

# *The Qur'ān and Science*

with Majid Daneshgar, “The Qur'ān and Science, Part I: The Premodern Era”; Majid Daneshgar, “The Qur'ān and Science, Part II: Scientific Interpretations from North Africa to China, Bengal, and the Malay-Indonesian World”; and Majid Daneshgar “The Qur'ān and Science, Part III: Makers of the Scientific Miraculousness.”

## THE QUR'ĀN AND SCIENCE, PART II: SCIENTIFIC INTERPRETATIONS FROM NORTH AFRICA TO CHINA, BENGAL, AND THE MALAY-INDONESIAN WORLD

by Majid Daneshgar

*Abstract.* The second installment in a three-part series on the Qur'ān and science, this article provides a systematic discussion of the scientific interpretation of the Qur'ān both inside and outside the Muslim world. This discussion reveals how Muslims' interactions with Euro-Americans have kept discourse on the Qur'ān and science alive. It also demonstrates how Muslims promoted this exegetical genre transregionally from the Middle East to Southeast Asia.

*Keywords:* 'Abduh; Jawharī; Middle Eastern commentaries; scientific interpretation; Southeast Asia; *Tafsīr*

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Beginning in the nineteenth century CE, Qur'ānic commentators changed the nature of exegetical works based on the development of scientific disciplines, making scientific interpretation a more systematic and “viable” genre of Qur'ānic interpretation (see Mir 2004). In contrast to earlier commentators, who wished to prove God's existence and authority through references to nature and the cosmos, Muslim modernists have sought to demonstrate harmony between Islam, rationality, and empirical science and compete with Europeans in industry, science, medicine, and agriculture. Four different trends, emanating from outside Islam, led Muslims to compete with Europeans.

The first trend was the European Industrial Revolution, which effectively occurred from 1760 to 1830 (Hudson 2014, 5). The Industrial Revolution brought economics, technology, and agriculture to bear on all human life. Indeed, industrialization brought about “profound economic

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and social transformation” (Hudson 2014, 11), which lead to more power, wealth, and prosperity for Europeans and their allies.

The second trend was European colonialism, in particular their militarization, which seriously affected Muslim viewpoints on the Qur’an and science. Colonialism and, later, imperialism both made it possible for Europeans to rule others. European colonialism was stronger, more violent, and more powerful than Oriental colonialism, such as the invasion of India by Iranians, Ottoman rule in Arab territories, or the Japanese invasion of Indonesia (see Daneshgar 2020a). Europeans expanded their territories in every possible way to “rule,” “educate,” and “civilize” Orientals. In addition to colonizers’ military expeditions and systematic humiliation of the East, the conquest of the Muslim world opened the way for many Orientalists, scientists, and philologists to visit the East and have face-to-face contact with Orientals. These interactions made it possible for both parties to learn about the other’s literature, visions, and dreams. French and, later, English became the main languages of empirical science, with many Muslims beginning to study and work in these two languages—although some fundamental works were written in German, they were often translated into French.

The third European trend was scientific naturalism.<sup>1</sup> According to philosophers of the late nineteenth century, scientific naturalism promoted the idea “that reality is exhausted by nature, containing nothing ‘supernatural,’ and that the scientific method should be used to investigate all areas of reality, including the ‘human spirit’” (see Papineau [2007] 2023). Following the high regard for science and technology that began in the eighteenth century, scientific naturalism was concerned with addressing the roots of religious statements to either criticize or validate them. The geographical analysis by Georges Cuvier (1769–1832) gained influence—although that was not his intention—among scientists and theologians for paying attention to the question of the biblical flood. More importantly, his project had further effects. It attempted to demonstrate that the Bible contains the most reliable holy scriptures compared to those of Muslims and non-Muslims—a tactic that was later modified and used in Muslim literature against the Bible:

*Nous en dirons des Arabes, des Persans, des Turcs, des Mongoles, des Abyssins d’aujourd’hui, autant que des Arméniens. Leurs anciens livres, s’ils en ont eu, n’existent plus; ils n’ont d’ancienne histoire que celle qu’ils se sont faite récemment, et qu’ils ont modelée sur la Bible.*

We [will] refer to the Arabs, Persians, Turks, Mongols, Abyssinians of today, as much as the Armenians. Their ancient books, if they had any, no longer survive; they only have the ancient history that they have recently made and that they modelled on the Bible. (Cuvier 1840, 216)

The fourth trend was what I would like to call “literary naturalism.” While scientific naturalism was chiefly promoted by French, British, and American scientists, literary naturalism was promoted by literary figures who further added to the field of naturalism. In this latter movement, nature was interpreted as a symbol of beauty. Western writers like Ralph Waldo Emerson (d. 1882) produced a wide range of literary materials about the universe, nature, and science—materials that were subsequently read by Muslims. As Emerson notes: “All science has one aim, namely, to find a theory of nature. We have theories of races and of functions, but scarcely yet a remote approach to an idea of creation. We are now so far from the road to truth [...] A nobler want of man is served by nature, namely, the love of Beauty” (Emerson 2008, 2, 9).

As will be seen, these trends had an influence (both direct and indirect) on Muslims who wanted to interpret the Qur’ān scientifically.

Generally speaking, four groups of Muslims have been involved in the scientific interpretation of the Qur’ān:

- (1) army physicians with limited scholarly background in Qur’ānic exegetical activities;
- (2) religious and political figures with limited scientific backgrounds;
- (3) social and political activists with limited scientific backgrounds; and
- (4) nationalists, including religious figures interested in scientific works and physicians.

#### ARMY PHYSICIANS

Works on the scientific interpretation of the Qur’ān produced by Muslims in the nineteenth century CE emerged out of an us-versus-them context, largely the result of Muslims facing European advancement and influence in the political, social, and cultural realms. The Egyptian governor, Muḥammad ‘Alī Pāshā (Mehmet ‘Alī), sent a number of students to be educated in France and then return and serve their community. At the same time, French scientists went to Egypt to serve French political and military aims. One of the most renowned of these was the physician Antoine Barthélemy Clot, known as Dr Clot Bey (Officer Bey), whose medical teachings were read in Egyptian Ottoman circles. He came to Cairo in 1824 to support Mehmet ‘Alī’s goals of setting up a medical corps and teaching modern medical science and physiology in Arabic. Clot’s medical writings were accessible to university students in the Arabic language, in particular those with a background in Muslim medicine, such as the works of Avicenna (Daneshgar 2021). His works were read by army and naval physicians, in particular those attached to the Ottoman Empire. Officer Bey “founded the school of medicine, that of pharmacy, and that of obstetrics, and promoted hygiene and variolisation” (Ruf 2011, 71).

Clot published a number of works, including *Kunūz al-ṣiḥḥah wa-yawāqīt al-minḥah* (“Treasures of Health and Gems of Benefit”),<sup>2</sup> which contains sections on nutrition, pharmacology, pediatrics, pathology, infections, injuries, herbal medicine, and the health qualities of vegetables. As a result of his influence, Muslims who trained as physicians and worked for the army became acquainted with the latest discoveries of their time, including those made by Clot himself. Two Egyptian physicians in particular showed great interest in the relationship between Islamic texts and both modern science in general and modern medicine in particular: Muḥammad bin Aḥmad al-Iskandarānī (d. 1887/1888) and Muḥammad Tawfiq Ṣidqī (d. 1920). Both physicians had a moderate knowledge of Islamic and religious sciences and can be considered among the first modern scientific interpreters in the Muslim world. They were among the first generation of Muslim scholars who discussed the Qurʾān and science alongside each other.

#### Al-Iskandarānī

Muḥammad ibn Aḥmad al-Iskandarānī was born in Alexandria in the early nineteenth century CE. He studied modern and traditional Islamic medicine at college before joining the Ottoman navy as a physician. He began his work in Egypt but left in 1829 for Damascus, where he lived out the rest of his life. Al-Iskandarānī was the chief physician in Damascus until 1842 (see Daneshgar 2021). He was proficient in both Avicennism and modern medical science, a combination of classical science of the body (*ʿilm al-abdān*) and physiology. It is unclear, however, what al-Iskandarānī’s religious background was.

Al-Iskandarānī’s interest in writing about the Qurʾān and science was aroused during a meeting with some Christian medical doctors and officers who wondered why the Bible is silent about coal, a vital commodity for the navy and army during the era of industrialization and colonialization. In response to these Christians, who could not detect a direct allusion to coal in the Bible, al-Iskandarānī referred to Qurʾān 6:38, informing them that “everything can be found in the Qurʾān.” After this meeting, he published a three-volume book about the Qurʾān and science, *Kashf al-asrār al-nūrāniyyah al-Qurʾāniyyah fī mā yataʿallaqu bi-l-ajrām al-samāwiyyah wa-l-arḍiyyah wa-l-ḥayawānāt wa-l-nabātāt wa-l-maʿadaniyyah* (*Revealing the Luminous Qurʾānic Secrets, and Their Relation to the Heavens, Earth, Animals, Plants, and Minerals*), in 1879–1880 (see Jansen 2012).

*Kashf al-asrār* does not cover the whole Qurʾān, focusing rather on certain verses pertaining only to creation and nature that can be explained by traditional and modern scientific knowledge. The first volume deals with coal, modern embryology, anatomy, and zoology. Al-Iskandarānī explains the origin of the human being based on the combination of body

and soul, explaining each from a physiological perspective. He also draws attention to the theological concept of God breathing “His spirit” into the human body (al-Iskandarānī [1297] 1879–1880, i:18). Al-Iskandarānī describes the medical concept of inhalation and exhalation, the anatomical parts of the lung, and the process of breathing using “two lungs” and “internal muscle contractions” (al-Iskandarānī [1297] 1879–1880, i:18). He then presents further points regarding fetal respiration (*tanaffūs al-janīn*) (al-Iskandarānī [1297] 1879–1880, i:59). Al-Iskandarānī also uses Hippocratic medicine and modern physiological works to discuss rational features of the human mind along with anatomical descriptions of brain function and its influence on spiritual and physical aspects of the human body.

