The Architectural Design of the Natural Physics in the Qur'ān: Analytical Study of Its Objectives and Philosophy

Abdurezak Abdulahi Hashi•

Abstract

Numerous Qur'ānic verses elucidate the structural design of the celestial bodies of the physical cosmos, such as the Sun, the Moon, the Earth, the stars, and the natural rules (*sunan*) governing such planets in the space. Though a large portion of the Qur'ān illuminates the rules of the natural sciences, including the architectural design of the physical world, however, it emphasizes on the worth of signals beyond the natural sciences. As such, the enduring attractive architectural design of the natural physics, the diversity of its subject matter and the expediency of its environmental climate, in the Qur'ānic view, are not without philosophy and aim. Besides, the functional consistency of the natural physics to serve humanity (*taskhīr*), according to the Qur'ān, and the rules of nature, are *āyāt*, i.e. signs, which indicate to ultimate destinations or goals. Hence, the architectural design of the natural physics is both purposive and evocative. Therefore, philosophy of natural physics, which is the study of the philosophical questions underlying the cosmological universe, is a field which the Qur'ān required man to reflect upon. Similarly, scholars of philosophy of science agree on the necessity of exploring not only the sciences of the natural world but also its metaphysical indications, objectives and implications. This is because of the fact that scientific findings and statements are no longer merely neutral accounts without meaningful signals and philosophy. Through analytical and textual methods, this paper attempts to examine the philosophy and objectives of the architectural design of natural physics from the Qur'ānic perspective.

Key Words: Qur'ānic Perspective, Architectural Design, Natural Physics, Philosophy and Purpose.

Abstrak

Beberapa ayat-ayat Quran menjelaskan rekabentuk struktur jirim-jirim alam fizikal seperti matahari, bulan, bumi, bintang-bintang dan beberapa peraturan yang mengawal peredarannya di angkasa raya. Walaupun di kebanyakan bahagian Quran tidak menyebut peraturan sains alam, termasuk rekabentuk seni bina alam maya, ia walaubagaimanapun menyebut tentang pentingnya memahami maksud di sebalik peraturan sains alam maya ini. Kerana itu, keajaiban stuktur seni bina alam fizikal, kepelbagaian aspek-aspeknya, kebijaksanaan susun atur cuacanya, pada perspektif Quran, ada mempunyai tujuan-tujuan dan motif tertentu. Di samping fungsi elemen alam maya ini dalam memberikan manfaat dan khidmat kepada manusia dan keperluannya, mengikut Quran, peraturan fizik alam turut mempunyai maksud untuk menunjukkan wujudnya satu tujuan besar bagi kehidupan. Oleh itu reka bentuk dan susun atur alam fizikal juga mempunyai sebab dan tujuan. Rentetan dari itu, falsafah tentang alam semulajadi, iaitu satu kajian tentang persoalan falsafah berkenaan dengan alam semesta, ialah satu aspek yang dituntut Quraan supaya dihayati oleh manusia. Cendekiawan falsafah

• Assistant Professor, Department of Biomedical Science, Faculty of Science, IIUM, e-mail: hashi@iiu.edu.my

dan sains bersetuju tentang keperluan unutk menyingkap bukan sahaja sains semulajadi tetapi juga aspek metafiziknya, tujuannya serta maksudnya. Ini adalah kerana, penemuan-penemuan saintifik dan pernyataan-pernyataanya bukanlah hanya ungkapan neutral yang tidak mengandungi maksud dan makna falsafah tertentu. Melalui pendekatan tekstual and analisa, kertas ini bertujuan untuk meninjau falsafah dan objektif reka bentuk binaan alam semesta dan alam fizikal daripada perspektif Quran.

Kata Kunci: Perspektif Islam, Reka bentuk binaan, Fizik semulajadi, falsafah dan tujuan.

Introduction: Scope and Importance of Philosophy of Natural Physics

A moment of thoughtful reflection on the structure and the design of the physical cosmos generates some metaphysical and epistemological questions, particularly on the issues of causality, determinism and the origin of physical laws. Among many questions raised with this regard are: does the universe exist because it caused itself to exist?; or is there transcendental *raison d'être* that caused it to exist?; is every state of natural physics' affairs, design, and function the inevitable natural consequence of antecedent states of affairs? Since early Greek philosophy, scholars of natural physics like the Greek philosopher Thales (d.546), endeavor to offer some genuine answers to such fundamental and philosophical questions about the beginning and the end of physical cosmology.[1] Similarly, philosophers and theologians attempt to understand the origins of the physical order, space and time (eternal or temporal),[2] and to comprehend rationally the foundations of physical laws (causality or determinism).[3]

As such, to address the issues of temporal and eternity of the physical universe, and causality and determinism of natural laws, is indeed to address the philosophy of science. The philosophy of science is understood as a

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[1]Greek philosopher Thales (d.546) is considered as the founder of natural philosophy. He developed the naturalistic method to explain why things in the physical order change, and proposed a basic underlying substance of the world, which according to him is water. See Anton Sebastian, *A Dictionary of the History of Science* (New York: Parthenon Pub. Group, 2001), p.329

[2]Both philosophers and scientists offer some overlapping thoughts on the qualities and the nature of time and space, specifically whether time and space are absolute and relative, temporal or eternal. Such argument turns to be complicated when time and space are related to God.

