Editor's Introduction
The Essence of Time, Space, and Motion in Islam

Summary:

This book presents results of several years of research on the subject of "Time, Space, and Motion in Islam". Islam presents a triple concept of time in the Qur'ân (The Revelation) and the Hadith (traditions of the Prophet). It was decided to present the works of several well-known ancient Islamic scholars on the subject. Time, known as *zaman*, is the serial time that is known to us within everyday activity. Other than the serial time, two other concepts of time, known as *al-dahr* and *al-sarmad* are believed to be associated only through the spiritual inner-self development and a process of *tahqîq* (verification) of the truth (*Haqq*) of God. It is the manifestations of the Omniscient God that give rise to "Time, Space, and Motion in Islam". This book also covers an extensive synthesis of essences and existences in various domains of time. The religious philosophy of essences and existences is presented as an attempt to resolve some of the differences in the views of scholars. The modern concepts of time and space are also explored and presented during discussions for a comprehensive analysis of the subject. It is very important to gain extensive knowledge, through further research into the ancient documents, beyond what is presented in this book.

In the earlier period of Islam, Greek thought on time and space was confronting Islamic ideologies on the subject. Later, it became obvious that the concept of the Day of Judgment in the Qur'ân, the Bible, and other divine scriptures made a significant difference in the way of looking at the concepts of time and space. The Muslim thinkers readily accepted the combined challenge of Greek and Persian thinkers where they were consistent with the broad metaphysical outlook on the subject of time and space. The Qur'ân describes the universe in terms of its beginning, end, and

the hereafter, so that it was a tough task for Muslim thinkers to get away from external influences. The Qur'ânic knowledge of God and eternity also made a significant difference in the way Muslim thinkers developed their understanding of underlying concepts over a period of several years after the Prophet of Islam (SAAS).

Islamic thought on time, space, and motion was further examined by numerous schools of Islamic thought that may be categorized as follows:

- Time as viewed by the philosophers: Al-Kindi, Ibn Sînâ, Shaikh al-Ishraq Shihab al-Din al-Sahrawardi (Ishraqi school), Abu Bakr Muhammad, Ibn Zakariya al-Razi.
- Time as viewed by the Mutakallimün –Ash`arites*:* Fakhr al-Din ar-Razi.
- Time as viewed by the mystics: Ibn al-`Arabî, Sheikh Taj al-Din Ushnohi, Khwaja Mohammed Parsa, Khwaja Mehboob Ilahi Dehlvi, and 'Ala' al-Dawlâh Simnani, and others.
- Time as viewed by the Mu`tazilite theologian Al-Nazzam.
- Time as viewed by Mîr Dâmâd, Sadr al-Din Shirazi (or Mullâ Sadrâ), Mohammed Iqbâl.

The work on "Time, Space, and Motion in Islam" was initiated in early 1994. It was based on our attempt to locate key historical documents from many countries, including Iran, India, Pakistan, United Kingdom, and here in the United States. It was difficult to acquire the needed manuscripts. But, once some of the needed manuscripts were acquired, an effort was launched to translate selected works from Persian to English, and from Arabic to English. The final phase included writing and inviting papers on

targeted topics of research. The various topics chosen within the subject of "Time, Space, and Motion in Islam" are:

(1) Triple Time Concepts in Islam
(2) Knowledge and Reality
(3) Serial Time in Modern Cosmology
(4) Cosmology in the Qur'ân
(5) *Important Historical Works*
(6) Ancient Islamic/Arab Heritage
(7) Islamic Views on Time, Space, and Motion in Islam
(8) Precise Determination of Truth
(9) *Knowledge and Substance*
(10)Cosmological Views and Modern Concepts.

Some of these sub-topics were covered in an important conference which was organized in the year 2000 to discuss this subject. Prior to and subsequent to the conference there was extensive work done in the exploration of knowledge and understanding of the subject of "Time, Space, and Motion in Islam." There are several papers that were written subsequent to the conference. During the course of this work numerous key documents were acquired, some translated, prior to and after the conference, but only selected translations are presented in the various appendices in this book.

This work represents a unique and comprehensive treatment of the subject of "Time, Space, and Motion in Islam," not to be found elsewhere. The ancient classical works of many authors, including Sheikh Taj al-Din Ushnohi, Khwâja Mohammed Pârsa, Khwâja Mehboob Illahi Dehlvi, and 'Ala' al-Dawlâh Simnani and many others, were translated from Persian into English. The work of Ibn al Haitham was translated from Arabic into English. Translations of other works such as those of Fakhr al-Din al-Râzi, Ibn Sînâ, Mîr Dâmâd, became available to us for analysis. The works of Mullâ Sadrâ, Ibn al-`Arabî, and Mohammed Iqbâl were made available by many scholars who wrote papers for

this book. The book presents some papers on modern concepts and uses Henri Bergson's work during the analysis of the subject. Many other works, such as those of Fakhr al-Din al-Razi, Shâh Walliullâh, Al-Bayruni, Mîr Dâmâd, Ibn Sînâ, Mullâ Sadrâ, were consulted. Our efforts are continuing further on these and many other works.

Triple Time Concepts in Islam

Islam bases its challenge to humanity on the promise of life after death, whether in Paradise or Hell, and requires belief in the day of Resurrection as the Day of Judgment. It is a day, as we are told in the Qur'ân, that will be equal to a thousand years of our reckoning. Here is where Islam guides us to take life and time seriously, and instead of explaining them away, make them the focus of all our activities in the present life, thus providing a true definition of virtue in Islam. In our life, the unreality of time still remains the dominant attitude, because of the numerous influences of our daily, mundane activities. Subjectivism and absolutism have led Muslim thinkers to the conclusion that time is an irrelevant factor, and that change does not belong to the nature of reality—thus treating time as accidents or mere illusions of the perceiving mind.

Why is this subject so critical to Islam, as some scholars have suggested? If we begin to address this question, it becomes very clear that certain temporal challenges are posed in Islamic thought when attempting to understand the questions of the *Mi`râj* or ascension to heaven of the Prophet without loss of significant time, belief in a life after death, and in the Day of Judgment. The Reality is often referred to as the truth behind all creations, which is not fully conceivable by the created. The Reality is also often referred to as the Creator Who pre-existed and Who is ever living. The knowledge of other realities emanates from God's Reality. For some this knowledge of reality is wholly material, for others it can be better achieved through spiritual personal growth. Yet, it is also

important to explore the importance of the subject with respect to the empirical sciences. This book does not fully answer all such questions, but attempts to establish the foundation of knowledge and understanding on which to begin to address them. It is very obvious that this book can be considered as the first step in our effort. Further research and analysis may lead to future works.

In Islamic philosophy time occupies many domains within our understanding. First, there is the time in our contemporary life, which is the cyclic time or serial time that we are subjected to from the moment of our birth through our life span. This time is given in the Qur'ân in the *Surat al-`Asr* (103). But, then before we were created, and even before the universe was created, there is another time that is not serial. This time, ***al-dahr,*** is mentioned in the Qur'ân in two verses: 45:24 and 76:1. The most authentic interpretation of this term is given by Ibn Jarir al-Tabari[1], where it is related to the event and the process of Adam's creation, before the creation of the universe, and is stated as the time in place for which there is no limit that is known. Many scholars have used *al-dahr* as a limitless or endless time. Lastly, there is yet another time that is referred to as eternity or *al-sarmad*. The term *al-sarmad* has been used twice in *Surat al-Qasas*. To fully understand this last time concept, think of the Prophet's experience in time when he described that he saw the past and the future together associated with the Reality. While we delve into these concepts we are challenged to address time in terms of the empirical sciences, which are applicable only to serial time. For addressing other modes of time in Islam, we are best advised to wait until a foundation of knowledge and an understanding of the differences between serial and endless time are built. Our basic attempts are therefore to broaden our knowledge and to understand these modes of time. Note the paper on the "Architecture of Time, Space, and

[1] Ibn Jarir al-Tabari, *Tafsir al-Qur'ân* (Cairo, Egypt: Bulaq, al-Matba`ah al-Kubra al-Amiriyyah, 1311-12, 1329 AH, vol. 29:126).Pertinent to the Qur'ân (76:1). Note that this reference is to the Arabic text. Translation of the particular passage was done with the help of Dr. Assad N. Busool.

Motion in Islam" which develops the required foundation of this triple time concept in order to build a platform for the discussion and contemplation of subsequent papers. This investigation extends the definition of time for the cyclical (serial) time to other time zones such as *al-dahr* (ceaseless time) and *al-sarmad* **(**eternity) that will make the subject of our study more complex and challenging. Later we will present the views of Ibn Sînâ , Mîr Dâmâd, Mullâ Sadrâ, Shâh Walliullâh, Iqbâl, and many others as various explanations of *al-dahr* and *al-sarmad*. Here conscious experience and spiritual knowledge become important in addressing these last two concepts.

It was very important for us to explore the Qur'ânic and Hadith concepts relating to the subject of time, space, and motion in Islam. Once this basis is established then it is much easier to discuss and compare other concepts. The works of ancient scholars are explored to know their position and their analysis of the issues with respect to the Qur'ânic and Hadith interpretations. Any future conference on the topic of "Time, Space, and Motion in Islam" is advisable only after significant research has been done.

> You shall not be employed in affairs, nor shall you read a text out of the Qur'ân, nor shall you work any work, but We will be witness over you when you are engaged therein; and the weight of an atom on Earth or the Heaven escapes not thy Lord; nor is their weight that is less than this or greater but it is in the Perspicuous Boo" (The Qur'an, 10:61).

Knowledge and Reality:

Islam refers to the concept of life before the beginning of the world, in the world, and after the end of the world. Our knowledge of reality remains bound by our perception of the knowledge of the Creator, of the universe, and of pre-universal conditions. Our knowledge also depends on our perceptions of underlying principles and systems. Hence, our knowledge of reality depends on our perception of reality. For instance, earlier

Greek astronomers perceived the earth as the center of the universe on which they based their knowledge of reality. This perception as a consequence of what is known as the Copernican revolution, which discovered earth to be itself a planet revolving around the sun.