The second volume of *Kashf al-asrār* covers verses about the macrocosm and the microcosm, the cosmos, and the oceans. For example, al-Iskandarānī interprets Qurʾān 7:54 (“Your Guardian-Lord is Allah, Who created the heavens and the earth in six days, and is firmly established on the throne (of authority)”) using detailed information about the rotation of the planets on their axes as they revolve around the sun (al-Iskandarānī [1297] 1879–1880, ii:64).

The final volume of *Kashf al-asrār* uses botany to interpret the plants mentioned in the Qurʾān. In interpreting the relevant verses, al-Iskandarānī describes various types of trees (e.g., the hazel tree and the coconut) and their health-giving qualities (al-Iskandarānī [1297] 1879–1880, iii:60). His approach to plants in the Qurʾān resembles that of Christian authors, who initiated a new scientific-theological genre (“biblical plants” or “phytotheologia”) that was popular from the eighteenth century CE on.

After the British occupation of Egypt in 1882, al-Iskandarānī decided to work with other publishers in Ottoman Syria. He published his second Qurʾānic work, *Tibyān al-asrār al-rabbāniyyah fī al-nabātāt wa-l-māʾādīn wa-l-hawāṣṣ al-hayawāniyyah* (*The Demonstration of the Divine Secrets of Plants, Minerals, and Animal Characteristics*), in Damascus in 1882–1883 (Figure 1). *Tibyān al-asrār* is a volume on the interpretation of Qurʾānic verses through the lens of nutrition, human and animal bodies, and the internal and external senses (see Daneshgar 2021). Al-Iskandarānī begins his explanation of Qurʾān 87:2–3 (“Who hath created, and further, given order and proportion; Who hath ordained laws. And granted guidance”) with classical arguments concerning different understandings of “divine power” and “decrees,” as well as the way the humans are guided toward good and evil (*al-khayr wa l-sharr*). He then discusses the guidance, shaping, and movement of objects through the lens of physics (e.g., magnetism and gravity) (al-Iskandarānī [1300] 1882–1883, 114). He also makes further arguments about the importance and roles of oxygen (e.g., in making fire).

هَذَا كِتَابُ الْأَسْرَارِ أَرْبَانِيَّةٍ فِي الْأَنْبَاتِ وَالْمَعَادِنِ  
 وَالنَّوَاصِ الْحَيَوَانِيَّةِ تَأَلِيفُ الْقَاضِلِ الْمَدْفُوقِ  
 الْمُفَهِّمِ مُحَمَّدِ بْنِ أَحْمَدَ الْإِسْكَانْدَرَانِي  
 رَحِمَهُ اللَّهُ تَعَالَى الْمُسْتَعِينِ بِطَوْلِ حَيَاتِهِ  
 وَجَزَاءُ خَيْرٍ جَزَائِهِ  
 آمِينَ

Figure 1. Muḥammad bin Aḥmad al-Iskandarānī's *Tibyān al-asrār al-rabbāniyyah*.

A few years later in 1885–1886, al-Iskandarānī published his lesser-known work, *al-Barāhīn al-bayyināt fī bayān ḥaqā'iq al-ḥayawānāt* (*Absolute Proofs Regarding the Truth about Animals*), in one volume in the Ottoman Empire. This work demonstrates his use of French biological and zoological literature to explain Qur'ānic texts. *Al-Barāhīn* resembles a book of biology that has been Islamized for Muslim readers and educational institutions. Qur'ānic verses are accompanied with new information about insects, fish, and other animals not addressed in Islamic literature. For example, al-Iskandarānī includes a detailed section on the typology of apes (monkeys) to explain Qur'an 2:65–66 (“And well ye knew those amongst you who transgressed in the matter of the Sabbath: We said to them: ‘Be ye apes, despised and rejected’”) (al-Iskandarānī [1303] 1885–1886, 590–97). He says that “this type of animal is similar to the human in every sense” (al-Iskandarānī [1303] 1885–1886, fol. 596). To describe the function of apes and monkeys, al-Iskandarānī cites the works of French biologist and naturalist Georges-Louis Leclerc, Comte de Buffon (d. 1788), author of *Histoire Naturelle* (al-Iskandarānī [1303] 1885–1886, 630–40ff.). Al-Iskandarānī's explanation is as detailed as possible; in light of Buffon's zoological opinions, he includes a section on zoology and zoography (al-Iskandarānī [1303] 1885–1886, fol. 665).<sup>3</sup>

### Şidqī

Muḥammad Tawfiq Şidqī was another influential thinker who promoted the scientific interpretation of the Qur'ān. In contrast to al-Iskandarānī, who left Egypt for Damascus and stayed away from the modernist movements of the Arab world, Şidqī stayed in Egypt, interacting closely with the political and social activists of his time. He was born in 1881 and studied religious science as a young boy. He graduated from medical school in 1904, after which he began working in hospitals (e.g., Qaşr al-'Īnī/‘Aynī), prisons (e.g., Ṭura Prison), and correctional centers. He died of typhus on 2 Sha‘bān 1338 (April 21, 1920) (see Ryad 2009). During

his short life, Şidqī was a co-author and friend of Rashīd Riḍā (d. 1935), a reformist, prolific scholar of Islam, and the editor of *al-Manār*, a widely read Islamic magazine in the early twentieth century CE. Şidqī and Riḍā co-authored *ʿAqīda al-şalb wa l-fidā* (*The Doctrine of Crucifixion and Redemption*), which was soon translated into various languages (Ryad 2009, 21).

For Şidqī, modern science could be used as an instrument to both confirm the truthfulness of the Qurʾān and prove the falsity of the Bible. To demonstrate the Qurʾān's compatibility with the study of physiology, and therefore its superiority to the Bible, Şidqī wrote an article explaining the death of Solomon in Qurʾān 34:14 ("Then, when We decreed (Solomon's) death, nothing showed them his death except a little worm of the earth, which kept (slowly) gnawing away at his staff"). Relying on the forensic science he learned in medical school, Şidqī claimed that Solomon's death while leaning on his stick refers to "cadaveric spasm," from which he concluded that Solomon died in an upright position. For Şidqī, "this interpretation of Qurʾān 34:14 is the correct one, which is also compatible with modern science" (Şidqī 1908, 361–62). His interest in placing Islam next to modern science is apparent in the rest of his works, where Qurʾānic verses are pivotal elements of his discussions. As a medical student, Şidqī authored "Restrictions on the Consumption of Pork and Impurity of Dogs" using insights from helminthology (the study of parasitic worms) to explain and support the Qurʾānic text (Şidqī 1904, 302–8). While working in the Tura Prison, he authored further essays, such as "Metaphysics in Islam," in which he explains Qurʾānic allusions to Muḥammad's reception of divine revelations (Şidqī 1909, 118–24), and "How Was the Human Created?" in which he expounds Qurʾānic verses using the evolutionary thoughts of Charles Darwin (Şidqī 1911, 303–7).<sup>4</sup>

## RELIGIOUS AND POLITICAL FIGURES

### Arabic Interpretation versus Indian Qurʾānic Literature

Muslims faced a number of social and political upheavals in the nineteenth century CE, many of which have lasted until the present. Internal and external forces together shaped a new Oriental history. On the one hand, Muslim leaders wanted to confront Europeans; on the other, they wanted Muslims to be united as brothers. The Qurʾān and science were two of the main tools used to achieve these objectives. Thus, religious figures also played a key role in the scientific interpretation of the Qurʾān. They are among the second group of scientific interpreters. These Muslim leaders were often graduates of Islamic seminaries or trained as religious experts. They were by and large equipped with knowledge of traditional Islamic law, philosophy, and theology and had gained proficiency in one or more

European languages. They monitored French, British, and German publications on “the Orient” and Islam and lamented losing the historical superiority Muslims had enjoyed during the Muslim caliphate, particularly the ‘Abbasid period (e.g., Jawharī 1931, ii:191–96).

Jamāl al-Dīn al-Afghānī (also known as Asadābādī) (d. 1897) was a reformist whose ideas affected the whole Muslim community from East to West. He is widely commemorated as an early leader in the pan-Islamist movement, which aimed to unite Muslims regardless of their geographical location, race, or language, empowering them to stand against European (predominantly British) imperialism. To al-Afghānī, rationality and Islam were compatible, and he conversed with European intellectuals about this (e.g., Ernest Renan). Al-Afghānī admired the comprehensiveness of the Qur’ān and, as Keddie states, his main aim “was not to glorify the Koran but to introduce Muslims to modern science and technology” (Keddie 1983, 48).

Al-Afghānī is remembered in part for his response to the naturalist movement detailed in his Persian treatise *Ḥaḳīqat-e Madhhab-e Neicherī va Bayān-e Hāl-e Neicheriān (Truth about the School of Naturalism and about the Naturalists)*, published in Hyderabad in 1881. This treatise was conceived as a response to Darwin’s evolutionary ideas about the common biological ancestral background of all beings (see Keddie 1983). Al-Afghānī wrote the treatise after Muḥammad Vāṣil, a teacher of mathematics in Hyderabad, asked him a question concerning the popularity of naturalism across Hindustan, Punjab, Bengal, Sindh, and Hyderabad (Keddie 1983, 130). Vāṣil states that “there are naturalists active in every region,” but no one has been able to provide him with information about their backgrounds, their understanding of religion, or their contributions to human life. In response, al-Afghānī states that naturalists are materialists whose background dates to Greece in the “fourth and third” centuries BCE (Keddie 1983, 132). Al-Afghānī explains that the aim of naturalists, including Charles Darwin (d. 1882) was to eradicate religion, downgrade the morality of communities, and challenge the origin of humans and the world (Keddie 1983, 135).

Soon, al-Afghānī’s treatise became a symbol of anti-European scientific thought. Many assumed that this sentiment was a response to recent evolutionary movements in Lebanon and Egypt. The formal engagement of Arabs with Darwin began with the Christian Arab physician Dr Shibly Shumayyil (d. 1917) and his entourage. Shumayyil challenged Muslim evolutionary discourse with his partial Arabic translation of commentaries on Darwin’s *On the Origin of Species* by the “German materialist” Ludwig Büchner (d. 1899) (Elshakry 2014, 105, 120). Shumayyil’s translation was based on Auguste Jacquot’s 1869 French translation of Büchner’s 1868 *Sechs Vorlesungen über die Darwin’sche Theorie von der Verwandlung der Arten und die erste Entstehung der Organismenwelt*. As Elshakry noted,



“Shumayyil’s opinion of Büchner was such that he considered Darwin’s theory of evolution incomplete without his insights” (2014, 110).