[3] Causality refers to the relationship between one event (called the cause) and a second event (called the result or the effect), where the second event is the direct consequence of the first. Determinism on the other hand, is the view that every event, including human cognition, behaviour, decision, and action, is causality determined by an unbroken chain of prior occurrences. See M.J. Clugston, (ed.), *The new Penguin Dictionary of Science*, (London: Penguin Books, 1998), p.106.

branch of philosophy which studies the philosophical foundations, presumptions and implication of science.[4] In this respect, the philosophy of science is closely related to epistemology and ontology, and it seeks to explain the nature of scientific statements and concepts.[5] On the other hand, while philosophy of science covers a wide subject ranging from natural sciences, such as biology and physics; and social sciences, such as psychology and economics; an essential part of the philosophy of sciences is the philosophy of natural physics which concentrates on physical cosmology and its natural laws. Thus, philosophy of physics is the study of the fundamental philosophical questions posed by the arrangement, positions and manifestations of the physical universe.[6] It begins by reflecting on the basic metaphysical and epistemological problems encountered in the foundations of theoretical physics, such as causality, determinism, and the nature of physical laws.[7] One of the major concerns of the philosophy of physics is the clarification of logical structure and ontological commitments about physical cosmology, space and time, origin of the ultimate fate of the universe, etc. In this study, philosophy of physics is understood as the ultimate reality and the fundamental destination to which the physical universe points to.

The rationale of this study is that, though both theist and atheist scientists share a common understanding about the function and the quality of natural physics, they hold different answers to the questions about the objectives and the geneses of natural physics. This is because while modern philosophical naturalism[8] and dialectical materialistic worldviews (atheists)[9] present the notion that the structural design of the physical universe has either

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[4]Robert Audi, (ed.), *The Cambridge Dictionary of Philosophy* (Cambridge, England: Cambridge University Press, 1995).

[5]Paul T. Durbin, *Dictionary of concepts in the philosophy of science* (New York: Greenwood Press, 1988).

[6]*The New Encyclopaedia Britannica* (Chicago: Encyclopaedia Britannica, Inc., 1989).

[7]W. F. Bynum, E. J. Browne and Roy Porter (Ed.), *Dictionary of the History of Science* (London: Macmillan, 1981).

[8]Philosophical naturalism is meant as any of several philosophical stances wherein all phenomena or hypotheses commonly labeled as supernatural, are either false or not, inherently different from natural phenomena or hypotheses. See J.L. Heilbron, *The Oxford Companion to the History of Modern Science* (Oxford: Oxford University Press, 2003), pp.565-566.

[9]Dialectical materialism is the Marxian interpretation of reality that views matter as the sole subject of change and all change as the product of a constant conflict between opposites arising from the internal contradictions inherent in all events, ideas, and movements. This philosophical approach was expressed through the writings of Karl Marx (d.1883), and Friedrich Engels (d.1895), though its central tenet was borrowed from Hegelianism developed by Hegel (d.1831).

existed accidentally or through random occurrences which are aimless and without transcendental purpose; according to the theists' worldviews like the Islamic conception, the universe existed as a result of the creative work (*badīʿ*) and designs (*tadbīr*) of the Almighty God.

In addition, while according to metaphysical naturalism,[10] the origin of the universe and the structural design of the physical planets do not owe their origin to any thing Divine; rather, they are from certain arrangements of matter. In the Islamic worldview, the structural design of the physical planets is from the Divine Existence, that is Allah, and thus remains purposive and exhibitive. Thus, as the overall answers to questions related to the physical universe by modern philosophers,[11] this study argues for the need of presenting the Islamic perspective of the architectural design of the physical universe, particularly that of the Qur'ān. Hence, this study strives to present the Qur'ānic account of the architectural design of natural physics, its objectives and aims.

Philosophy of Physics in the Islamic History

In the Muslim world, soon after the establishment of the Islamic caliphate in seventh and eight centuries C.E., Muslims were able to study mathematics, physics, anatomy, biology, botany, chemistry, medicine, and astronomy. Furthermore, as a result of their reflection and pondering upon the Qur'ānic dictums about the natural physics and astronomy, early Muslim scientists and philosophers were deeply fascinated by pursuing further knowledge about the movements of the physical planets.[12] Accordingly, the structural design of the universe was studied, and as a result, a new body of

[10]Metaphysical naturalism is the view that the cosmos consists only of objects studied by the natural sciences, and does not include any immaterial or intentional realities.

[11]Modern theories and philosophies, like Darwinism, Positivism, Marxism and Modernism argue that all natural phenomena of the natural physics can be explained in terms of natural causes and natural laws, and each of these philosophies incorporates the idea that the universe existed merely through evolutionary transformation or a natural gradual process to its current shape and design. See J.L. Heilbron, *The Oxford Companion to the History of Modern Science*, pp.487-488, and 490-491

[12]Among early Muslim writings which contain astronomical knowledge are *Kitāb ʻUyūn al-Masā'il,* written by Abū Naṣr *al-Farābi; Rasā'il Ikhwān al-Ṣafā', Kitāb ma bāʻd al-Tabī'ah written by Ibn Rushd; Al-Tafsīr al-Kabīr by Fakhr al-Dīn al-Rāzī, and Kitāb Ḥikmat al-ʿAyn fī al-Ilāhiyyāt wa al-Tabīʻiyyāt by Najm al-Dīn Omar bin ʻAlī al-Qarwaynī.*

knowledge soon arose namely *ʿilm al-hay'ah,* i.e., the science of the formation of the physical cosmos alongside the traditional Muslim sciences.[13]