Ibn Sînâ[2] followed Aristotle in as far as the philosophy of Nature is concerned: change and time are the basic principles of this philosophy; Nature is a real process of change, of actual transformation, and real development. The logical categories of substance and essence get ontological status: That which was merely logical becomes of paramount ontological significance.

Ibn Sînâ[3] presented the emanational order of reality in terms of contingency (*imkân*) and origination (*hudûth*). He distinguishes between God and all contingents, including transcendence and intelligence. The intelligence as a contingent is of different order and quality from the Intelligence of God. The intelligence of contingents is borrowed from or caused by God, Whose existence is original, unique, and uncaused. God, as the Grantor of existence (*wajib al- wujûd*) and hence the intelligence of contingents may have existence and non-existence, acquired from God, whereas His Intelligence is every existent. The universe created by God is essentially posterior to God, but has a place in His Intelligence (in the Mind of God) and hence is also eternal with Him. Thus Ibn Sînâ believes that God's knowledge is by a simultaneous but ordered cognition of all the causes and their effects. For these views Ibn Sînâ is regarded as a Peripatetic and also as a neo-Platonic philosopher and was criticized by other Islamic philosophers.

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[2] S. Alam Khundmiri, "Iqbâl's Conception of Time – Its Relation to Contemporary Thought" Ph.D. Thesis: Osmania University, India, 1969, Part II, Chapter I, p. 58.

[3] Fazlur Rahman, " Mîr Dâmâd's Concept of Hudûth Dahrî", *Journal of Near Eastern Studies* 39 (1980).

Shaikh al-Ishraq Shihab al-Din al-Sahrawardî, who was the founder of the Ishraqi school of thought, explained creation as an unending series of illumination because God is the first Absolute Light and the source of constant illumination. God's knowledge, according to al-Sahrawardî, is passed to the objects through a process of illumination, a relationship between the soul and all its object of knowledge. This is also known as the relationship of *ishrâq* (illumination) through which God, therefore, knows things directly, without needing any intermediate cognitive forms such as are needed in the material transmission of light.

For Nasîr al-Dîn al-Tûsî, God gives rise to the First Intelligence, which is separate from Him but which He knows directly, being its creator, the content of this Intelligence[4]. Now part of the content of this Intelligence is temporal and spatial and governs causes and their effects. According to al-Tusî God knows all causes and their effects fully by means of this Intelligence.

Al-Suhrawardî further regarded existence as merely the reality of quiddity as reflected in mind. T. Izutsu[5] has noted that in the statement "flower exists to be a flower," the latter part "to be a flower" refers to the quiddity of the flower, which exists. Hence the "primary reality of existence" stands opposed to the "primary reality of quiddity". Mîr Dâmâd, who was a follower of al-Suhrawardi, adopted this later reality.

However, existence is a dynamic cosmic force, ever changing into an infinite number of things but forever remaining in itself exactly the same from eternity to eternity, that is, the "primary reality of existence" in this context is the sole reality. T. Izutsu states:

> The infinitely various and variegated things which this reality never ceases to create out of itself and in which it manifests itself are but its phenomenal

[4] Fazlur Rahman, *The Philosophy of Mullâ Sadrâ*, (Albany: State University of New York Press, 1975), pp.158-159.
[5] Tushiko Izutsu, Intr. to (Mîr Dâmâd's) *Qabâsât*, ed. M. Muhaqiq (Tehran, Tehran Univ. Press, 1367), p.12.

> forms. It is these phenomenal forms which are called in philosophical terminology quiddities (*mâhiyât*), which represent conceptualizations of the mind, i-e., reason[6].

The quiddities are thus the accidental modifications of the sole reality, which is existence.

Mullâ Sadrâ, as a pupil of Mîr Dâmâd in his young age followed the philosophy of the "primary reality of quiddity", but later articulated an opposite position in his work on the definition of quiddity as described by himself:

> In the early days I used to be a passionate defender of the thesis that quiddities are extra- mentally real while existence is a mere construct, until my Lord gave me guidance and let me see His own demonstration. All of a sudden my spiritual eyes were opened and I saw with utmost clarity that the truth was just the contrary of what the philosophers in general had held. Praise be to God Who, by the light of intuition, led me out of the darkness of groundless ideas and firmly established me upon the thesis that would never change in the present world and the Hereafter. As a result (I now hold that) the individual existences of things are primary realities, while the quiddities are the permanent archetypes (*a`yân thâbitah*) that have never smelt even the fragrance of existence. The individual existences are nothing but beams of light radiated by the true Light, which is the absolutely self-subsistent Existence. The Absolute Existence in each of its individualized forms is characterized by a number of essential properties and intelligible qualities. And each of these properties is what is usually known as quiddity[7]

Mullâ Sadrâ's philosophy deals with two forms of existences: mental existence and physical existence. Physical existence deals with external objects, whereas mental existence deals with the knowledge of external objects. Hence, external objects are based on material forms; the mental forms cease to be material forms. Mental and external existences cannot be interchanged. Mullâ Sadrâ calls knowledge pure existence, free from matter.[8] Since God is pure and simple Existence, the

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[6] Ibid.
[7] Rahman, *The Philosophy of Mullâ Sadrâ*, pp. 13-14
[8] Ibid, p.213.

Absolute Mind and all existences are related to Him. Mullâ Sadrâ also recognizes that the knowledge of the object is presented to the subject to be acquired, that perception is involved in the mode of transfer of knowledge from the object to the subject, whereas physical organs are required for sense perception. This interaction between the object and the subject was initiated by Aristotle, carried out to its logical extreme by Neo-Platonism, and elaborated and vindicated by Mullâ Sadrâ[9]. There is some uncertainty in Mullâ Sadrâ's thesis on how the interaction "forms within our soul" and how it is related to the external world.

Mullâ Sadrâ's doctrine of human intellect is that it rises to become united with the Active Intelligence or the Universal Intelligence. According to this doctrine, the end of all substantive movement, known as *haraka jawharîya*, is to unite the human intellect with the transcendent Intellect, giving rise to a new level of existence – that of pure, simple intellect. This discussion involves two orders of knowledge, the one existing in the natural world, ie., human soul, and the other in transcendent Intelligence, but the genesis is different, depending on whether an essentialist or an existentialist examines it. God's knowledge, according to Mullâ Sadrâ, is nothing but His simple existence, an order of being unique to Him[10].

Mohammed Iqbâl's religious philosophy of self is based on a theory of knowledge in his famous work on the *Reconstruction of Religious Thought in Islam.* In this work he tries to bridge the gulf between religious and atheist levels of experience, and the temporal and spiritual orders of Reality[11]. To this end, Iqbâl lays greater stress on religious purification to achieve reality. He comments:

[9] Ibid, p. 224.
[10] Ibid, p. 244.
[11] See S. Alam Khundmiri, "Time in Iqbâl's Poetic Vision" in "Iqbâl's Conception of Time", p. 244.

> In fact, religion, for reasons which I have mentioned before, is far more anxious to reach the ultimate reality than science. And to both the way to pure objectivity lies through what may be called the purification of experience.[12]

He further states:

> The ultimate aim of the ego is not to see something, but to be something. It is in the ego's effort to be something that he discovers his final opportunity to sharpen his objectivity and acquire a more fundamental 'I think', which finds evidence of its reality not in the Cartesian 'I can' but in the Kantian 'I can'[13].

Henri Bergson who stated, "that to understand knowledge we must first grasp the meaning of life" [14] comes closest among the philosophers to this idea. Simply put, if we are entirely materialists, the perception of reality may be entirely based on material judgments. Said differently, if we are entirely spiritualists, the perception of reality may be entirely based on spiritual judgments. It seems that balanced spiritual and material understanding of life is required to comprehend reality. Obviously, it is God Who has created the universe and the earth, and also created us, and His other creations. We have been given faculties to create the material world. In describing Henri Bergson's philosophy, H. Wildon Carr states:

> The intellect has been formed to serve the purpose of the activity which we call life. Knowledge is for life, and not the life for knowledge…life is the reality for which knowledge is and for which nature receives the order that knowledge discovers. [15]

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[12] M. Iqbâl, *Reconstruction of Religious Thought in Islam*, edited. and annotated by Sayeed Sheikh (Lahore, Pakistan: the Iqbâl Academy, Institute of Islamic Culture, 1989), p. 155.
[13] Ibid, p. 156.
[14] H. Wilden Carr, *Henri Bergson: The Philosophy of Change' (*London and Edinburgh, U.K: T.C. & E.C. Jack Limited, T. Nelon & Sons, Ltd,, 1919), p. 17.
[15] Ibid, p.17.

Hence, we need knowledge of both the spiritual and material world to have a glimpse of the true reality.

At this point I want to discuss the inherent relationships between knowledge, consciousness, intellect, and instinct. The discussion of these items is going to be very different than Henri Bergson, although I bring his views on pure duration when they are important. The discussion I am going to present will depend on whether there is a faith in the Creator of the heavens and the earth and all that exists between them. If one does not believe in the Creator then the perception of reality will be entirely different and may be all-materialistic. If one believes in the Creator then the created only has a glimpse of the reality that is hidden to be approached, stage-by-stage, but may never reach it through conscious and/or spiritual experience. Hence, any knowledge gained through the intellect helps form the instinct, which is used in studying life as it is given and as it unfolds in every moment of evolution. The primary result of this discussion is therefore that I must direct my inner-self in developing the consciousness for proper investigation to gain better glimpse of reality. This further leads me to knowledge of my life and surroundings and of all that is created and exists to further develop the intellect and instinct for experimentations and explorations. We have been given to form our intellect to gain superiority over all other creations. The universes, the earth, and all other creations have been created for humanity and not vice-versa.

