

THE QUESTION OF COSMOGENESIS—
THE COSMOS AS A SUBJECT OF SCIENTIFIC STUDY

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Islamic thought has always considered the question of cosmogenesis to be religious and metaphysical, not merely extrapolation of the natural sciences. A constant feature of Islamic schools of thought has been the basic ontological dependence they accord the world vis-a-vis the Creator. In contrast to modern speculations on questions of cosmogenesis, absolute creative power and dominion are exclusively of God, Who is known in the Qurʾān as *Khāliq*, *Fāṭir*, *Bārī*, *Muṣawwir*, etc. Creation thus must be regarded as a sign of His existence and wisdom.

Keywords: cosmogenesis; sacred cosmology; the role of God in Islamic and modern cosmogenies; an Islamic approach to the study of nature; nature as *āyah*.

The study of the cosmos involves the question of its origin, and there is no school of the philosophy of science—whether ancient or modern, Eastern or Western—that has not dealt in one way or another with this problem. Islam and the sciences cultivated in its bosom are no exception. In fact, the Noble Qurʾān insists over and over upon the ultimate significance of the question of the genesis of the cosmos for the religious life itself, and directs all veritable Islamic thought to concern itself, after the study of the Divine Principle, first of all with the question of the origin of the world before turning to the possibility and manners of its study. Moreover,

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Islamic thought, basing itself on the Qurʾān, has always considered the question of cosmogenesis to be a religious and metaphysical one, the answer to which comes from the truth of revelation and not simply from an extension and extrapolation of the sciences of the natural and physical order. The Islamic attitude to this question stands therefore at the antipode of the modern Western scientific view, which considers cosmology and cosmogenesis as simply extensions of physics, astrophysics, and other branches of the natural sciences.

Islam insists that the cosmos, no matter how vast quantitatively, is but a speck of dust before the Divine Reality which alone is absolute and infinite. All that is *mā siwaʾLlāh* (that is, other than Allah), and is as nothing before the Majesty of the Divine.

Moreover, within the created order itself, the archangelic and angelic worlds are of such immensity that the visible and physical world pales into insignificance before them. This is the implication of many *aḥādīth* concerning the angels, such as the one concerning the Angel of Death whom God has veiled with a million veils and who is more immense than all the heavens and the two earths (that is, East and West).¹

The physical part of the cosmos that is the subject of study by natural sciences has a beginning and an end. It is the lowest level of reality which is encompassed, metaphorically speaking, by worlds immensely greater than it. And all of these worlds are in turn but as a dust-mote before the Divine Throne.

The Qurʾān affirms over and again that the world was created and did not come into being by itself.² It insists on the ontological dependence of the world upon God and the fact that all the coherence, regularity, and

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1. According to a *ḥadīth*, “When Allāh created the Angel of death, He veiled him before creatures with a million veils. His immensity is vaster than the two earths (East and West), and the eastern and western countries here below in the territorial world are between his hands like a dish on which all things have been set”. Schuon, Frithjof, *Dimensions of Islam*, trans. by P. Townsend (London: George Allen and Unwin, 1970), 116.
 2. Some *aḥādīth* refer to angels as light. The well-known *ḥadīth* upon which al-Ghazzālī commented in his *Mishkāt al-Anwār* and which contains a whole cosmology is as follows: “God has seventy veils of light and darkness; were He to lift them, the august glories of His face would burn up everyone whose eyesight perceived Him”. See Buckman, David, trans. and ed., Al-Ghazālī, *The Niche of Lights* (Provo: Brigham University Press, 1998), 1.

harmony of the natural order is a result of the nature of the Creator and His Wisdom, which is reflected in His creation. The Qurʾān repeats in many verses that God is the Creator (*al-Khāliq*) of the world. *Recite, in the Name of thy Lord who created*³; *Your Lord is Allah, who created the heavens and the earth in six days*.⁴ He is also creator in the sense of *al-Fāṭir*. *Lo! I have turned my face toward Him who created the heavens and the earth*⁵; and *Your Lord is the Lord of the Heavens and the earth, Who created them*.⁶

Man in fact addresses God as *O Thou Creator (Fāṭir) of the heavens and the earth*.⁷ Moreover, the Qurʾān emphasizes that God created not only the heavens and the earth but everything within them. *We created the heavens and the earth and what is between them*.⁸ There is also an insistence that the duality of the masculine and feminine observed in all of creation in one form or another is the result of God's creation and not the consequence of some cosmic or biological process, for *We have created you male and female*.⁹ There is also more general reference in the Qurʾān to God's creation of pairs.¹⁰

Not only is God the Creator, but He is the *only* Power who can create. He created the world through His Will: He said "Be" (*kun*), and there was.¹¹ The Divine Word is the origin of the entire created order. Moreover, within this order God creates what He Wills, as is repeated so often in the Qurʾān.¹² And it is He who bestows upon things their nature and the laws and order that govern them: *Our Lord is He who gave everything its nature, then guided it aright*.¹³

Being the origin of the world, God is also its end, and creation returns to Him. *God originates creation, then brings it back again*¹⁴; *The Day when We shall roll up the heavens, as a recorder rolleth up a written scroll—and We began*

3. *al-ʿAlaq*: 1.

