The Problems of the Relationship between Science and Religion in Qibla Direction Calibration at the Great Mosque of Demak and Baiturrahman Mosque in Semarang, Indonesia

Problematika Hubungan Sains dan Agama dalam Kalibrasi Arah Kiblat di Masjid Agung Demak dan Masjid Baiturrahman Semarang, Indonesia

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Abstract: The relationship between science and religion in the practice of Islamic law (*fiqh*) is dilemmatic. On the one hand, science is in harmony with religion, and the two are mutually exclusive on the other hand. This article includes the last category by presenting evidence from two cases of Qibla direction calibration in Indonesia. The author focuses on the disagreement between fiqh and scientific results on the calibration of the Qibla direction at the Great Mosque of Demak and Baiturrahman Mosque in Semarang, Indonesia. Using literature research and content analysis, the author finds that *fiqh's* rejection of science lies in the intersection of *fiqh* with Sufistic elements and the reality of social establishment. In the Qibla's case direction at the Great Mosque of Demak, they believe that Sunan Kalijaga determined the direction of the Qibla in the mosque, and the mosque has a switched historic value. In contrast to the case of the Qibla direction at the Baiturahman Mosque in Semarang, which has no historical value and the Qibla direction was previously determined using a simple tool, they reasoned that changing the prayer lines in the mosque could cause discomfort and lack of stability for the congregation when carrying out prayer rituals. Thus, a scientific integration approach is needed in handling the gap between science and religion in religious practice in Indonesia.

Keywords: Religion, Science, Qibla Direction Calibration, Great Mosque of Demak, Baiturrahman Mosque Semarang.

Abstrak: Hubungan antara sains dengan agama dalam praktik hukum Islam sangat dilematis. Pada satu sisi, sains selaras dengan agama dan pada sisi yang lain keduanya saling bertentangan. Artikel ini masuk dalam kategori terakhir dengan menghadirkan bukti dari dua kasus kalibrasi arah kiblat di Indonesia. Penulis fokus pada ketidaksepahaman antara fikih dengan hasil sains pada kalibrasi arah kiblat di Masjid Agung Demak dan Masjid Baiturrahman Semarang, Indonesia. Dengan menggunakan penelitian kepustakaan dan

analisis isi, penulis menemukan bahwa penolakan fikih terhadap sains terletak pada persinggungan fikih dengan elemen sufistik dan realitas kemapanan sosial. Pada kasus arah kiblat di Masjid Agung Demak, mereka menyakini bahwa arah kiblat di masjid tersebut ditetapkan oleh Sunan Kalijaga dan masjid tersebut memiliki nilai historisitas yang saklar. Berbeda dengan kasus arah kiblat di Masjid Baiturahman Semarang yang tidak memiliki nilai historis dan arah kiblat sebelumnya ditentukan dengan menggunakan alat sederhana, mereka beralasan bahwa perubahan saf-saf salat di masjid tersebut dapat menimbulkan ketidaknyamanan dan kekurangmantapan jamaah saat menjalankan ritual salat. Dengan demikian, pendekatan integrasi keilmuan diperlukan dalam upaya mengahadapi kesenjangan antara sains dengan agama dalam praktik beragama di Indonesia.

Kata Kunci: Agama, Sains, Kalibrasi Arah Kiblat, Masjid Agung Demak, Masjid Baiturrahman Semarang.

A. Introduction

The relationship between science and religion is a central issue in civilization and culture.[1] On the one hand, science is an ally of Islam.[2] On the other hand, the relationship between science and Islam is disintegrating[3] and contradicting each other.[4] For a Muslim, the existence of science needs to get legitimacy from norms originating from Islam.[5] This rejection of science is caused by findings in the field of science that do not come from Islamic ethics and morals.[6] In contrast to the two studies, which view it from a conflict approach, some scholars seek to integrate science with Islam.[7]

This article describes the disagreement between *fiqh* and scientific results by presenting two cases of calibration of the Qibla direction at the Great Mosque of Demak and the Baiturrahman Mosque of Semarang in the practice of religion in

[1] Richard Lemay, "Religion vs Science in Islam. The Medieval Debate Around Astrology," *Oriente Moderno* 80, no. 3 (August 12, 2000): 557–75.

[2] M. Alper Yalcinkaya, "Science as an Ally of Religion: A Muslim Appropriation of 'the Conflict Thesis,'" *The British Journal for the History of Science* 44, no. 2 (June 2011): 161–81.

[3] Nasser Mansour, "Science Teachers' Views of Science and Religion vs. The Islamic Perspective: Conflicting or Compatible?," *Science Education* 95, no. 2 (March 1, 2011): 281–309.

[4] C.A.O. Van Nieuwenhuijze, "Religion Versus Science in Islam: A Past and Future Question," *Die Welt Des Islams* 33, no. 2 (1993): 276–88.

[5] Nuraini, "Mengintegrasikan Agama, Filsafat, dan Sains," *Istawa: Jurnal Pendidikan Islam* 2, no. 1 (2016): 111–38.

