



Tolerance or Compatibility?

The Search for a Qur'ānic Paradigm of Science

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TOLERANCE OR COMPATIBILITY? THE SEARCH FOR A QUR'ĀNIC PARADIGM OF SCIENCE

Ahmad Dallal*

Whether¹ one takes the standpoint of a believer or a textual critic, the Qur'ān, the foundational text of Islam, does not tell us anything unless we read it. The meaning of the Qur'ān, therefore, is inevitably intertwined with the understanding of its readers. Readings of the Qur'ān have not ceased since the beginning of Islam, and over time, generations have read the text and commented on it in different ways, and thus produced what can be termed evolving cultural understandings of the text. Rather than doing what has become fashionable, look at the Qur'ān and quote some of its verses and then jump to make assertions about the Islamic or Qur'ānic stand on science, I will instead look at *tafāsīr*, commentaries on the Qur'ān, and try to discern from them how the relationship between the Qur'ān and science was understood in the cultures that produced these commentaries. What I will be looking at therefore is not an edified Islam that stands outside history, but the dynamic interaction between the text and the real historical communities that embodied Islamic culture. Of course, the relationship between science and Islam is reflected in a variety of genres and activities. In this essay, however, I will focus on the way this relationship has been understood in just one genre, *tafsīr*; both because of the normative weight of this genre and because these commentaries provide credible registers of the cultural trends of their time.

In his anthropological history of India, Abū Rayhān al-Bīrūnī starts a chapter "On the Configuration of the Heavens and the Earth According to [Indian] Astrologers", with a long comparison between the cultural imperatives of Muslim and Indian sciences. The views of Indian astrologers, Bīrūnī maintains, "have developed in a way which is different from those of our [Muslim] fellows; this is because, unlike the scriptures revealed before it, the Qur'ān does not articulate on this subject [of astronomy], or any other [field of] necessary [knowledge] any assertion that would require erratic interpretations in order to harmonize it with that which is known by necessity" (Bīrūnī, 219). The Qur'ān, adds Bīrūnī, does not speak on matters which are subjects of hopeless differences, such as history. To be sure, Islam has suffered from people who claimed to be Muslims, but retained many of the teachings of earlier religions, and claimed that these teachings are part of the doctrines of Islam. Such, for example, were the Manichaeans, whose religious doctrine, together with their erroneous views about the heavens, were wrongly attributed to Islam (Bīrūnī, 220). Such attributions of scientific views to the Qur'ān are, according to Bīrūnī, false claims of un-Islamic origins. In contrast, all the religious and transmitted books of the Indians do indeed speak "of the configuration of the universe in a way which contradicts the truth which is known to their own astrologers." However, driven by the need to uphold the religious traditions, Indian astrologers pretend to believe in the astrological doctrines of these books even when they are aware of their falsity. With the passage of time,

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accurate astronomical doctrines were mixed with those advanced in the religious books which led to the confusion one encounters in Indian astronomy (Bīrūnī, 220-21).

Although not all Indian religious views contradict the dictates of the astronomical profession, the conflation of religious and astronomical knowledge undermines Indian astronomy and accounts for its errors and weaknesses. And this conflation of scripture and science, is contrasted by Bīrūnī with the Islamic astronomical tradition which, in his view, suffers from no such shortcomings. In Bīrūnī's view, therefore, the Qur'ān does not interfere in the business of science nor does it infringe on its realm.

Far from Bīrūnī's contentions, contemporary Islamic discourse on the Qur'ān and science abounds with assertions of the relationship between the two. This presumed relationship is construed in a variety of ways, the most common of which are the efforts to prove the divine nature of the Qur'ān through modern science. These efforts cover a wide range of activities including the establishment of institutions, holding conferences, writing books and articles, and the use of the internet to promote the idea of the scientific miracles of the Qur'ān. For example, a recent website search listed a little less than two million occurrences on Islam and science, most of which assert that the Qur'ān's prediction of many of the theories and truths of modern science is evidence of its miraculous nature and its Divine origins (Iqbāl, 15, 380). Such contentions are not just part of folk belief, but are also reflected in the work and writings of many contemporary Muslim intellectuals. As a manifestation of the popularity of this idea, the Muslim World League at Mecca formed in the 1980s the Committee on the Scientific Miracles of the Qur'ān and Sunna (traditions of the Prophet). The Committee has since convened numerous international conferences and sponsored various intellectual activities, all aimed at exploring and corroborating the connections between science and the Qur'ān. A recent meeting of this Committee in Cairo, reported in the mass media, urged Muslims to employ the "scientific truths which were confirmed in the verses of the Qur'ān and which, only recently, modern science has been able to discover" as a corrective to the current misunderstanding of Islam. The scientific miracles of the Qur'ān are the only weapon with which contemporary Muslims can defend the Qur'ān, and the only convincing language in this age of science and materiality (*Al-Sharq al-Awsat*, 9/23/2003).