Consciousness implies that when a work is being performed the mind fully understands the relationships involved, is able to analyze, and lead to perceived decision to do the activity. Our intelligence, therefore, depends on this activity. Our consciousness is the main link between instinct and intelligence. The immediate knowledge of the activity gives us instinct, but a conscious decision to perform the selected activity is based both in our instinct and intelligence. Now we have to look into how this

consciousness can be developed in a personality. I have pointed out earlier that a balanced material and spiritual development is required which helps develop balanced consciousness. What this means is that the mind remains conscious of the material world and the reality of ceaseless time. As Iqbâl says:

> The idea that thought is essentially finite, and for this reason unable to capture the Infinite, is based on a mistaken notion of the movement of thought in knowledge[16]
>
> In its deeper movement, however, thought is capable of reaching an immanent Infinite in whose self-unfolding movement the various finite concepts are mere moments[17].

Life as we know is real: it has duration, and is subject to changes in space and time. Time governs the movement of space, and time is also true duration. To some time is only external; to others time is external and internal. Even conscious states endure changes with time. Time is real and to a great extent all reality is time. Physical science thus restricts this reality, but physical science is also limited in its ability to understand life as a whole. According to Henri Bergson:

> There are changes, but there are underneath the change no things which change: change has no need of a support. There are movements, but there is no inert or invariable object which moves: movement does not imply a mobile. [18]

The continuity of change is indivisible which constitutes true duration; that is the indivisible change that the past and the present are together in every creative activity of the future. Elsewhere, Henri Bergson[19] says: "We appreciate duration as a stream against which we cannot go. It is the foundation of our

[16] M. Iqbâl, *Reconstruction of Religious Thought in Islam*, p. 4.
[17] Ibid, p. 5.
[18] Henri Bergson, *The Creative Mind: An Introduction to Metaphysics* (New York: Citadel Press: Kensington Publishing Corporation, 1974), pp. 147-149.
[19] Henri Bergson, *Creative Evolution*, tr. Arthur Mitchell (Mineola,: Dover Publications, 1998), p. 39.

being, and, as we feel, the very substance of the world in which we live".

It is through the intellect that our mind is able to attain knowledge of life as it is given, while it is through knowledge that we are able to increase our intellect and instinct in space and time. However, according to Bergson, intellect combines and separates; it arranges, disarranges and co-ordinates; it does not create[20]. Bergson further states:

> The more we succeed in making ourselves conscious of our progress in pure duration, the more we feel the different parts of our being enter into each other, and our whole personality concentrate itself in a point, or rather a sharp edge, pressed against the future and cutting into it unceasingly. [21]

But, here is where I deviate from Bergson: The true recognition of Reality and spiritual progress, as will be discussed later, brings the concentration of personality to the height of working from a single point of Reality.

The universe as we know it is only a partial expression of the Ultimate Reality. We are more in tune with knowledge of our planet and are able to make scientific conclusions comprehensively. We recognize water, air, crystal, metal as substances affected by their surrounding; changes do occur in them in time as a consequence of the influence of their environment. Applying thermal energy to these makes them to change their state in time and space. The intellect recognizes the changes in time, space, and their movement into various states. The intellect also recognizes that physical laws govern any change of state and a new glimpse of reality is revealed with the change of time and space of the states. I would like to see this book convey to the reader inherent concepts of time and space in Islam without going

[20] Bergson, *The Creative Mind*, p. 133.
[21] Bergson, *Creative Evolution*, p. 201.

extensively into general philosophical discussions without affecting the importance of various philosophers.

There is an inherent relationship between change and movement. The changes do occur in all things with movements in time. This movement can be internal to the structure of a thing or external. For instance, there may be changes to the external structure of a metal as it corrodes in time, or there may be other internal changes because of changes in the environment. Even for the physical sciences, movement is absolute in time-duration. We perceive duration, change, and movement only in relation to reality. Change in the state of a thing thus requires a time-duration. For the physical sciences it is impossible to perceive a change in time the state of a thing in time-duration is not measurable. When something moves we observe that movement only relative to our movements. This is still explainable and provable in terms of results.

However, spiritual changes also do occur and, at times, we are experiencing and are able to see such changes in others. It is therefore a very difficult task to explain a change in the spiritual state of creation that we know to be there, but have difficulty describing it or relating to it. We can ascribe spiritual changes to changes in consciousness and intellect. A great many of our observable facts are related to our intuition, which is further related to our consciousness and intellect. Our instinct is a recognizable form of our intuition and consciousness that governs our intelligence. While all of these changes are not directly measurable they are important in our functioning and it has been known to require material and spiritual changes to affect their development, change, and movement. While the material development of these activities gives rise to material knowledge, spiritual development of these activities gives rise to changed feelings, which influence our other activities and enhance our knowledge of ourselves.

The true self thus resists the transience of time as it has grasped time's real essence. Only in moments of proximity and love – the modes of creation – can the temporality of time be arrested and pure duration grasped[22]. This is the intuitive grasp of pure duration that makes history a creative act of real and enduring soul that leads to open challenges for the future. This is where the understanding and clear interpretation of time and space are critical in Islam. Its exploration, however, is a very difficult job. I regard extensive translation of numerous commentaries of Muslim thinkers as important next steps for gaining further insight.

Serial Time in Modern Cosmology

For centuries the Aristotle-Ptolemaic-Plato system dominated the scientific intellectual traditions where the planets were arranged in an earth-centered orbits so that the average distance between a planet and the earth increased with the time required for the planet to traverse the ecliptic. This concept worked for some planets, the sun, and moon for some time. Even the criticisms of Muslim and some European scientists went practically unnoticed for a long time. Nicholas Copernicus' *De Revolutionibus Orbium Caelestium,* was published in 1543 CE (the year he died), which brought about an upheaval in astronomical and cosmological scientific thought, later regarded as the Copernican Revolution.[23] In the Copernican system, the planets (Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, and Pluto), while they rotate about their own axis, each revolve in approximately circular orbits around and about the sun. The moon, unlike the Ptolemaic system, is no longer involved in planetary motion but revolves around the earth.

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[22] S. Alam Khundmiri, "*Conception of Time,*" in Hafiz Malik (ed.), *Iqbâl: Poet, Philosopher of Pakistan,* (New York, London: Columbia University Press, 1963), p. 246.

[23] Thomas S. Kuhn, *The Copernican Revolution: Planetary Astronomy in the Development of Western Thought* (New York: MJF Books, 1957), p. 173.

Modern astronomy, with the advent of advanced telescopes, has leaped forward in innovating numerous scientific realities. There are numerous moons orbiting around Saturn and other planets. Even many stars are now known to have planets as large as Jupiter revolving in orbits around them. Modern cosmology thus has advanced enormously in the acquisition of astronomical knowledge.

Darwin's theory of evolution during the nineteenth century brought about another major revolution in the thinking of modern scientists, which was criticized by many Muslim scholars. Albert Einstein's special relativity theory in 1906 was another major step forward, but Einstein himself was perplexed that somehow in this theory he did not address the problem of gravity. Hence, Einstein, in 1915, produced the general theory of relativity, which addressed the relativity concepts advancing from the earlier Euclidean geometry of the cosmos to Riemann's geometry of space-time. It is a fundamental premise of Einstein's general relativity theory that the mass of objects in the universe distorts space, so that even light does not travel in a straight line. This allowed Einstein to include the effects of gravity more accurately, thus providing a significant improvement over Newton's concepts of gravity, which were based on Euclidean geometry. Einstein's general theory brought a revolution in the early twentieth century, but since it regarded the universe as static, it notably had a flaw in the cosmic term of its equations. Recently, numerous attempts have been made to overcome this flaw in the general relativity equations by improving upon the cosmological constant in the cosmic term of the general relativity equations.

Our knowledge of various times in various planets is a function of the space they occupy. Mercury is the fastest of the planets and hence Mercury's year is much shorter than our earth's; likewise Pluto's year is much longer. The orbital velocity given in the following table is given for all planets in our galaxy. The changes in the times at various planets also affect changes in their

environment. As further research yields more results, our knowledge of the universe continues to increase. This information collectively is fostering a better basic understanding of our galaxy. Note that Jupiter has the largest mass and largest momentum (m x v) of all planets in the galaxy.

Table 1: Space and Time Data for Various Planets.[24]

Planet	Mean distance from sun (10^6 Km)	Equator diameter (km)	Mass (Kg)	Mean Orbital Velocity (km/sec)	Average density (Kg/m^3)	Orbital Period (fraction of earth's year)
Mercury	58	4,878	3.3×10^{23}	47.9	5400	0.24
Venus	108	12,104	4.9×10^{24}	35.0	5200	0.62
Earth	150	12,756	6.0×10^{24}	29.8	5500	1.00
Mars	228	6,794	6.4×10^{23}	24.1	3900	1.88
Jupiter	778	142,800	1.9×10^{27}	13.1	1300	11.86
Saturn	1426	120,000	5.7×10^{26}	9.6	700	29.41
Uranus	2870	51,120	8.7×10^{25}	6.8	1300	84.04
Neptune	4497	49,528	1.0×10^{26}	5.4	1700	164.8
Pluto	5914	2,300	1.3×10^{22}	4.7	2000	248.6

Note that the number of years for each planet is represented as a fraction of the Earth year. It is realistic to think of the number of years for each planet from its own orbital and rotational information.

Table 2: Space and Time Data for our the Sun

Star	Radius (km)	Mass (kg)	Mean Density (kg/m^3)	Distance from Center of Galaxy (ly)	Orbital Period around the center of Galaxy (years)	Orbital Velocity around the center of Galaxy (km/s)	Light travel time to Earth (min)

[24] William J. Kaufman III, *Universe* (New York: William J. Freeman, 1991), pp. 129-130.

Sun	696,000	1.99×10^{30}	1410	25,000	200,000,000	230	8.3

The orbit of Pluto is 39 times longer than the earth's, but Pluto's year is 247 earth years because it moves slower. Using radio waves, the rotation curve of our own galaxy is measured.