4. *Yūnus*: 31.

5. *al-Anʿām*: 80.

6. *al-Anbiyāʾ*: 56.

7. *Yūsuf*: 101.

8. *Qāf*: 39.

9. *al-Ḥujurat*: 13.

10. *al-Zukhruf*: 12.

11. *Yā Sīn*: 82.

12. See for example *an-Naḥl*: 20, 40, 48; *al-Anbiyāʾ*: 117. This doctrine is of the utmost importance for the understanding of the Islamic conception of nature and its relation to its Creator.

13. *Ṭā Hā*: 50.

14. *Yūnus*: 35.

*the first creation. We shall bring it back again.*¹⁵ He can also destroy the world and create a new one, for *hast thou not seen that Allah created the heavens and the earth with truth? If He Wills, He can remove you and bring (in) some new creation.*¹⁶

As the Creator, God established laws and order that man cannot alter, for *there is no altering the laws of God's creation*¹⁷; and although He has given man the possibility of knowing the cosmos, it is only God who knows all creation¹⁸ and has knowledge of everything in the universe, from the movement of the stars to that of an ant within its hole. The Islamic cosmos comes from God, is governed by Him, and returns to Him. It is not an autonomous and independent reality with an unknown or simply material beginning and end. Nor are its laws developed by chance or by its own inner workings, or are the changes and transformations taking place within it solely dependent upon its own forces and energies. Creative power always belongs to the Creator, not the created order, although that power has manifested itself in countless ways in the cosmos throughout its long history and God has acted through various agencies.

Different schools of Islamic thought, basing themselves on the terminology of the Qur'ān and *Ḥadīth*, have developed a rich technical vocabulary concerning creation in order to bring out different meanings of this term. Later Qur'ānic commentators and Muslim thinkers have distinguished between *khalq*, *fīṭr*, *ṣun'*, *'ibdā'*, and *ḥudūth*, each of which possesses an exact meaning in various schools of commentary (*tafsīr*), theology, Sufism, and philosophy. The Qur'ān itself refers to these terms in one form or another as well as to the creative function of God as the producer (*al-Bārī'*) and as the Form-giver (*al-Muṣawwir*), as in the verse, *He is God, the Creator* (al-Khāliq), *the Producer* (al-Bārī'), and *the Form-giver* (al-Muṣawwir).¹⁹ The diversified terminology of the Qur'ān has caused

15. *al-Ḥajj*: 104. See also *Āli 'Imrān*: 47; *an-Nūr*: 45; *ash-Shu'arā'*: 68; *ar-Rūm*: 54; and *ash-Shūrā*: 49.

16. *Ibrāhīm*: 19 and *al-Fāṭir*: 16.

17. *ar-Rūm*: 30.

18. *Yā Sīn*: 79.

19. *al-Ḥashr*: 24. See also *ar-Rūm*: 11 and 27. There is in fact a hierarchy in such Divine Names as *al-Khāliq*, *al-Bārī'*, and *al-Muṣawwir*, as seen in the order in which they are mentioned in the Qur'ānic verse *al-Ḥashr*: 24. *Khāliq* refers to God's Power to conceive the realities of creation in the Divine Intellect. As *al-Bārī'*, He gives these realities existence and produces them. Then, as *al-Muṣawwir*, He gives them form. See Burckhardt, Titus, *An Introduction to Sufi Doctrine*, trans. by D. M.

numerous debates over the centuries concerning the meaning of creation. The main issue emphasized by Muslim thinkers, which is also of importance to the present discussion, concerns creation from nothing (*ex nihilo*, *min al-ʿadam*) on the one hand, and from a previously unformed matter on the other—as well as the *meaning* of this “nothing”.