The Qur'ānic attitude towards science, in fact, the very relationship between the two, is not readily identifiable, and the discordance between the classical and modern Islamic views on this subject is substantial. To be sure, almost all sources, classical and modern, agree that the Qur'ān condones, even encourages the acquisition of science and scientific knowledge, and urges humans to reflect on the natural phenomena as signs of God's creation. Most sources also argue that doing science is an act of religious merit and, to some, even a collective duty of the Muslim community. Yet, as actual debates of the Qur'ān and science show, the points of contention are far more significant than this one general convergence. More than any other place, these debates can be traced in interpretations of the Qur'ān, and in several other writings in which specific uses of the Qur'ān are promoted, or where a Qur'ānic framework and philosophy of science is adduced. Therefore, the starting point for the study of the Qur'ān and science is not the Qur'ān itself since, as we will see, there are considerable differences in the interpretation of the verses that may have a connection to science or the natural phenomena. For this reason, it is not useful to try to ascertain a particular Qur'ānic position on science. Rather, it is more productive to look at the way in which the relationship between science and the Qur'ān has been viewed by various Muslim thinkers, albeit of varying degrees of authority. The main source in which Qur'ānic paradigms of science are articulated is the genre of Qur'ānic exegesis (*tafsīr*, plural *tafāsīr*). Much as they insist on grounding themselves in the

immutable text of the Qur'ān, exegetical works are repositories of larger cultural debates and reflect the prevailing views at their time and place. Rather than identifying one fixed Qur'ānic paradigm of science, the task then becomes one of tracing the evolution of the Islamic discourse on the Qur'ān and science, and adducing some of the factors that shaped this evolutionary process.



Figure 1: Modern printing of the Qur'an in Maghribi calligraphy. *Al-Musshaf al-Hassani*, printed in Morocco, 1417 H, p. 3. Source: <http://quran.habous.gov.ma/Default.aspx>.

Traditional Qur'ānic exegetical works contain plenty of material of possible scientific import. However, despite the contemporary interest in the Qur'ān and science, this aspect of exegesis has not received much scholarly attention. One possible reason for this neglect is that, collectively, these traditional materials do not add up to what might be legitimately called a scientific interpretation of the Qur'ān. Traditional interpreters did not present themselves as engaging in such an interpretive exercise. A minority of traditional scholars, notably Abū Hāmid al-Ghazālī (d. 1111) and Jalāl al-Dīn al-Suyūṭī (d. 1505), maintained that the Qur'ān is a comprehensive source of knowledge, including scientific knowledge (Dhahabī, 2:454-464). The basis of the contentions of Ghazālī and Suyūṭī are such verses in the Qur'ān as "for We have revealed to you the Book as an exposition of every thing" (Qur'ān 16:89). It should be noted, however, that the same verse starts with "Remind them of the Day when We shall call from every people a witness against them, and make you a witness over them;" after describing the Book as an exposition of everything the verse continues to say "and as guidance and grace and happy tidings for those who submit." Therefore,

the likely reference in this verse to the exposition of knowledge is connected to knowledge of what would happen in the hereafter and the fate of believers. Despite their claims, neither Ghazālī nor Suyūṭī proceeds to correlate, in a systematic interpretive exercise, the Qur'ānic text to science. Moreover, there are no instances in which these two or other exegetes claim authority in scientific subjects on account of their knowledge of the Qur'ān. Perhaps the most relevant cause for the absence of an articulation of a Qur'ānic paradigm of science in pre-modern times is that there was no need for such an articulation in the absence of the counter claims of a hegemonic culture of science, and the ideological outlook that accompanied the rise of modern science (Muzaffar Iqbal, 30).

To be sure, scientific subjects do come up in many medieval Qur'ānic exegetical works, but their treatment in these sources is radically different from their contemporary counterpart. I will address the contemporary approach later in this essay, but first I will explore the paradigmatic treatment of this subject in classical *tafāsīr*.

