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EDITORIAL

TAFSIR KRITIS ATAS AGAMA DAN ETIKA

Agama dan etika merupakan dua ikon yang dipertaruhkan untuk kebaikan hidup. Perkembangan yang berlangsung dalam tataran kehidupan sosial telah mensyaratkan adanya penafsiran terhadap keduanya. Namun dalam proses penafsiran tidak pernah bebas nilai, sehingga kemungkinan terjadinya simplifikasi, distorsi, dan bias sangat terbuka. Oleh sebab itu, penafsiran harus terus dilakukan untuk –paling tidak– mendekati kesahihan teks. Di sinilah letak signifikansi penafsiran dalam memahami teks-teks secara kritis.

Dalam rangka mengupas lebih jauh proses penafsiran terhadap agama dan etika **Refleksi** kali ini mengetengahkan tema tersebut sebagai wacana umum. Penafsiran kritis yang disajikan pada terbitan kali ini meliputi pandangan beberapa pakar terhadap ajaran agama yang bersumber pada al-Qur'an dan Hadis serta wacana kritis tentang etika yang menjadi diskusi panjang di kalangan filosof.

Untuk membahas tema tersebut, Refleksi kali ini menurunkan lima tulisan yang khusus mengkaji proses penafsiran terhadap teks-teks keagamaan, seperti al-Qur'an, Hadis, dan penafsiran terhadap masalah etika. *Pertama*, tulisan Usman Syihab Husnan yang mengupas pola penafsiran atau pendekatan yang dilakukan oleh Malik Bennabi dalam memahami al-Qur'an. Menurut Usman Syihab Husnan, pendekatan yang dilakukan Malik Bennabi terhadap wahyu adalah pendekatan integral. Dengan menelaah karya Malik, Fenomena al-Qur'an, Usman menarik kesimpulan bahwa Malik Bennabi berhasil memberi respons yang matang terhadap tantangan-tantangan filsafat dan pemikiran Barat dalam melihat al-Qur'an. Dengan meletakkan wahyu al-Qur'an sebagai fenomena objektif yang melampaui semua konteks sejarah dan berbagai bentuk sosial budaya, Malik Bennabi mampu menjawab para orientalis yang

mengingkari dan yang berusaha menebar keraguan tentang kebenaran al-Qur'an sebagai wahyu Tuhan. Malik Bennabi menjawab Margelyouth (orientalis Inggris) dan kawan-kawannya yang menganggap al-Qur'an sebagai produk Nabi Muhammad atau merupakan salinan dari Taurat dan Injil, atau bahwa di dalam al-Qur'an terdapat pengaruh dari kedua kitab perjanjian tersebut. Dengan karyanya ini juga, secara tidak langsung, Malik Bennabi menolak filologi Christoph Luxenberg (orientalis Jerman), yang datang jauh setelahnya, yang menuduh bahwa bahasa asal al-Qur'an adalah bahasa Aramiah dan bukan bahasa Arab.

Kedua, tulisan Bustamin yang mengulas pemikiran Ahmad Amin tentang hadis. Berdasarkan kitab *Fajr al-Islām* Bustamin menemukan tujuh aspek kritik hadis, yaitu tidak adanya pembukuan, pemalsuan hadis, sebab-sebab pemalsuan hadis, gerakan ulama untuk meluruskan pemalsuan dan langkah-langkah yang diambilnya dari berbagai cara, tokoh-tokoh hadis terkemuka, usaha-usaha yang diambil bagi pembukuan hadis, dan khazanah hadis dalam penyebaran kebudayaan. Inilah tujuh aspek kritik hadis yang dikritik oleh Amīn dalam *Fajr al-Islām*.