Those questions, that have been discussed and analyzed since the first Islamic century, are, properly speaking, the concern of theology and metaphysics but they are also important for the philosophy of science. The importance of the subject and the very extensive debates carried out about it in various schools of Islamic thought must therefore be mentioned even if briefly. On the one hand the Qurʾān asserts that God said ‘Be’, and there was—the famous *kun fayakūn*.²⁰ This has usually been interpreted as meaning creation from nothing, although creation itself implies God’s knowledge of His creation and hence the “presence” of the world in Divine Knowledge before its external creation. And then there are *aḥādīth* and sayings of some Companions such as ‘Alī bin Abī Ṭālib referring to the creation of the world from “dust” or “cloud” (*al-habāʾ*), a term that must be understood symbolically.²¹

Let us turn to the question of God’s Name as the Creator (*al-Khāliq*). If the world were created at a particular moment before which it did not exist, then either God was not *al-Khāliq* before that moment, which would imply a change in the Divine Nature, a thesis that Islam could not accept, or one would have to accept that since God is *al-Khāliq*, He must have always created and therefore there must have always been a creation. Furthermore,

Matheson, (Wellingborough: Thorsons, 1976), 58-59. See also Nasr, S.H., *An Introduction to Islamic Cosmological Doctrines* (Albany: State University of New York Press, 1993), 212-213; also O’Shaughnessy, Thomas J., *Creation and the Teachings of the Qurʾān* (Rome: Biblical Institute Press, 1985); Burrell, David, *Freedom and Creation in Three Traditions* (Notre Dame: Notre Dame University Press, 1993); and Burrell, David, and McGinn, Bernard (eds.), *God and Creation: An Ecumenical Symposium* (Notre Dame: Notre Dame University Press, 1990). These works contain various in depth studies on the idea of creation in Islamic thought.

20. *Yā Sīn*: 82.

21. Many later thinkers identified *habāʾ* with the *hayūlā* (*hylé*) of the philosophers and certain Sufis, with the pre-existence of things in Divine Knowledge before their creation. See Chittick, William, *The Sufi Path of Knowledge* (Albany: State University of New York Press, 1989), 38. See also Chittick *The Self-Disclosure of God* (Albany: State University of New York Press, 1998), xxix.

time is itself a feature of the created order. Therefore, there could not be a time before creation and creation could not have a beginning in time. This is basically the argument of Islamic philosophers against the theologians (*mutakallimūn*) concerning the creation of the world.

Muslims seeking to avoid all danger of attributing any Divine Qualities (such as eternity) to the world sought to answer these questions in such a way as to preserve the status of the Creator as the source of all reality and creative power. Following the clear message of the Qurʾān, they identified the power of creation with the Divinity and therefore insisted that since only God possesses Divinity in the ultimate sense, only He can be the creator. All creative power must belong to Him and originate from Him, as emphasized by the whole tradition of Qurʾānic commentators from al-Ṭabarī to Fakhr al-Dīn al-Rāzī, from al-Ṭabarsī to Ibn al-Jawzī. The greatest Muslim thinkers such as al-Fārābī, al-Ashʿarī, Ibn Sīnā, al-Ghazzālī, Fakhr al-Dīn Rāzī, Ibn Rushd, Ibn ʿArabī, and in more recent centuries Ṣadr al-Dīn Shīrāzī and Shāh Walī Allāh Dihlawī devoted much of their writings to this problem, which came to be known classically as *al-ḥudūth waʾl-qidam*.²²

The debates between various schools of Islamic thought cannot be repeated or summarized here. But what is significant for the Islamic philosophy of science is that all schools of Islamic thought, basing themselves upon the Qurʾān and *Ḥadīth*, agree that only God creates and that creative power belongs, ultimately, to God alone. They also agree that God has knowledge of all things and that nothing occurs in the world without His Knowledge. Even those who accept that the world is *qadīm*, that is, having no origin in time, do not consider the “world” to mean the whole created order as such, for the created order comes into being and passes away all the time according to God’s Knowledge and Will; but they mean matter (*al-māddah* or *hayūlā*) which is the same as the Scholastic *materia prima* in the sense of that which has no origin in time but is also pure receptivity, not actuality, and therefore not to be confused with matter in the modern scientific sense of the term. Like other Muslim thinkers, such thinkers consider what we call the world to be ontologically dependent upon God, without Whom it would have no existence whatsoever.

22. Much of the famous attack of al-Ghazzālī against the philosophers in his *Tahāfut al-falāsifah* and Ibn Rushd’s rebuttal in his *Tahāfut al-tahāfut* deal with this issue. See Averroes, *Tahāfut al-tahāfut (Incoherence of the Incoherence)*, trans. with notes by Simon van den Bergh (London: Luzac & Co., 1954).