The instances of occurrence of scientific discourse in the classical Qur'ānic commentaries are invariably mixed with other kinds of discourse that have no connection to science. Qur'ān commentators had a distinct conception of what constitutes the main thematic emphasis of the Qur'ān, and they often, though not always, presented their detailed discussions of various subjects within this framework. Thus, for example, in his commentary on (Qur'ān 7:54), Fakhr al-Dīn al-Rāzī spells out the four themes around which the various discussions of the Qur'ān revolve (*madār amr al-Qur'ān*). Significantly, the verse in question relates to the natural order; it reads: "Surely your Lord is God who created the heavens and the earth in six days, then assumed the throne. He covers up the day with night which comes chasing it fast; and the sun and the moon and the stars are subjugated by His command. It is His to create and command. Blessed be God, the Lord of all the worlds." Before embarking on a lengthy discussion of this verse, Rāzī lists four overriding Qur'ānic themes: the oneness of God, prophethood, resurrection, and the omnipotence of God or the related question of predestination (Rāzī, 13-14:96ff.; see also Abū Hayyān, 1:809-11). All other themes, including the ones in this verse, ultimately underscore one of these four essential motifs. Rāzī proceeds to explain the manner in which this seemingly unrelated verse does indeed relate to the oneness and omnipotence of God. Rāzī lists several interpretations of the verse that would confirm this correlation. One is to argue that the heavens and the earth are created with a particular size, while their natures do not preclude the possibility of having a larger or smaller size. This shows, according to Rāzī, that a willing maker chose to give them this specific size and no other, thus proving the existence of a free and willing creator (Rāzī, 13-14:96-7). Alternatively, the creation at a specific time of the heavens and the earth, when they could have been created at an earlier or later time, is an act of choice by God, and not due to the inherent nature of either. The same argument also applies to the configurations and the positions of the various parts of the universe relative to each other, and so on (Rāzī, 13-14:97-8). After a lengthy digression to disprove the attribution of place and direction to God (Rāzī, 13-14:98ff.), Rāzī then returns to the first theme, albeit from a different perspective. He enumerates the benefits that result from the succession of day and night, again as proof that God creates the world in a specific fashion in order to maximize the benefit for humans from this world (Rāzī, 13-14:117). Rāzī then undertakes a linguistic exploration, typical of Qur'ānic commentaries of all kinds, of the meaning of the word subjugated (*musakhkharāt*). The sun, he reports, has two motions: the cyclical rotation of one is completed in a year, while the other in a day. Night and day, however, are not due to the motion of the sun but to the motion of the great orb which is also the throne (Rāzī, 13-14:117-8). Moreover, each heavenly body or planet has an angel assigned to it to move it when it rises and sets (Rāzī, 13-14:118-9), and God has endowed the throne or the great outer orb with

the power to influence all the other orbs, thus enabling it to move them by compulsion from east to west in opposite direction to their west to east slow motion (Rāzī, 13-14:119-120). This, according to Rāzī, is the meaning of subjugation: that orbs and planets are organized by God in a particular order, *for no inherent reason of their own*, so that they produce the most optimal benefits for humans (Rāzī, 13-14:120).

Rāzī's approach is typical of many other commentaries, both in its linguistic turn, and in its emphasis on the benefits of creation to humans as evidence of the existence of the willing creator. Commentaries often focus not just on the meaning and appropriateness of using certain terms, but also the logic of their order of appearance in the Qur'ān. For example, Rāzī explores the reasons why the word heavens occurs before earth in most cases where they are mentioned in the Qur'ān. Among the virtues of the heavens is that it is ornamented by God with the bright stars, the sun and the moon, as well as the throne, the pen and the preserved tablet. God also uses complementary names to refer to the heavens in order to underscore its high status. Other merits of the heaven are that they are the abode of angels where God is never disobeyed, that prayers are directed to them, hands are raised towards them in supplication, and they have perfect colour and shape. The one advantage of the heavens over the earth which invokes a common scientific view of the time is the notion that the heavenly world influences the sub-lunar world, whereas the earth is acted upon. Rāzī also lists some of the merits of the earth according to those who prefer it to the heavens, including the fact that prophets are sent in it and mosques for the worship of God are built in it (Rāzī, 1-2:106-7). The noticeable absence in this comparison is of any discussion of a natural superiority of heaven over earth, which would be the standard argument of natural philosophy. Rather than using the Qur'ān to elucidate science, or science to extract the proper meaning of the Qur'ānic text, these quasi-scientific discussions often aim at explaining the order of words, and at demonstrating the linguistic, rhetorical miracles of the Qur'ān. Indeed, it is not just the creation of a perfect and wondrous world that is underscored in the commentaries, but also the fact that God refers to this creation by using words that cannot be emulated by the most eloquent humans (Rāzī, 1-2:105).