Al-Afghānī’s treatise also rejected the ideas of Indian scholar and thinker Sir Aḥmad Khān (1898), the founder of Aligarh University. Al-Afghānī critiqued Khān for his close relationship with the British as well as his Western-inspired conception of nature (see Keddie 1983). Khān produced various works, some of which dealt with the Bible and the Qur’ān. *Tafsīr al-Qur’ān wa Huwa al-Hudā wa al-Furqān* was a leading interpretation the Qur’ān replete with scientific, ethical, philosophical, and interreligious information. Regarding Sūrat al-A’rāf (Qur’ān 7), Khān comprehensively draws distinctions between jinn, humans, animals, and plants by analyzing body organs, nervous systems, the human spirit, and so on (Khān 1998, 631–39). In interpreting Qur’ān 6:8, Khan also uses modern sociological works to comment on human social behavior (Khān 1998, 566–68). In his commentary, he “juxtaposed the Qur’ān, the word of God, and nature, the work of God, as two manifestations of the same reality that cannot be in conflict” (Dallal 2004, 557). In Khān’s opinion, classical and modern theories, like those of Shāh Valiullāh (d. 1762), should be read alongside each other and used together in Qur’ānic interpretation.<sup>5</sup> Not surprisingly, Khān’s interpretation and scientific views were not, as far as I can say, celebrated in Cairo. Rather, Egyptian beliefs were moving from what al-Afghānī announced as the harmony between Islam and reason and what he denounced as the materialism of Darwin, Büchner, and Shumayyil.

Al-Afghānī’s arguments were circulated in Cairo by his friend Muḥammad ‘Abduh (d. 1905), who also cotranslated al-Afghānī’s treatise into Arabic. The two wanted to show the rationality of Islam as a divine religion founded by Muḥammad. According to al-Afghānī and ‘Abduh, the Qur’ānic text recommends that Muslims pursue “modern change and progress” (Keddie 1972, 180). One way of doing so is through interpreting the Qur’ān. Together, al-Afghānī and ‘Abduh produced a magazine called *al-urwa al-Wuthqā (The Firmest Bond)* in Paris, which included essays on the Qur’ān. After al-Afghānī’s death, ‘Abduh spread their ideas through lectures and writings in both European and Muslim contexts (e.g., in North Africa). ‘Abduh’s ideas were further promoted by his disciple, Rashīd Riḍā (d. 1935), in *al-Manār* as well as in a commentary on the Qur’ān entitled *Tafsīr al-Qur’ān al-Ḥalīm/al-Ḥakīm*, now known as *Tafsīr al-Manār* (see Pink 2015). Although a small part of this commentary depends on talks ‘Abduh delivered during religious gatherings, it largely reflects his concerns about the logic of the Qur’ān as a “text” and a “revelation” (Pink 2015). Further aspects of ‘Abduh’s social and political concerns are evident in his three shorter commentaries on the Qur’ān: *Tafsīr Sūrat al-Fātiḥa* on Qur’ān 1, *Tafsīr juz’ ‘Amma* on the last part of the Qur’ān, and *Tafsīr Sūrat al-‘Aṣr* on Qur’ān 103. Although his exegetical corpus does not make repeated direct references to modern science, such as those

presented by al-Iskandarānī, ‘Abduh’s emphasis on harmony between Islam and rationality and the importance of Muslims standing against imperialism is clearly expressed. In contrast to *Tafsīr al-Manār*, most of which was produced by Rashīd Riḍā, short exegetical works by ‘Abduh were soon translated across the Muslim world. In addition to the Chinese, Malay-Indonesians also produced renditions in local languages like Malay and Javanese. ‘Abduh’s commentary on the first chapter of the Qur’ān, which was particularly pedagogically useful, not only invited people to interpret the Qur’ān based on modern social circumstances but also provided readers with philosophical approaches to the text of the Qur’ān. To ‘Abduh, Qur’ān 1:6 (“[God] Guide us along the Straight Path”) should be deconstructed word by word; not in a traditional sense, but in a modern sense. According to ‘Abduh, “guidance” does not mean that people should accept what has happened to them or their ancestors. Rather, using the guidance of the intellect and the senses (*hawās*), along with the guidance of religion, would enable people to find their way (‘Abduh 1901, 50–51). ‘Abduh’s emphasis on placing the importance of the intellect alongside that of the law, religion, and the senses is also obvious in *Tafsīr Sūrat al-‘Aṣr* (‘Abduh 1911, 45). ‘Abduh wanted to highlight the great potential of the Qur’ān to guide humans in learning about the universe through science.<sup>6</sup>

A few direct quotes by ‘Abduh regarding modern science and the Qur’ān can be highlighted. One of the most popular is his analogy between “microbes and jinn,” edited and republished by Rashīd Riḍā in the third volume of *Tafsīr al-Qur’ān al-Hakīm*. In interpreting Qur’ān 2:275 (“Those who devour usury will not stand except as stand one whom the Evil one by his touch Hath driven to madness”), ‘Abduh states:

[This] is based on the idea prevalent among the Arabs [theologians], that an epileptic had been touched by Satan, an idea that had become proverbial with them. The verse does not confirm, nor does it deny, the truth of the idea expressed in the comparison, that is, that the epileptic has actually been touched by Satan and that his condition is due to that. The ‘Ulamā [thinkers] differ. The Mu‘tazilites held that Satan has no other influence over man than suggestion, others held that epilepsy is his work. Physicians to-day consider it a nervous disease which can be treated as similar diseases, by drugs and other modern methods, and some say, by suggestion. This is not an indisputable proof that the unseen creatures called “Jinn” cannot possibly have any sort of connection with person disposed to epilepsy, so that under certain conditions they might be the cause of it. The ‘Ulama say that the Jinn are living bodies which cannot be seen. The “al-Manār” [in approximately 1906] has said more than once that it is permissible to say that the minute living bodies which to-day have been made known by the microscope and are called microbes, may possibly be a species of the Jinn. It has been proved that the microbes are the cause of most diseases. [...] However, we Muslims are fortunately under no necessity of disputing with science or the findings of medicine regarding the correction of a few

traditional interpretations. The [Qurʾān] itself is too elevated in character to be in opposition to science. (ʿAbduh and Riḍā [1367] 1948, iii:95–96)<sup>7</sup>

Through encouraging Muslims to apply science in the interpretation of the Qurʾān, ʿAbduh and Riḍā became symbols of reform in Muslim political and theological spheres. Neither al-Iskandarānī nor Ṣidqī could have played the role that ʿAbduh played in giving modern science a place in Islamic exegetical literature. Neither al-Iskandarānī nor Ṣidqī had the global authority of ʿAbduh. Even Sir Aḥmad Khān, who had the same approach to science (especially sociology and modern history) in his commentary, was not able to find a place in early twentieth century CE Arabic *tafsīr* (exegetical) literature.

After Aḥmad Khān, other South Asian interpreters of the Qurʾān whose views differed from the mainstream were marginalized due to their theological approaches. One of these was Maulana Muḥammad ʿAlī (d. 1951), the leader of the Ahmadiyyah in Pakistan, who was referred to by Rashīd Riḍā as a “distorter” of Qurʾānic verses (see Nur Ichwan 2001, 151). Muḥammad ʿAlī invited readers to use studies on history, geography, science, and spirituality in their interpretations. He was a pioneer in interpreting Dhū l-Qarnayn (in Qurʾān 18:83) as “Darius the Persian King,” an idea later promoted by other South Asian and Iranian commentators in light of German archaeological discoveries. He also used biblical, Islamic, and European geographical sources to explain the Qurʾān. For instance, in interpreting Qurʾān 55:17 (“[He is] Lord of the two easts and the two wests”), he observes: “The two Easts and Wests signify the different points of the horizon at which the sun rises and sets at the summer and winter solstice. In modern terminology, the two Easts are the near or Middle East and the Far East; the two Wests are Europe and America” (ʿAlī 2010, 1044).

To interpret Qurʾān 55:19 (“He has let free the two bodies of flowing water, meeting together”), he states that “some understand that the Red and Mediterranean Seas are meant. These seas were separated formerly but are now united by the Suez Canal” (ʿAlī 2010, 1045).

#### POLITICAL ACTIVISTS

Followers of ʿAbduh, political activists who played a significant role in furthering the scientific interpretation of the Qurʾān, constitute the third group of scientific interpreters. Long debates about different aspects of the Qurʾān were held in Egypt and other North African countries. Both the rhetorical and the scientific nature of the Qurʾān were treated systematically. Cairo was a hub for new debates on the content, structure, and interpretation of the Qurʾān. Muslims were becoming increasingly engaged with European scientific discoveries and had serious questions about their Islamic background, as well as broader issues of nationalism and

scholarly contribution to the world. Muslims were determined to demonstrate to European colonial officers, Orientalists, book collectors, scientists, and thinkers that their religion was compatible with industry and progress. Just as the Qur'ān had been inspirational to earlier Muslim polymaths interested in science, it also proved inspirational for those interested in modern science.

### Ṭaṇṭāwī Jawharī

Among the many active scholars in Cairo, Ṭaṇṭāwī Jawharī (1862–1940)<sup>8</sup> emerged as the foremost symbol of the scientific interpretation of the Qur'ān. Although he trained as a religious scholar and Arabic teacher, Jawharī was quite active in political debates and activities. He wished to see the spread of education, including pedagogical techniques and methods, throughout Egypt and the rest of the Arab world. He also wanted to combine traditional and modern science in universities and schools. To reach his reformist objectives, he founded a society dedicated to Muslim brotherhood, Jamā'a al-Ukhūwwa al-Islāmiyya, in 1898. This society was inspired by the political thoughts of al-Afghānī and other influential activists. Later, Jawharī became a prolific author immersed in political activities and the promotion of science. He strongly believed that in order to compete with Europeans scientifically and technologically, Muslims should refer to the Qur'ān and other Muslim scholarly literature, especially the writings of al-Ghazālī (see Hartmann 1916), be united, and learn about modern science. As such, he interpreted the whole Qur'ān alongside modern science to confirm the essential harmony of the two. He moved beyond all former scientific interpreters, using the Qur'ān and science as a social and political device for Muslim authority.

