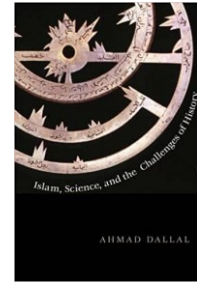


The Qibla Debate: Tradition, Authority, and Education

Ahmad Dallal begins his 2010 book *Islam, Science, and the Challenge of History* (Yale University Press) by discussing the problem of the orientations of mosques in Islam. What happens when the direction of Mecca toward which the faithful have been traditionally facing for prayer turns out not to be scientifically correct? As the science of astronomy developed in Islamic culture, this question arose.



Many people have some familiarity with certain “religion and science” debates. Debates over human origins are an obvious example. However, those debates may be so familiar that they have limited value as tools for discussion or education regarding religion and science; too many people already have set opinions on the issues at hand, regardless of whether they are truly knowledgeable about them. The qibla debate is one that many people in non-Islamic cultures (and perhaps some even in Islamic cultures) are not familiar with. Thus it provides a fresh tool for examining questions of religion and science.

The excerpt below, from pages 1-9 of *Islam, Science, and the Challenge of History*, is edited with commentary primarily for educational use—to be accessible to an audience that is broader than the scholarly audience for which the book was written. Edits are indicated by ellipses (...) or {curvy brackets}. The [square brackets] that the reader will encounter are Dallal’s; he uses them regularly. Curvy brackets typically indicate material that has been abridged, or material that Dallal relegated to endnotes that might be valuable to an educational discussion. Dallal’s copious endnotes have been omitted. On the right of Dallal’s text are comments, intended to assist the reader with this unique and interesting, but at times challenging, material.

Muslims are enjoined to face Mecca during their five daily prayers, just as all mosques are supposed to be oriented toward the Ka‘ba in Mecca, in what is known as the direction of the *qibla*. Before mathematical methods became available, Muslims determined the direction of the qibla based on the practices of the early Companions of the Prophet Muḥammad and their successors. They also made use of traditions of folk astronomy and of the astronomical alignment of the Ka‘ba itself. These methods provided reasonable approximations in locations close to Mecca but were quite inaccurate in faraway places like North Africa and Iran.

With the emergence of mathematical sciences, new methods of considerable sophistication were devised to compute the qibla for any locality on the basis of its geographical coordinates and Mecca’s. In the most accurate solution, the problem is transferred

to the celestial sphere {and is solved by means of astronomical calculations}.... Most astronomical handbooks contained chapters on finding the direction of the qibla by one or more approximative or accurate methods, separate treatises were composed on the subject, and tables were published displaying the qibla direction as a function of terrestrial longitude and latitude, thereby providing the results of complex mathematical computations.

In many works on “astronomy in the service of Islam,” David King has noted that jurists and scientists often proposed different solutions to the same problem, but jurists criticized mathematical astronomy only when it was used in astrology and, with occasional exceptions, did not criticize exact mathematical methods that differed from their own methods, nor did scientists often speak against the simplified methods of the religious scholars. In other words, alternative methods of radically different provenance, some relying on religious tradition and others on mathematical astronomy, were usually tolerated. Methods used to determine the direction of the qibla, however, were a major exception to this general rule.

Beyond the Hijaz (by the Red Sea), Syria, and Iraq, which were near enough to Mecca so that pre-mathematical methods of computing the direction of the qibla provided fairly accurate results, many of the mosques built in the early period of Islamic expansion were misaligned. With increased knowledge of mathematical astronomy, this flaw was recognized, and although some of the misaligned mosques retained their orientation, others were rebuilt to face in the correct direction. This presented a serious problem—namely, the possibility of tearing down mosques built on the authority of the Companions of the Prophet on the basis of the findings of mathematical astronomy. More generally,

A “jurist” here refers to an expert, perhaps in religious law or another field, who has authority to render judgments on different matters.

In regions that were not too far from Mecca (such as Syria, Iraq, and the Hijaz), traditional methods of determining direction were sufficient to determine which way a mosque should face. But in regions more distant from Mecca, traditional methods were inaccurate, and as people became skilled at determining direction through astronomical calculations, many of the early mosques built in those more distant regions were discovered to be oriented in the wrong direction.

the question raised was whether mathematical knowledge should take precedence over religious authority in a matter where, admittedly, the realms of science and religion overlapped.

The problem of the direction of the *qiblat ahl Fās*, the qibla of Fes {in Morocco, in North Africa}, was debated for several centuries.... {Texts by Abū ‘Alī Šāliḥ al-Mašmūdī, Abū ‘Alī al-Mittījī, ‘Abd al-Raḥmān al-Tājūrī al-Maghribī al-Ṭarābulsī, and others—all written between the twelfth and the early eighteenth centuries, provide detailed accounts of opinions on both sides of the debate, including views of astronomers as well as religious scholars whose legal rulings (*fatwas*) were solicited on this matter.}

One twelfth-century scholar {Al-Mittījī} maintained that those who assigned one qibla direction to all North African countries were wrong because this region is vast.... To corroborate his claim, this author referred to the Companions’ redirection of the qibla of Fuṣṭāṭ (later Cairo).