Modern scientific theory states that the universe was created through a single event, known as the "Big Bang," and is uncertain with respect to life before and after this event. Hubble made it known to Western scientists around 1930 that the universe was indeed an expanding universe. In fact, its expansion is accelerating. This caused a revolution in the scientific world. Further developments of Hubble's space telescope confirmed this with physical data. Hubble measured the Doppler shifting of the lines, most appeared to be moving away from us or "red-shifted, in the spectra of many galaxies. Stephen Hawking, Lawrence Krauss, and others have pointed out that a large volume of the universe is occupied by a large dark mass that cannot be observed by even the most powerful telescope. Current research indicates that the "Echo of the Big Bang" is reflected in the cosmic microwave background, known as CMB. The inherent feature of the cosmic microwave background, besides its amazing degree of isotropy, is that it is a "thermal" remnant from the time the universe was a hot dense smooth plasma, under which it glows and emits light, which is a type of electromagnetic radiation. Early in this century numerous scientists, technologists, and physicists, including some from the University of Chicago, have been engaged in an experiment at the South Pole, called the Degree Angular Scale Interferometer (DASI) to receive accurate cosmic microwave background data. The experiment data are used to develop a power spectrum for comparing theory with experiment, which allow us to gather information about the nature of the universe. John Carlstrom and his team at the University of Chicago have also reported the effect of polarization on CMB when the CMBs pass through the poles. Recently NASA has launched many satellites designed to study this microwave background and dark mass. Future NASA projects also include the design and science capabilities of Laser

Interferometer Space Antenna, known as LISA, as part of their Beyond Einstein initiative which will focus on strategies for detecting stochastic backgrounds. The result of these experimental ventures is likely to open an era of gravitational wave astronomy, known as the Cosmic Gravitational Background (CGB), that is likely to give us information about gravitational waves from early universe. The design of the Hubble telescope is also being improved to increase understanding of the phenomenon. The new telescopes being designed will also focus on a study of the effect of neutrinos in numerous stars including the sun. It is believed that any future supernova is expected to provide enormous information on neutrinos, whose study in turn will generate better information and knowledge about the sun and the stars. The cosmic structure of the universe will probably be quite different, including time and space concepts, than what is currently known when this cosmic microwave background and the cosmic gravitational background are investigated further. It has been pointed out that there may even be an antigravity force emanating from dark mass that may be important in the continuous expansion of the universe. Furthermore, under these conditions, it is difficult to imagine how galaxies are isotropic and together in such an expanding universe.

Cosmology in the Qur'ân

There are more than 460 verses in the Qur'ân that directly refer to various aspects of the heavens and the earth. Those verses that reflect the topic of time and space are presented in the following:

> Are, then, they who are bent on denying the truth that the heavens and the earth were [once] one single entity, which We parted asunder? And [that] We made out of water every living thing? Will they then not believe? (21:30).

This is a direct reference to the fact that this universe has originated as one entity from a single element, namely, hydrogen,

which became subsequently consolidated through gravity and then separated into individual nebulae, galaxies and solar system, with further individual parts progressively breaking away to form new entities in the shape of stars, planets, satellites. It is an indication of how creation develops, step by step, under one Creator with a unitary plan. It is through this verse that we can later study the assumptions made in the Big Bang theory developed in modern cosmology. However, such details are not the subject of this work.

> Allah is He Who raised the heaven without any pillars that you can see. Then He rose above the Throne [`Arsh]. He has subjected the sun and the moon, each running [its course] for a term appointed. He manages and regulates all affairs; He explains the verses in detail, that you may believe with the meeting with your Lord (13:2*)*.
>
> It is He Who has created the heavens and the earth in due proportion" (6:73).

Allah mentions His perfect ability and infinite authority, since it is He Who has raised the heavens without pillars by His command and has elevated heavens high above the earth, distant and far away from reach. According to a hadith narrated by Ibn Mas`ud, the heaven nearest to the present world encompass the earth from all directions, and is also high above it from every direction. The distance between the first heaven and the earth is five hundred years from every direction, and its thickness is also five hundred years. The second heaven surrounds the first heaven from every direction, encompassing everything that the latter carries, with a thickness also of five hundred years and a distance between them of five hundred years[25]. Such may also be true for all heavens.

[25] Shaykh Safiur Rahman al-Mubarakpuri, et.al, *Tafsir Ibn Kathir* (Abridged) (Riyadh, Houston, New York: Darussalam Publishers & Distributors, July 2000), Vol. 5, pp. 231-232. Note that Ibn Kathir uses and references the Hadith quoted by Ibn Mas`ud and others: see *Al-Mukhtasir*, p. 103; *al-Mujama`*, 1:86, and al-Tirmidhi, 2:525.

> And among His signs is this, that heaven and the earth stand by his command. Then when He calls you, by a single call, from the earth, behold, ye come forth. (30:25)

> Consider those that rise only to set, and move with steady motion, and float with floating serene, and yet overtake with swift overtaking, and thus fulfill their behest. (79:1-5)

According to `Abd Allah ibn `Abbas (as quoted by Baghawi and al-Razi), this refers to the mansions or stages through which the sun and the moon, like all other celestial bodies, move in time as well as in space. In the first of the verses quoted above, the word *samâwâ* refers to the spatial universe in which all aggregates of matter—be they planets, stars, or nebulae—are suspended in space within a system of unceasing motion determined by centrifugal forces and mutual gravitational attractions. Qatadah, al-Tabari, al-Baghawi, al-Hasan al-Basri, Abu `Ubaydah, and al-Razi support the interpretations of the above verses translated by Muhammad Asad. According to the above, the daily rising stars, their overtaking, passing from constellation to constellation, followed by their setting are allusions to the different speeds of orbiting stars as well as to the extent of their orbits and movements in space in relation to one another.[26]

> To Him belongs every being that is in the heavens and the earth: all are devoutly obedient to Him. (30:26)

> It is He who begins [the process of] creation; then repeats it; and for Him it is most easy. To Him belongs the loftiest similitude [we can think of] in the heavens and the earth: for He is exalted in Might, full of wisdom. (30:27)

> He [God] adds to His creation what He wills. (35:1)

[26] See *Surat Al-Ra'd, and Surat Al-Nazi'a* in Muhammad Asad, *The Message of the Qur'an* (Gibraltar: Dar Al-Andalus, 1993).

> And among His signs is the creation of heavens and the earth, and the variations in your languages and your colors, verily in this are signs for those who know. (30:22)

It is indicated above that His creativity is boundless; He continues the process of creation. Human language is incapable of fully expressing this divine boundless creativity, and we can only refer to it through similitude and through the limits of our thought process. Without the moral and spiritual significance of the Reality behind the creation of the heavens and the earth, all creations become mute and any doctrine built on this last effect ultimately fails.

> Allah, it is He Who has subjected to you all that is in the heavens, and all that is in the earth; it is]all [as a favor and kindness] from Him. Verily in it are signs for a people who think deeply. (45:13)

It has also been stated at many places in the Qur'ân that the heavens and the earth are created with truth or for just ends, as it is intimately connected with the role of human beings. Hence, recognizing the truth and justice in all creations can only lead to the understanding of true benefits to human beings and all creations. We are challenged to always seek higher principles to derive God's signs. The Truth (*al- Haqq*) of God is at the highest level and every other *haqq* is derived from it. The most direct reflection of *Haqq* are: Divine scriptures and the Prophets whose *huquq* are the contingents of the Reality (*Haqq*).

> He it is Who has created the heavens and the earth in accordance with [the inner] truth – and whenever He says, "Be", His Word comes true, and His will be the dominion on the Day when the trumpet is blown. He knows all that is beyond the reach of a created being's perception, as well as all that can be witnessed by a creature's senses or mind, for He alone is truly wise, all-aware. (6:73)

The implication is that without differentiation between right and wrong—or true and false—there would be no "inner

truth" in the concept of a divinely planned creation. Recognizing the truth in the heavens also involves scientific processes based on which the universe is built. It also recognizes that extensive scientific investigation may provide in-depth understanding of the creations but may not reach the Truth as a whole. The precise determination of the Truth is therefore a continuous process.

According to al-Zamakhshari, al-Baghawi, and al-Razi God has not created this world except in accordance with the Truth; that is, to fill a definite purpose in consonance with His wisdom. This implies that everything in the universe—whether existent or potential, concrete or abstract—is meaningful, and nothing is accidental.

Creations are subject to Time, but the Creator is not. His word is the key that opens the door of existence. It is not only the starting point of existence, but the whole measure and standard of Truth and Right. His judgment seat will, with perfect justice, restore the dominion of Right and Reality, for His Knowledge and Wisdom cover all reality. Unity of design in creation also proves the Unity of Allah the Creator. Belief in the existence of a meaning and purpose underlying the creation of the universe is a logical corollary to one's belief in God.

> See you not that Allah has created the heaven and the earth in accordance with [the inner] Truth. (14:19)
>
> He has created the heavens and the earth for just ends. (16:3)
>
> Allah has created the heavens and the earth in true [proportions], and in that is a sign for those who believe. (29:44)
>
> Say – go through the earth and see how God hath brought forth all creation; hereafter will give it He another creation. (29:20)

> Verily, it is God who holds the celestial bodies and the earth, less they deviate—for if they should deviate, there is none that could uphold them after He will have caused to do so. (35:41)

> He created the heaven and the earth in proportions. (39:5)

> Allah created the heavens and the earth for just ends, and in order that each soul may find the recompense of what he has earned, and none of them will be wronged. (45:22)

In all Allah's creation, not only is there intelligent Purpose, fitting all parts together with Wisdom, but also of supreme Goodness and cherishing Care, by which all needs are satisfied and all the highest and truest cravings fulfilled. These are like beckoning signals for those who pray and search in Faith, those who with the most intense desire of their soul can pray.

> And it is We who have built the universe with power; and, verily, it is We who are steadily expanding it. And the earth have We spread out wide – and how well have We ordered it. And in everything have We created opposites, so that you might bear in mind. (51:47-49)

The above passages indicate that the universe is constituted in such a way that it can be extended. Man has been identified as the trustee and given the challenge to affirm his inner-self (spiritual-self), as he discovers the material world. The universe, thus, is not a fixed block, but rather subject to swing and impulse, or the swing of time and space, which appears to us as the movement of day and night. All the galaxies and stars traverse the cosmic spaces subject to God-willed laws, or Divine laws, of which the law of gravity is only one. The heavens and the earth represent the expanding or dynamic universe including visible and invisible world representing the world in which we live and the world we call the hereafter. The above challenge of an expanding universe indicated in the phrase in above verse (*inna la-musi`ûn*) indicates the cosmos, which though finite in extent, is continuously

expanding in space. The Qur'ân repeatedly calls God as the "Originator" and the "Creator" of the world. The heavens and the earth, their creation and their existence, are dominated by oneness and uniqueness and lead back to the originator.