Jawharī knew how to collect first-hand materials from non-Muslim contexts. He translated those he deemed valuable into Arabic and critiqued others or used them in his commentary on the Qur'ān. He was instrumental in the lives of students of the Dār al-'Ulūm in Cairo, supervising Khalīl Sālim and Muḥammad Aḥmad Kāmil, as well as translating English poems into Arabic and placing them alongside his own poems. Jawharī's Arabic translations of poems by Richard Chenevix Trench (d. 1886), William Wotton (d. 1727), and William Shakespeare (d. 1616) were reproduced alongside their original English versions for the sake of studying in schools. The interest of Egyptian scholars in learning about British nursery rhymes and childhood songs was apparent when they translated the famous "Twinkle, Twinkle Little Star" into Arabic as "خطاب للنجم" (Jawharī 1921, 13–15) (Figure 2). Jawharī also provides the first extant Arabic rendition of Immanuel Kant's *Über Pädagogik* as *Kitāb al-Tarbiyya li l-Hakīm al-Almāniy Kānt* (*The Book of Education Written by the German Thinker Kant*) (1936–1937), a work crucial to Jawharī's goal of

(خطاب للنجم)

من شعر نرسرى الشاعر الانجلىزى

« ٤ »

أضىء يا أبها النجم الصغير  
 فشأنك فى غرابته كبير  
 وفوق رهوسنا أبداً تسير  
 كمثل الماس رُصع فى السماء  
 لىذا ما الشمس غابت فى دجها  
 وبلىّ النبت فى الدنيا نداها  
 تريننا الضوء يلمع فى رباها  
 أضىء يا نجم فى غسق الدجاء  
 بهرت أبوك وسط السماء  
 وترجى النور منك على البناء

- ١٤ -

بناظرك المصوغ من السناء  
 فلا تخبو بغير سنا ذكاء<sup>(١)</sup>  
 تضىء الأرض من أعلى سناها  
 وتهدى من يسافر فى فناها  
 فاذا أنت يا باهى سناها  
 أضىء فالله خصك بالضياء

4

Twinkle, twinkle little star  
 How I wonder what you are,  
 Up above the world so high,  
 Like a diamond in the sky,  
 When the glorious sun is set,  
 When the plant with dew is wet,  
 Then you show your little light  
 Twinkle, twinkle all the night,  
 In the dark blue sky you keep,  
 And often through my curtain's peep,  
 For you never shut your eyes,

Figure 2. The Arabic translation of "Twinkle, Twinkle Little Star" under the supervision of Ṭaṇṭāwī Jawharī in 1921.

education reform. He also emerged as an environmentalist and activist. He was concerned about the killing of birds and industrial smoke and promoted consuming more vegetables than meat in order to maintain health. To address these topics, he relied extensively on European scientific reports. To most of his European interlocutors, he was a “friend of nature” (Hartmann 1916). Rare footage from al-Azhar University in the 1930s clearly confirms his interest in nature (Saleh 2016).

Jawharī’s most important scientific contribution was the twenty-six volume work entitled *al-Jawāhir fī Tafṣīr al-Qur’ān al-Karīm al-Mushtamil ‘alā ‘Ajā’ib Badā’i’ al-Mukawwīnāt wa Gharā’ib al-Āyāt al-Bāhirāt* (Jewels of the Interpretation of the Holy Qur’ān, Containing the Marvel of the Beauties of the Creation and Wonderfully Luminous Divine Signs). It was published after his retirement, between 1923 and 1935, but contains interpretive ideas from his works written between the 1890s and the 1920s. When Jawharī was around thirty years old, he compiled *Mizān al-Jawāhir fī ‘Ajā’ib al-Kawn al-Bāhira* (The Balance of the Jewels in the Spectacular Wonders of the Universe). In his book, he compares the ideas of Muslim theologians with those of European naturalists in order to examine whether science and religion can arrive at the same conclusion. He also discusses and critiques the theory of Pierre-Simon Laplace about the origin of the universe (Jawharī [1899] 1901, 100) and challenges the “School of Darwin” about the origin of human beings (Jawharī [1899] 1901, 103). Jawharī also comparatively analyzes the ideas of Muslim thinkers with those of European philosophers. In so doing, he refers to *Ṣafwat al-i’tibār bi-mustawda’ al-Amṣār wa l-aqtār* (The Finest Reflection on the Location of Countries and Regions) by Muḥammad Bayram (d. 1889), whose intention was “to provoke [his] readers into exploring new developments in society without at the same time compromising the essence of Islam” (see Jawharī [1899] 1901; Omran 2021, 115). Jawharī furthermore addressed contemporary debates about the relationship between pestilence and the jinn, concluding that pestilence is composed of microscopic organisms, which are from the jinn.<sup>9</sup> Later, he produced *Jawāhir al-‘Ulūm* (The Jewels of Science) to encourage readers to behold nature more closely:

النظر في الكون بهجة الحكماء وعبادة الاديكاء

Beholding the universe is a joy for thinkers and worship for those who are intelligent. (Jawharī 1913, i)

In Jawharī’s opinion, many different traditional and rational sciences, along with modern discoveries, refer to divine wonders and instructions. These instructions have no limitation, because they are what has been outlined in Qur’ān 24: 35 (“God is the Light of the heavens and the earth”). For example, geography (*‘ilm takhṭīt al-buldān*) and geology (*‘ilm ṭabaqāt al-ard*) reflect on the nature of humans, animals, plants,

mines, mountains, and rivers (Jawharī 1913, 42). On a broader scale, Qur'ānic allusions to nature (e.g., Qur'ān 16:68) are made in order for the prophets or whomever has a sound mind and intellect to perceive God's authority over the universe (Jawharī 1901, 57).

### Europeans in Jawharī's Works

Most of Jawharī's works are replete with reports in English and French, languages he had studied. Thanks to his proficiency in English, he was able to initiate communication with the famous British naturalist, entomologist, banker, and literary figure John Lubbock, Lord of Avebury (d. 1913). Lubbock was quite close to Darwin and other famous British scientists, as well as an essential member of and contributor to the journal *Nature* (see Jensen 1970). Lubbock was famous among Muslims due to his naturalist and entomological approach, as well as his moral philosophy. Jawharī frequently cited Lubbock's works, translating parts of them and modeling his own writings on that of Lubbock. Jawharī sent a letter to Lubbock, the gist of which was also explained thoroughly in his scientific interpretation; Jawharī indicated that Europeans "do not pay attention to the religion that lies closest to their intellect and to their way of thinking" and that "the science of civilization exists in the Qur'ān" (Daneshgar 2018).<sup>10</sup> In Jawharī's opinion, the ideas of al-Ghazālī, Seneca, and Lubbock could be utilized alongside each other in his interpretation of the Qur'ān. Jawharī noted that some of Lubbock's advice on how to live happily in the industrial world could be found in the Qur'ān.

To develop his social and political theses, Jawharī monitored non-Muslim publications and was aware of Christian engagement with modern science. At the same time Jawharī was writing about the Qur'ān's compatibility with empirical science, Europeans and Americans were actively organizing gatherings to discuss the relationship between the Bible and science. Christian Europeans believed in the sociological significance of the Bible, considering it prime "for scientific treatment" (Wallis 1907, 532). For Europeans, the Bible had emerged from the Orient and then became the "sacred book" throughout Europe and America (Wallis 1907, 532). According to Jawharī, the Qur'ān could also become a global book compatible with modern science for everyone, everywhere (see Daneshgar 2018).

Jawharī was determined that the scientific reading of Christian metaphysics and biblical literature should be discussed in his works on the scientific interpretation of the Qur'ān and studied by Muslims. He was significantly influenced by (pseudo-)scientific movements, including the spiritualist practice of conducting séances to get in touch with spirits. In addition to producing various treatises on the topic, he repeatedly alluded to both spirits and séances in his exegetical works, specifically in the context of Egyptians visiting the London séance circles and ghost clubs

and scholars like Farīd Wajdī being inspired by French Spiritisme (for more on the latter point, see Doostdar 2016). Jawharī also established the first Cairene Club for Mediumship (Dā'ira al-Qāhira al-Rūḥiya) in 1902, where people gathered to deal with human ghosts “empirically.” His interpretations of Qur’ān 7 (*al-A’rāf*) and Qur’ān 17 (*al-Isrā’*) demonstrate his attempts to include (pseudo-)scientific views on spiritism in English contexts. One of the celebrated figures cited in Jawharī’s interpretation of the Qur’ān is the physicist and inventor Sir Oliver Lodge (d. 1940), one of the most important supporters of mediumship in the West.<sup>11</sup> Lodge became an active spiritualist after his son Raymond was killed in 1915 during World War I (Gregory and Ferguson 1941, 571). In 1916, he authored *Raymond or Life and Death*, the first copies of which were sent to European and American medical schools (Figure 3).<sup>12</sup>

To introduce and promote his Qur’ānic interpretation as a scientific one, Jawharī was determined to use “scientific photography,”<sup>13</sup> a widely known technique in the nineteenth-century Europe (see Prodger 2009). Jawharī’s use of scientific photography was groundbreaking, encouraging Muslims to use the visual scientific arts in mainstream Islamic theological literature. His interpretive volume and its appendix were particularly visual, resembling an album of scientific pictures.

In interpreting Qur’ān 27:60 (“Or, Who has created the heavens and the earth, and Who sends you down rain from the sky? Yea, with it We cause to grow well-planted orchards full of beauty of delight [...]”), Jawharī describes geographical regions and the distribution of particular species of plants and animals on Earth using graphs and pictures (Jawharī 1923–1935, XII:54). In interpreting Qur’ān 55:19 (“He merges the two bodies of water”), Jawharī indicates the depth and nature of oceans and seas and describes aquatic animals, islands, and the natural beauties of the sea based on European reports (Jawharī 1923–1935, XIII:215).