The term *ʿilm al-hay'ah* consists of two words: *ʿilm*, i.e., knowledge, and *hay'ah*, i.e., formation or structural design. It is the field that studies the origin and the formation of the structural design of natural physics.[14] Muslim philosophers and scientists, like Ibn Rushd (d.595 H), distinguish between *ʿilm al-hay'ah* and astronomy (*ʿilm al-falak*). This is because though both *ʿilm al-hay'ah* and astronomy (*ʿilm al-falak*) share the description of the physical cosmos, nonetheless, astronomy is only about counting and determining the position of the stars and the celestial bodies; while scholars of *ʿilm al-hay'ah* go beyond such parameters to elucidate the cause (*ʿillah*) and the ultimate objective (*al-ghāyah*) of the physical universe.[15]

As such, according to early Muslim philosopher and scientist Ibn Sina' (d.428 H), *ʿilm al-hay'ah* consists of two interrelated aspects: first, it deals with the structure of the heavens, the number and configuration of the stars, the sign of the Zodiac, the distances of the stars, their size and their motion, (as well as) the compilation of the planetary tables, the catalogue of stars for making calendars. Second, it strives to provide answers to the transcendentally underlying questions about the origin and the end of cosmological planets.[16]

Besides astronomy and philosophy of science, *ʿilm al-hay'ah* is related to and includes the basic components of the field of architecture and township planning. This is because the field of architecture and town planning which is the "art and science of designing and erecting buildings,"[17] or the "art of formation and construction of designs and structures,"[18] is closely associated

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[13]This is because when the scientific tradition emerged in the Islamic civilization, its initial technical terms came from the Qur'ān, and they (Muslim scientists) transferred back to the Qur'ānic usage, establishing a fundamental congruity between their scientific usage and their Qur'ānic meaning. See Muzaffar Iqbal, *Islam and Science* (USA: Ashgate Publishing Company, 2002), p.5.

[14]Al-Sunyur Karlunilyānū, *ʿIlm al-Falak: Tārīkhuhu ʿinda al-ʿArab fī al-Qurūn al-Wusṭaʿ,* (Cairo: al-Dār al-ʿArabiyah Līl-Kitāb, 1993), pp.18-22.

[15]For further readings see Ibn Rushd, *Rasā'il Ibn Rushd*, (ed.) Jibrar Jihami (Beirut: Dār al-Fikr al-Lubnānī, 1994).

[16]In his philosophical treatises (*al-Rasā'il al-Falsafiyyah*), Ibn Sīnā' states that: وعلم الهيئة يعرف فيه حال أجزاء العالم في أشكالها وأوضاع بعضها عند بعض ومقاديرها وأبعادها ما بينها وحال الحركات التي للأفلاك والتي للكواكب وتقدير الكرات والقطوع والدوائر التي بها تتم الحركات... ومن فروع علم الهيئة عمل الزيجات والتقاويم. For further readings see Ibn Sīnā', *Rasā'il Ibn Sīna fī al-Ḥikmah wa al-Tabīʿiyyāt*, (*Egypt:* Maṭba'ah Hindiyyah, 1908).

[17]Cyril M. Harris (ed.), *Dictionary of Architecture and Construction* (New York: McGraw-Hill, 1993).

[18]James Stevens Curl, *A dictionary of Architecture* (Oxford: Oxford University Press, 1999).

with ʿ*ilm al-hay'ah,* in terms of designing, measuring and unifying different items into functionally harmonious entities.

As such, there are three dimensions of the field of ʿ*ilm al-hay'ah.*[19] The first dimension deals with the body and the material aspect of the celestial bodies and their movements, such as their substance, limits and that which studies terrestrial bodies, including rational plants, minerals, the four elements (water, air, earth, and fire), etc.[20]

The second dimension deals with the formation and the structure of the celestial bodies, in terms of counting, designing and measurement of their geometrical dimensions.[21]

The third dimension of ʿ*ilm al-hay'ah* strives to understand the metaphysical aspect of the physical universe and the relationship between the transcendental reality and the temporal universe. This portion includes the intellectually understandable things (*al-maʿqūlāt*) and conceptions (*al-taṣawwurāt*) about the qualities and the characteristics of the existence (*al-wujūd*), including substance, unity, multiplicity, identity, causality, universality and relativity of the physical laws, etc.[22]

This dimension in particular contains the Muslim philosophy of physics, where the issues of ʿ*illah* (cause), *ghāyah* (purpose), *ṭabī'ah* (natural physics), *wujūd* (existence), *māhiyyah* (essence), *ḥudūth* (being temporal), *qidam* (eternity) of the universe are addressed. As such, ʿ*ilm al-hay'ah* is wider than ʿ*ilm al-falak* (astronomy), where the later remains part of ʿ*ilm al-hay'ah*.

Thus, philosophy of natural physics remained as an integral part of the Muslim philosophy and science. Among early Muslim writers of philosophy and science whose works incorporate the philosophy of natural physics is Abū Naṣr al-Farabī (d.339 A. H.). His work entitled, *Kitāb Iḥṣā 'al-ʿUlūm*,[23] in which he presented astronomical account of natural physics and philosophical convictions about the origins and the ultimate goals of the celestial bodies. Furthermore, *Kitāb al-Ishārāt wa al-Tanbīhāt,*[24] written by

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[19]Al-Sunyur Karlunilyānū, ʿ*Ilm al-Falak: Tārīkhuhu ʿinda al-ʿArab fi al-Qurūn al-Wusṭa'*, pp.28-29.

[20] النوع الأول أمور يتعلق وجودها وحدودها بالمادة الجسمانيّة والحركة مثل الأجرام السماويّة والعناصر الأربعة والأثار العلويّة والحيوان والنبات والمعادن.

[21] النوع الثاني هي أمور وجودها متعلق بالمادة والحركة وحدودها غير متعلقة بهما ضرورياً مثل العدد وخواصه ومثل الكروية والتدوير والتربيع وغير ذلك.