[6] M. B. Hooker, "Islam and Medical Science: Evidence from Malaysian and Indonesian Fatāwā, 1960-1995," *Studia Islamika* 4, no. 4 (1997).

[7] Nidhal Guessoum, *Islam's Quantum Question: Reconciling Muslim Tradition and Modern Science* (London: I. B. Tauris, 2011).

Indonesia. The Qibla direction of the two mosques has been calibrated using the scientific method or astronomy. Interestingly, after the results of the Qibla direction calibration carried out by the Ministry of Religious Affairs, the Central Java Regional Office stated that the two mosques did not lead directly to the Kaaba. Although the prayer rows at the Great Mosque of Demak have been adjusted to the results of the Qibla direction calibration for a while,[8] the prayer rows of the two mosques were finally returned to their original state. In both cases, the results of scientific work do not agree with religious norms and have an impact on rejection at the level of application. Differences in *fiqh* understanding can also have implications for determining the direction of Qibla.[9]

In the Indonesian context, several scholars have studied the relationship between science and religion in constructing *fiqh* in Indonesia. One of them is Susiknan Azhari, who explains the problem of integrating science and religion in terms of reckoning and *rukyat* in Indonesia.[10] Some scholars argue that science is coherent with religion after reviewing the fatwas issued by the Indonesian Ulema Council (MUI) regarding transplantation[11] and changes in religious practices during the Covid-19 period.[12] Not coherent with religion, some scholars argue that there is an integration between science and religion. It is evidenced by the MUI fatwa methodology, which combines the methods of science and religion.[13] Science and Islam are one and cannot be contradicted.

Meanwhile, some scholars found that Muslim groups' rejection of science in religion impacted the transmission of Covid-19.[14] The rejection of science is also

[8] Ahmad Munif, "Analisis Kontroversi dalam Penetapan Arah Kiblat Masjid Agung Demak" (Tesis, Semarang, IAIN Walisongo, 20143).

[9] ABD Karim Faiz, "Fiqh Moderation on Qibla Direction Determination: Flexible Accuracy," *JIL: Journal of Islamic Law* 1, no. 1 (February 27, 2020): 83–99.

[10] Susiknan Azhari, *Kalender Islam: Ke Arah Integrasi Muhammadiyah-NU* (Yogyakarta: Museum Astronomi Islam, 2012).

[11] Hooker, "Islam and Medical Science."

[12] Ilyas Supena, "Konstruksi Epistemologi Fikih Pandemik: Analisis Fatwa-Fatwa MUI," *Al-Manahij: Jurnal Kajian Hukum Islam* 15, no. 1 (June 11, 2021): 121–36.

[13] Ali Sodiqin, "Science-Based Ijtihad: Religious and Scientific Dialectic on Fatwas Regarding Congregational Worships Amid the Covid-19 Pandemic," *Ijtihad: Jurnal Wacana Hukum Islam dan Kemanusiaan* 21, no. 1 (June 30, 2021): 79–98.

[14] Musa Maliki, "Covid-19, Agama, dan Sains," *MAARIF* 15, no. 1 (June 30, 2020): 60–92, https://doi.org/10.47651/mrf.v15i1.77. Ahmad Zaenuri, "Fiqh Conception of the Jamā'ah Tablīgh's Da'wah during the Covid-19 Pandemic: A Study of the Da'wah Movement of the Jamā'ah Tablīgh in Gorontalo," *Journal of Islamic Law (JIL)* 1, no. 2 (August 1, 2020): 135–57.

found in determining the direction of Qibla.[15] This article is included in the last typology that examines Qibla direction calibration. In contrast to Muthmainnah and Fattah Setiawan Santoso, who study it normatively, this article uses the calibration of the Qibla direction at the Great Mosque of Demak and the Baiturrahman Mosque in Semarang as real examples of the neglect of *fiqh* on the results of scientific work.

This article is library research using content analysis. This library research and content analysis is used to answer why science is still neglected with calibration of the Qibla direction at the Great Mosque of Demak and the Baiturrahman Mosque in Semarang in the practice of religion in Indonesia. Interestingly, this neglect occurred amid massive efforts by Islamic universities to integrate or find common ground between religion and science.[16] For this reason, this article discusses the relationship between science and religion in Indonesia, the characteristics of *fiqh*, methods and tools for determining the direction of Qibla, and a description of two cases that ignore the results of the calibration of the Qibla direction with the scientific method and return to neglecting it.

B. Science and Religion in Indonesia: Integration or Disintegration?

The separation of knowledge from science and religion stems from differences in the truth's acceptance or validity of the information provided by physical things with metaphysical things.[17] In the series of modern scientific history, science is everything that can be digested by the five senses or is empirical. For adherents of empiricism (also known as positivism), truth is what appears, what can be proven and witnessed by the five senses.[18] Consequently, knowledge is structured and becomes a science emphasizing all things physical. Because of his

[15] Muthmainnah Muthmainnah and Fattah Setiawan Santoso, "Pemanfaatan Sains dan Teknologi dalam Pengukuran Arah Kiblat di Indonesia," *Ulumuddin: Jurnal Ilmu-Ilmu Keislaman* 10, no. 2 (December 29, 2020): 149–62.