In addition to Jawharī’s stated goal of explaining Qur’ānic verses through scientific discoveries, his interpretation also popularized the inclusion of scientific knowledge and non-Islamic literature in discussing the Qur’ān. The exegetical accounts of Jawharī were also circulated throughout North African countries. Muḥammad Afandī Sasī al-Maghribī al-Tūnisī was one of the main promoters of Egyptian scientific interpretation of the Qur’ān in Tunisia, where Muhammad ‘Abduh also used to deliver lectures on Islamic theology and its harmony with science (see Jawharī 1906, 191).

#### Abū Kalām Āzād

In addition to Jawharī, other twentieth century CE scholars with political concerns also incorporated scientific reports into their approaches to Qur’ānic interpretation. For many of them, European science was a





**Figure 3.** *Raymond or Life and Death*, cited in Ṭanṭāwī Jawharī's Qur'ānic exegetical literature in Egypt.

trustworthy vehicle for engaging with the Qur'an. One such scholar was Abū Kalām Āzād (d. 1958), a politician and activist from India who was born in Mecca. His ancestors had been engaged in Islamic scholarly debates, and he was competent in religious teachings. Āzād was influenced by Egypt's scientific and reformist movements and edited two weekly journals in Urdu: *al-Hilāl* and *al-Balāgh* (Syed Mahmud 1981, ix). However, his best known Islamic work is an "explanatory translation of the Qur'an" entitled *Tarjumān al-Qur'an* published during the 1930s (Syed Mahmud 1981, ix). It is not clear how Āzād developed his approach to discussing science in the Qur'an, but his application of German Orientalism (philology, history, and archaeology), similar to that of Karl Friedrich Geldner (d. 1929), made his work both celebrated and controversial in the Muslim world. His interpretation of the aforementioned Qur'anic figure known as Dhū l-Qarnayn (Qur'an 18: 83) is worthy of note. Most commentators considered Dhū l-Qarnayn to be Alexander the Great or Afrīqish al-Himyarī from Southern Arabia. Like Muḥammad 'Alī before him, Āzād also understood Dhū l-Qarnayn to be a Persian king. However, as noted previously, Muslim communities did not take Muḥammad 'Alī's idea into serious account. Āzād changed the discourse, relying on European historical-archaeological discoveries, as well as research by Geldner, to suggest that Dhū l-Qarnayn was actually Cyrus the Great, the Persian king who controlled the East and West from his capital of Pasargadae (Āzād 1981, iii:379).

This reference to Cyrus as Dhū l-Qarnayn in the Qur'an had a serious impact on nationalist, historical, and philosophical movements; for the first time, many in the Muslim world came to terms with the idea that archaeological evidence could be used to prove historical origins (see Daneshgar 2016).

#### NATIONALISTS

The fourth group of people who interpreted the Qur'an scientifically were nationalists whose works were shaped by the adaptation, indigenization, and translation of earlier exegetical works. The voices were neither new nor different, but rather a continuation of what had already been pointed out by the first, second, and third generations of scientific Qur'an interpreters. Some used modern science to explain the Qur'an in order to demonstrate the harmony between the two, while others had theological purposes, such as defending Islam against Christianity, European materialism, or Orientalism. Still others had social and political motivations, encouraging Muslims to be united and thoughtful about the Qur'an and their heritage. The works that fall into this category were mainly produced when independence movements were popular throughout the Muslim world, from North Africa to Southeast Asia. For Muslim nations seeking independence

from colonial powers, the use of the Qur'ān as a social and political vehicle was key. It was during this time that scientific interpretation of the Qur'ān penetrated non-Arab and non-Indian parts of the Muslim world.

Several factors led to the flourishing of scientific interpretation the Qur'ān throughout the Muslim world. First, European advancements in technology and medicine had given many Muslims a sense of being backward that they wanted to address. Second, Muslims still required a catalyst to speed up the end European colonialism. Third, European philosophers and thinkers themselves were extensively challenging colonialism and civilizing the other, as well as challenging theories like materialism and modernism. Fourth, European colonial powers were excluding or marginalizing each other after the end of World War I in 1918; during this time they gave more rights to Orientals (see Kennedy 2016). All of these factors were instrumental in emboldening Muslim intellectuals to carry on the work of former generations, either by echoing former exegetical theories or translating them into their own languages. The result was a huge body of literature covering the Qur'ān, both selectively and comprehensively.

I do not see this transformation as accidental. Muslims were gradually gaining more global power in every sense, and there was a desire to show that a focused reading of Qur'ānic verses could save them from slavery, backwardness, and humiliation. In the process, however, various scholars and scientists soon began to make space for the scientific miraculousness of the Qur'ān, with a specific focus on the Qur'ān as a foreteller of scientific discoveries. This will be discussed in detail in part three of this series.

### The Indigenization Process

By the early twentieth century CE, modern science had become standard in all types of Muslim exegetical works. If a verse had the potential to be explained by means of scientific reports, this was done, whether the commentary was written in a literal, mystical, philosophical, or analytical vein. European science, including Darwinian evolution, was translated and studied more systematically in Oriental educational contexts during the early twentieth century CE, particularly after the first (albeit selective) Arabic translation of Darwin by Mazhar in 1918. For many Muslims, Darwin had failed to put forth a sound scientific theory; indeed, he was not a true believer in any religion. Most Muslim interpreters wanted to demonstrate the harmony between Islam and science while at the same time challenging the theories of Darwin and other Europeans. Meanwhile, Qur'ānic commentaries, periodicals, and booklets were printed as means of familiarizing people with the Qur'ān, politics, religion, and culture. Many such publications included columns about Islam and scientific discoveries. By contrast, very few sources during this period are representative of the notion of scientific interpretation discussed previously.

The following sections introduce a number of works (admittedly limited) that represent the extent to which Muslims have engaged with the genre of scientific interpretation of the Qur'ān in different parts of the world.

### Kazan and Turkey

Turkish scholars and religious communities were introduced to ideas about the harmony between Islam (or the Qur'ān) and science through the works of Jawharī (and, later, 'Abduh). Jawharī's works were translated into Turkish by his students, most of them from Kazan in Tatarstan. Jawharī's educational and religious argument for Muslim communities, outlined in his 1906 publication *al-Tāj al-Muraṣṣa' bi-Jawābir al-Qur'ān wa l-'Ulūm* (*The Crown Adorned with the Jewels of the Qur'ān and the Sciences*), was quite popular and translated into many languages during the first two decades of the twentieth century CE. The Turkic version was translated by Zakir Kadirī, a scholar from Kazan living in Cairo; it was later circulated widely across the Balkans and central Asia.

At the same time, Turkey was also being influenced by modern scientific movements. Several magazines discussed the relationship between religion and science (especially Darwinism) at the turn of the twentieth century CE. In the meantime, Turkish exegetical tradition of that time is best exemplified by the works of Bediuzzaman Said Nursi (d. 1960), a celebrated Muslim thinker and reformer from Turkey. Writing during both Ottoman Turkey and the Turkish Republic, Nursi paid less attention to the literal meanings of the Qur'ān, focusing instead on offering new ideas. Nursi, who had experienced social and political upheavals before and after both world wars, was an active theologian who worked with different religious groups to find solutions for Muslim problems (Çoruh 2019, 23). He was unhappy with both European colonialism and the disunity in the Muslim world. Nursi's *Risale-i Nur* (*The Rays Collection*), a selective interpretation of the Qur'ān, has occasioned much discussion. This commentary addresses roughly one tenth of the Qur'ān, almost six hundred and twenty verses, with themes similar to those of previous commentaries: "*tawhid* (unity of God), *nubuwwah* (prophethood), *haşr* (resurrection), *adalah* (justice), and *ibadah* (worship)" (Çoruh 2019, 24–26). However, Nursi's mystical, ethical, and spiritual approach to the ultimate message of the Qur'ān differentiates his work from other popular scientific interpretations. Indeed, he had different approaches to the concept of science throughout his life. Earlier in his life, especially before World War I, he was less cautious about the application of science and technology; after the war, he modified his approach and became more cautious.<sup>14</sup> Some scholars identify the genre of *Risale-i Nur* as a "*şhūdī tafsīr*" (transempirical commentary on the Qur'ān) (Çoruh 2019, 53–56), a "clarification of

comprehensive expressions of the Qur'ān by visible and experiential phenomena" (Çoruh 2019, 53) through which interpreters also use day-to-day events to discover meaning. Nursi, in line with Jawharī, also reflected upon the scientific, sociological, and philosophical accounts of Europeans.

His Fifth Ray section, produced around 1938, deals with "Dhū l-Qarnayn, Gog and Magog, and the signs of the end of time." He interprets these Qur'ānic elements by means of further Qur'ānic verses (e.g., Qur'ān 18:94, 21:96, 47:18); prophetic statements (originating in various Sunni collections); and sociological and philosophical analyses. Nursi also covers the French Revolution, along with socialism, which "destroyed certain sacred matters," the ideas of which "it inculcated and turned into bolshevism."<sup>15</sup> He goes further and states that Manchurian, Mongolian, and certain Kirghiz tribes made the Great Wall of China (which is that of Gog and Magog) and that "expounding the Qur'ān's concise statements about them, Muḥammad (peace and blessings be upon him) predicated their appearance miraculously and precisely" (Nursi 2004, 122). He interpreted the Qur'ān based on historical and day-to-day movements that happened around the central Asian and Balkan regions, ending with the overthrow of the Ottomans and the emergence of new regimes that had contact with the Soviet Union.