[22] النوع الثالث هي أمور لا وجودها ولا حدودها مفتقرة إلى المادة والحركة مثل الذات الإلهية والجواهر والعرض، والهويّة، والوحدة، والكثرة، والعلة، والمعلول، والجزئية، والكثرة، وما أشبهها.

[23]Abū Naṣr al-Farabī (d.339 A. H.), *Kitāb Iḥṣā 'al-ʿUlūm* (Cairo: Maktabat al-Anjalo al-Maṣriyah, 1968).

[24]Abū ʿAlī Ibn Sīnā', *Al-Ishārāh wa al-Tanbihāt* (al-Qāhirah: Dār al-Maʿārif bi-Miṣr, 1971).

Ibn Sīnā' (d.428 A. H.) is another source of philosophy of natural physics from an Islamic perspective. Ibn Sīnā' divided his book (*al-Ishārāt*) into two portions: the first portion is about the science of logic (*ʿilm al-manṭiq*) and human psyche (*al-nafs*), while the second part is about the natural science (*al-ṭabīʿiyyāt*) in which he highlights the nature and the philosophy of natural physics.

The two books of Ibn Rushd (d.595 A. H.), namely "*Faṣl al-Maqāl fī mā bayna al-Sharīʿah wa al-Ḥikmah, i.e. on The Harmony of Religion and Philosophy,*"[25] and "*Kitāb Mā Baʿd al-Tabīʿah*, i.e. a book about the Metaphysical World"[26] comprise some essential principles of the philosophy of the natural physics. In *Faṣl al-Maqāl*, Ibn Rushd elucidates the harmonious relationship between religious order (*al-Sharīʿah*) and natural philosophy (*al-Ḥikmah*), in which he emphasizes on the importance of the physical structure of the universe for the accumulation of knowledge. In both books Ibn Rushd contends for the exhibitive character of the physical universe and natural laws, and explains further the relationship between the transcendental and temporal worlds. However, he underlines the need for reflection and intellection by man upon the natural universe to understand such relationships.

Muslim theologian, scientist and philosopher Fakhr al-Dīn al-Rāzī's exposition of the Qur'ānic verses about natural physics is another imperative source of philosophy of physics from an Islamic perspective. In his *tafsīr* (interpretation of the Qur'ān) *Mafatīḥ al-Ghayb*,[27] al-Razi (d.606 H) provides a philosophico-scientific approach to understand the natural physics. His metaphysical explanation of Qur'ānic verses, particularly *Sūrat* al-Ra'd, verse 2, *Sūrat* Ibrahim, verses 32-33, and *Sūrat al-Naḥl*, verses 12-14, reflects truly Islamic worldview of the origin, function and philosophy of the physical universe.

Among the contemporary Muslim scholars whose work incorporates the philosophy of natural physics is Muhamad Naquib al-Attas. His concise work "*Islam and the Philosophy of Science*"[28] contains deep and profound expositions about the philosophy of science from an Islamic perspective.

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[25] Ibn Rushd, *On the harmony of religion and philosophy*, A translation with introduction and notes, George F. Hourani (London : Luzac, 1961).

[26] Ibn Rushd, *Kitāb Mā Baʿd al-Tabīʿah* (Egypt: Maṭbaʿat Muṣtafa al-Babī al-Ḥalabī, 1958).

[27] Fakhr al-Dīn al-Rāzī, *Mafatīḥ al-Ghayb* (Beirut: Dār al-Fikr, 1978).

[28] Syed Muhammad Naquib al-Attas, *Islam and the Philosophy of Science* (Kuala Lumpur: International Institute of Islamic Thought and Civilization, 1989).

Similarly, in his book the "*Cultural Atlas of Islam*,"[29] al-Fārūqī (d.1986) offers some elegant and rigorous explanations about the basic characteristics of natural physics and its laws. Finally, in his article, "*Taskhīr,* Fine-Tuning, Intelligent Design and The Scientific Appreciation of Nature,"[30] Adī Setia, provides some useful explanations about the Islamic perspective of natural physics, particularly the Islamic concept of *taskhīr* in relation to nature. These and many other Muslim writings about the natural physics would be the main references for this article.

Architectural Terms in The Qur'ān

The Qur'ānic expressions about natural physics have incorporated some architectural concepts and engineering terms. The Qur'ān mentions the word heavens (*samāwāt*) which are one above another (*ṭabaqan ʻan ṭabaq*), roof (*saqf*), floor or foundation (*mihād*), pillar (ʻ*amad*), space (*wama baynahumā*), building (*binā*), functions of pre-designed software system (y*ajrī li ajalin musammā*), final destination (*mustaqarr*), well placed and hanged constellations with full of light and energy (*burūj*), above (*fawq*), under (*taḥt*), horizons (*āfāq*), dimensions (*aqṭār*), pegs that have roots extending below the surface (*awtād*), tunnel and subways (*nafaq*), ornamentation and decoration (*zīnah*), all of which address the arts and basic components of architectural engineering, designing and building.