[16] Muhammad Thoyib, "Model Integrasi Sains dan Agama dalam Perspektif JF Haught dan M. Golshani: Landasan Filosofis bagi Penguatan PTAI di Indonesia," *Akademika: Jurnal Pemikiran Islam* 18, no. 1 (March 26, 2013): 1–28.

[17] Hadi Masruri and Imron Rossidy, "Filsafat Sains dalam Al-Qur'an: Melacak Kerangka Dasar Integrasi Ilmu dan Agama," *El-QUDWAH* 4, no. 1 (2007): 1–16.

[18] Izzatur Rusuli and Zakiul Fuady M. Daud, "Ilmu Pengetahuan dari John Locke ke Al-Attas," *Jurnal Pencerahan* 9, no. 1 (March 30, 2015): 12–22.

fanaticism, things that smelled of metaphysics were removed from the science category.[19]

On the other hand, religion (Islam), which never separates and distinguishes between knowledge from physical and metaphysical matters, is understood as a party that only puts forward everything that smells of metaphysics.[20] It is related to the definition of religion and the basic foundation of religion which prioritizes something metaphysical, such as believing in angels who are not visible, believing in previous prophets who have not been found, until believing in the last day that will come in the future. In Indonesia, it is alleged that religious communities practice the way Islam emphasizes the way of Islam that puts forward abstract things, once known as superstition for the practice of Islam by Muslims in Indonesia.[21]

The paradigm of separation of science and religion (general science and religious science) has been tried to erode by scholars and ulemas in Indonesia in the last three decades. Several professors and thinkers of Islamic studies have tried to formulate how there is harmony and understanding between general science and religious knowledge. M. Amin Abdullah, professor of UIN Sunan Kalijaga, offers the integration of science with theo-anthropocentric-integralist character, also known as the scientific spider web. This idea tries to map out the existence of all aspects of life, which comes from two main sources in Islam, the Qur'an and the sunnah. These two sources inspired the birth of studies on hadith, *fiqh*, and interpretation, in philosophy. At the same time, there are several scientific studies according to their respective characteristics, such as sociology, anthropology, archaeology, history, ethics, and others. The outermost net is in the form of practical rules that have taken the form of law, economic studies, human rights, environmental issues, and others. All of them are interconnected like spider webs that are inseparable from one another.[22]

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[19] Akmal Mundiri, "Komitmen Organisasional Sumber Daya Manusia dalam Meningkatkan Mutu Pendidikan Pesantren," *PEDAGOGIK: Jurnal Pendidikan* 2, no. 1 (December 31, 2015): 88–105.

[20] Maria Ulfah, "Mekanisme Perolehan Ilmu dalam Perspektif Filsafat Pendidikan Islam," *Jurnal Ilmiah Didaktika: Media Ilmiah Pendidikan dan Pengajaran* 12, no. 2 (February 1, 2012): 289–307.

[21] Andik Wahyun Muqoyyidin, "Dialektika Islam dan Budaya Lokal Jawa," *IBDA`: Jurnal Kajian Islam dan Budaya* 11, no. 1 (2013): 1–18.

[22] Parluhutan Siregar, "Integrasi Keilmuan dalam Perspektif M. Amin Abdullah," *MIQOT: Jurnal Ilmu-Ilmu Keislaman* 38, no. 2 (December 9, 2014).

From a different perspective, Kuntowijoyo offers scientific integration that can be achieved in four stages. First, make religion (the Qur'an) a *grand theory* to give color to guidance and ethics in life. Second, towards theo-anthropocentrism. This stage recognizes that there is an intelligence of the human mind that cannot be denied in obtaining the truth, and it cannot be denied that humans cannot be separated from divine rules. Both are sources of knowledge. The third is dedifferentiation. This stage is responsible for the differentiation of religion and other sectors of life that is echoed by the spirit of modernism. Dedifferentiation requires the reunification of religious elements with other sectors of life. Finally, intergalactic science, namely science that does not distinguish between divine revelation and the findings of the human mind. There is no longer the term excessive secularism that overrides religion and excessive religious radicalism that looks down on other than religion.[23]

Integrating science and religion has inspired several State Islamic Institutes in Indonesia, which have been transformed into State Islamic University (UIN), offering the concept of scientific integration with their respective characteristics. Among them is UIN Syarif Hidayatullah Jakarta[24] offering the concept of 'reintegration of knowledge', UIN Yogyakarta choosing the term 'interconnection-interrelation',[25] UIN Sunan Ampel Surabaya introducing the concept of 'integrated twin towers',[26] UIN Maulana Malik Ibrahim Malang offering the concept of 'tree of knowledge',[27] UIN Makassar using the term 'cell integration of science', UIN Semarang uses the term 'unity of science', and UIN Sunan Gunung Jati Bandung with the idea of 'wheel of knowledge'.[28] Unfortunately, the integration of science and religion promoted by each UIN is not in line with some of the religious practices of

[23] Husniyatus Salamah Zainiyati, "Landasan Fondasional Integrasi Keilmuan di UIN Maulana Malik Ibrahim Malang dan UIN Sunan Ampel Surabaya," *Islamica: Jurnal Studi Keislaman* 10, no. 1 (September 7, 2015): 248–76.