Nursi's approach to science is reminiscent of that of traditional thinkers. According to Nursi, day-to-day natural and scientific discoveries should be used to shed light on the ultimate Qur'ānic message. For Nursi, all forms of religious and modern science should be used as an interpretive tool to promote the Qur'ān:

When the Qur'ān refers to the sun as a "lamp," it is actually revealing its intrinsic reality. For, Nursi argues, the term "lamp" calls into mind the idea of furniture in a home, which is intentionally placed there for the benefit of the inhabitants. Hence, by describing the sun as a lamp, the Qur'ān proclaims that the world is a purposefully constructed home, that human beings and living beings are guests of a Merciful and Powerful Host, and that the sun is an obedient creature of this Host. (Yazicioglu 2013, 349)

### Iran

As a result of close relationships with Egypt and other nations that had produced a body of intellectual literature, Iranian and Arab Shī'ī thinkers became active in Islamic reform from the late nineteenth century CE on. Attempts to translate or critique Darwin were just beginning at that time. For example, a Persian Shī'ī cleric from Iraq, Muḥammad-Riḍā al-Najafī al-Iṣfahānī, critiqued Darwin's evolutionary theory in 1913, even before Ismā'il Maḥzar's Arabic translation of Darwin was published (see Gamini 2021). Within a couple of decades, Iranian scientists showed significant interest in this topic, making space for modern biology and geography in their education system as well as their religious gatherings and

communities. At the same time, intellectuals like Aḥmad Kasravī (d. 1946) became hesitant about the applicability of evolutionary thought:

You, scientists, in your progress in the field of science made a mistake that has expenses for the world. In your studies of animals and the process of their creation, you have concluded that there is a conflict and battle between animals in this world and that whoever is powerful (with more authority) deserves to live, and destroys the weak [...] and thus you have announced that life is a battle and everyone who is powerful overcomes the weak in this world and that is their right. This increases the ignorance of people. (Kasravī 1933, 7; see Daneshgar 2018, 85)

Iranian thinkers were still keen to introduce modernist interpretive approaches in Iran. Although their exegetical heritage was usually that of the medieval, Safavid, and Qajar periods, they began to translate foreign commentaries into Persian and cite them in their original interpretations. They sent letters or agents from Qum and Tabriz to Cairo to seek advice and establish mutual relationships with Muslims there. Various printing houses were active in Iran, being well funded in order to promote Islamic teachings; some of these publishing houses specialized in the scientific interpretation of the Qurʾān. One of the first Egyptian commentaries translated into Persian was that of Jawharī, published by Maṭbaʿa ʿaliyyah and Taqī Zādeh in Tabriz in 1932. Iranians expressed their gratitude to Jawharī and were excited to promote his exegetical approach among Persian-speaking readers. To them, Jawharī's interpretations were superior to others (whether traditional or modern) and were more beneficial due to "a beautiful and new approach combined with modern sciences" (Jawharī 1932, 2–4). Local magazines also translated Jawharī's works, and Afghan communities based in Tehran translated his commentary on the Qurʾān into Persian (see Daneshgar 2018, 11). The works of others also interested Iranian communities. Thus, in the 1950s, Seyed Muḥammad Taqī Fakhr Dāʿī Gilānī (d. ca. 1964) translated Sir Aḥmad Khān's commentary on the Qurʾān into Persian (Figure 4). Fakhr Dāʿī Gilānī was influenced by Khān and impressed with the structure and educational contexts of Aligarh University, where both Muslims and non-Muslims worked and researched together. Conscious of the controversies surrounding the ideas of Khān, Fakhr Dāʿī Gilānī encouraged Muslim readers to thoroughly read Khān's works, including in his Persian translation of *Tafsīr al-Qurʾān wa Huwa al-Hudā wa al-Furqān*: "This is one of the distinguished works of the noble ʿAllāmah Sir Syed Aḥmad Khān Hindī [...] the great reformer of the Muslim community of the large country of India; he is considered as one of the elites of the Orient. Besides leaving his immortal influence across India, he owns a large number of beneficial books and publications, one of which is this very Qurʾān commentary" (Khān 1955, i).

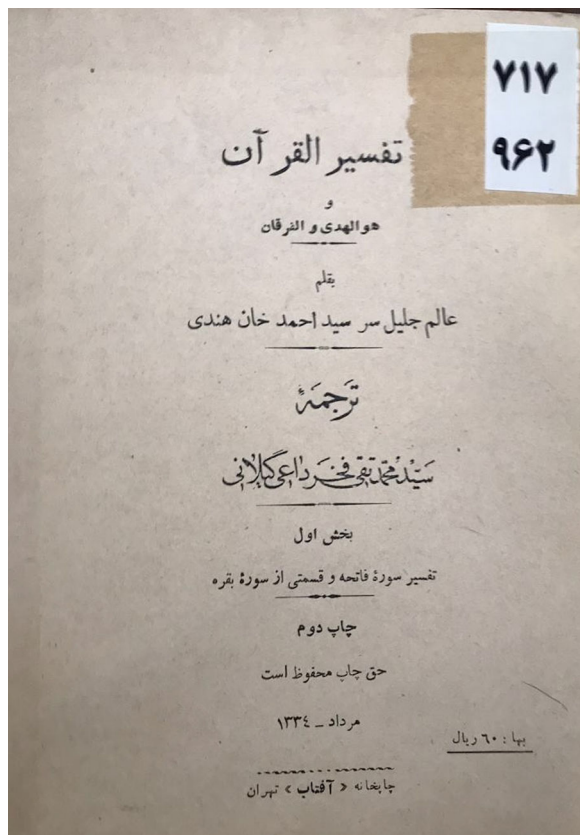


Figure 4. The Persian translation of Ahmad Khān's commentary on the Qur'ān.

The translation of famous scientific interpretations of the Qur'ān was a starting point for other Iranians to develop an indigenized form of commentary. They produced original Persian scientific interpretations with obvious allusions to Shī'ī sources. Early works were often short or based on select parts of the Qur'ān. For instance, Muḥammad Taqī Shari'atī (d. 1987), a lecturer at the University of Mashhad and the father of Iranian sociologist 'Alī Shari'atī, authored several works about Muslims, their religion, and their texts. Influenced by both European science and Egyptian reformist movements, Shari'atī pursued Muḥammad 'Abduh's agenda by placing Islam and rationalism alongside each other, encouraging Muslims to be united, and approaching the Qur'ān in the context of the modern world. He began writing a series of articles interpreting the final part of the Qur'ān. These articles were integrated into his commentary, known as *Tafsīr-e Novīn* (*Modern Commentary on the Qur'ān*), in 1967. In interpreting Qur'ān 95:1 ("By the fig and the olive,") he states:

There is a disagreement between commentators about the indication of the names fig and olive. Those who consider them as the real known fruits of fig and olive [not metaphorical names] have mentioned that the fig is a food as well as a fruit and medicament. A fine food which is quickly digested and is a laxative and reduces mucus, and refines kidneys, and dissolves the bladder stone, and makes the body fleshy, and opens the pores of liver and spleen, it is among the best and favorite fruits ever. And it is said from the Prophet that ‘eat this fruit as I would say this is the one from Paradise, because all parts of heavenly fruits are edible, and the fig is one of them, by which haemorrhoids and gout are treated’. And this is also reported from Ḥazrat-e Riḍā [eighth Imām of Shī‘a] that ‘eating the fig will stop the mouth smelling [bad], improve the growth of hair, and save one from paralysis’ [...] and also the advantages of the olive which is also both food and medicament, whose oil is used for lamps to illuminate the house [and life], or soap is made from it to clean and purify body and clothes, and so on and so forth. As such, one should interpret the [Qur’anic word] based on its actual exterior meaning, without interpreting the inner aspect. Today, scholarly literature on nutrition has listed several advantages of the fig and the olive. [...] Thus, owing such benefits, what would be the problem if God has made an oath to both of them in order to make people aware about their qualities, through which He can familiarize His creatures with His mercy and kindness. (Sharī‘atī 1965, 170–71)

In his interpretations, Sharī‘atī uses exegetical traditions of the past along with Prophetic Medicine and the Shī‘ī medical advice of Imām Riḍā. In other publications, Sharī‘atī refers to Muḥammad ‘Abduh, Ṭaṭāwī Jawharī, Gustave Le Bon, Marx, Lenin, and others to explain the concept of caliphate and leadership in the Qur’ān and Islamic tradition. Egyptian scholars used the same methods, mixing European and Islamic readings of history and civilization. Here, social science is again considered as significant as medicine and physics; all are aspects of the modern world that can help Muslims solve social problems.

In the meantime, other Iranian figures were engaged with debates about Islam and science. While in jail approximately between 1964 and 1975, the Iranian political activist Āyātollāh Maḥmūd Ṭāleqānī—an anti-Marxist—produced a selective commentary on the Qur’ān entitled *Partovī az Qur’ān (A Ray Radiated from the Qur’ān)*, which was published after his death in 1979. This interpretation includes references to modern science. Ṭāleqānī was significantly influenced by the works of al-Afghānī, ‘Abduh, Jawharī, and Sir Aḥmad Khān (e.g., see Ṭāleqānī 1983, v:157). For Ṭāleqānī, scientific interpretations of the Qur’ān produced in India and Egypt were valuable, since they gave insights into the modern understanding of Islam. In interpreting Qur’ān 86:6–7 (“created from a spurting fluid; stemming from between the backbone and the ribcage”), Ṭāleqānī clearly refers to the interpretation of Jawharī, then states:

[...] this is made of two different fluids, but God has unified them in one form [viz., a spurting fluid], whose reason is now apparent through the



science of embryology in this [modern] period [...] this fluid is the combination and unification of that of man and woman. And 'the backbone' refers to the spinal cord which acts like a brain in the body and has [its cords] scattered throughout the body by which senses are transferred to run body movements. And sexual intercourse is subject to this muscular and nervous functionality. And the ribcage of women is their chest bone, where they hang necklaces and jewellery. (Ṭāleqānī 1983, iii:331)

In the 1960s, scholarly and theological attention was paid to discourse on the Qur'ān and science. The cleric Ḥujjat Allāh Balāghī, a Sufi thinker (of the Ni'matullāhī branch) and prolific scholar whose works were sent to the West,<sup>16</sup> produced a commentary in 1966 entitled *Ḥujjat al-Taḥāsīr*. His work was influenced by the ideas of Jawharī and Muḥammad 'Abduh, along with other Egyptians like Maḥmūd Shaltūt and Ḥanafī Aḥmad. Alongside Qur'ānic references to Moses, his cane, and the death of pharaoh and his army in the Nile River, Balāghī provides an informative list of oceans and seas around the world. For example, after explaining the features of the Dead Sea, he refers to Ibn al-Faqīh (in *Mu'jam al-Buldān*), who said that "the drowned one does not go down in this lake, but floats until he dies," and then cites Ṭanṭāwī Jawharī, who says that "Englishmen are about to exploit the materials of this sea" (Balāghī 1966, i:379). Balāghī is also suspicious of modern evolutionary thoughts, rejecting Darwin's ideas in his interpretation of Qur'ān 24:45 ("And Allah has created every animal from water"). On another occasion, while describing the descendants of Adam and Eve, Balāghī indicates that there are two types of generations: (1) the righteous ones like Ibn 'Arabī, who followed the Qur'ānic message of "honor your parents" (Qur'ān 17:23) and performed Ḥajj (pilgrimage) on behalf of Adam, Eve, Noah, and others, and (2) the sinful ones like "Charles Darwin who was born on February 12, 1809 and died in 1882. He stated a hypothesis that puzzled the father [origin] of human being, a lost ring, whose origin was ape [...] He left the world, while he had led it to chaos, and turbulence of thoughts and turmoil of ideas [...]" (Balāghī 1966, iv:184). To reject Darwin's ideas, Balāghī refers to various Christian materials on religion and science, such as *The Urantia Book*, published in 1955.