In his book *Architecture and Town Planning in The Holy Qur'ān*, Gelani Ikram Shah argues that though the Qur'ān is a sacred book which contains guidance on all subjects, it "has reference to architecture, to spaces in architecture and to subjects relevant to architecture."[31] Gelani mentions a number of architectural words that come in the Qur'ān. According to him, among the architectural terms mentioned in the Qur'ān are those words which indicate housing materials and sanctuary designs, such as apartments (*ḥujurāt*), artful designs (*tamathīl*), outstretched columns (ʻ*amad*), house (*dār*), platform (*hadab*), sanctuary (*ḥaram*), tower (*ṣarḥ*) and stairs (*maʿārij*). Furthermore, the Qur'ān also contains terms and words which signify arts of formation and designing, such as beautification and decoration (*zīnah*), foundations of constructions and buildings (*qawāʿid*), artistry (*ṣunʻah*), forms (*ṣuwar*), enclosure (*aḥāṭa*), raising (*rafaʻa*), reform (*iṣlāḥ*), and building

[29]Ismail R. Al-Fārūqī, *The Cultural Atlas of Islam* (New York: Macmillan Publishing Company, 1986).
[30]Adī Setia, *Taskhir*, *Fine-Tuning, Intelligent Design and the Scientific Appreciation of Nature* (Islam and Science, v.2, 2004), p.7-8.
[31]Gelani Ikram Shah, *Architecture and Town planning in the Holy Qur'an* (Lahore: Perozsons, 1991), p.1.

materials like palm-fibre (*dusūr*), woods (*alwāḥ*) and ropes (*ḥabl*). Similarly, the Qur'ān mentions colors, contraction crafts and materials, dimensions and numbers, landscape, spaces, nations and places as well as town planning, which all constitute the basic components of modern architecture and town planning subjects.[32] Nonetheless, the Qur'ānic verses about architecture and design could be divided into two types: those verses which make reference to manmade arts and formations and those verses which highlight the architectural design of natural physics. In the later part, the Qur'ān mentions not only the architectural design of natural physics but also mentions the basic natural systems and laws which coordinate and govern its very existence.

Natural Physics and Its Structural Design in the Qur'ān

Although the Qur'ān is not a book of physics which contains historical and laboratory details of celestial atmospheres, it incorporates vital descriptions related to the structure and positions of physical planets as well as the aim and philosophy behind the architectural design of the physical universe. In this regard the Qur'ānic account about the structural design of the universe comprises the fundamental mechanisms of the physical universe that physically exists including the solar system, different forms of matter, energy and momentum, and also indicates the architectural position and structural design of these elements. The Qur'ānic description of the structural design of the physical planets starts with the Qur'ānic affirmation that the natural universe was created over a very long period of time by God, where the heavens and the earth were joined together (as one Unit of Creation) before Allah cloved them asunder (أَنَّ السَّمَوَاتِ وَالأَرْضَ كَانَتَا رَتْقًا فَفَتَقْنَاهُمَا); and then the Almighty Allah, made from water, every living thing (وَجَعَلْنَا مِنَ الْمَاء كُلَّ شَيْءٍ حَيٍّ). (The Qur'ān, 21:30). Furthermore, though initially the heavenly bodies, galaxies and planets were made of waters, then the sky had been (as) smoke (السَّمَاء وَهِيَ دُخَانٌ) (The Qur'ān, 41:11); however, the heavens are expanding, "for it is We Who create the vastness of space" (وَالسَّمَاء بَنَيْنَاهَا بِأَيْدٍ وَإِنَّا لَمُوسِعُونَ) (The Qur'ān, 51: 47)." While on the other hand, the mountains are pegs that have roots extending below the surface of the earth (وَالْجِبَالَ أَوْتَادًا) (The Qur'ān, 78:7); and their function is to stabilize the earth's crust by standing firm, lest it should shake with you (وَأَلْقَى فِي الأَرْضِ رَوَاسِيَ أَن تَمِيدَ بِكُمْ) (The Qur'ān, 16:15).

[32]For further readings see Gelani Ikram Shah, *Architecture and Town planning in the Holy Qur'ān,* chapters 3 -7.

In addition, the solar system is traveling through the universe to a final destination (وَالشَّمْسُ تَجْرِي لِمُسْتَقَرٍّ لَّهَا) (The Qur'ān, 36:38); but at the end of time the Sun will stop radiating energy and will be folded into a ball (إِذَا الشَّمْسُ كُوِّرَتْ) (The Qur'ān, 81:1). Moreover, among the decorative architectural design of God is the constellation of the shining stars (*burūj*) in the skies, and a Lamp (Sun) placed therein and a Moon giving light (تَبَارَكَ الَّذِي جَعَلَ فِي السَّمَاءِ بُرُوجًا وَجَعَلَ فِيهَا سِرَاجًا وَقَمَرًا مُّنِيرًا) (The Qur'ān, 25:61-62); to ensure the continuation of the secession of Night and the Day follows (جَعَلَ اللَّيْلَ وَالنَّهَارَ خِلْفَةً). Part of the structural design is the creation of the seven heavens one above another (الَّذِي خَلَقَ سَبْعَ سَمَوَاتٍ طِبَاقًا) (The Qur'ān, 67:3), without cracks and fractures. The Qur'ān states that ornamental decoration and the beauty of this design reflects on the vision and makes the vision discomfited, in a state worn out (ينقلب إليك البصر خاسئاً وهو حسير) (The Qur'ān, 67:3).

These and many other Qur'ānic verses about natural physics elucidate the basic components of the architectural design of the natural universe, including the position, the function and the decorative quality of every planet in the universe. Similarly, the Qur'ān highlights the existence of natural laws and systems which accurately and consistently coordinate the interaction of the natural planets continuously.