[24] Toto Suharto, "The Paradigm of Theo-Anthropo-Cosmocentrism: Reposition of the Cluster of Non-Islamic Studies in Indonesian State Islamic Universities," *Walisongo: Jurnal Penelitian Sosial Keagamaan* 23, no. 2 (December 15, 2015): 152–282.

[25] Suharto, 152–282.

[26] Zainiyati, "Landasan Fondasional Integrasi Keilmuan di UIN Maulana Malik Ibrahim Malang dan UIN Sunan Ampel Surabaya."

[27] Zainiyati.

[28] Suharto, "The Paradigm of Theo-Anthropo-Cosmocentrism," 152–282.

Muslims in Indonesia, including the practice of calibrating the Qibla direction in this article.

C. Sources and Characteristics of *Fiqh*

Fiqh is the work of *fiqh* experts from time to time. As the definition commonly used in the study of *fiqh*, it is understood as the science (knowledge) of practical sharia laws (*amaliyah*), which are taken from detailed arguments.[29] This definition requires that all matters related to Muslim practice refer to the textuality of the Qur'an and hadith. It is because the measure of truth is based on what is contained in the two main sources of Islamic teachings. Thus, *fiqh* is the product of human thought on the Qur'an and hadith.[30]

Textuality can be seen from the sources of Islamic law (*mashādir al-tasyrī'*), which have been described in the study of *uṣūl al-fiqh* (Islamic legal theories). There are four agreed sources of law (*ittifāq*), namely the Qur'an, sunnah, *ijmā '*(consensus) and *qiyās* (analogy).[31] The Qur'an and Sunnah occupy the main and top sources, respectively. It is based on the hadith about the sources of law used by Mu'adz bin Jabal in ijtihad.[32] Meanwhile, *ijmā'* and *qiyās* are methods that require the role of humans as sources of legal truth, provided that they do not conflict with the Qur'an and Sunnah.[33]

Apart from the agreed sources of law, several other sources of Islamic law are still in dispute (*mukhtalaf*). Among them are *istihsān* (the public interest), *istishāb* (presumption of continuity), *istishlah* (consideration of public interest), *syar'u man qablana* (revealed laws before Islam), *'urf* (local custom), and *sādd dzari'ah* (eliminating pretexts). All the disputed sources still make the Qur'an and

[29] Wahbah Al-Zuḥailī, *Ushūl Al-Fiqh al-Islamī*, vol. 8 (Beirut: Dār al-Fiqr, 1986), 13.

[30] Muhammad Lutfi Hakim, "Sharī'a, Fiqh, and Qānūn: A Portrait of the Cognitive Nature of Islamic Law in Indonesia," *Asy-Syir'ah: Jurnal Ilmu Syari'ah dan Hukum* 55, no. 1 (April 20, 2021): 25–48.

[31] Ali Imron, "Menerapkan Hukum Islam yang Inovatif dengan Metode Sadd al Dzari'ah," *QISTIE* 4, no. 1 (January 2, 2010).

[32] Soiman Nawawi, "Ijtihad sebagai Jalan Pemecahan Kasus Hukum," *Al-Munqidz: Jurnal Kajian Keislaman* 2, no. 2 (2013): 15–19.

[33] Nirwan Syafrin, "Konstruk Epistemologi Islam: Telaah Bidang Fiqh dan Ushul Fiqh," *TSAQAFAH* 5, no. 2 (November 30, 2009): 227–56.

hadith as a measure of truth. All results using some of these methods must be returned to the general truth in the Qur'an and Sunnah.[34] Because it belongs to the category of *mukhtalaf*, some scholars accept it, and some reject it. Therefore, the result of this mukhtalaf *fiqh* is referred to as *dhannī* (presumptive).[35] According to Haris, several methods used to formulate *fiqh* lead to three categories: linguistic interpretation, case study, and categorization. The three categories have very strong textual nuances.[36]

Regarding the practical nature of *fiqh*, it leads to guidelines that Muslims can use directly. Ordinary people are ready to use what has been contained in *fiqh*. Because *fiqh* is practical, it will try to keep up with the times. Why follow? It is because the reference of Islamic jurists (*fuqaha*) in formulating *fiqh* has changed along with the development of human civilization. Therefore, there is one rule that allows *fiqh* to always adapt to space and time, *taghayyur al-ahkām bi taghayyur al-azminah wa al-amkinah/changes in the law (possible) along with changes in time and place*.[37] The rule of law is under the practical-applicative nature of *fiqh* and must adapt to the conditions in which *fiqh* exists.[38]

In the Qibla's context direction in Indonesia, one has to look at the development of science that is getting more and more advanced here, not necessarily the Qibla direction which was previously determined by simple tools such as a magnetic compass under current science. Because the direction generated from the magnetic compass is not pointing to the true north but the direction of Earth's magnetic north. So that the *fiqh* of the Qibla direction must always be applied so that the Qibla direction produced based on science is truly in line with the concept of *fiqh*.