This Qur'ânic notion is thus a departure from the Aristotelian view of the fixed universe, and gave Islam the impetus for investigation into the sciences. For nearly twelve centuries, the Greek scientific and philosophical notion that the earth was at the center of the universe dominated the world. Even Muslim scholars for two to three centuries could not resist these influences of the time. Eventually they began to recognize the dynamism in the cosmological concepts offered by the Qur'ân, which resulted in their important contributions to astronomical science.

The astronomical scientists ignored the Qur'ânic knowledge of the expanding universe for over thirteen centuries. Thus our perception about the universe remained in darkness until 1930, when Hubbard discovered that the universe was actually expanding. Hence, our perception of reality changes with our knowledge of the underlying principles.

Important Historical Works

I am indebted to Professor Nasrollah Pourjavady from the University of Tehran, Iran for providing me with some of the key documents: (1) *Asâr-i-Fârsi* which contains numerous treatises that are mentioned in detail in the following, (2*)* Mîr Dâmâd's *Al-Qabasât,* which contains an introduction by T. Izutsu and an article by Fazlur Rahman, (3) Fakhr al-Din Mubarak Shah Marorody's *Rahiq Al-Tahqiq,* which contains an introduction by Professor Nasrollah Pourjavady. I am very grateful to Dr. Jon McGinnis who provided me with the translation of a chapter on time from Ibn

Sînâ's *Naja*[27], and also provided a translation of four chapters on time and motion from Ibn Sînâ's *al-Shifa'*[28]. Some of the research into these documents is presented in several articles in this book, but a great deal of investigation remains to be conducted for a comprehensive study of these documents.

One of the important documents in the literature known as *Ghâyat al-Imkân fi Dirâyat al-Makân* (The extent of possibilities in the exploration of space) has been widely accepted as a reference document on time and space over the centuries but, its authorship has been questioned several times. In one instance, Iqbâl attributed this work to Fakhr al-Din Iraqi. Later, Rahim Farmanish, a well known scholar from Iran edited the treatise *Ghâyat al-Imkân* but credited the original authorship to Ali al-Miyanji al-Hamdani, which was translated into English by Abdul Hameed Kamali, a scholar from Pakistan. However, recently, Mael Harovi, another well-known scholar from Iran, has edited Sheikh Taj al-Din Ushnohi's treatise called *Asâr-i-Fârsi,*[29] which includes the chapter on *Ghâyat al-Imkân* , with a comprehensive discussion of it called *Muqadama. Asâr-i-fâri* also includes several key articles from other ancient authors of considerable importance. All the works in *Asâr-i-Fârsi* decisively prove the authorship of Sheikh Taj al-Din Ushnohi on *Ghâyat al-Imkân* which is now mostly accepted in the academic world. I must point out that Shigeru Kamada also arrived at this conclusion recently

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[27] Jon McGinnis, *Time and Time Again*: *A Study of Aristotle and Ibn Sînâ's Temporal Theories* (Philadelphia, Pennsylvania: Ph.D. Diss., University of Pennsylvania, 1999), pp. 397-405.

[28] From Ibn Sînâ's *al-Shifâ'* (*al-Shifa', al-Tabı*^{c}*iyyât,* vol. 1 *Al-Samâ*^{c} *al-Tabi`i),* ed. Sa`id Zayd (Cairo, Egypt: The General Egyptian Book Organization, 1983), pp. 171.15-172.5. Note that J. McGinnis translated this work into English.

[29] Sheikh Taj a-Din Ushnohi, "*Ghayat al- Imkan Fi Dirayat Al- Makân*" (Section I of the *Asar-i-Farsi*), ed. Mael Harovi, (Tehran: Kutub Khana Tahuri, Khiyaban-i-Inqelab, 1368 F [Farsi calendar]. This work is in Persian and was translated into English by Professor Nisar Ahmed Faruqi and is presented here in this book as Appendix A.

when he verified Mullâ Sadrâ's use of the treatise in his work.[30] While the authorship of the treatise on *Ghâyat al-Imkân* has been disputed, the content of the treatise is very similar and did not change the subject matter. I found during the course of my own research that this treatise has been used and referenced by many great ancient Islamic scholars (long before Iqbâl) uch as Mullâ Sadrâ, Khwâja Mohammed Pârsa, Khwâja Mehboob Illahi Dehlvi, Shâh Walliullâh, Sheikh Ahmed Sirhindi, and many others (or nearly 400 years) mostly referencing the work to Sheikh Taj al-Din Ushnohi. Shigeru Kamada has a full discussion on Mullâ Sadrâ's reference to Ushnohi's treatise and the authorship of it. I am delighted to say that this book not only presents a historical resolution of this issue, but also presents the English translation of *Gâyat al-Imkan* by a well-known scholar and critic of Arabic and Persian language from India, Professor Nisar Ahmed Faruqi. This translation, herewith included in Appendix A, is a very important contribution by Professor Faruqi to the literature. Several key old treatises from *Asâr-i-Fârsi*, including those by Khwâja Muhammad Pârsa, Khwâja Mehboob Ilâhi Dehlvi, 'Ala al-Daulah Simnani, Aziz al-Din Nasafi, Ibn al-Fârid, 'Abd al-Rahmân Asfrâ'ini, and Afdal al-Din Kashani were also translated [from Persian into English] and are included in Appendix B herewith. I have also found another key reference on space, a paper by Ibn Haitham[31] which has been translated [from Arabic into English] by Mohd. Imran Azmi. This is included in Appendix C. Ibn al-Haytham's treatise on space in Arabic was located at Da'irat al-Ma`arif in Hyderabad.

Sheikh Nizâm al-Din Auliyâ (also known as Khwâja Mehboob Ilahi Dehlvi) said: "Some spiritually elevated person might have taken rest under that tree and all that you experienced

[30] Shigeru Kamada, "*Time and Space in Mullâ Sadrâ's Mystical Thought Through His Reference to Ushnohi*": http://www.MullâSadrâ.org/papers/kamada.

[31] Ibn al-Haytham (d 430 A.H), *Al-Makân* (Hyderabad, India: Da'irat al-Ma`arif , 1985), Catalog No: 128, Treatise No: V. This treatise is in Arabic and was translated for us by Mohd. Imran Azmi and is in Appendix C.

was the effect of his spirituality". In this context Sultan al-Mashâ'ikh (this title meaning "authority of the saints") was given to Sheikh Nizâm al-Din Auliyâ) who recited a verse:

> Every land yields the secret of its being
> As if they [saints] are like rains in various parts of land.

The above quotes are included in Appendix B.[32] Khwâja Mehboob Ilâhi Dehlvi's 13th century article is presented for the first time in English and will be an important source for understanding spirituality.

Khwâja Muhammad Pârsa, reports in his article[33] a statement from Sheikh Abu al-Hasan Kharrikani in which he said: "One night they captured us from our selves while we were doing our daily chants. When we returned to ourselves, our faces were still wet with ablution water." This early article helps us understand spirituality and provides us with an important document, which supports Ushnohi's concepts.

'Ala' al-Dawlâh Simnani's article on "Universal Time" is another early work which demands careful study. "The universe is sempiternal," he states and with this saying he underscores that singulars did not exist prior to visionary universal time. Universal time refers to the beginning of the movement of the celestial sphere.

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[32] Sheikh Nizam al-Din Auliya (also known as Khwaja Mehboob Ilahi Dehlvi, and Sultan al-Masha'ikh (d. 725 A.H): "Comments on the Superiority of Space Over Space and Time Over Time and the Reality of Time and Space." Note that this article is given in Section IV of the *Asar-i-Farsi* edited by Mael Harovi, mentioned above. This work is in Persian and was translated into English by Professor Nisar Ahmed Faruqi and presented in Appendix B. It is an article dictated by Sultan al-Mashâ'ikh to one of his disciples as is indicated by the title of the article in this reference.

[33] Khwâja Muhammad Pârsa, "Some Connoisseurs Statements on Tahqiq of Space and Time." Note that this article is given in Section IV of the *Asar-i-Farsi*, edited by Mael Harovi. This work is in Persian and was translated into English by Professor Nisar Ahmed Faruqi and is presented here in Appendix B.

Mîr Dâmâd's *al-Qabasât* is considered one of the most important documents on time concepts in Islam. The introduction of this document in English by T. Izutsu, and Fazlur Rahman's article provided significant important details about this work, which were extensively used in some articles. However, the imperative that *al-Qabasât* be translated from Arabic into English remains before we can fully know the validity of these concepts. The difficulty here is that the Qur'an has a very limited mention of *al-Dahr* and *al-Sarmad*. It is, therefore, very important to engage in a critical review of Mîr Dâmâd's *al-Qabasât* which expands these concepts into three volumes. This work has proven to be a significant contribution on the concepts of essences and existences which have been explicated in detail later.

Ancient Islamic/Arab Heritage

Professor Asad Nimer Busool's paper on "The Ancient Arabic Calendar" provides very important and useful historical information on the influence of both the pre-Islamic and Islamic Arab heritage in finally establishing the Islamic *hijri* calendar. There was a significant ancient Arab tradition for figuring time and weather conditions based on the movement and position of stars. Later, the Qur'ân provided extensive knowledge on the number of months and the fixing of various seasons and months based on the *hijra* calendar. It is to be noted that Professor Busool's work presented is based on the extensive historical data that he collected. The data collected represents the pre-Islamic lunar-solar calendar, after the time of *al-'Arab al-'Aribah*, when there was a desynchronization due to intercalation. As described in "Al-Nasi" section of his paper, this intercalation in the lunar-solar calendar was stopped immediately when the revelation of *Surat al-Tawbah* occurred. The verse states: [34]

[34] Al-Mubarakpuri, *English Translation of Tafsir*, vol. 4, p. 419.