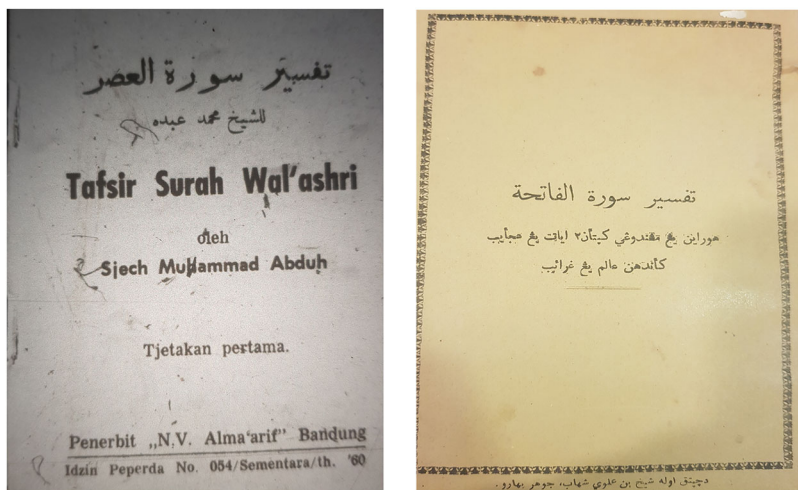
This new genre of Qur'ānic literature in Iran continued; debates between scientists and religious figures were now part of the regular discourse on the Qur'ān and science. Muḥammad Ḥusayn Ṭabāṭabā'ī (a Qur'ānic commentator) and Yadullāh Saḥābī (a scientist and activist) engaged in a debate on the concept of evolution based on theological and empirical insights (Kocsenda 2022). Ṭabāṭabā'ī's *al-Mīzān fī Taḥsīr al-Qur'ān* commentary later applied Egyptian modernist interpretations, and Bānū Amīn of Isfahan (d. 1983) and several others benefited from al-Azharī's and Aligarh's reading of the Qur'ān and science in their commentaries (especially Jawharī).<sup>17</sup>

## Scientific Interpretation in East Asia and South Asia

The dissemination of these ideas in East Asia occurred as quickly as it had in Tunisia, Turkey, and Iran. This was partially due to foreign students and scholars in Cairo and India introducing these new exegetical trends to their own communities. Although Egyptian commentaries were more widely read, the Indian school of scientific interpretation was also welcomed in Asian countries. Muslims in India, China, Indonesia, and Malaysia translated commentaries by Jawharī into their own languages from the 1910s on. Some Malay-Indonesian reformists (e.g., Tahir Jalal al-Din al-Azhari)<sup>18</sup> who had connections with the Egyptian school founded local magazines modeled on *al-Manār* in Cairo that introduced topics such as the Qur'ān and science, Muslims and science, Muslims and backwardness, Muslims and Europeans, and Muslims and education. For instance, *al-Imām*, a monthly publication in Singapore in Jawi script, published a few issues under the title *al-ta' rīkh al-Islāmī (Islamic History)* on Muslim civilization, as well as Muslim pedagogy, science (e.g., astrophysics) in America, and its reception in the Muslim world.

Likewise, the reformist Syed Syeikh al-Hādī (d. 1934) translated into Malay two short commentaries by Muḥammad 'Abduh on the first chapter of the Qur'ān and *Juz' 'amma* (the last part of the Qur'ān) (see Abdullah 2009).<sup>19</sup> Just as 'Abduh was a symbol of Islamic reform, Jawharī was a symbol of Islamic education reform. His reading of science and the Qur'ān served as a pedagogical instrument. Scientific interpretation was seen as not only a vehicle for proving the mercy and authority of God over the universe but also as corrective material to educate Muslims about their history and doctrine at a time when their worldly affairs were controlled by Europeans. Chinese and Indonesian scholars organized meetings with Jawharī in order to rebuild their education systems, and Jawharī “became associated with the Educational Committee for the Islamic East” (Laffan 2007, 710). Representatives of his in Johor, Sumatra, and Java transformed his ideas into Arabic, Malay, and Javanese. Shaykh 'Abd al-'Azīz al-Shīmī, director of a scientific college in Indonesia, was an active promoter of Jawharī's scientific interpretation and educational thoughts. Later, Hajji Abd al-Rahman bin Hj Husain, imām of the Abu Bakr mosque in Johor, taught Jawharī's scientific commentary on Qur'ān 1 and translated it into Bahasa Melayu (Figure 5).

Egyptian works were also introduced in places where Muslims were minorities. Penang Island of Malaysia, which had a high proportion of Chinese residents and Muslim converts, was a primary hub for the circulation of literature by Jawharī, 'Abduh, and Riḍā. One of the main engines behind the circulation of Egyptian exegetical works in Penang was a local publisher, distributor, and library owned by Hj. Abdullah b. Mohammad Nur al-Din al-Rawiy (Figure 6).



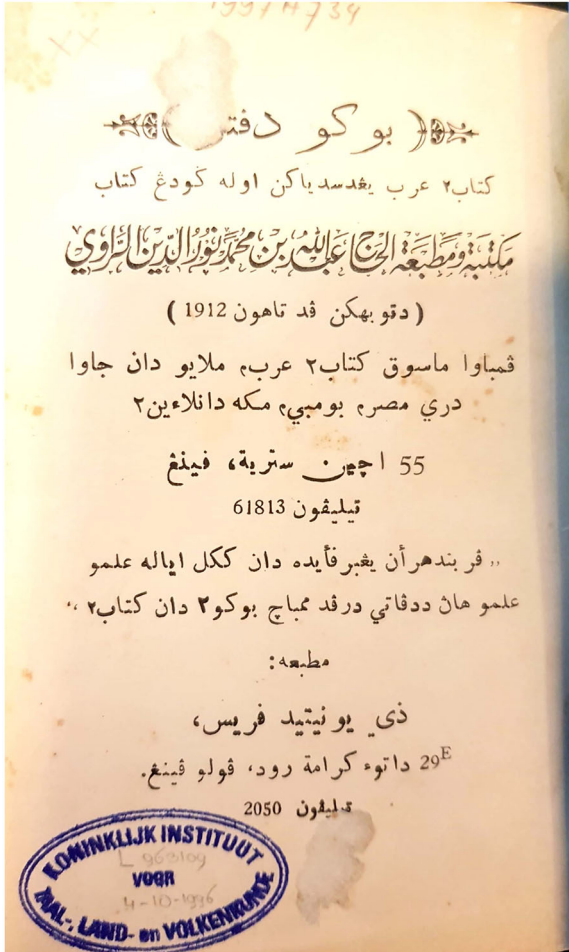
**Figure 5.** Malay-Indonesian translations of Muḥammad ‘Abduh’s commentary on Qur’ān 103 (in Bandung) and Ṭaṅṭāwī Jawharī’s commentary on Qur’ān 1 (in Johor Bahru; right side).

The first well-known Indonesian commentary, similar in theme to the Egyptian commentaries, was *Tafsīr al-Qoeranoel Karim (Commentary on the Holy Qur’ān)* by H. Abdul Halim Hasan, Zain al Arifin Abbas, and Abdurrahim Haitam in 1938. Interpreters from all previous generations are acknowledged and cited in this commentary: Tawfiq Ṣidqī, ‘Abduh, Ridā, and Jawharī. In interpreting Qur’ān 2:219 (“They ask you about intoxicants and gambling [...]”), the authors first discuss the destructive impact of alcoholic beverages on the human body:

a. *merusak usus*; b. *menghilangkan nafsu makan*; c. *merobah rupa dan sifat* [...]; d. *kena sakit jantung*; e. *kena sakit buah pinggang*; f. *mudah kena sakit batuk kering* [...]

a. damage the intestines; b. eliminate appetite; c. change the appearance and character [...]; d. affected by heart pain and heart attack; e. affected by kidney pain; f. prompt sickness with dry cough. (Hasan, Abbas, and Haitami 1938, ii:330–31)

It is for these reasons that they believe God has forbidden alcohol and warned Muslims not to consume it. To this discussion are added medical statistics on the death rates from alcohol in Europe, followed by Muḥammad Tawfiq Ṣidqī’s ideas about alcohol. The commentators suggest to readers that the circulation of wine in Asia and North Africa during colonial times was a policy designed to weaken Islam. Ideas about wine from European scientists and physicians, such as Edward Smith (d.



**Figure 6.** *A Handlist of Muslim Literature*. Published and/or distributed by Hj. Abdullah ibn Mohammad Nur al-Din al-Rawiy Library, Penang, Malaysia.

1874), are placed alongside those of Jawharī (Hasan, Abbas, and Haitami 1938, ii:336–37).

Beyond this, *Tafsīr al-Qoeranoel Karim* discusses topics including biological evolution and social Darwinism, the origin of humans, and the geography of the Earth (see Daneshgar 2020b). Addressing Qur’ān 8:45 (“O ye who believe! When ye meet a force, be firm, and call Allah in remembrance much (and often); that ye may prosper”), the commentators discuss the importance of struggling for life: “*perjuangan merebut kekaln hidup dalam dunia ini* (struggle for eternal life in this world)” (Hasan, Abbas, and Haitami 1938, ii:500–1; Daneshgar 2020b, 1051). In inter-

preting Qur'ān 2:251 (“And did not Allah check one set of people by means of another, the earth would indeed be full of mischief”), they declare that both nature and humans are divinely created and intrinsically inclined to survive; thus, the motivation of humans to fight their enemies is divinely natural. Further, as the commentators note, one’s victory is achieved by means of “natural selection”; as such, Muslims are allowed by God to try their chance at survival (Hasan, Abbas, and Haitami 1938, ii:500–1; Daneshgar 2020b, 1051).