The fourteenth-century scholar Al-Mašmūdī recognized a number of difficulties associated with finding the qibla in North Africa, in part, he says, because the religious scholars who wrote the authoritative legal works used in North Africa did not mention ways of finding the direction of the qibla using the stars and the risings and settings of the sun. A second difficulty arose from the drastic differences in the orientations of mosques; in the same city some mosques were directed to the east and others to the south. Those who directed their mosques to the south relied on a *ḥadīth* of the prophet that says, “Between the East and the West is a qibla,” and took this to be a general *ḥadīth*, although, Al-Mašmūdī adds, most religious scholars consider this *ḥadīth* to be relevant only to Medina and similar regions, such as Syria. Al-Mašmūdī quotes Imām Mālik (d. 796), whose legal school was the dominant school in North

A *ḥadīth* is a traditional account of things said or done by the prophet Muḥammad or his companions.

Africa, to confirm that the ḥadīth does not have general applicability.

Interestingly, Al-Maṣmūdī, who maintains that the traditional qibla is wrong, adds that he bases this assertion on the sayings of religious scholars, because the law (*sharʿ*) was not founded on mathematics (geometry) and because only a small number of people are competent in geometry. He goes on to refer to a “valuable” work on the qibla of the Maghrib (northwest Africa) that only a few people can understand because it is based on geometry. He also says that he consulted many of his colleagues who know how to extract the direction of the qibla using the astrolabe or mathematical computations, but their answers “were not accessible to the understandings of people like us.”

To Al-Maṣmūdī, the problem is not that mathematical computations are wrong; in fact, they are not. Those in North Africa who rely on a literalist reading of the ḥadīth and face the south in their prayers are wrong. {In his essay *Risāla fī Ittijāh al-Qibla*, Al-Maṣmūdī maintains that calling for people in Morocco to pray while facing south is tantamount to calling on people to commit a sin.} The problem, however, is that the mathematical methods are often not accessible to the masses. What he wishes to provide, therefore, are methods for determining the qibla in the Maghrib that are not only traditional-sounding and accessible to ordinary people but also compatible with mathematical findings.

One of the issues of concern for Al-Maṣmūdī and other participants in this debate was how to redirect the qibla without risking social conflict. In most cases, the deviation in the orientation of the qibla was small and did not call for the drastic measure of tearing down the mosque. In such cases, praying at a slight inclination with respect to the original mosque niche would solve the problem. If,

To Al-Maṣmūdī, being scientifically or mathematically correct is not sufficient if only a few people can understand the math or science.

however, the difference was substantial, then a Muslim should seek verifiable evidence and consult those who could provide it. Unless there was fear of civil strife, the misaligned mosque ought to be rebuilt in the right direction.

Another important work on the subject of qibla orientation was written by Al-Tājūrī, a sixteenth-century religious scholar and timekeeper. Al-Tājūrī's book includes a question soliciting the fatwas (legal rulings) of the scholars of Cairo and Egypt about the mosques of Fes that were directed toward the south, including the city's famous Qarawiyyīn mosque, the most important mosque-school complex in Morocco. {For much of the history of Islam in North Africa, Fes was the political capital of Morocco and also its scholarly capital.} Al-Tājūrī maintained that these mosques were not directed toward the legal qibla (*al-qibla al-shar'iyya*), which is the eastward direction of Mecca. In addition to wrongly interpreting the above-mentioned ḥadīth, those who defended the false qibla invoked the precedent or practice of the early generations of Muslims who built the first mosques in Morocco in the presence, and with the consent, of religious scholars. To be sure, these early mosques were built before the rise of a scientific culture in the Muslim world, but the religious authority of their builders was upheld even after the rise of science. Given the gravity of Al-Tājūrī's challenge, it is not surprising that he wished to muster religious support for his position. Besides soliciting the support of the scholars of Egypt, he used religious language to refer to the correct qibla, calling it the qibla of the Companions. Despite this veneer of religiosity, the real question he tackled was whether the qibla was to be determined on the basis of religious precedence or mathematical astronomy.

Al-Tājūrī was criticized and defended by several Fāsī scholars, but, for our purposes, the most

The direction of the qibla becomes a question of religious tradition, on one hand, versus science, on the other.

interesting defense of his views was by a late seventeenth-century scholar, Al-‘Arabī Ibn ‘Abd al-Salām al-Fāsī, who was responding to a critique of Al-Tājūrī by a fellow Fāsī scholar. Al-Fāsī refers to a distinction made by some scholars between the *jiha* of the qibla, or its general direction, and the *samt* of the qibla, or {its precise direction, determined by astronomical calculations of the location of Mecca}. People who make this distinction, he says, suggest that the only requirement of the law is that Muslims face the general direction of the qibla without requiring knowledge of its exact mathematical coordinates, which would involve knowledge of the science of geometry. These scholars argue that since knowledge of geometry is not a legal obligation, no other legal obligations can be contingent on it. In response to this rather compromising view, Al-Fāsī insists that the meanings of *jiha* and *samt* are the same, and that geometry is not different from any other commonly used skill, such as those used in construction and commerce, “because each craft (*ṣanā’i*) that involves precision and measurement partakes in geometry. In fact, it is even possible to chastise a person {who is} capable of finding the exact direction of Mecca who... {nevertheless ignores the exact direction} and instead imitates (*yuqallid*) [the direction of] the niche (*mihrāb*)” that was erected in the interest of people who have no knowledge of the ways of finding the direction of the qibla. After noting that many mosques are equipped with such astronomical instruments as the astrolabe and the Zarqālī plate, which are used for finding the direction of the qibla and for determining the times of prayer, and that numerous scholars have composed treatises on these instruments without ever being criticized for doing so, Al-Fāsī distinguishes between two senses of the term *jiha* (direction): as an objective in itself (*maqṣad*) or as a means (*wasīla*) for