> Verily, the number of months with Allah is twelve months [in a year], so it was ordained by Allah on the Day when he created the heavens and the earth; of them four are sacred (9:36).

In Ibn Kathir's *al-Tafsir*[35], an important hadith is given as follows:

> The division of time has turned to its original form which was current when Allah created the heavens and the earth. The year is of twelve months, out of which four months are sacred: Three are in succession: Dhu al-Qa`dah, Dhu al-Hijjah and Muharram, and the fourth is Rajab (of the tribe of Mudar), which comes between Jumada II and Sha`ban.

Professor Busool's paper, therefore, presents a very important subject based on a close reading of primary sources.

Islamic Views on Time, Space, and Motion in Islam

The paper on "The Architecture of Time, Space, and Motion in Islam" attempted to build the foundation of this topic based on the Qur'ân, Hadith, and some critical reference literature. Undoubtedly, the Qur'ân is the best and the original source of the conception of time, space, and motion in Islam. However, the investigation of numerous Islamic scholars is also extremely valuable for the understanding of the numerous interpretations of the Qur'ân on the subject. The Qur'ân often refers to various time and space references without going into too much detail on the content. While we are challenged to reflect on these references, we are also required to develop logical conclusions derived from the concepts explained in a limited way in the Qur'ân and the Hadith.

This paper addresses many philosophical and psychological issues that emanate from references to the basic concepts of time, space, and motion in the Qur'ân and Hadith. For example, this

[35] Ibid.

paper points out that human beings confront various time modes through their inner-self development, a subject essential for their spiritual development. Further, it is pointed out that various physical changes in the universe are due to divine laws of time, space, and motion.

The paper also provides an extensive review of Ibn Sînâ's dual principles of essences and existences, al-Suhrawardî's philosophy of illumination, and Mullâ Sadrâ's discussions on existentialism. This paper presents a "religious philosophy of essences and existences," which gives importance to both essences and existences.

Adnan Oktar, writes under the name of Harun Yahya. His article on "Timelessness and the Reality of Fate" provides his interpretation of the Qur'ânic concepts of relativity. This article asserts that in the light of scientific findings, materialism has utterly collapsed. It states further that it provides significant evidence regarding the relativity of time and space, introducing some facts that were not known before. Time comes to exist as a result of the comparison made between some illusions stored in the brain; without this memory one would not make interpretations and therefore would never have formed the concept of time.

Precise Determination of the Truth

The Mu'tazilites were the early Muslim thinkers in the early Islamic period who regarded faith as being based on knowledge, not obedience, contrary to what T. J. de Boer has claimed.[36] Logic-based discussion in religious thought and teaching was termed *kalâm*, and those who engaged in this acitivity were known as Mutakallimün. History tells us that the Mu'tazilites were greatly influenced by Greek thought in their

[36] T. J. de Boer, *The History of Philosophy in Islam*, tr. Edward R. Jones (Darya Gunj, New Delhi, India: Cosmo Publications, 1903), p. 43.

interpretations of the Qur'ân.[37] T.J. de Boer regards the Mmutakallimün as dialectic theologians who followed the doctrine of the free will of the Christian scholars. This may have been true of the Mmutakallimün of the Mu'tazilites tradition but the Mutakallimün of the Ash`arite school began repudiating Greek influences in Islamic thought, as it was this school that brought about the intellectual revolution in Islam discussed later in this volume.

Another important and critical event that demands attention is the doctrine of *wahdat al-wujûd* (literally "the unity of being") that made its way into Sufism through neo-Platonism, which was established as an independent school of thought in the third century CE. According to Abu Sayeed Nur-Ud-Din[38] *wahdat al-wujûd* was brought into Sufism during the late 9th century and early 10th century CE. *Wahdat al-wujûd* is used in Sufism to refer to monism. Abu Yazid Tayfur ibn Isa(also known as Bayazid al-Bistami) was an exponent of this philosophy and played a critical role in introducing this principle into Sufism under the name of *wahdat al-wujûd.*

Professor William Chittick offers an excellent discussion on Ibn al-`Arabî's enumeration of *tawhid* or the assertion of God's unity. He extends the discussion of *tahqîq* according to Ibn al-`Arabî. Ibn al-`Arabî does not single out time and space for special attention, but a good deal of what he says about the human situation has a bearing on their nature, and it is not difficult to find passages that illustrate his understanding of their reality in rather explicit terms. For him, the two terms express correlative dimensions of our experience

[37] Note that the Greek scientists and philosophers, Plato in particular, believed that the earth was at the center of the universe and believed in a static and fixed universe. This influence dominated the world for centuries of Christian era and even first three hundred years of Islamic era, when the scientists began to recognize some of the dynamism of the universe.

[38] See Nur-Ud-Din Abu Sayeed, "Attitude toward Sufism" in Hafiz Malik, *Iqbâl: Poet, Philosopher of Pakistan*, Chapter IV, p. 287.

of the world. Both are rooted in the reality of God, but they reveal God's signs to us in different modalities.

Ibn al-`Arabî is described in the paper as someone who had all the qualities of a Sufi, a philosopher, a theologian, a jurist, and a Hadith expert combined in him. He is better judged as a *muhaqqiq,* while *tahqîq* refers to his "verification" and "realization". A true grasp of the role of time and space in *Ibn al-`Arabî's* thinking is reflected in *tahqîq* as a methodology. The way to verify and realize something—that is, to discern its *haqq* and act accordingly—is to see how it displays the signs of God. This is the *tahqîq* that leads to the true understanding of time and space.

Such a beautiful approach toward defining the true essence of time and space is demonstrated by one of the most capable scholars of our time, William Chittick, through the study of *Ibn al-`Arabî's* philosophy.

In addition to Ibn al-`Arabi, Professor James Morris extends the discussion of *tahqîq* further to other Muslim thinkers, al-Ghazâlî and Mullâ Sadrâ . He discusses the treatment of these three Muslim thinkers of the times of the "greater" (universal) and "lesser" (individual) "rising" (or Resurrection: *al-qiyâma*). He points out that the overall theme of *qiyâma* is particularly relevant to any discussion of the concept of "time" in Islam because of its centrality in the Qur'ân: the multitude of verses relating to that subject in the Qur'ân are inextricably connected with any Muslim thinker's conception of the ultimate purpose or finality of human existence and action, as well as their notions of the proper paths and means to reach and fulfill that purpose.

Knowledge and Substance

Undoubtedly, the Qur'ân was the ultimate source of knowledge of the early Muslim thinkers, the Mmutakallimün

(dialectic theologians) and the Sufi scholars, but they were greatly influenced by Greek tradition and, in particular, the neo-Platonic Aristotelian tradition. This led on their part to a denial of time as a constituent of reality. According to these traditions time is also unreal as the universe of sense experience is unreal. Later, the Mmutakallimün, particularly of the Ash`arite school, adopted an atomic view of time.

The scientists and philosophers, including Aristotle, regarded the universe as fixed. The Ash'arites[39], the subsequent Muslim thinkers, repudiated this and brought forth an intellectual revolution that was predominant in the history of Islamic thought in the rise and growth of "atomism in Islam". According to them the visible universe is constituted of infinitely tiny particles or atoms that are indivisible. The atoms cannot be finite because the creativity of God is limitless. They are being created each moment. Ash'arites became highly subjective in their tendency to reduce Divine Will and Nature to the Omnipotence of God. It is the creative self of God that allows the space to be generated by their aggregates and the space to be growing. These aggregates are subjected to accidents that are operative and visible in Time and are also liable to disappear and collapse. The continuous existence of the atoms very much rests on the creation of accidents in them. Many scholars such as Fakhr al-Din ar-Razi, Ibn Sînâ, Mîr Damâd, and Mullâ Sadrâ, wrote works on the substance of time, space, and motion and particularly addressed the subject of "atomism in Islam" leading to the study of time-atoms. According to them *jawhar* (atom) is an entity irreducible to another entity. Time in the presence of God is *jawhar* (substance or entity). All creations in the various universes are composed of these aggregations that form matter. Even the human self is composed of the aggregates of atoms called *jawhar* that act according to the will of the self.

[39] Abu al-Hasan al-Ash`ari (d. 935) was the founder of the Ash`ari school of theologians.

God has conferred upon the atoms to act alone or in aggregate within the environment bestowed upon them, as they are part of the fabric of the universe. The very idea of their creative change and movement uphold the Qur'ânic view that the universe is dynamic and is subject to movement and growth. Thus, the atomic theory of creation giving a direct relationship to the space occupied by atoms is very much justified and tied to the expanding universe.

The Mutakallimün, and particularly, the Ash'arite School, brought about a revolt against the intellectual philosophers who always looked for the rational study of the universe. The scientific method followed by these intellectuals ignores the ultimate authority of the revealed scriptures. Thus there always existed an apparent incompatibility between Divine Omnipotence and the universal law of causality. The Mutakallimün and particularly the Ash'arites tended to depict God as a force acting upon every atom of the universe. They influenced the investigation of time from this perspective. The early Mutakallimün–Mu`tazilites initially adopted atomic synthesis in metaphysics rather than the homogeneous substance approach of Aristotle. It was al-Nazzam[40] from the Mu'tazilites school of Basra who solved Zeno's paradox of a vacuum between every two atomic positions through a theory of jump to overcome the difficulty of motion, which is being discussed in several places.

The Ash`arite atomism from the school of Baghdad developed by Abu Bakr Muhammad ibn al Tayyib al-Baqillani was based on the doctrine that God is the free Creator of atoms of the universe every moment. This helped them to repudiate rationalists who regarded existence and essence as identical[41]. The Ash'arites, on the other hand, maintained that existence constitutes the very being of the essence.

[40] Al-Nazzam (d. 845 CE) was a contemporary and a disciple of Abu al-Hudhail.
[41] Mohammed Iqbal, *Metaphysics of Persia* (London: Luzac & Co., 1908), . 82.