There are no traditional Islamic schools of thought which would consider the world an order of reality independent of God. The Islamic philosophy of science is totally opposed not only to the atheistic view which denies God and considers the universe as the only reality but also to the deistic position, according to which God is only the originator of the universe in the sense of a mason who builds a house and has no relation with it afterwards—so that his death or passing would not at all affect the existence of the house. In the Islamic perspective, the whole universe is ontologically dependent upon God at all moments, not only at the beginning. Without God's Word *kun* being operative here and now, the whole universe would collapse and be literally nothing. It would cease to exist. There is a teaching developed by a number of Sufis according to which the universe is annihilated and recreated at every moment, so that its ontological dependence upon God holds for every moment of its existence.²³

God has not only created the world but sustains and in reality re-creates it at every instant, not only through His Knowledge but also through His Will, which is associated with the command form of the verb "to be" (*kun*). As already mentioned, God said 'Be', and there was. The whole universe, this world and the next, were brought into being by these two letters, *k* and *n*. As the Persian poet Maḥmūd Shabistārī says in praising God,

From k and n He brought forth the two worlds of being
(*kawnayn*).²⁴

The Word by which all things were made is known in Islamic sources as *al-Kalimah*, which is also a name of the Qur'ān that in a sense is the complement and in another the prototype of creation itself.²⁵ Certain *aḥādīth* refer to the *Kalimah* as the first being created by God (*awwalu mā khalaqa'llāh*), while others refer to the Pen (*al-Qalam*), Light (*al-Nūr*),

23. See Chittick, *The Self-Disclosure of God*, 57ff.; also Izutsu, Toshiko, *Creation and the Timeless Order of Things* (Ashland: White Cloud Press, 1994).

24. *Zikāfu nūn padīd āward kawnayn*.

25. That is why both are replete with signs and symbols of God, that is, *āyāt*. The Qur'ān clearly establishes the rapport between the soul of man who reads the message of the Qur'ān and also observes the phenomena of nature by using the term *āyāt* for phenomena appearing within the souls of men as well as in the cosmos, while the verses of the Qur'ān are themselves called *āyāt*, in one of which God states *We shall show them Our āyāt upon the horizons and within themselves...* (*Fuṣṣilat*: 53).

Intellect (*al-ʿAql*), or Spirit (*al-Rūḥ*) as the first creation of God through which everything else was made. These *aḥādīth* all refer to the same reality which is at once Word, Pen, Light, Intellect, and Spirit, each of these terms alluding symbolically to an aspect of that reality that was and is God's first creation and also first instrument of creation.

Furthermore, God did not create only the physical cosmos. Between the *Kalimah* and the spatio-temporal world that is the subject of the sciences of nature stand the archangelic and angelic worlds (*al-jabarūt* and *al-malakūt*) and the world of psychic beings, or the imaginal world to which the jinn referred to so often in the Qurʾān belong.²⁶ The angelic world itself, moreover, is composed of vast hierarchies ranging from the supreme *Rūḥ* that stands above creation to the archangels to the host of angels who govern the affairs of the world. Traditional Islamic literature is replete with references to them and no amount of modern rationalism and skepticism can gloss over their importance for the authentic Islamic worldview. For example, ʿAlī has said:

Then He created the openings between high skies and filled them with all classes of His angels. Some of them are in prostration and do not [rise to] kneel. Others remain kneeling and do not stand. Some of them are in array and do not leave their position. Others are extolling Allah and do not get tired. The sleep of the eyes or the slip of wit, or languor of the body or the effect of forgetfulness, does not affect them.

Among them are those who work as trusted because of His message, those who serve speaking tongues for His prophets and those who carry to and fro His orders and injunctions. Among them are the protectors of His creatures and guards of the doors of the gardens of Paradise. Among them are also those whose steps are fixed on earth with their necks protruding into the skies, their limbs extending on all sides, their shoulders in accord with the columns of the Divine Throne, their eyes downcast before it: they have spread down their wings under it and they have rendered between themselves and all else curtains of honour and screens of power. They do not think of their Creator through images, do not impute to Him attributes

26. In his *al-Futūḥāt al-Makkiyyah* Ibn ʿArabī deals with the meaning of these terms on their deepest level. See the two already mentioned works of Chittick in which passages from the *Futūḥāt* pertaining to these terms are translated and explained.

of the created, do not confine Him within abodes, and do not point at Him through illustrations.²⁷