In 1938, the influential Malay thinker Syaikh Idris al-Marbawi (d. 1989) produced *Tafsīr Qur'ān Marbāwīy* (*Qur'ān Commentary of Marbawi*), which covered the first part of the Qur'ān. He produced another select commentary on Qur'ān 38 (Yā-Sīn) in 1964, modeled on Jawharī’s scientific interpretation and using scientific photography to elaborate Qur’ānic verses.

In addition to the Egyptian commentaries, the Qur’ānic translation and commentary of Maulana Muḥamamd ‘Alī from the Ahmadiyyah Society of Lahore was promoted across Indonesia in different languages, mainly Dutch and Bahasa Indonesia (see Nur Ichwan 2001). The exegetical accounts of Āzād regarding the identification of Dhū l-Qarnayn as Cyrus the Great based on modern archaeology also reached Indonesia and were discussed in Hamka’s *Tafsīr al-Azhar* (see Daneshgar 2016).

At the same time, Chinese students and residents of Cairo started translating the treatises of ‘Abduh and Jawharī. After ‘Abduh’s interpretation of Qur’ān 1 (Figure 7), two works by Jawharī were sympathetically received in China. One of them was the translation of his commentary on Qur’ān 1 by Wáng Jingzhāi, whose pen name was Wang Wenqing. The other was a select part of *al-Qur’ān wa l’Ulūm al-‘Aṣriyya* (*Qur’ān and Modern Science*) translated by Xiong Zhenzong (熊振宗) as *Gulan yu kexue* (古蘭與科學) in 1940.<sup>20</sup>

In South Asia, *The Fortnightly Ahmadi* (পাক্ষিকি আহমদী) was one of the leading journals of Bangladesh dedicated to Islam and science, Islam and pedagogy, and Muslim leadership. It was printed in Kolkata in the 1920s and later promoted across Bangladesh by Ahmadi communities. In the 1950s and 1960s, this fortnightly journal published a number of articles about the relationship between religion and science. An essay by Maqbool Ahmed Khan entitled “Science and Islam” (“বজ্জ্ঞান ও ইসলাম”) from 1964 says:

Now is the era of Science [...] as a matter of fact, there is no conflict between Science and true Religion(s). (Khan 1964, 393–94)

Khan believes that the Industrial Revolution changed the world and that religious figures misinterpreted religions, presenting an inaccurate picture of them in the modern era. He also expresses his unhappiness, for example,

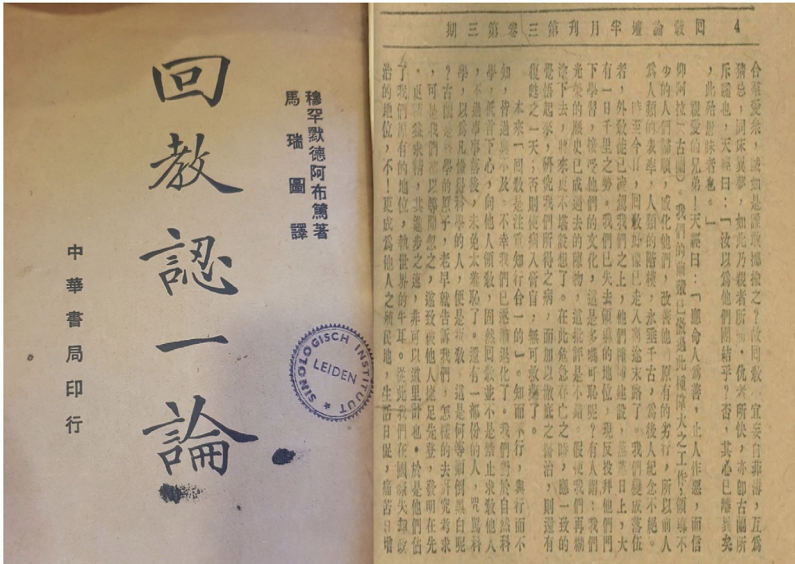


Figure 7. Chinese translations of Muḥammad 'Abduh's exegetical literature (left) and Ṭaṅṭāwī Jawharī's *Qur'an and Modern Science* (right).

with the way Dhamma priests (perhaps referring to Buddhists in Bengal) unjustly treated scientists and philosophers in the name of their religious tradition. He also notes that only unstable religions are challenged by science, and Islam is the only religion that is compatible with science.

According to Maqbool Ahmed Khan, European progress is due to its reception of world knowledge, the presence of which also allows Europeans to freely raise theological questions. In his view, Islam's compatibility with science emanates from prophetic traditions that encourage Muslims to seek knowledge (Khan 1964, 393–94). Referring to both philosophy and modern physics, Khan states that although scientific theories change (e.g., “those of Copernicus”; Khan 1964, 393–94), Islam is fixed. Indeed, Islam is the only religion of unity that also aims to promote the unity of the universe. He further cites the ideas of “Immanuel Kant” (康乃德) and “Herbert Spencer” (斯賓塞) to discuss the role of nature and its importance in world and human orders (Khan 1964, 396). He contends that Darwin's theories have affected all disciplines, including geology and relevant fields about the age of the Earth, furthering scientific debates about whether it was created over several thousand years (which contradicts the Qur'anic belief in “the six-day creation of the Universe” (Khan 1964, 396).<sup>21</sup>

In contrast to the world of science, “which is harmonious and universal,” Khan critiques religious figures, noting that there is a global consensus

on scientific methods and results but not on religions (Khan 1964, 395–96). Every religion propagates its own ideas without considering that God, around whom religion is shaped, is One. All religions ultimately lead to the message of Islam as a universal religion embracing believers with God’s unity (Khan 1964, 396). Khan cites a statement ascribed to Bernard Shaw (d. 1950) that Islam is an “eternal religion” (Khan 1964, 397). He also discusses Qur’ānic verses about the heavens and the Earth, including the process of their creation and movement, along with the modern scientific and literary theories of James Jeans (d. 1946), Arthur Eddington (d. 1944), Thomas Carlyle (d. 1881), and Ralph Waldo Emerson (d. 1882) (Khan 1964, 397).

Thus, a movement that began in the nineteenth century CE spread around the world to wherever Muslims lived by the twentieth century CE. As Muslims began to see how unqualified their religious and political leaders were to govern and how European colonial powers were in decline, they started to elevate the role of the Qur’ān in their daily lives. The challenge of identity in the post-colonial Muslim world led to Muslims investing more systematically in their Qur’ānic traditions. In the wake of scientific interpretations of the Qur’ān, this led in turn to the concept of the scientific miraculousness of the Qur’ān (*i’jāz ‘ilmī*), discussed in the third article in this series.

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Research Platform Development Program at Kyoto University, Japan. All errors are mine.

## NOTES

1. Not scientific naturalism, on which see Habermas (2008).
2. A manuscript copy of this work is in the Wellcome Library in London.
3. Al-Iskandarānī's references to Comte de Buffon and the monkey's features were probably taken from the Arabic collection of "Zoography" (*sharḥ ṭabā'ī' al-ḥayawān*) translated and compiled by Fāris al-Shidyāq and printed in Malta in 1841. Nonetheless, al-Iskandarānī shows one of the earliest Muslim attempts to translate French biological doctrines into Arabic.
4. Şidqī published more than 30 articles and reports in *al-Manār* on Islam and Christianity, Muḥammad and Jesus, cosmology, Arabic scientific words, the history of the Qur'ān, and so on (see Daneshgar 2014).
5. On Aḥmad Khān's approach to science, see Qidwai (2021). Note that other scholars in the Persianate world were also engaged with the relationship between Islam and modern science. See Arjomand (2020) and below.
6. On 'Abduh's approach, see Elshakry (2014, 177). Muhammad Iqbal (d. 1938) from India adopted similar approaches to science, although not benefiting from an adequate number of scientific accounts.
7. Thanks to Nidhal Guessoum for his advice to add this full quotation.
8. Considering the birth date of Jawharī to be 1870 is a common mistake in scholarly publications. This misinformation is often based on the early twentieth century CE Arabic encyclopedias. Jawharī's relatives, including his son-in-law, corrected his date of birth after his death (for more, see Jomier 1958).
9. This idea is also mentioned in Jawharī's *Jawābir al-'Ulūm* (1913, 210).
10. See also *al-Tūj al-Muraṣṣa'* by Jawharī (1906, 31–33)
11. Lodge's contact with members of the Society for Psychical Research, such as Frederic William Henry Myers (d. 1901) and Gladys Osborne Leonard (d. 1968), were crucial in developing his convictions about life after death.
12. Boston Medical Library, for example, acquired its copy in early 1917. Its scanned copy can be found at [www.archive.org](http://www.archive.org).
13. A term in the literature referring to the scientific use of photography.
14. On Nursi's approach to the Qur'ān and science, see Yazicioglu (2013).
15. References to bolshevism are also found in Jawharī's commentary (see Daneshgar 2018).
16. He explained his connections with scholars from different countries in his monographs. For example, S. H. Nasr from Harvard University exchanged letters with him to seek his advice on Islamic mysticism.
17. Regarding the reception of Darwin's theory of evolution in modern Iranian religious contexts, see Kocsenda (2022).
18. Transliteration is not used for modern Malay-Indonesian names/figures.
19. I have been trying to obtain a copy of al-Hadi's commentary, which is kept at the University of Malaya, Kuala Lumpur. Alas, I have not yet been successful.
20. Special thanks to David Brophy (Sydney) for this important information.
21. Khan's discussion around Darwin occurred after the publication of Hindi and Bengali translations of *On the Origin of Species* and its commentaries by locals of Kolkata and Dhaka in the 1940s. The Bengali version, entitled *Dāruīna/Anilakumāra Bandyopādhyāya*, was published in Kolkata by Purbāša in 1943.

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