Ketiga, tulisan tentang teologi pembebasan yang digagas oleh Harvey Cox. Tulisan ini diulas oleh Mohammad Nuh Hasan dengan melihat latar belakang munculnya teologi pembebasan di lingkungan masyarakat sekuler. Kepesatan kemajuan peradaban Barat yang berdampak serius khususnya terhadap sistem nilai dan keagamaan menjadi agenda perbincangan teologi Kristiani, sebagai agama yang paling akrab bergumul dengan perkembangan dunia Barat modern. Para teolog konservatif memandang fenomena semacam itu sebagai sesuatu yang bersifat negatif, dan mereka akan tetap mempertahankan ortodoksinya. Sementara itu, sebagian lagi yang mengambil jalur pemikiran liberal memandangnya sebagai suatu kenyataan yang positif. Proses sekularisasi tidak dipandang sebagai sesuatu yang '*an sich*' bersifat antagonistis dengan keberadaan agama, tetapi justru merupakan suatu tanda kemajuan kesadaran manusia yang pada dasarnya lebih bersifat Biblis. Para tokoh semacam Friedrich Gogarten, Rudolf Bultmann, John A.T. Robinson dan Dietrich Bonhoeffer, termasuk Harvey Cox, masuk dalam barisan terakhir ini. Di antara para tokoh tersebut, Harvey Cox paling lugas menggagas teologi sekularisasi, khususnya dalam karya monumentalnya: *The Secular City: Secularization and Urbanization in Theological Perspective* (1965).

Keempat, tulisan Syamsuri yang mengulas pemikiran Murtadha Muthahhari tentang manusia sempurna atau multidimensi dan cara yang harus ditempuh untuk mengembangkan dimensi-dimensi tersebut agar dapat mencapai derajat manusia sempurna. Murtadha Muthahhari berpendapat bahwa manusia terdiri dari dua unsur utama, yaitu pribadi dan kepribadian (badan dan ruh, atau fisik dan mental). Kedua unsur tersebut memiliki kualitas dan karakteristik yang sangat berbeda. Unsur ruh (jiwa) bersifat kekal dan senantiasa mendorong manusia untuk berbuat baik, menjaga kesucian dan kehormatan serta ingin selalu dekat dengan Tuhan. Sementara unsur badan atau fisiknya, kebalikan dari unsur ruh, mendorong manusia untuk selalu memenuhi kebutuhan jasmani (fisik material) dan cenderung pada kerendahan, kehinaan, bahkan jauh dari Tuhan.

Kelima, tulisan Agus Darmaji yang mengangkat kritik Max Scheler atas etika formalisme Kant. Dengan fenomenologi, ia mencoba merekonstruksi dan mengembangkan masalah nilai pada umumnya, khususnya etika. Ia beranggapan bahwa dengan cara demikian etika dapat menghindari relativisme baik psikologis, sosiologis, maupun historis. Scheler, menurut Agus, bermaksud mengajukan suatu penilaian kritis terhadap etika formal Kant dan berusaha mengatasi formalisme Kant dengan mengajukan pemikiran tentang etika material.

Refleksi kali ini juga menurunkan dua tulisan lepas, yaitu tentang al-Qur'an dan teori Big Bang. Tulisan yang disajikan oleh Mu'adz D'Fahmi ini berusaha mencari sintesis antara penemuan ilmiah (*astronomical study*) dengan paparan al-Qur'an (*Qur'anic study*). Tulisan kedua tentang sistem parlemen bikameral di Indonesia yang merupakan langkah baru, mengingat selama ini Parlemen Indonesia menganut Unikameral (satu kamar), yaitu DPR. Sedangkan sekarang (hasil Pemilu 2004) menghasilkan anggota-anggota DPR dan DPD yang kelak akan menjadi dua kamar.

Pada rubrik *Book Review* kami hadirkan tulisan yang mengulas buku *Islam Emansipatoris: Menafsir Agama untuk Praksis Pembebasan*. Buku ini merupakan bagian dari agenda besar untuk menjadikan Islam sebagai ajaran yang aktual, rasional, progresif, dan emansipatoris.

Sebagian besar sajian dalam Refleksi kali ini merupakan rangkaian untuk menemukan peran agama bagi pembebasan nilai-nilai kemanusiaan universal. Dan ini hanya bisa ditemukan melalui proses penafsiran secara

kritis atas wacana-wacana keagamaan yang hadir di sekitar kita. Selamat membaca.