Al-Fāsī argues that people must learn math in order to be able to construct buildings or conduct business, so they must likewise learn what is needed to determine the correct direction of Mecca. Al-Fāsī advocates for knowledge of what today are called STEM fields (Science, Technology, Engineering, Math).

finding the direction. The ultimate objective, he says, is to find the mathematical coordinates of the direction of the Ka‘ba; the second sense of the term refers to approximations similar to the one indicated in the ḥadīth of the Prophet. Furthermore, “the exercise of independent legal reasoning (*ijtihād*) in matters related to the qibla is valid only through use of proofs that are suitable for finding this direction (*al-adilla al-munāsiba*) and not through guess and conjecture.” Al-Fāsī then refers to a legal opinion attributed to Imām Mālik, whose doctrine is that of the official legal school of North Africa: if the orientation of a mosque is based on *ijtihād*, then rebuilding it is not required in case of an error. In response, Al-Fāsī maintains that this is true if the *ijtihād* is based on proofs derived from astronomy or the use of astronomical tables but that there is no credence in an *ijtihād* that is not based on proofs.

To hold all Muslims responsible for praying in the correct direction by using mathematical knowledge that only a few can attain is contrary to the spirit of Islamic law, say some of Al-Fāsī’s opponents. Al-Fāsī responds:

Each craft has its masters, and nothing comes easy; learning [how to find] the direction of the qibla is similar to learning other sciences; in fact, it might even be easier than learning more elaborate texts, and it is attainable in a short period. In large cities, it is illegal for someone who does not know [how to find] the direction of the qibla to build a mosque, unless he is accompanied by masters of the craft who know the proofs of the qibla (*adillat al-qibla*). It is permissible to erect only [a mosque oriented in] the direction of Mecca, and someone who does not know the proofs of the qibla should not exercise his *ijtihād* even if he happens to be a jurist, *because the most a jurist can know in*

Al-Fāsī argues for proper education in math and science. These subjects are not easy, he says, but they are not more difficult than other subjects.

his capacity as a jurist is that it is obligatory to face the qibla and that it is obligatory for a non-mujtahid to imitate a mujtahid in this matter—that is, to imitate one who knows the suitable proofs for it. {emphasis added}

Elsewhere, Al-Fāsī develops his point about the mujtahids, the scholars who exercise independent legal reasoning (ijtihād):

The real mujtahids in the matter of the qibla, using proofs suitable for it (*al-mujtahidīn fī al-qibla bi-adillatihā al-mansubā ‘alyhā*), are the astronomers, not the jurists. Because... the prerequisite for this [ijtihād] is knowledge derived from the sciences of mathematics and mathematical astronomy (*hay’at al-falak*), from timekeeping, and from the positions of the planets and the computation of directions, and all of these are outside the domain of legal science.... Furthermore, the ijtihād of astronomers in the matter of the qibla is not similar to the ijtihād of jurists in applied law, because there is only one correct outcome for the ijtihād in the qibla, whereas for jurists each mujtahid is correct in applied law.... This is why in the matter of the qibla the astronomers are given precedence over the jurists, because each craft has its masters, and the masters of the craft of [finding the direction] of the qibla are the astronomers.

In the following fifty pages of his treatise, Al-Fāsī quotes and comments on numerous legal rulings and questions, only to reiterate that “the ijtihād of the Companions [of the Prophet] is certain, that [the ijtihād] of jurists is probable and uncertain (*iḥtimālī dhannī*), and that [the ijtihād] of the astronomers in the [matter of the] qibla is scientific and technical (*‘ilmī ṣinā’ī*), which is equivalent to certainty because they [the astronomers] and not the jurists

Al-Fāsī notes that there is only one correct answer regarding the direction of the qibla, whereas in questions regarding applications of law, there may be multiple reasonable interpretations or answers.

know the proofs of the qibla. For these reasons, astronomers take precedence over jurists.”

The epistemological questions raised in these texts reflect widespread discussions that took place in many fields over a very long period of time.... The significance of the qibla debate is that precise epistemological discussions filtered down to the sensitive matter of prayer and raised, in no uncertain terms, the question of intellectual authority within, as it were, the most sacred space of Islam. Clearly, this was not an academic debate relegated to the margins of Islamic culture but a debate constitutive of the culture and... one of its characteristic features.