Creation in the Islamic context means more than the creation of the physical world, which is itself a “condensation” and “crystallization” of realities belonging to higher levels of existence, levels all of which are also created by God. In all realms of the cosmos, ranging from the archangelic to the material, moreover, there are laws established by the Creator which all beings obey; but these laws are not simply laws based on empirical observation of the physical world and/or their rationalistic extrapolations. This is made clear by the Qurʾān itself in the case of the days of creation. In several places the Qurʾān asserts that the world was created in six days,²⁸ while the earth was created in two days.²⁹ But the Qurʾān insists that time itself is not the quantitative linear time associated with the empirical observation of the physical world. Rather it is qualitative and cannot be simply measured as if it were a homogenous quantitative entity. Thus *The Night of Power is better than a thousand months*³⁰; *A day with the Lord is as a thousand years*³¹; or *A day whereof the span is fifty thousand years*.³² The genesis and history of the cosmos is based on a qualitative conception of time totally different from the quantitative time of modern geology, astronomy, and astrophysics where one speaks of four billion years as if each year were a unit identical with the year before it, like so many identical blocks of stone set next to each other. The Islamic philosophy of science cannot but remain aware of the qualitative nature of time alluded to in the Qurʾān in many verses, including the story of the Aṣḥāb al-Kahf (the Seven Sleepers of the Cave).³³ This philosophy cannot but remain completely skeptical about all hypotheses that interpolate the results of physical or astronomical observation in a very limited segment of time across vast periods of the past and future.

It is obvious from what has been said that in the Islamic perspective not only cosmogenesis but also the end of the cosmos are related to God.

27. See Imām ʿAlī bin Abī Ṭālib, *Nahjuʾl-Balāghah*, translated by Syed Ali Reza as *Peak of Eloquence* (New York: Tahrike Tarsile Qurʾān, 1984), 92-93.

28. *at-Tawbah*: 7-25, 59 and *al-Ḥadīd*: 4.

29. *Fuṣṣilat*: 9.

30. *al-Qadr*: 3.

31. *al-Ḥajj*: 47.

32. *al-Maʿārij*: 4.

33. See *al-Kahf*: 10-27.

Not only are all things created by Him, but all beings within creation and creation as a whole return to Him. God is both the Alpha and Omega of creation and Islamic cosmology is therefore concerned with both cosmogony and eschatology. *He is the First and the Last, the Outward and the Inward*.³⁴

Islamic Philosophical Cosmology

Of all the different cosmologies developed in Islamic civilization, including Ismā'īlī, *mashshā'ī*, *ishrāqī*, Ibn Arabian Sufism, etc.,³⁵ none has been as important for the development of the Islamic sciences as the philosophical cosmology which originated with al-Fārābī and Ibn Sīnā, was criticized not only by the Ash'arites but to some extent also by Ibn Rushd, and revived by Naṣīr al-Dīn Ṭūsī. This cosmological scheme began with the First Intellect, nine other Intellects each of which generated a particular heavenly sphere that possessed its own soul, and ended with the Tenth Intellect which governed the sublunar region. The states and levels of being and also intellect that are metaphysical and independent of astronomy were thereby correlated with the Ptolemaic scheme as modified by Islamic astronomers. Since each Intellect was generated by the Intellect above, the Divine Reality reached all levels of existence and in fact generated those levels. Moreover, for Ibn Sīnā the hierarchy of Intellects and Souls of the spheres were identified with realities that in the language of religion were called angels. Ibn Rushd perserved the Intellects of the spheres while rejecting their Souls, while Ṭūsī re-established the full Avicennan scheme.

This cosmology is much more profound than its critics have thought. In the West, however, once the Ptolemaic world was destroyed by Copernicus and Galileo, the hierarchy of being also came to be doubted in mainstream Western thought and Leibnitz was the last major Western philosopher to take angels seriously. In the Islamic world in the seventeenth century Ṣadr al-Dīn Shīrāzī consciously separated the hierarchy of being from the Ptolemaic scheme through the formulation of another type of cosmology. That is one of the reasons, among others, for the presence of

34. *al-Ḥadīd*: 3.

35. See our *Introduction to Islamic Cosmological Doctrines* and our "Cosmology", chp. 3.1 in *The Different Aspects of Islamic Culture*, Volume Four, Science and Technology in Islam, al-Hassan, A.Y., et al (eds.) (Paris: UNESCO Publishing 2001), 361-404, where different types of Islamic cosmology are discussed. See also Chittick, William, *The Self-Disclosure of God*.

a living metaphysical tradition—and why, once Muslims learned about modern astronomy, they were not as deeply affected by it religiously as were Western thinkers. The weakening of the hold of traditional schemes of cosmology in the Islamic world, also based on principles mentioned above, occurred later and for reasons other than what one finds in the West.