The marvel of creation is a recurrent theme of Qur'ānic commentaries. These marvels are viewed as signs of God and proofs that He exists, is All-Powerful and All-Knowing, and is the willing Creator of all being. One of the commonly cited verses which urge contemplation of the signs of the heavens and the earth is (Qur'ān 3:190-191): "In the creation of the heavens and the earth, the alteration of night and day, are signs for the wise. Those who remember (pray for) God, standing or sitting or lying on their sides, who reflect and contemplate on the creation of the heavens and the earth, (and say): Not in vain have You made them. All praise be to you, O Lord preserve us from the torment of Hell." In his commentary on this verse, Rāzī contends that the human mind is incapable of comprehending the manner in which a small leaf on a tree is created, how it is structured or how it grows; needless to say, the larger task of discovering God's wisdom in the creation of the heavens and the earth is next to impossible. One must therefore concede that the creator is beyond full comprehension. Instead, one must admit the utmost wisdom and great secrets of creation, even if there is no way of knowing what these are. Ultimately, when people reflect on the heavens and the earth, they will come to realize that their Creator did not create them in vain, but for remarkable wisdom and great secrets, and that the intellects are incapable of comprehending them (Rāzī, 8-10:137-41). Therefore, the ultimate purpose of reflection is to establish the limitations of human knowledge and its inability to comprehend creation, not to establish a scientific fact and demonstrate its correspondence with the Qur'ān. Moreover, as understood in these commentaries, the contemplation which the Qur'ānic text calls for is outside the text, in nature, and does not move back to the text, nor does it follow or correspond to any particular Qur'ānic scheme. As such, contemplation does not

imply a correlation between science – whether natural philosophy, astronomy, or medicine – and the Qur'ān. The Qur'ān, according to these commentaries, directs people to reflect on the wisdom of creation of nature, but provides no details on the natural order or of ways of deciphering it; these details, if and when they appear in classical Qur'ānic commentaries, are drawn from the prevalent scientific knowledge of the time. A brief overview of the mode in which commentators invoke creation as evidence of God and His traits illustrates this fundamental divide between science and the Qur'ān.

As noted above, the Qur'ānic signs of creation are often classified into signs from within the self (*dalā'il al-anfus*) and those from the external world (*dalā'il al-āfāq*). Alternatively, the signs are classified into signs in the heavens, on earth, or in what falls in between. The heavenly signs include the movements of the celestial orbs, their magnitudes and positions, as well as signs specific to different components of the heavens, such as the sun, the moon and the planets. The earthly signs include minerals, plants and humans (for example, Qurtubī, 2:191-202; Abū Hayyān, 1:156f.; Rāzī, 1-2:101ff., 8-10:137, 17-18:169). The most striking feature of the discussions of these signs, especially the heavenly ones, is the mixing of some information drawn from astronomy and natural philosophy with a wealth of other non-scientific information. Thus, for example, one of the benefits of the rising and setting of the moon is that, while its rising helps night travelers find their way, its setting shelters fugitives trying to escape from their enemies. Additionally, among the signs of heavens is the fact that the shooting stars or meteors serve as missiles that drive devils away and keep them from spying on the angels in the heavens (Rāzī, 1-2:p. 108-9. See also, Qurtubī, 7:230ff, 8:38; Rāzī, 15-16:76, 17-18:37; Zamakhsharī, 1:291, 1:354-5; Abū Hayyān, 1.2:7, 2.1:49-50.) Another common feature of the commentaries on the what is often referred to as the "sign verses" is that, while the complexity and perfection of creation is, in and of itself, a sign of the wise creator, the primary proof is not just in the creation of a complex natural order, but in the benefits to humanity from this creation. A typical commentary thus focuses on the specific way that various aspects of the natural phenomena are arranged in order to maximize the benefits to humanity from them; since there is no inherent reason for the universe to be arranged in a particular fashion, then there must be a willing maker who chose to create them as such; again, the guiding principle of this creation is human benefit. Thus, it is the benefit to humans that ultimately proves the existence of a wise and willing creator. To be sure, the subjugation by God of all creation in the service of human beings serves both their needs for survival and their independence without which they cannot worship God; thus benefit is both in this world and in the hereafter (Zamakhsharī, 1:43; Abū Hayyān, 1:54). However, benefit and utility are not the ultimate purposes of creation; rather, benefit is what induces people to reflect on God's creation, recognize the magnitude of His power, and then believe in Him.



Figure 2: Andalusian copy of the Qur'an, from Granada, 13th century, preserved at the British Library, MS Or 12523C, ff. 14v–15 (displayed in the exhibition Sacred: Discover what we share, London, the British Library, 27 April-23 September 2007: <http://www.bl.uk/sacred>). Source: http://www.bl.uk/onlinegallery/sacredtexts/spanishquran_lg.html.