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[34] Abd Wafi Has, "Ijtihad sebagai Alat Pemecahan Masalah Umat Islam," *Epistemé: Jurnal Pengembangan Ilmu Keislaman* 8, no. 1 (June 7, 2013): 89–112.

[35] Ratu Haika, "Konsep Qath'i dan Zhanni dalam Hukum Kewarisan Islam," *Mazahib* 15, no. 2 (December 30, 2016): 182–95.

[36] Munawir Haris, "Metodologi Penemuan Hukum Islam," *Ulumuna* 16, no. 1 (June 30, 2012): 1–20.

[37] Ibn Qayyim al-Jauziyah, *I'lam al-Muwaqi'in*, Juz III (Bairut: Maktabah al-Asriyah, 2003), 12.

[38] Hannani Hannani, "Hukum Islam dan Multikulturalis-Pluralitas di Indonesia," *DIKTUM: Jurnal Syariah dan Hukum* 11, no. 1 (January 14, 2013): 32–46.

D. Qibla Direction Calibration Method and Tool

Praying facing the Qibla is one of the legal requirements. Under normal conditions, a Muslim who wants to pray must try to face the Kaaba in the Grand Mosque, Mecca, as his Mecca. Therefore, mosques and prayer rooms used as places of prayer for Muslims must be sought so that the existing buildings and their prayer line direct and face the Qibla.[39] Thus, knowledge and tools to know the Qibla direction are very important for Muslims.

Knowledge and equipment to know the direction of Qibla develops over time. Knowing the Qibla direction is a command from the Qur'an and hadith, which are still general and not yet applicable. The Qur'an only mentions "*fawallu wujūhakum syathrah/ turn your face towards him (Masjidil Haram)*" as contained in Surah al-Baqarah verses 144 and 150. Besides the Qur'an, the command to face the Qibla is also contained in the hadith narrated by Al-Bukhārī, *istaqbil al-qiblah/facing the Qibla*. Because the two arguments are still generally commanded, the *fiqh* experts (*fuqahā'*) try to make the command to face the Qibla to be *amaliy* and can be a guide for the people. The efforts of these *fiqh* experts are known as *'ainul qiblah* and *jihātul qiblah*.[40]

'Ainul qiblah is the opinion of the fuqaha to designate the conditions in which a person can see or know the Kaaba directly. It applies to people who perform prayers in the Grand Mosque and nearby. As for *jihātul qiblah,* it is a condition in a person who cannot see the Kaaba directly. It applies to Muslims who are far from the Kaaba.[41] In addition to the opinion of the fuqaha, Muslims already know to determine the direction. In the past, Arabs used the constellations of Orion and Polaris to find the closest point to the Grand Mosque, where the Kaaba is located. So that when traveling far from Mecca, they can try to get to the Kaaba well.

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[39] Rizki Muhammad Haris, "Hukum Salat yang Tidak Sesuai Arah Kiblat: Studi Kasus Masjid-Masjid di Kecamatan Sidamanik," *AT-TAFAHUM: Journal of Islamic Law* 1, no. 1 (May 22, 2017): 136–48.

[40] Anisah Budiwati, "Tongkat Istiwa', Global Positioning System (GPS) dan Google Earth untuk Menentukan Titik Koordinat Bumi dan Aplikasinya dalam Penentuan Arah Kiblat," *Al-Ahkam* 26, no. 1 (April 14, 2016): 65–92.

[41] Ahmad Izzuddin, *Ilmu Falak Praktis: Metode Hisab-Rukyat: Praktis dan Solusi Permasalahannya* (Semarang: Pustaka Rizki Putra, 2012).

In addition, Muslims have also discovered the *rashdul qiblah* to find the time the sun is above the Kaaba. Thus, every object at that time is pointing toward the Kaaba. There are two types of this method, annual and daily. The annual *Rashdul qiblah* occurs twice, 27 or 28 May and 15 or 16 July. At the same time, the daily *rashdul qiblah is* adjusted to a certain location on the Earth, allowing the sun's shadow to produce an angle equal to the *azimuth of the Qibla* or vice versa.[42]

Along with the development of science, the direction to face the Kaaba has been sought by Muslims accurately, even though it is located far away from the Grand Mosque.[43] Various tools and methods have been found to find out the Qibla direction. Al-Fazzari, for example, had invented (perfected) a tool known as the astrolabe in the 8th century AD.[44] Ibn al-Syātir had discovered *the rubu' mujayab* (quadrant). These two tools can be used with certain calculations to determine the Qibla direction. In the modern era, the two tools were refined into a theodolite.