Contrast between the Islamic and Modern Views of the Cosmos

From what has been outlined briefly, it is clear how different the Islamic view of the origin, governance, and end of the cosmos is from what has developed in the West in the domain of what has been called cosmology since the Scientific Revolution. In the Islamic perspective, God is the absolute and sole Creator, the sole giver of existence to the cosmos.³⁶ The universe or the created order or nature do not possess the power of creating in the sense of bestowing existence or even form, in the traditional meaning of the term. God alone is giver of existence and of forms. In contrast, modern cosmologies remain of necessity uncertain as to the origin and end of the cosmos and shift the power of God to nature considered as independent of Him.

Many scientists now speak of the big bang theory while yesterday they spoke of something else, and tomorrow they will point to other theories. In fact the big bang theory is already being challenged by some modern cosmologists. It is interesting to note, however, that during the past few decades modern cosmologists have spoken so often about the big bang theory and have pointed to an “origin” for the universe of some 16 billion years, at the beginning of which at very high energy levels the four forces now observable in nature (namely, the gravitational, the weak, the strong, and the electromagnetic) were one. Some even claim to know exactly what happened from 10-49 seconds after the event of the big bang, after which moment everything contained in the universe with all the laws that can now be observed and studied were present.

Despite the fact that many Western theologians and philosophers

36. Some Qur’ānic commentators in fact consider the verb “create” (*khalāqa*) to mean none other than *ijād*, or to bestow existence to forms contained in Divine Knowledge. Sufis and Islamic philosophers have spoken of the two stages of creation, namely, of the creation of the archetypes of all things in the Divine Intellect or in His Knowledge and their subsequent existention (the first known as *al-fayḍ al-aqdas*, the most sacred effusion, and the second as *al-fayḍ al-muqaddas*, sacred effusion).

have jumped at this opportunity to claim scientific support for the religious doctrine of creation on the basis of these theories, it is important for Muslims to preserve a critical perspective on this matter by basing themselves on the Islamic point of view. It must be remembered that only a generation ago, cosmologies spoke of expanding and contracting phases of the universe which some compared to the day and night of the life of Brahman in Hindu cosmology. A generation from now some other interpretation may be placed upon this most conjectural type of so-called scientific activity called modern cosmology. Furthermore, if man's consciousness can now know what went on at the beginning of the creation of the world, how could consciousness have been absent at that moment of creation?

Finally, the big bang theory, even if interpreted in the religious sense of the creation of the world, reduces the relation of God to the world to a purely material one. Today one theory after another is posited to explain the origin of the cosmos without reference to God and to the higher levels of being, cutting the "Hands" of God from His creation. Even this relationship, moreover, is cloaked in ambiguity and based on incredible conjectures. The Divine Origin envisaged by Islam for the cosmos is in contrast not clouded by any doubts or ambiguity. Nor is the relation of this origin to the world seen as being only material. Since God has knowledge of the cosmos, the reality of everything was inscribed upon "the Guarded Tablet" (*al-lawḥ al-mahfūz*) even before material creation took place. And God bestowed existence upon the archetypes, existence of which the physical mode is the lowest and far from being the only mode.

Modern cosmologists have also speculated about the end of the universe, which many see to be a final death, like that of individual stars. For Islam, however, the end of the cosmos, or its omega point, is also God, for all things return to Him. This re-absorption into higher states of being and finally the Principial Order is simply beyond the confines of modern science. Islamic thought once again harbors no doubt as to this reality so forcefully described in Islamic eschatological teachings. As this world became manifested suddenly through the *kun*, or Divine Command, so will it one day come to an end through the Will of God, through a sudden process beyond the observable laws of nature, by becoming integrated into the higher states of being and not simply dying out slowly on the basis of extrapolation of the behavior of present day astronomical phenomena into vast spans of time in the future.

As for the laws governing the cosmos now, Islam sees the power of

God manifested throughout the universe. It is God's agents, known as angels in religious language, who govern the events of this world according to His Will but also according to laws determined by God and reflecting His Wisdom. If most of modern science and its philosophy see the order and regularity of the phenomena of nature as proof that the cosmos does not need God to function, Islam sees this very regularity as the sign of His Wisdom and Will ruling over the universe and proof of His existence. For a modern skeptic, the proof of God would come in the sun not rising tomorrow or some miraculous event taking place in the natural order. For the Muslim the greatest proof of the presence of God is that the sun *does* rise every morning. For the mainstream of modern science, there are laws of nature to be studied independently of whether God exists or not. For Islam there are no laws of nature outside God's Will and Wisdom manifested in His creation, of which He is the Sustainer, the Origin, and the End, for *God originates creation, then brings it back again*.³⁷ He is, moreover, the Origin of all forms, including living forms, while the prevalent schools of the philosophy of modern science consider nature itself to be the progenitor of both forms and of life, independent of God, and not as an agent of God (as held by certain classical Muslim thinkers).