Dr. Jon McGinnis presents Ibn Sînâ's critique of temporal atomism and his argument that time really is continuous. His work provides an analysis of the relation between the now and time. Time must be such that either it is potentially infinitely divisible or it is not. These two options exhaust the possibilities. If time is potentially infinitely divisible, then time is continuous. If time is not and the process of division ends with some ultimately indivisible unit, then time has an atomic structure. Since these two positions are mutually exclusive, any complete account of the nature of time must commit itself to one side or the other. Moreover, in arguing for either a continuous or an atomic thesis, a complete account of time should expose the fallacious reasoning of any arguments for the opposite side; and likewise it should disarm any critiques against its own position.

Ibn Sînâ's account of time is no exception. Ibn Sînâ argues that time is a magnitude (*miqdar*) of motion, but realizes that this conclusion is compatible with time having either an atomic or a continuous structure. In the end, he maintains that time is continuous. In contrast to Ibn Sînâ 's position, various Mutakallimün, or Islamic theologians, ardently held that time is atomic, something composed of temporal units (*awqât*). Furthermore, Ibn Sînâ had inherited from the ancient Greek world a series of puzzles that suggested that time could not be continuous. Consequently, it was incumbent upon Ibn Sînâ not only to refute the atomic account of time present in the Islamic milieu, but also to defend his own position from attacks embedded within the Greek philosophical tradition within which he worked.

In this paper, McGinnis discusses Ibn Sînâ's temporal theory and the arguments for this theory, and then focus on Ibn Sînâ 's attack on temporal atomism and his defense of the continuity of time.

Dr. Mehdi Aminrazavi has carried out the monumental task of translating portions of the Q*abas*â*t* of Mîr Damâd (d. 940/1631),

who was the founder of the School of Isfahan and the teacher of the grand metaphysician of Iran, Mullâ Sadrâ. Mîr Damâd who is often referred to as the "philosopher of time" develops a tripartite concept of time in his major work *Qabasat*. Known as *azali*, *abadi* and *sarmadi*, these concepts of time are related to different ontological domains and interact with each other in a complex manner. In this discussion, salient features of each of these types and their relationship to each other as well as to God were analyzed, interpreted, and discussed in his paper.

The study of interactions and interfaces of back-and-forth transport between *al-zamân* and *al-dahr* or *al-sarmad* is almost an impossible task although I recognize that there have been and will be some efforts in this area of research. It is *sarmad* (eternity) through which God holds *dahr*, which then holds *zamân* (serial time) that makes it important to make every attempt possible to understand unknown interactions.

Ibrahim Kalin makes another very valuable contribution through his comprehensive study of Mullâ Sadrâ's concept of motion (*harakâh*) in his *al-harakât al-jawhariyyâh*. He cites Mullâ Sadrâ's account for change in the order of nature, and the classical concept of substance (*jawhar*) into a 'structure of events', and a 'process of change', abandoning the idea that substance is the ultimate building block of things. Kalin's study outlines Sadrâ's highly articulate notion of nature and motion, and shows the way in which Sadrâ utilizes substantial motion to weave his natural philosophy and cosmology.

Mullâ Sadrâ 's cosmology is based on a qualitative understanding of the order of nature where the concept of motion occupies a central place. As Mullâ Sadrâ contends, nature cannot be reduced to pure quantity because every change in the world of nature, whether it is positional, spatial or temporal, is the outcome of the 'existential transformation' in the very substance of things. His thought is based on the dynamic nature of the substance, which

does not exist separately from the quantitative aspect. According to him the world of nature in constant movement is subject to change resulting in growth and development.

"Doctrines of Space-Time, Continuous Creative Movement, Atomism and Iqbal" by Dr.Habib Uddin Ahmed offers numerous time and space concepts encountered in many of Iqbal's works.

The fact that the atoms are a-historical and yet endowed by the 'created ability to act' and become co-sharers in the creative energy of God or the ultimate will establishes Iqbâl's link with the Ash'arites. For him time is involved in creation and time and motion are close coordinates or interchangeable entities. He makes a clear distinction between Human time and Divine Time or more specifically between time and duration, which the latter may be used for measuring the ordinary time spans.

It is very important to point out that Iqbâl carried his discussion using the terms human time and Divine Time, which he regarded as Time without succession. He didn't precisely go into a discussion of the triple concept of time. In the context of Muslim philosophical thought, time or *zamân* is distinguishable from *dahr* and *al-dahr*.

Iqbâl's references and discussions on Samuel Alexander's[42] view on time as the mind of space, Albert Einstein's[43] view on time as the fourth dimension of space-time [three dimension of space and one dimension of time], emphasizes his inclination to regard time as more important

[42] Samuel Alexander, *Space, Time and Deity* (The Glifford Lectures at Glasgow, 1916-1918, London: 1920), 2 Vols.
[43] Leonard Mlodinow, *Euclid's Window: The Story of Geometry from Parallel Lines to Hyperspace* (New York, N.Y: The Free Press, a division of Simon & Schuster, Inc., 2001), Chapter IV: "Story of Einstein," p. 153.

within the space-time fabric. Henri Bergson's view on pure duration and creative evolution, were important to build a good intellectual platform to elucidate the case of time and space.

Cosmological Views and Modern Concepts:

Professor Sachiko Murata has an outstanding paper on "Islamic Cosmology in Chinese Language." As in other parts of the Muslim world, the Muslim thinkers in China made a significant effort to present Islam within local traditions and local language idioms. They, however, paid little attention to time and space as such. Rather, they were concerned to illustrate how the universe manifests the continuing cycle in the Supreme Principle, also known as the "Real Lord" and the "Tâo". In their way of looking at things, the fundamental issue was not the nature of the physical world, but rather the nature of the Human Ultimate, which is the principle of human nature prefigured in the Real Lord himself. Only when we understand the Human Ultimate can we grasp how the universe comes to exist and how all creatures return to the Principle from which they arose. The subject of time, space, and movement as occurs in ancient Chinese discussions of change can of course be fruitfully compared to many theological discussions of change in Islamic thought, ranging from *Ash`arite* atomism, to Ibn al'Arabî's renewal of creation at each instant, to Mullâ Sadrâ's idea of substantial movement.

Abdul Hameed Kamali's article offers a valuable "Cosmological Views of Time and Space in Islam" is a valuable contribution to this area. It should be noted that he is the author of the work *Space, Time and Orders of Reality*,[44] which covers a mixture of Western and Islamic concepts of time and space. Almost the same style continues in this paper in this book but he covers very important concepts of *sarmadiya* and *al dahr* with

[44] Abdul Hameed Kamali, *Space, Time and Orders of Reality* (Lahore, Pakistan: Bazm i Iqbâl, 1998).

reference to Abdul Karim al-Jili, Ibn Rushd, and Shâh Walliullâh. Kamali is extraordinarily fluent with very difficult concepts especially the highly complex works of Shâh Walliullâh. Although these arguments are taken directly from some Urdu translations of these well known scholars of their time, they provide a source of knowledge on s*armadiya* and *al-dahr* which adds to the richness of the other discussions in the book.

Professor M. M. Taqui Khan presents a paper on "Directionality and Relativity of Time and Space in Islam". Khan describes that time and space are not external parameters to humans. They are part of their beings and consciousness. They cannot be separated from the being since they are created along with matter, energy and consciousness. The flow of time is directed by the entropy flow in one direction, which is considered as the "Arrow of Time".

Gravity is considered to be a curvature of time and space in the general theory of relativity. The problem of quantization of gravity, which is a combination of general relativity and quantum mechanics, has defied all the attempts so far. The question is whether one can quantify time and space. According to Roger Penrose,[45] time if quantified will be hidden in the depth of our consciousness, and is not computable. It is a super-imposition of two different four dimensional space sections, one pertaining to the micro world, and the other to the macro world of the consciousness.

At this point the world lines of the past and the present merge and time is transferred to a higher domain. This is the spiritual domain of the Qur`ân. Can this domain becomes mathematically computable and physically definable? These are some of the unsolved problems of physics for which guidance may be obtained from the Qur`ân.

[45] Roger Penrose, *The Emperor's New Mind* (Oxford, UK: University Press, 1989), pp. 302-339.

Professor William Chittick's Ppreface to this book is an outstanding contribution that invites our appreciation. It adresses the Islamic intellectual tradition which regards *nafs* (the self or soul) as the center of attention for intellectual growth. The human self must develop and refine its own inner power, which is called "intellect" or "heart." The human soul from within itself requires verification to gain self-knowledge. Chittick then challenges the Islamic community to address the issue of intellectual development.

The Epilogue by Habib Ahmed addresses this challenge of the intellectual development of the individual. The individual's development of "inner-self" is central to individual's participation with the levels of "time and space" in Islam". The individual's development of "inner-self" depends on reforming an individual's personality consistent with God's command in the Qur'an (13:11). Thus it becomes apparent that the "epilogue" of this work must address reformation of the individual and the community. Hence, a paper on "Tahdhib al-Insan" connects the concepts of time and space to the inner-self development of individuals. The paper presents practical concepts of *tahdhib al-qalb, tahdhib al-nafs, tahdhib al-akhlaq, tahdhibul al-aql/ilm, and tahdhib al-amanah* towards reforming the individual personality.

Future Research:

Future work needs to be directed to areas we have yet not fully comprehended and explored: Al-Bayruni's work on mathematical function and his generalizing of Newton's interpolation formula 'from trigonometric function to any function,' al-Khawarizmi's astronomical and trigonometric tables containing sine and tangent functions moving away from the notion of the static universe of that time, and Ibn Haitham's notion of space and movement of the stars after the Ash'arites had

completely succeeded in overcoming the views of the rationalists. Mohammad Iqbal has remarked:

> Al-Bayruni's and Ibn Haitham's positivism anticipated modern psychology in recognizing what is called reaction-time, gave up all inquiry concerning the nature of the supersensual, and maintained prudent silence about religious matters.[46]

This describes reaction-time in the modern sense:

> not only is every sensation attended by a corresponding change localized in the sense-organ, which demands a certain time, but also, between the stimulation of the organ and consciousness of the perception an interval of time must elapse, corresponding to the transmission of stimulus for some distance along the nerves. [47]

E.S.Kennedy's article on Al-Bayruni's mathematical function as given in the *Dictionary of Scientific Biography*[48] may provide further important insights into Al-Bayruni's reaction-time.