E. Abandonment Science in Jurisprudence Determination of Qibla Direction: Case Studies at the Great Mosque of Demak and the Baiturrahman Mosque in Semarang

The Qibla direction calibration method and tool that the author has described previously is a practical guide in carrying out *fiqh* facing the Qibla. These tools and methods are a tool in determining the direction of Qibla, as desired in the integration's study of science and religion. Referring to the opinion that science should be an important guideline for strengthening the implementation of *fiqh* or Islam, Muslims should be able to accept the calibration of mosques or prayer rooms using the latest methods and equipment to determine the direction of Qibla.[45] Unfortunately, some Muslims have not fully accepted the use of science in determining the direction of Qibla. In this discussion, the author makes the

[42] Muhammad Faishol Amin, "Global Rasdhul Qibla: The Probability of Four Times in A Year Study," *Jurnal Penelitian*, November 20, 2018, 175–88.

[43] Siti Tatmainul Qulub, "Konsep Jarak Terdekat dalam Menghadap Kiblat," *Al-Qanun: Jurnal Pemikiran dan Pembaharuan Hukum Islam* 20, no. 1 (2017): 1–25.

[44] Jayusman, "Sejarah Perkembangan Ilmu Falak; Sebuah Ilustri Paradok Perkembangan Perkembangan Sains dalam Islam," *Al-Marshad: Jurnal Astronomi Islam dan Ilmu-Ilmu Berkaitan* 1, no. 1 (February 24, 2017): 43.

[45] Ahmad Izzuddin, *Fiqih Hisab Rukyat* (Jakarta: Erlangga, 2007), 67.

calibration of the Qibla direction at the Great Mosque of Demak and the Baiturrahaman Mosque of Semarang as two cases of neglect of science.

The first is the calibration of the Qibla direction at the Great Mosque of Demak. This mosque is a legacy of Walisongo, nine guardians who spread Islam in Indonesia. Sunan Kalijaga has determined the Qibla direction of the Great Mosque of Demak. Sunan Kalijaga himself is a member of Walisongo whose grave is near to the Great Mosque of Demak, namely in the Kadilangu Complex. In 2012, the Ministry of Religious Affairs Regional Office of Central Java calibrated the Qibla direction at the mosque using the latest methods and equipment, namely contemporary calculation methods and using a theodolite. The result is that the Qibla direction of the Great Mosque of Demak is less oblique to the north by twelve degrees one minute.[46]

Because the Great Mosque of Demak has a sacred history, numerous parties are interested in the calibration results. It received various responses in response to it, whether to change the mosque's prayer line according to the results of the Qibla direction calibration or leave it intact as before. Jurisprudence, social, and mystical considerations are used by various parties to take a stand. Finally, the Takmir of the Great Mosque of Demak decided to use the prayer line as before it was calibrated, even though the prayer line of the mosque was adjusted to the calibration results for six months.[47]

In rejecting the results of the direction calibration, the Takmir of the Great Mosque of Demak and local religious leaders used mystical and sufistical reasons. The mystical reason is illustrated by the belief of the community or mosque users that Sunan Kalijaga calibrates the Qibla direction of the Great Mosque of Demak. The Qibla direction calibration is carried out using Sunan Kalijaga's left hand holding the Mustaka of the Great Mosque of Demak and the other hand at the end of the Kaaba.[48] Muslims believe the stories recorded in this century in Java to be the correct and proper direction of Qibla. In the Sufistic perspective, the truth of the Qibla direction sought by Sunan Kalijaga is considered absolute truth. This reason is reinforced by

[46] Munif, "Analisis Kontroversi dalam Penetapan Arah Kiblat Masjid Agung Demak."
[47] Munif.
[48] Munif.

the local community's belief in the prohibition of arguing or disagreeing head-on with their spiritual teacher.[49] In the context of the Great Mosque of Demak, Sunan Kalijaga is a spiritual teacher who must be followed and obeyed in all his words and actions.

The second is the calibration of the Qibla direction at the Baiturrahaman Mosque in Semarang. This mosque is located in Simpang Lima, Semarang City. Because it is located in the city center, this mosque is visited by thousands of people every year to perform prayers. In 2010, the Ministry of Religion of the Central Java Regional Office calibrated the Qibla of the mosque. Calibration is carried out using the latest equipment with methods that are believed to be scientifically accurate enough, which in this case uses contemporary calculation methods and tools such as theodolite. The result is that the Qibla direction of the Baiturrahaman Mosque in Semarang is too tilted to the north by two degrees, zero minutes, thirty-three seconds. The value of north is equivalent to a distance of two hundred and forty kilometers from the point of the Kaaba.[50]

After the Qibla direction calibration results were submitted, the Takmir of the Baiturrahaman Mosque Semarang ignored it. They do not want to adjust the prayer rows with the calibration results. They reasoned that the change in rows could cause discomfort and a lack of stability for the congregation when performing prayers at the mosque.[51] The reason why Muslims worship at the mosque is the argument of the Takmir Baiturahman Mosque in Semarang to ignore the results of the Qibla direction calibration through the scientific method (science).