In the question of cosmogenesis as well as the history, destiny, and end of the cosmos, the Islamic perspective possesses its own definite teaching based upon the Qur'ān and *Ḥadīth*. These teachings are nearly completely at variance with the seventeenth century European philosophical background from which modern science arose and which still dominates modern science, despite certain recent developments in the frontiers of contemporary physics which point to the possibility of a paradigm shift in modern science.³⁸ These recent developments must not, however, be

37. *Yūnus*: 35.

38. We do not at all mean that Muslim thinkers should not be aware of recent developments in physics and cosmology and that they should not ponder their theological significance. What we oppose is the scientism that lurks behind so much present day thinking in the Islamic world when the question of religion and science is discussed. A number of contemporary Jewish and Christian thinkers have turned their attention to recent developments in scientific cosmology and physics and tried to see in the Big Bang theory a confirmation of the Biblical theory of creation. Although this type of attempt is fraught with danger because of the ever-changing views of modern cosmologists, the studies made by such Jewish and Christian theologians should be investigated carefully by Muslims. See Novak,

confused with the still dominant and prevalent philosophy of modern science to which the Islamic philosophy of science stands in stark opposition in the basic questions of the origin and end of the cosmos, the nature and origin of the laws observable in it, and the ultimate forces and agents which govern it.³⁹

The Cosmos as Subject of Study

The Qurʾān emphasizes in numerous places that the cosmos can be and in fact should be the subject of study, for the cosmos was created in truth: *He hath created the heavens and the earth with truth* (biʾl-ḥaqq).⁴⁰ Also, *We created not the heavens and the earth and all that is between them save with truth*.⁴¹ Consequently the cosmos is intelligible and not incoherent, and God has given man the intelligence to know the truth at all levels of reality. The very term for world in Arabic, namely *al-ʿālam*, is related to the word for knowledge (*al-ʿilm*). The world is that which can be known because God created it with truth (*biʾl-Ḥaqq*) and gave us the intelligence to know that truth. Consequently, to study the world is to discover something of that truth by which it was made and which belongs ultimately to God. Theoretically it would be possible to think that the world could have been created by God but not be a subject worthy of study from a religious and also the Islamic scientific point of view, or that it would not even be possible to study it and know it. But the Qurʾān insists not only that the world can be studied and known, but that it is worthy of study from the Islamic point of view, and that it is even incumbent upon man to do so without, however, neglecting its relation to God.

In numerous verses in the Qurʾān man is directed to the phenomena

David and Samuelson, Norbert (eds.), *Creation and the End of Days* (Lanham: University Press of America, 1986); Youngrau, Wolfgang and Beck, Allen D. (eds.) *Cosmology, History and Theology* (New York: Plenum Press, 1977); and Jastrow, Robert, *God and the Astronomers*, (New York: Warner Books, 1980).

39. For the interpretation of modern physics, especially quantum mechanics, on the basis of a fundamental paradigm shift, which is of the utmost significance for the Islamic view of cosmology and science, see Smith, Wolfgang, *The Quantum Enigma* (Hillsdale: Sophia Perennis, 2005); and his *The Wisdom of Ancient Cosmology* (Oakton: Foundation for Traditional Studies, 2003).

40. *an-Naḥl*: 3.

41. *al-Ḥijr*: 85. This theme is so important that it is repeated in several other verses in the Qurʾān such as *al-Fāṭir*: 5, *al-Jāthiyah*: 22, and *al-Taghābun*: 3.

of nature and asked and even ordered to study them. There is in fact a very rich Qur'ānic vocabulary relating to the study of the phenomena of nature. Such verbs as *yarā*, *yafqahūn*, *yataḥakkārūn*, *ya'qilūn*, and *ya'lāmūn* are used in different verses with different meanings, alluding to the level and depth of understanding the phenomena of nature.⁴² There is implicit in the Qur'ān a hierarchy in studying and understanding nature. There is not just one level of knowing or one science of nature but many, ranging from simple observation related to seeing (*ru'yā*) to intellection (*ta'āqqul*) and in depth knowledge of the essences of things (*'ilm*), which must not under any condition be confused with simple ratiocination any more than one can simply identify Qur'ānic *'ilm* with modern science, a sin of which many modern Muslims thinkers are guilty.