Classical commentaries often introduce elaborate discussions of scientific subjects to illustrate the idea of God's wise choice of creation as a way of maximizing human benefit. For example, in his commentary on (Qur'an 2:22), Rāzī outlines the prerequisites for making the earth a bed (*firāsh*). After asserting that one of these prerequisites is that the earth does not move, Rāzī proceeds to prove his contention (Rāzī, 1-2:101ff). If it were to move, the earth's motion would be either linear or circular. If it is linear, it would be falling; yet since heavier objects move faster than slower ones, then the earth would fall at a faster speed than people on its surface; as a result, they would be separated from the surface of earth and hence cannot use the earth as a bed. If, on the other hand, the earth's motion is circular, the benefit for humans from it would not be complete, since a person moving in a direction opposite to its motion would never reach his destination. Rāzī then surveys the evidence adduced by various scholars to prove that the earth is stationary. What follows is a quasi-scientific discussion which draws on but does not privilege science as the authoritative reference on this subject. Some, Rāzī reports, argue that the earth is bottomless, and thus it has no bottom to move to, which is why it does not move. This view, Rāzī contends, is wrong because all created bodies are finite. The finitude of created bodies, it should be noted, is asserted on theological and not scientific grounds. Others concede the finitude of objects, but argue that the earth is still because it is a semi sphere whose flat bottom floats on the surface of water. Rāzī rejects this argument on the grounds that even if this were true, both the earth and the water on which it floats could be moving; moreover, Rāzī wonders, why would one side of the earth be flat and the other round? Again, while Rāzī could have invoked arguments for the sphericity of the earth which are more in line with the sciences of the time, his response is notably general and not grounded in science. Irrespective of how scientific these and other arguments appear to us, from our modern perspective of science, these discussion do not reflect the prevalent scientific view of Rāzī's time. The closest he gets, however, to engaging this prevalent understanding of science is when he reports, and rejects the Aristotelian argument that the earth, by nature, seeks the center of the universe. This, Rāzī rightly notes, is the view of Aristotle and the majority of

his followers among the natural philosophers. Rāzī's objection to this view is on the grounds that the earth shares the trait of physicality with all other bodies in the universe, and its acquisition of a specialized trait that makes it stationary is by necessity logically contingent. Thus, it is the free volition of the maker, and not any inherent nature, that accounts for the stillness of the earth. If anything, Rāzī adds, the nature of the earth is to sink in water, and God reverses its nature so that it does not submerge in water, in order to maximize the benefit for humans from it and to make it a place over which they can reside (Rāzī, 1-2:102-4).

This elaborate, quasi-scientific discourse which draws freely on the scientific knowledge of the time is evidently not aimed at upholding a particular scientific view of nature. Moreover, it is equally true that this discourse does not aim at making positive contributions to the accepted body of scientific knowledge. Rather, the primary purpose is to argue the contingency of created order, and its ultimate dependence on God. Nowhere in this and other classical commentaries does one encounter the notion that a certain scientific fact or theory is predicted or even favoured by the Qur'ān. Instead, these commentaries emphatically reject explanations of Qur'ānic verses that are grounded in the notion of a natural order. The sign verses serve as evidence of the creator not in the particular knowledge that they convey about nature, but in the ultimate conclusion in each and every verse that there is a choice in creation, and thus a creator who makes this choice, that the "world is created with perfect management, comprehensive determination, utter wisdom, and infinite omnipotence" (Rāzī, 1-2:109).

A related question is that of causality, which has been addressed extensively in connection to Ghazālī and, in the genre of *tafsīr*, Robert Morrison has examined the works of Rāzī and, more so, of Nishabūrī; in both cases, Morrison has shown, intermediary causes are posited; however, regardless of their specific position on intermediary causes, discussions of the natural phenomena conforms with the general outlines of other classical commentaries in two main respects: first, in not using the Qur'ān as a source of knowledge about nature. Second, the exposition of various scientific theories and explanations is seldom done for the purpose of favouring one over the others. Rather, this exposition is usually undertaken to suggest that there are multiple possible explanations, on which the Qur'ān is neutral.

Asserting the multiplicity of possible explanations of the natural phenomena is hardly compatible with a positive scientific outlook. Classical *tafāsīr*, however, are full of such assertions. Most of the commentaries on the sign verses contain multiple interpretations of which only some are connected to science. While some of these interpretations are rejected, many are allowed as acceptable possibilities. In many cases, information culled from scientific discourse is countered, rather than confirmed, by what is considered acceptable alternative interpretations. For example, Qur'ān commentaries often maintain that the role of meteors is to preserve the heavens by driving away devils, or that the movement of the Sun to a resting place (*tajrī li mustaqarrin lahā*) refers to its movement to a point beneath the throne where it prostrates then rises again.