The tight battle between scientists and Sufism at the Great Mosque of Demak did not occur at the Baiturrahman Mosque in Semarang. The mosque located in the center of the city is classified as a mosque that does not have historical value as the Great Mosque of Demak. The Qibla direction of the Baiturrahman Mosque in Semarang is determined by people who are not spiritual teachers like Sunan Kalijaga. Previously, the determination of the Qibla direction only used simple

[49] Moh Isom Mudin, "Suhbah: Relasi Mursyid dan Murid dalam Pendidikan Spiritual Tarekat," *TSAQAFAH* 11, no. 2 (November 30, 2015): 399–416.

[50] Siti Nur Rohmah, "Penolakan terhadap Sertifikasi Arah Kiblat di Masjid Baiturrahman Simpang Lima Semarang" (Skripsi, Semarang, IAIN Walisongo, 2014).

[51] Rohmah.

equipment as a tool, namely a compass. When a simple tool is faced with more modern equipment, it will immediately be defeated. Therefore, what happened in Qibla's case direction at the Baiturrahman Mosque in Semarang was not a battle for truth from a different angle but testing the old truth with the latest equipment, which is believed to be able to provide a more precise truth.

F. The Dispute between Science and Sufism in Determining Qibla Direction

There is a dispute between science and Sufism in calibrating the Qibla direction (*fiqh*) in a place of worship as a mosque or prayer room. Especially for mosques and prayer rooms with high historical value and (or) mosques that are the center of the crowd. *Fiqh* can go hand in hand with science and (or) Sufism. *Fiqh* can become scientific *fiqh* and Sufistic *fiqh* in some cases. Scientific *fiqh* is a fiqh term that uses science to strengthen *fiqh* practice.[52] In this term, *fiqh* can only provide rules for carrying out Islamic teachings in the form of signs. In the Qibla direction, for example, science is used to support the requirements for valid prayer by facing the Kaaba. *Fiqh* does not provide further information and procedures for determining the Qibla direction. This role was taken over by science.

In contrast to scientific *fiqh*, Sufistic *fiqh* is an intersection between *fiqh* and Sufistic elements. Sufistic terminology is also known as Sufism. There is an Arabic proverb (*maqālah*) that is quite popular regarding the relationship between *fiqh* and mysticism (*tasawuf*), *man tafaqqaha wa lam yatashawwafa faqad tafassaqa, wa man tashawwafa wa lam yataffaqqaha faqad tazandaqa/whoever believes in fiqh but puts aside Sufism, it will fall for anyone who does fasiq. Those who practice Sufism but ignore fiqh will be trapped in the attitude of zindiq*.[53] In Sufism, inner peace or heart is the main goal. According to Sufi scholars, Sufism cannot be done independently, but there must be a spiritual teacher (a kind of *murshid*) who teaches it. Everything said by this *murshid* should not be debated or refuted. The message must be accepted as is.[54] It happened in the Qibla's case direction calibration at the Great

[52] Muhammad Muhibbuddin, "Ijtihad Scientific dalam Hukum Islam (Refleksi Metodologis Penemuan Hukum Islam)," *Ahkam: Jurnal Hukum Islam* 3, no. 1 (July 1, 2015): 1–18.

[53] Deswita Deswita, "Konsepsi Al-Ghazali tentang Fikih dan Tasawuf," *JURIS (Jurnal Ilmiah Syariah)* 13, no. 1 (August 21, 2018): 84–91.

[54] Mudin, "Suhbah."

Mosque of Demak. The local Muslim community has believed the direction of the Qibla at the Great Mosque of Demak to be the legacy of Sunan Kalijaga, the foremost spiritual teacher of Muslims in Java.

Meanwhile, between the scientific and the Sufi is very difficult to meet and walk side by side. The main factor causing the difficulty of a meeting between science and Sufism is both characteristics. Scientifics prioritize rationality and the five senses related to physical things,[55] while Sufism comes from the depth of spiritual experience from the heart (*al-qalb*), which is not visible and involves metaphysical matters.[56] The difficulty of the conference between science and Sufism is further exacerbated by accusations from the scientific group who regard Sufism as a knot that weakens the joints of life to become more advanced and developed.[57]

As a node that can be side by side with scientific and Sufistic, *fiqh* provides an option that can bridge the difference in views between Sufism and science in terms of facing the Qibla. *Fiqh* offers *jihatul qiblah rules* for Muslims who cannot see the Kaaba directly or are located very far from the Kaaba. *Jihatul qiblah* allows a person to face the Qiblah without being exactly straight like a ruler, and it can slide slightly obliquely to the right or to the left. The inaccuracy of facing the Qibla can still be tolerated by *fiqh* with a note that it is not as big as the direction of the wind as the original meaning of jihad.[58] The scientific node still understands this perspective. Otherwise, the Sufistic knot requires prayer to be performed solemnly and brings peace of mind and soul. However, what calms the heart should not be arbitrary. It must remain in the *fiqh* corridor of *jihatul qiblah* . If this is violated, it is possible to fall into the term *zindiq* in religion. It is where science and Sufism meet.