The Nature of Physical Laws in The Qur'ān

About the function and purpose of the natural physics of the universe, the Qur'ān states that the whole universe in its various physical planets and biological phenomena, and to its incessant laws and systematic order are governed by the Divine order (*sunnat Allāh*), which maintains continuation and coordination of the celestial bodies of nature.[33] According to this understanding, nothing in the universe functions outside the patterns set by Allah. These patterns are the norms and systems, to which all creations of Allah will subscribe to and function accordingly. These natural patterns (*sunan*) are enduring (*la tabdīl or taḥwīl*), and the main aim of their subsistence is first to ensure stability and continuation of the universe, and second to avoid chaos to the order of nature. The Qur'ān teaches that natural physics is an orderly realm where an event occurs as a result of its cause; in

[33]To explain the term *sunnat Allāh* Muslim scholars employ some interchangeable words, such as the "natural order," "order of universe," "laws of God," "laws of nature," "natural law," and "laws of universe." See Pervez Hoodbhoy, *Islam and Science, Religious Orthodoxy and the Battle for Rationality* (London: Zed Books, 1991); Muzaffar Iqbal, *Islam and Science* (USA: Ashgate Publishing Company, 2002).

turn, its occurrence is the cause of another event. It is a complete order because all events follow the same laws and nothing stands outside them, where each seeks the other in rapid succession. Allah created the Sun, the Moon, and the stars, (all) governed by laws under His command. Is it not His to create and to govern (مُسَخَّرَاتٍ بِأَمْرِهِ أَلا لَهُ الْخَلْقُ وَالأَمْرُ) (The Qur'ān, 7:54), in a structure that determines its life and from, which it never deviates? (وَخَلَقَ كُلَّ شَيْءٍ فَقَدَّرَه تَقْدِيراً) (The Qur'ān, 25:2). Moreover, the Qur'ān states that this perfection in nature will remain as long as it exists because Allah's creation will always be the same. His patterns are immutable (فَلَن تَجِدَ لِسُنَّتِ اللهِ تَبْدِيلاً) (The Qur'ān, 35:43). He stands beyond change; thus, He does not change His way (وَلَن تَجِدَ لِسُنَّتِ اللهِ تَحْوِيلاً) (The Qur'ān, 48:23).

While both the duration of formation and the purpose of physical order are clearly stated in these verses, the Qur'ān also mentions that natural laws in natural physics are not self-regulatory entities. Nevertheless, the existence and the functions of the natural order are determined and regulated by an ultimate and transcendental authority, the Almighty Allah. The Qur'ān presents this understanding in two reticular ways: first, it states that the natural principles and the structural design of physics are not self-originated, which existed as a result of accidental occurrence or natural evolutionary process.[34] Second, the Qur'ān states that natural laws of natural physics are not aimless and without point of reference.[35]

With regards to the origin of the natural physics of the universe, the Qur'ānic conception of physics holds the understanding that physics and its design are neither transcendental nor eternal, but they are created. Each and every individual galaxy, star, gas, and dust that constitute the universe existed as a result of the creative (*badīʿ*) design of Allah, though in miscellaneous times and circumstances.

Contemporary Muslim scholar al-Fārūqī stresses that the Qur'ān and Islamic teachings give very serious consideration to the natural world including the physical structure of the universe. Al-Farūqī highlights five characteristics of nature including the physical planets, which are: profanity, createdness, orderliness, purposiveness, and subservience.[36] On one side, profanity means "not sacred", while on the other, it signifies "being temporal." Similarly, createdness denotes that nature is a creature of Allah, created *ex nihilo,* by His sheer command for it to be, which is perfectly in

[34]See The Qur'ān (52:35-36).
[35]See The Qur'ān, (15:85), and (46:3).
[36]Ismail R. Al-Fārūqī, and Lois Lamya, *The Cultural Atlas of Islam* (New York: Macmillan Publishing Company, 1986), pp.314-320.

order. Furthermore, each of the objects that constitute nature has been assigned to a purpose, which it must, and will, fulfill. Besides, the Almighty Allah did not create the universe in vain but for a purpose so that man will do the good works.[37]

The Aim and Philosophy of Natural Physics in The Qur'ān

After depicting the beautiful decoration of the physical universe and accuracy of its software systems (natural laws), the Qur'ān states that such decorative design and precise laws are purposive and denotative. The Qur'ān presents two interrelated objectives of the architectural design of the physical universe, namely *taskhīr* and *āyah*.

Taskhīr is the verbal noun of *sakhkhara*, which signifies to bring something into service, to compel something to be of service to something else and to make something subservient. In its lexicographical meaning, *taskhīr* denotes to charge someone with a task without remuneration or to charge someone/something with a task not of his/its accord and to compel him/it to do it.[38] Therefore, *taskhīr* is employed literally to demonstrate anything that subserviently submits to Him and obeys Him, and is ready to serve us. In the Qur'ān, *taskhīr* refers to: "Allah compells the heavens and the earth to be of service to humankind that they may consciously appreciate His manifold blessings upon them and thereby give thanks to Him."[39] This is to say that celestial bodies, including the solar system and the natural laws that govern the universe, and the two physical states (motion and rest) of the physical planets, are being determined by a transcendental entity which compelled it to function in accordance with predetermined laws.

According to Imam al-Rāzī, the celestial bodies are compelled by Allah to move in the way they actually do. They do not move out of their own accord; rather, they move in a way that they render service to mankind by drawing their attention to their wondrous motion, which is indicative of

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[37]Nature has been created malleable, capable of receiving man's intervention into its processes. No realm of nature is out-of-bounds. All aspects of nature with its Sun, Moon, the Earth, and the seas with all that they contain are his to explore and to use, for utility, for pleasure and comfort or for contemplation.

[38] Hans Wehr, *A Dictionary of Modern Written Arabic*, ed. J. Milton Cowan (Beirut: Library of Lebanon, 1974), p.401; Setia, *Taskhir*, *Fine-Tuning, Intelligent Design and the Scientific Appreciation of Nature*, pp.7-8.