In a move that further clarifies his exegetical strategy, Rāzī notes in the commentary on the same verse (*tajrī li mustaqarrin lahā*) that most commentators agree that the sky is plane and has no edges or peaks (Rāzī, 25-26:75-6). In response, however, he maintains that there is nothing in the text of the Qur'ān which suggests with certainty that the sky has to be plane and not spherical. On the other hand, Rāzī adds, "sensory evidence indicates that the sky is actually spherical, so it must be accepted." After giving some of this sensory evidence to illustrate his point, he adds that such evidence is abundant, and its proper place is

in the books of astronomy. To Rāzī, therefore, the authority on this matter is the science of astronomy, and not the Qur'ān, however understood, and the only reason he gets into this extra-Qur'ānic discussion is to undermine the claims of other commentators who wrongly extend the authority of the Qur'ān outside its proper realm.

Another aspect of Rāzī's exegetical strategy with regard to the sign verses is also revealed in the commentary on the same verse. This time, however, he takes issue with astronomers not commentators. Astronomers maintain that celestial orbs are solid spherical bodies but Rāzī contends that this is not necessarily the case. The basis for Rāzī's objection is that it is not impossible, from the standpoint of astronomy, to have an orb which is a circular plate or even an imaginary circle which the planet traces in its motion. Furthermore, it is not beyond God's power to create any of these configurations (Rāzī, 25-26:76; also see Morrison, 20-22 for the different views of Nīsābūrī). While Rāzī's interest in these quasi-scientific subjects exceeds those of other commentators, they still reflect a common attitude in classical commentaries. Scientific knowledge is freely invoked, and occasionally challenged in these commentaries. Yet the purpose of rejecting some scientific views is not to promote alternative ones, nor to assert the authority of the Qur'ān at the expense of the various fields of science. In the absence of a clear statement in the Qur'ān, one seeks answers to scientific questions in their respective fields. The contrary, however, is not true, since the text is not science. When there is an apparent conflict between a Qur'ānic text and a scientific fact, commentators do not present the Qur'ānic text as the arbiter, but simply try to explore the possibility of alternative scientific explanations and thus suggest that scientific knowledge on such points of contention is not categorical.

It follows from the above, that religious knowledge and scientific knowledge are each assigned to their own compartments. This would justify the pursuit of science, and even the use of scientific discourse in commenting on the Qur'ān, but would also limit this use. A case in point is Rāzī's contention that some ignorant people may object to his unusual use of the science of astronomy in explaining the book of God. In response, he asserts that God has filled His book with proofs of His knowledge, power and wisdom which are inferred from the conditions of the heavens and the earth. If exploring these subjects and reflecting on them were not permissible, God would not have so frequently urged humans to reflect on these signs. "The science of astronomy," adds Rāzī, "has no other meaning than reflection on how God ordered the (heavens) and created its (different parts)" (Rāzī, 13-14:121). The purpose of this exercise is not to establish correspondence between scientific verities and the Qur'ān, but simply to reflect and hence reinforce belief in the creator of the impeccable universe. This kind of reflection for the aim of belief does not produce knowledge about the natural order. Despite all of his talk about the permissibility of using astronomy in exegesis, Rāzī asserts that all creation is from God, that the planets have no influence on the sublunar world, and that the "assertion of natures, intellects, and souls in the manner advocated by philosophers and diviners is invalid" (Rāzī, 13-14:122-3). These statements by Rāzī, however, are directed primarily at fellow religious scholars and not at scientists. When discussing the religious import of the Qur'ān, commentators are urged to stay within the realm of the text, and not try to impose astronomical knowledge on it or, for that matter, feign a Qur'ānic understanding of astronomy. The Qur'ānic text to which Rāzī wants to restrict himself and his fellow commentators does not have a scientific import and does not translate into binding scientific facts. It underscores the wisdom and power behind creation but says nothing about the exact order and workings of the created world. The complexity and wondrous nature of the world reinforce belief in God, but this is not contingent on the adoption of any particular scientific view. In fact, scientific facts and theories in themselves do not provide evidence of the oneness of the Creator. Rather, it is the very fact

that other natural orders are possible that points to a willing maker who chooses one of these possibilities (for example, Rāzī, 21-22:161-2). According to this logic, everything in nature, however explained, as well as all scientific discoveries and facts, irrespective of their certainty, would serve as proofs for the existence of the maker. And this is the fundamental reason why, the scientific and unscientific could appear side by side in the commentaries on the Qur'ān (for example, Rāzī, 21-22:163).

As the above overview suggests, Bīrūnī's view was in conformity with the prevalent view within the discursive culture of Qur'ānic exegesis. This confluence of attitudes between scientists like Bīrūnī and Qur'ānic exegetes further suggests a conceptual separation of science and religion in the mainstream of classical Islamic culture. The same, however, cannot be said of modern Islamic discourse on science and religion and contemporary Islamic views of the relationship between the Qur'ān and science. Ironically, when Muslims were the main producers of science in the world, they did not advocate the idea of the wedding of science and religion, while the contemporary call for such a wedding is concurrent with the dwindling Muslim participation in the production of the universal culture of science. As the above cursory overview suggests, classical commentators on the Qur'ān never even hinted that the miracle of the Qur'ān is in its prediction of scientific discoveries that were made centuries after the coming of the revelation. Nor did these commentators advocate an understanding of the Qur'ān as a source of scientific knowledge. Both claims abound in contemporary Islamic discourse.