Nasir al-Din Tusi's[49] effort to improve the parallel postulates of Euclid which resulted in the origination of the hyperspace movement, may not be as important as it was initially thought. Further, al-Tusi's effort to improve the parallel postulates of Euclid is believed to have furnished for Europe the problem of space, which eventually led to the non-Euclidian theories by many scientists including Carl Friedrich Gauss, Georg Riemann, Wolfgang Bolyai, Nikolay Lobachevsky, William Cliford, and others.[50] Al-Tusi's work on the parallel postulates of

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[46] Mohammed Iqbal, *Metaphysics of Persia*, Ph.D Thesis (London: Luzac & Co., 1908), p. 80.
[47] Ibid
[48] E. S. Kennedy, *Dictionary of Scientific Biography*, ----------
[49] Nasir al-Din al-Tusi, *al-Risalah al-Shafi`iah 'an al-Shak fi al- khutut al-mutawaziyah*" in (Tusi's) *Rasa'il*, Volume II (Hyderabad, India: Da`irat al-Ma`arif, 1359 AH), Catalog No: 132.
[50] Mlodinow, *Euclid's Window, C*hapter III: "Story of Gauss," p. 136.

Euclid was first published in Rome in 1594. Note that Albert Einstein[51] developed his general theory of relativity in 1915 in which he resorted to Riemann's geometry that described the war page of space. Albert Einstein's special and general relativity theories were based on the assumption of a fixed universe. Since the universe is now determined to be a dynamic universe, there have been significant corrections to the relativity theory that have been put off for a comprehensive discussion on this subject for the subsequent planned extension of this work. The reference to Tusi's hyperspace movement may no longer have any relevance. However, I consider it important to review al-Tusi's work on parallel postulates to assure that we do not leave out some genuine possibilities to benefit from this literature. In this context al-Tusi's various works on Euclid such as *Kitab al-Mutiyaat, Kitab al-Manazir, and his Kitab al-Zahirat* from his *Al-Rasa`il al-Sab`a*[52] need to be obtained and translated to gain further insight into his work on the hyperspace movement.

Since the Qur'ân makes only brief references to time concepts, our next best recourse is to either look into Hadith or the major Muslim thinkers for help. Fakhr-al-Din al-Razi[53] in his *Al-Mabahith al-Mashriqiyah* gives an account of all the theories of time to date including those that affirmed and those that denied the objectivity of time. Making a critical examination of various theories he confesses that he has not been able to probe into the true nature of time, although he recognizes that time is a fundamental fact of experience.

Other articles that we have located but not yet obtained are *Takhtit al-Sa`at*"[54] by Ibn Hatim al-Nirizi, and *Istikhraj al-Sa`at*"[55]

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[51] Ibid., Chapter IV: "Story of Einstein," p. 153.
[52] Al-Tusi, *Al-Rasa`il al-Sab`a*, V., I (Hyderabad, India, Da'irat al-Ma`arif, 1939), Catalog No: 132.
[53] Fakhr al-Din al-Razi, *Al-Mabahith al Mashriqiyah* (Hyderabad, India: Da'irat al-Ma`arif, 1924) Catalog No: 121, Vols., I and II.
[54] Ibn Hatim al-Nirizi, *Takhtit al- Sa'at*, Volume (ii): *al-Rasa'il al- Mutafari`ah* (Hyderabad, India: Da'irat al-Ma`arif , 1947) Catalog No: 131.

by Ibn Baamshadh al-Qaini that will be important in our research on time related to the Day of Resurrection.

Another work called *Ilm al-Kitab* by Mîr Dard, which may have a significant bearing on the concept of *al-sarmad*, has been identified. The manuscript of this work has been acquired and the translation work started.

Ibn Sînâ's *al-Shifa*' covers the analysis of substance in time, space, and motion on all creations. All creations including human body are composed of substance or entities that are governed and controlled by the Creator. Here is a statement made by al-Baydawi[56] on the Qur'ân (17:1) regarding the Night Journey of the Prophet from Makkah to Jerusalem, his Ascension to the heavens and return to earth:

> It is proved in *al-Kalâm* that bodies are equal in accepting changes, and Allah is able to effect all possibilities. He is able to create this fast speed in the body of the Prophet (SAAS), or in the body of what carries him.

This same commentary also refers to *burâq*, a horse like creature that was the Prophet's mount. It is where al-Baydawi got the reference to God's ability to create this fast speed in the substances within the body, or perhaps if it was merely his own observation. This whole episode is in need of extensive research, especially in regard to the fast speed of substances in the body and its effect in making possible travel through space and return to earth within an insignificant time period.

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[55] Ibn Baamshadh al-Qaini, *Istikhraj al- Sa`a*", Volume (ii): *Al-Rasail al-Mutafariah* (Hyderabad, India: Da'irat al-Ma'arif, 1947), Catalog No: 131.
[56] Nasir al-Din al-Baydawi, *Anwar al-Tanzil wa- Asrar al-Ta'wil* (Jeddah: As`ad Muhammad al-Habbal, 1385 H), p. 370. Al-Baydawi printed the text including his commentaries in Arabic. Dr. Asad N. Busool helped me to translate the commentaries that are referenced.

From the above it seems to be very important to dwell on the subject of *jawhar* or substance within the human body. We are given control of all substances within the body from which we have the option to control our modes of operations. This is where the subject of control of our inner-self, which in turn controls motion of substances within our body, is essential to ultimately control our behavior. This is how we either can lead a spiritual life or simply follow our desires. It is believed that a significant and careful research is required to understand these phenomena.

Al-Baydawi's commentary on the Qur'ân (28:71-72) illustrates another use of the word *sarmad* in these verses, as follows:

> If He makes the night *sarmad*: continues for ever to the Day of Judgment by holding the sun under the earth, or by moving it in an orbit over the lower horizon.
>
> If He makes the day light *al-sarmad*: Continues for ever to the Day of Judgment by holding the sun in the middle of the sky, or by moving it in an orbit over the horizon.

The above two possibilities imply that *al-`asr* or *al-zamân,* that is, serial time ceases to exist for the duration cited. This will be the effect of eternity, which is recognized as a*l-sarmad* by Ibn Sînâ in his work *al-*S*hifa'*. It is clear that we need to gather more commentaries and analyze this episode as well.

I am quoting from the translation of the Ushnohi's treatise on "*Ghâyat al-Imkân fi Dirâyat al-Makân*", given in Appendix A, the following lines:

> We say whatever is known by way of revelation, secret observation and spiritual perception; it is difficult to establish them as proof except for the men of [spiritual] taste. But I narrate an event from the life of the Messenger that would be binding for the just aspirant. The Prophet has said while describing the events of *Mi`râj* (Ascension) " I saw [the prophet] Jonah in the belly of fish. It is recorded in the *Sihah*

> [Six authentic collections of Hadith] that the Prophet said: in the description of Ascension " I saw 'Abd al-Rahman ibn 'Auf crawling while entering the Paradise. I said to him: Why were you so late? He said: O Prophet of Allah I was not able to reach you. I faced such hardships that would render children decrepit and senile. I thought I could not see you." Now it shows that the Prophet saw Jonah in the belly of fish though he was two or three thousand years before him and he saw 'Abd al-Rahman b. 'Auf creeping in a condition that was to have occurred after a few years and talked to him. This can not happen but in a time span in which thousands of past years and thousand of future years could be in the same condition."

It is obvious from the above passage that, while on the *Mi`râj* journey, the Prophet observed past events of several thousand years and future events together. We have known that God is the only one Who has these characteristics of seeing the past and future events together. It is our task first to research and document the basic sources of the above information, that is, to locate the hadith where the Prophet mentioned seeing the prophet Jonah and his companion Abd al-Rahman ibn `Auf. If a hadith confirms this then it can be concluded that the Prophet was given a glimpse of *sarmad* (eternity), even for a moment during the night journey, *Mi`râj*.

There are numerous such events directly mentioned in the Qur'ân and Hadith that will have to be researched to truly understand the various time zones known to us. This is likely to produce significant information that is important for our life in this world and the hereafter.

I believe the Arab/Muslim scientists, mathematicians, and astronomers, around 300 A.H. (900 CE to 1000 CE), when they discovered numerous astronomic concepts, were confronted with the challenge of explaining the dynamic nature of the universe to a world that believed the universe to be fixed.

> It is We who built the universe with power, and it is We who are steadily expanding it. (The Qur'ân 51:47):

The above verse impels us to think that it is indeed a dynamic universe. Muslim/Arab astronomers such as Al-Bayruni, Ibn al-Haytham, Nasir al-Din al-Tusi, and many others may have addressed the above Qur'ânic challenge in their monumental and fundamental astronomic research, even though they were not equipped with the most advanced telescopes and satellites of today. We therefore should put a significant effort to find any such work in the 200-500 A.H ancient literature, which looked at with the latest available sources of knowledge, might give us some ideas for further exploration. "Time, Space, and Motion in Islam" will then have a new meaning and basis of our next conference on the subject. At the very outset, I want to recognize the fact that we cannot ignore the value and the merit of modern astronomic theoretical and experimental work that has been done to better grasp the space-time relationships. While this book is dedicated mostly to serve as the basis of Islamic triple time concept, a later volume needs to be dedicated entirely to highlight the modern space-time concepts.

This research has encouraged the opinions of other scholars. My task was complex but pleasant in trying to advance the understanding of the subject of the "Time, Space, and Motion in Islam" though within the framework of encouraging diverse opinions, over and above my own views. There has been a relentless effort in translating, bringing scholars together, and exploring bringing of a historic subject into realm of modern investigation. In sum total, this book speaks for itself.