[39] Setia, *Taskhīr*, *Fine-Tuning, Intelligent Design and the Scientific Appreciation of Nature*, p.8.

transcendent design and ordinance.[40] Thus, the night and the day, the Sun and the Moon, and all inanimate things (*al-jamādāt*) are designed and architected by Allah in a manner that provides service to the welfare of human beings. This is to say that the aim of specification and fixation of actual and functional parameters of physical planets and their movements is to serve humanity (*taskhīr*). This service is not confined to material and biological consumptions, but is extended to spiritual and intellectual service where man is able to reflect and contemplate on the natural physics and its laws for the accumulation of knowledge.

Among many Qur'ānic verses which state *taskhīr* as one of the objectives of the architectural design of the universe are the following:

> He has made subject to you the night and the day; the Sun and the Moon; and the stars are in subjection by His Command: verily in this are Signs for men who are wise. And the things on this earth which He has multiplied in varying colors (and qualities): verily in this is a sign for men who celebrate the praises of Allah (in gratitude). It is He Who has made the sea subject, that ye may eat thereof flesh that is fresh and tender, and that ye may extract there from ornaments to wear; and thou seest the ships therein that plough the waves, that ye may seek (thus) of the bounty of Allah and that ye may be grateful. (16:12-14).

> It is Allah Who hath created the heavens and the Earth and sendeth down rain from the skies, and with it bringeth out fruits wherewith to feed you; it is He Who hath made the ships subject to you, that they may sail through the sea by His command; and the rivers (also) hath He made subject to you. And He hath made subject to you the Sun and the Moon, both diligently pursuing their courses; and the night and the day hath he (also) made subject to you.(14:32-33).

> Do ye not see that Allah has subjected to your (use) all things in the heavens and on Earth, and has made His bounties flow to you in exceeding measure, (both) seen and unseen? Yet there are among men those who dispute about Allah, without knowledge and without guidance, and without a Book to enlighten them! (31:20)

The second aim is to be *āyah,* where the position and the function of each and every unit of the physical cosmos are purposive and denotative. This is to say that the visual quality of the planets and the functional consistence of various galaxies in the physical world are not more than signboards and indicators *(āyāt)* for ultimate and transcendental destinations. In its lexical root, the Arabic term *āyah* means any material object or spiritual concept that stands as an indicator (pointer) for a destination or goal.[41] Furthermore, the

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[40]Al-Rāzī, *Mafāṭiḥ al-Ghayb*, v.10, p.99; Setia, *Taskhir*, *Fine-Tuning, Intelligent Design and the Scientific Appreciation of Nature*, p.11.

[41]J. Milton Cowan, *A Dictionary of Modern Written Arabic* (N.Y,: Spoken Language Services, 1976).

term *āyāt* which is being widely used in the Qur'ān signifies signboards, indicators and symbols. Both the Qur'ānic verses and the natural laws of the physical order were expressed as *āyāt* in the Qur'ān. According to al-Razi, Qur'ānic verses were described as *āyāt* (signboards or indicators) because they contain the proper directions of guidance for man to the ultimate truth of life.[42] As such, through following the Qur'ānic verses one finds the ultimate reality of life. Similarly, *āyāt* is used to mean the laws of natural phenomena which operate according to the natural principles measured by God (*āyāt al-ṭabīʿah*). This type of *āyāt* includes the natural laws that govern the physical appearances of the universe, such as the Sun, the Moon, stars, the day and night, lightening and rain, the Earth, sea, mountains, water, fruits, animals, human societies and their languages, colours and cultures, the *āyah* of social history and the livelihood of early human nations.

Intellection and Reflection of Man

The Qur'ānic account of natural physics starts with the indication of the significance of the physical universe for man's reflection and intellection to accumulate science and knowledge. In this regard, the Qur'ānic verses like: "Do they not look at the sky above them?- How We have made it and adorned it, and there are no flaws in it?" (50:6); "Say: Behold all that is in the heavens and on the Earth"; but neither Signs nor Warners profit those who believe not" (10:101); "Verily your Lord is Allah, who created the heavens and the earth in six days, and is firmly established on the throne (of authority), regulating and governing all things" (10:5); state not only the attractive beauty of the structural design of natural physics but also the purpose and objectives behind it. In these verses the Qur'ān requires man to reflect upon the physical structure of the celestial bodies (*samāwāt*), and how they were designed perfectly and decorated beautifully without faults and cracks (*furūj*).

In this regard, both the verses of the Qur'ān and natural laws are indicators of the same ultimate destination of life, which is the Almighty Allah. It is true as noted by Mohd. Zaki Kirmani in his book "*The Qur'ān and the Future of Science*", that the Qur'ān does not differentiate one type of *āyah* from the other (Qur'ānic verses and the natural rules). This is because; "*āyah* of the book and *āyah* of the universe appear equally significant in the Holy Qur'ān. Both of them serve to invoke Allah's name and give admonition. It should therefore be noted that in science, the subject of scientific investigation is, in its essence, an *āyah* or a sign of the creator.

[42] Al-Rāzī, *Mafāṭīḥ al-Ghayb*, v.7, p.98.

This should create a special relationship and a reverence of these objects with the investigating scientists."[43]

As such, unlike the contemporary scientific atmosphere in which scientific inquires are detached from spiritual and religious values, the Qur'ān teaches that as the process of hypothesis formation, theorization and drawing of inferences should substantially proceed from the human feelings and senses, the natural sciences should be signboards, which guide the mind and feelings to the Ultimate Binding Reality (*al-ḥaqq al-thābit*). The Qur'ān states that these signboards are shown in the different horizons of physical universe and man, "until it becomes manifest to them that this is the Truth" (Sūrat Fuṣṣilat, 53).