Questions of science and religion are approached in manifold ways in modern Islamic discourse. By far, however, the most common treatments of this subject maintain that many modern findings of science have been predicted, or at least alluded to, in the Qur'ān, and that these predictions constitute evidence of what is referred to as the scientific miracle (*ijāz*) of the Qur'ān (for example, Nawfal, 24). The origins of this approach can be traced back to the nineteenth century; thinkers, such as Muhammad 'Abdu and Muhammad Iqbāl (d. 1938) argued the harmony between the Qur'ān and science but did not dwell on the relationship between the two. Iqbāl, for example, passionately argued that the rise of Islam marked the birth of inductive reasoning and experimental methods, but he did not present the Qur'ān as a repository of scientific knowledge, nor did he suggest that one can arrive at scientific facts through the Qur'ān.

A more elaborate discourse on this subject was produced by other thinkers of the late 19th and early 20th centuries; such as Said Nursi (1877-1960), whose interpretations were rather simplistic (Qur'ān predict aviation or electricity), but had the notable effect of influencing a large group of Turkish students and followers. Another work that marks a turning point in the same direction is Tantāwī Jawharī's twenty-six-volume *tafsīr* entitled *Al-Jawāhir fī Tafsīr al-Qur'ān al-Karīm*. Jawharī made a point which is frequently repeated in the contemporary discourse on the Qur'ān and science, namely that the Qur'ān contains 750 verses pertaining directly and clearly to the physical universe, while on legal matters it has no more than 150 verses. Jawharī thus called on Muslims to reverse the order of interest, and to give priority to the scientific verses, especially since they were now living in the age of science (Jawharī, 2:483-4).

Once a correlation between the Qur'ān and science is asserted, it only takes a small extension of the same logic to embark on an arbitrary exercise of collecting extra-Qur'ānic facts and discoveries, and mining the Qur'ān for statements that seem to correspond to them. That these new scientific discoveries have nothing to do with the Qur'ān never hinders modern commentators who proudly present these theories as evidence of the Qur'ānic miracle. The Qur'ānic text is read with these so-called scientific facts in mind, without any recognition that this reading is itself an interpretation of the text which is conditioned by the assumptions

of the interpreters and what they are looking for. Examples of this kind of reading include the assertion that the Qur'ān (ex. 21:31) predicts the modern discovery of the role mountains play as stabilizers (*rawāsī*); or that the Qur'ān (ex. 21:30, "*al-samāwāt wal-ardh kānatā ratqan fafatqnahumā*" ("the heavens and earth were an integrated mass then We split them")) contains a condensed version of the big bang theory.

In extreme cases, this approach borders on the cultic, as in the widely circulated genre known as the *ījāz raqamī* or *'adadī* (numerical *ījāz*) of the Qur'ān. This form of numerology asserts an order to the occurrence of certain terms in the Qur'ān, which is seen as yet another numerical miracle.

The early attempts to interpret the Qur'ān and verify it in light of the discoveries of modern science received added impetus in the last decades of the twentieth century, when attempts were made to articulate the theoretical foundations of a new mode of *tafsīr* which aims not just at providing a scientific interpretation of the Qur'ān, but also at illustrating its scientific miracles. The emergence of this mode of Qur'ānic interpretation went through several stages starting with listing the verses which admit a scientific interpretation; and moving to theorizing, by laying out the rules for this new mode of scientific *tafsīr*; and finally maintaining that *ījāz* is a manifestation of a universal cosmic truth which has been predetermined in the Qur'ān, with the subsequent assertion that scientists can find leads in the Qur'ān that would facilitate their future scientific research (Azzindānī, 35), presumably by identifying research projects or finding answers to pending scientific questions.