The Qur'ān asserts that God taught Adam the "names" of all things as in the verse *And He taught Adam the names, all of them*.⁴³ By names (*asmā'*) is not of course meant names in the ordinary sense of the word but essential reality or nature. Man's intellect has been created by God in such a way that he is able to know the essential reality of all things and the power of his knowledge in contrast to even that of the angels has no limit, because it can range from knowledge of the most outward aspect of the reality of an object to its most exalted or inward aspect as it resides in God's knowledge. Human knowledge cannot of course encompass all things, that capacity belonging to God alone. According to the principle of adequation, the faculties of the knower must be adequate to the object to be known. Now, man as seen by Islam has been created in such a manner that there exists within him a hierarchy of faculties ranging from the outward senses to the intellect, through which he is able to know all levels of reality from the lowly sand pebble to the One, the Absolute, to Whom reference is made in *lā ilāha illa'llāh*. Man is also able to know the created order not only on the one level of physical reality but also symbolically on all levels reaching ultimately to the Divine, whose knowledge of all things is the root of their reality.

The phenomena of nature can be and are a worthy object of study Islamically speaking, provided they are seen not as facts divorced from higher orders of reality but also as symbols. Their order, harmony, and laws reveal the Omniscience and Omnipotence of God, as well as His Oneness

42. This fact has been mentioned by Maurice Bucaille in several of his writings, but he interprets this in a scientific manner which differs from the views of traditional Islamic thinkers.

43. *al-Baqarah*: 31.

and Wisdom. These phenomena are signs or portents (*āyāt*) of God, with a message that man is able to read if he accepts and understands the message and meaning of those other *āyāt* contained in the revealed Book. That is why the cosmos itself has been called the “macrocosmic Qur’ān” or the “Qur’ān of the Created Order” (*al-Qur’ān al-takwīmī*). By virtue of the Qur’ānic revelation, man is given the possibility of reading the cosmic text and deciphering its “words” and “letters”.

A sign (*āyah*), however, is always a sign of something other than itself. It is incoherent if considered by itself and as a completely independent order of reality. That is why, while the Qur’ān encourages the study of nature, and the remarkable development of the natural and mathematical sciences in Islamic civilization is a direct consequence of the teachings of the Qur’ān and *Ḥadīth*, the sciences of nature envisaged by Islam are not the same as modern science.

Since the seventeenth century Scientific Revolution, modern science has studied the physical aspect of nature as an independent and autonomous domain of reality with fixed laws of its own. The Creator has been cut off from His creation, even in the case of those schools of philosophy of science which still accept the reality of God. The Will of God is seen as being no longer operative in His Creation, nor are the higher levels of reality such as the angelic considered to be of any consequence in the running of the natural world. Moreover, the knowledge of the natural world has become limited to the empirical to the extent that, despite the fact that some of the greatest scientific discoveries (such as the laws of planetary motion formulated by Kepler and the theory of special relativity of Einstein) were not at all based on induction and empiricism, there is still constant talk about the scientific method based on observation and ratiocination. In the prevailing philosophies dominant in the West, in whose matrix modern science has for the most part grown during the past four centuries, nature is the subject of study—but merely as an autonomous reality of a purely physical and quantitative order having no relation to higher levels of being, nor to God, except in certain philosophical schools which at least accept God as the Original Cause at the beginning of creation. The knowledge of nature has also been reduced to only one kind of knowledge that soon came to be known as science. This science does study

the phenomena of nature but only as facts, and not as *āyāt* of God.⁴⁴

In contrast to this limited view of what constitutes science, Islam has also ordered man to study nature, but not only as fact. It has not limited nature to only its physical aspects nor the means of knowing nature to the empirical. Islam has always encouraged the study of nature, which would include a science of nature similar on a certain level to modern science but not limited in the same manner. Islam has envisaged the possibility of many sciences of nature and has refused to accept a particular science of nature as *the* science. Moreover, Islam refuses to accept the legitimacy of any science that would study the cosmos in forgetfulness of God. The Qur'ān insists that the world of creation is worthy of study, but it is worthy because at all levels of its activities and processes and in its very existence nature reveals the Wisdom of God and brings about in man that sense of wonder and awe that contribute to his spiritual perfection. All sciences of nature are legitimate and in fact encouraged, provided they reflect something of that truth (*ḥaqq*) with which the world was created, and that they enable man to contemplate in the created order the Wisdom of God and to use the science gained thereby in His service. No science can be acceptable to Islam that does not in some way remind man of the Wisdom of the One from whom everything issues and to whom everything returns.

44. See our *Man and Nature* (Chicago: ABC International, 1997). We have dealt more extensively with the whole question of the contrast between religious and scientific studies of nature in our *Religion and the Order of Nature* (New York: Oxford University Press, 1996).