Furthermore, the concept of *āyah,* having a spiritual dimension, should influence not only the viewpoint and the relationship of scientific realities but should also make a definite impact on the action and attitude towards nature and its study. This is because when the Qur'ānic *āyah* "are taken along with specific Qur'ānic instructions, *e.g.* to study, to think, to travel and to experiment and reflect, it appears that the Qur'ān intends to clarify that the world which man is part of, is knowable and should be studied and made use of it."[44]

Therefore, according to the Islamic conception, while it promotes the idea that the entire continuum of the universe has been created by the Almighty Allah and remains fervently in action according to His plan and design, Islam rejects the paganish approach of nature, which takes natural phenomena as deities or divinities. Islam also rejects atheism, according to which, the natural order of the physical universe exists through accidental and random chances. Hence, the Qur'ānic perspective of physical nature maybe divided into following points:

First, the structural design of the physical planets is an open book for man's lifelong readings and reflections in the process of accumulating knowledge and advancement. Besides, enabling and facilitating the livelihood of the leaving things in the universe, and the attractive arrangement of the celestial planets and their natural physical process of transforming from one condition into another, are basically to enable man to grasp knowledge through observation and experience. The rotation of the celestial bodies, such as the Moon, the Earth and the Sun and their relation to time, is another

[43]Mohd. Zaki Kirmani, *The Qur'an and the Future of Science* (Delhi: Global Vision Publishing House, 2001), p. 43.
[44]Ibid., p.44.

denotative sign for knowledge.[45] The alternation of night and day is necessary so that (human beings) may reckon the number of years and the account (of time), for Allah, the Almighty, has made everything distinctly clear (The Qur'ān, 10:5).

Second, although the physical matter of the universe seems to be diverse, the Qur'ān states that they are actually from one entity. Thus, they (human beings) should seriously understand that in the initial stages of creation all were joined together, before Allah cloved them asunder (كَانَتَا رَتْقًا فَفَتَقْنَاهُمَا) (The Qur'ān, 21:30). Hence, the various celestial bodies started floating in their own orbits (كُلٌّ فِي فَلَكٍ يَسْبَحُونَ) (The Qur'ān, 36:40). It is strange, says the Qur'ān, that even after all these explanations they (human beings) do not believe that only the Almighty Allah wields absolute sovereignty over everything in the universe. Allah says: "The Sun, Moon and other stars also obey His orders. Take note, both domains of *khalq* (creation) and *amr* (command) belong to Allah, Who is the source of all blessings and *rabb* of all the worlds" (The Qur'ān, 7:54).

Third, all heavenly bodies are not static in space, but are in continuous motion and movement. However, their entire movements are controlled by a discipline based on firmly fixed set of measures and calculations. It can never happen that the Sun, by speeding up, overtakes the Moon; or that the night lingers on beyond the point where the day had to start (لا الشمس ينبغي لها أن تدرك القمر ولا اليل سابق النهار). This is because each and every one of them keeps moving through space in its own orbit, according to the speed and course set for it (كل يجري لأجل مسمىً) (The Qur'ān: (35:13).

As such, the structural design of the celestial bodies indicates the possibility of developing software engineering systems. This is because part of architectural design of physical orbits is the configuration of the software systems that hold-up the physical orbits in their respective positions without physically observable hardware pillars) (بِغَيْرِ عَمَدٍ تَرَوْنَهَا) (The Qur'ān, 13:3). Each of the Sun, the Moon and the other stars is subjected to that software systems and each of them runs (its course) for a pre-programmed term (كُلٌّ يَجْرِي لأَجَلٍ مُّسَمًّى) (The Qur'ān, 13:3). These software programs control "the Earth as a wide expanse" (The Qur'ān, 78: 6), and "the mountains as pegs" (The Qur'ān, 78:7), to stabilize the motion of the Earth; while the clouds send "waters in abundance" (The Qur'ān, 78:14), in order for the Earth to "produce

[45]For instance, the Qur'ān indicates that Allah, the Almighty, has made the night and the day as two signs; the sign of night is that it is devoid of light and the sign of day is that it is full of light, so that we may secure Allah's bounties.

therewith corn, vegetables, forests and gardens of luxurious growth" (The Qur'ān, 78:15-16).

Perhaps the philosophy behind this is to enrich the mind of the Muslim scientists, particularly engineers and scholars of architecture, in order for them to improve their ability of developing accurate and efficient software engineering programs. The Qur'ānic statements like "Measure therein all things to give them nourishment in due proportion" (The Qur'ān, 34:11); "We have measured for its (the Moon) mansions or destinations" (The Qur'ān, 36:39); and "the command of Allah is a decree determined" (The Qur'ān, (33:38); provide the necessary clues of "quality control" for the software engineering systems. This is because the Qur'ānic pronouncements about the structural design of the solar system, emphasize on the "quality," "measurement," "permanence" and the functionality of the software system that governs and holds the solar system. The need for accuracy and precision of systems is another area emphasized by the Qur'ānic teachings about natural physics.

Conclusion

The structural design of the physical world is neither accidental nor random occurrences which are aimless and without purpose. The primary purpose of the structural design of the physical universe and the consistence of its natural laws is to serve (*taskhīr*) humanity continuously. Another purpose behind the visual quality of the planets and the functional consistence of the various galaxies in the physical world is to be signboards and indicators for an ultimate and transcendental destination of life (*ḥattā yatabayyana lahum al-ḥaqq)*. Therefore, the architectural design of the physical universe, including coordination of natural laws, decorative design of celestial bodies and the functional coexistence of different planets are there to serve human beings in terms of their biological and intellectual consumptions.