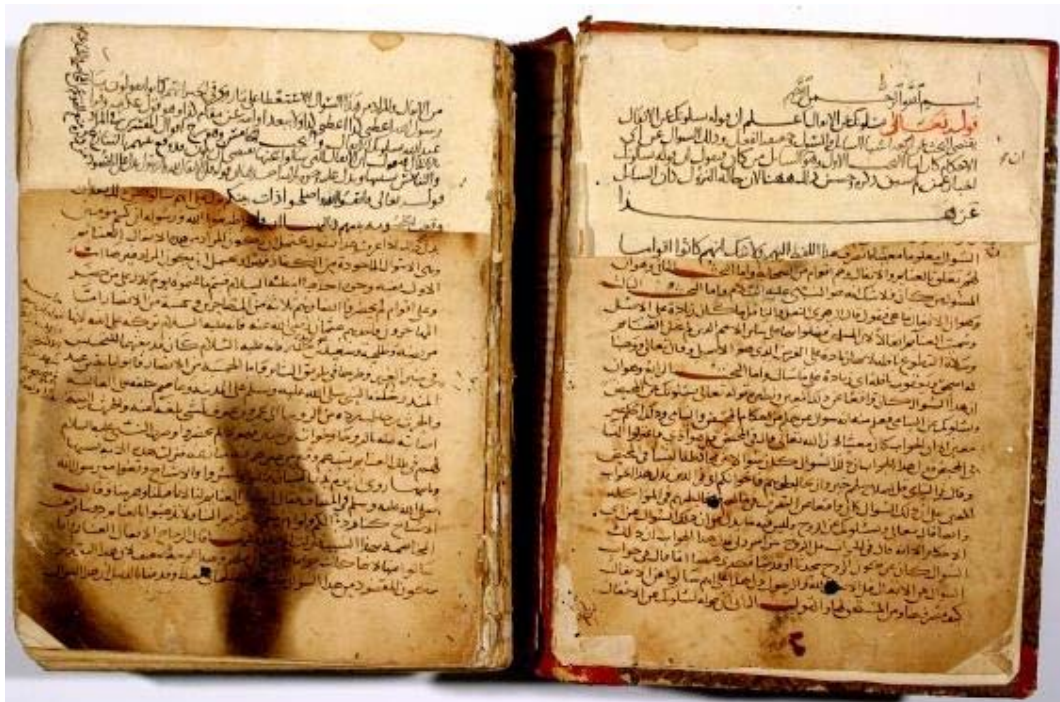


Figure 3: Beginning of *Tafsir al-Qur'an* by Abdullah al-Razi, vol. 7, in an Abbasid manuscript (MS 297.207, R27, v.7), a commentary on the Qur'an copied in 569 H / 1174 CE, in the library of the American University of Beirut. Source: <http://ddc.aub.edu.lb/projects/jafet/manuscripts/MS297.207/index.html>.

Modern discourse on Islam and science is not restricted to the above attempt to establish instances of scientific miracles in the Qur'ān. Two additional approaches have had recent influence in academic circles. The first focuses on the epistemological critique of modern science, and situates scientific knowledge in its historical and cultural contexts (Sardar, 1989; and Sardar, 1985). In opposition to the universal truth claims of modern science, this approach underscores the cultural-specificity of all forms of knowledge. This critique of science, in its manifold expressions, has been very influential among philosophers of science and, the desire to propose an Islamic epistemology notwithstanding, there is nothing specifically Islamic about it. Moreover, the content of this proposed Islamic epistemology remains undefined (Kalin, 57-62). A second approach questions the fundamentals of the metaphysical framework within which modern science operates, and attempts to articulate an alternative Islamic framework. This approach, best represented by the writings of S. H. Nasr, posits a dichotomy between ancient and modern sciences, and contends that the ancient sciences shared conceptions of sacredness and unity of knowledge (Kalin, 63ff.) Yet if the distinctive mark of this ancient metaphysical framework is in the sacredness and unity of knowledge, then it is not clear how Islamic science would be different from, for example, pagan Hellenistic science. Furthermore, as in the epistemological approach, the content of the Islamic metaphysical framework remains unclear. To be sure, both approaches are serious intellectual exercises; however, even when they strive to cite verses of the Qur'ān, they remain largely extra-Qur'ānic. Neither one of these approaches systematically engages the Qur'ānic text as a whole, or the cultural legacy which endowed the text with its specific historical meanings.

In all of its varieties, the newly constructed Islamic discourse on science is not rooted in the historical understanding of the relationship between the Qur'ān and science. On one level, this is understandable. However defined, modern science has and continues to engender multiple and intense responses among Muslims and non-Muslims alike. The challenges posed by the modern culture of science had no parallel in pre-modern societies. It is thus understandable that Islamic attitudes towards modern science would have to confront challenges that were not addressed in the classical period of Islam. Yet the desire to articulate contemporary critical concerns about science in Islamic language cannot conceal the radical departure of these modern articulations from the classical ones. In contrast to the contemporary readiness to strain and twist, and in effect manipulate, the Qur'ānic verses to endow them with a scientific meaning, classical commentators refused to subordinate the Qur'ān to an ever-changing science. In insisting on the possibility of multiple scientific explanations of the natural phenomena, classical Qur'ān commentators were able to guard the autonomy of Qur'ānic, religious knowledge not through the co-option of science but by assigning it to a separate and autonomous realm of its own.

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