In the context of the dispute between the scientific and the Sufis in calibrating the Qibla direction, Amin Abdullah's spider web approach is relevant.[59] It should be

[55] Yeremias Jena, "Thomas Kuhn tentang Perkembangan Sains dan Kritik Larry Laudan," *MELINTAS* 28, no. 2 (December 14, 2012): 161–81.

[56] Syaifan Nur, "Epistemologi Sufi dan Tanggung Jawab Ilmiah," *Kanz Philosophia A Journal for Islamic Philosophy and Mysticism* 2, no. 1 (June 22, 2012): 135–52.

[57] Ah Fawaid, "Qadimisme versus Jadidisme dan Dinamika Ulama di Asia Tengah," *Islamica: Jurnal Studi Keislaman* 12, no. 1 (September 4, 2017): 1–21.

[58] Ahmad Izzuddin, "Metode Penentuan Arah Kiblat dan Akurasinya," Conference Proceedings pada Annual International Conference on Islamic Studies (AICIS XII) tahun 2012. 759-811.

[59] Siregar, "Integrasi Keilmuan dalam Perspektif M. Amin Abdullah."

the result of human thought to support matters related to religion. On the one hand, the results of human thought can provide a new perspective in providing an assessment of the truth and can be a support for practicing religious teachings on the other hand. Qibla direction calibration has played both roles. However, acceptance or rejection of the results of the Qibla direction calibration needs to use another scientific approach. The Takmir of the Baiturahman Mosque in Semarang sees the sociological and psychological side of the Muslim community who worship at the mosque. They are worried that the mosque congregation will feel uncomfortable carrying out their worship. As a result, it will indirectly disrupt the social order of people and all parties who come into contact with the Baiturrahman Mosque in Semarang. The same thing happened to the Takmir of the Great Mosque of Demak, who ultimately chose to return the prayer rows at the Great Mosque of Demak to their original state.

Qibla direction calibration using the latest methods and equipment is an applicative form of integrating science with Islam. Borrowing Kuntowijoyo's language, theo-anthropocentrism[60] plays a role in the efforts of Muslims to develop knowledge to support and strengthen religious practices. It must be admitted that the human mind can develop a science that produces certain truths according to its own version. But in terms of *theo* or religion, like it or not, you have to submit to God's will and commandments. Facing the Qibla is a religious obligation, so one's prayer can be considered valid before God. To support and carry it out, religious obligations require human efforts in leading to the Kaaba. Of course, for Muslims in the Grand Mosque and nearby, this is an easy matter. It is a big problem for Muslims located outside Mecca or thousands of kilometers from Mecca. It is where the role of calibration as a result of science comes into play. Qibla direction calibration at the Great Mosque of Demak and the Baiturahman Mosque in Semarang is an effort to answer the needs of Muslims facing the Qibla.

[60] Yanti K. Manoppo, "Pemikiran Kuntowijoyo tentang Metodologi Pengilmuan Islam," *Irfani* 13, no. 1 (2017): 23–34.

G. Conclusion

In terms of worship must face the Qibla; religious orders are still general. Therefore, the *fuqaha* try to make the religious text practical by using several methods and modern tools (science) in determining the Qibla direction. However, some Muslim communities cannot accept the use of methods and tools in the calibration of the Qibla direction at the Great Mosque of Demak and the Baiturahman Mosque in Semarang. They use sociological to mystical-Sufistic reasons to ignore the results of the *fiqh* and science products. In the Qibla's case, direction at the Great Mosque of Demak, they believe that Sunan Kalijaga determined the direction of the Qibla in the mosque, and the mosque has a historical value that switches. In contrast to the case of the Qibla direction at the Baiturahman Mosque in Semarang, which has no historical value and the Qibla direction was previously determined using a simple tool, they reasoned that changing the prayer lines in the mosque could cause discomfort and lack of stability for the congregation when carrying out prayer rituals.

There is a contest between science and Sufism in calibrating the Qibla direction (*fiqh*) in calibrating the Qibla direction at the Great Mosque of Demak and the Baiturahman Mosque in Semarang. Jurisprudence can go hand in hand with science and (or) mysticism. Jurisprudence can use science to strengthen and strengthen *fiqh* practice. On the other hand, there is an intersection between *fiqh* and Sufism. The main factor causing the difficulty of a meeting between science and Sufism is both characteristics. Therefore, a scientific integration approach is needed in handling the gap between science and religion in religious practice in Indonesia.

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