Jakarta, Agustus 2004

Redaksi

THE QUR'AN AND THE BIG BANG THEORY: REGARDING HOW SCIENCE CONVERGES DIVINE REVELATION ON THE CREATION, PERSISTENCE, AND DESTRUCTION OF THE UNIVERSE[1]

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Abstract: *This article seeks to find a synthesis between scientific discoveries (astronomical study) and the exposition of the Qur'an (Qur'anic study) by presenting theories of the Big Bang.*

Keywords: *The Qur'an, Theory, Big Bang, Science, Revelation.*

Abstrak: *Tulisan ini berusaha mencari sintesis antara penemuan ilmiah (astronomical study) dengan paparan al-Qur'an (Qur'anic study) dengan penyuguhan teori teori Big Bang.*

Kata Kunci: *Al-Qur'an, Teori, Big Bang, Ilmu Pengetahuan, Wahyu.*

THERE are lots of the Qur'anic verses talking about universe, from the existence of celestial bodies such as planets, stars, sun, moon, etc., until the guidance on the origin of the creation of the universe including processes took place within.

Today, scientists set forward many theories based on empirical observation. In the field of astronomy, especially cosmology[2] and cosmogony,[3] lots of theories, which attempt to account for the origin of the universe, have been mushrooming.

The Big Bang Theory is the most frequently referred by scientists.[4] In the sense of divine revelation, the Big Bang Theory is the most appropriate concept for being juxtaposed with the Qur'an. According to the author, cosmological view of Qur'an is the Big Bang Theory itself.[5]

This study tries to find a synthesis derived from comparative analysis between astronomical study and the Qur'anic study, which are expected to be able in explaining how the universe goes on in the sense of religious revelation (the Qur'an) justified-by scientific observation.

In this study, the author focusses on two things: *Firstly*, in explaining the natural process of the universe from the viewpoint of scientific observation, the author determines to choose one of cosmogony theories called the Big Bang Theory as the initial hypothesis.

Secondly, in the endeavor to demonstrate the validity of Big Bang Theory in the sense of divine revelation as mentioned in the Holy Book of Qur'an, the author would like to use several specific verses of the Qur'an, which classified into three categories,[6] i.e.: *first*, the creation: al-Anbiyā': 30. *Second*, the persistence: al-Ghāshiyah: 17-18 and al-Dhāriyāt: 47. *Third*, the destruction: al-Infiṭār: 2, al-Takwīr: 2, al-Qiyāmah: 9, al-Anbiyā': 104, and al-Zumar: 67.

Epistemological Foundation

Regarding the method of comparative study between science and the Qur'an, the author place science as interpretation of the Qur'an. Thus, the

status of the Qur'an is higher than whatever things that science elaborates. As Mannā' al-Qaṭṭān said that the truth of the Qur'an is a final, fixed, and absolute truth. While, human explanations (science)—along with certain methodological tools used by them—are provisional, flexible, and temporary, because science is bound and limited by its empirical, experiential, and tentative boundaries. So, it will be a methodical error, if we hang the final truth of the Qur'an on the non-final truths (everything related to the human sciences).[7]

This is fitting with the opinion of Arkoun, who lays his idea on the thought of al-'Amirī. Arkoun says that divine revelation definitely cannot be doubted. Divine revelation is the source of the light (*mishka*), which turns out to be the first and principal foundation for the entire speculative sciences.[8]

Yet, we have to be more wisdom in perceiving this comparative approach. Using consideration on semiotic perspective, Arkoun points out that the Qur'an is a "limited Corpus". The Qur'an comprises of numerous certain statements that have a fixed form. But, for Arkoun, this only signifies the first phase of analysis. Arkoun directly adds that the Corpus (the Qur'an) is open. By this, Arkoun want to expound that the Qur'an is open to many contexts.[9]

Indeed, the truth of the Qur'an is final. Yet, however, the Qur'an is an open Corpus, not a closed one. It means that the interpretations of the Qur'an (exegesis) will never be final. Among those interpretations, science is one of them.

For that reason, the comparative principle of this study is based on the freedom of thinking, that is the liberty to articulate and interpret the Qur'an. In this case, as Arkoun did, the author assumes the use of a free-thinking, aimed to elaborate a new and coherent vision that integrates new conditions in the field of science with the God's guidance revealed in the Qur'an.[10] This mind-set is supported by the fact that in its early period, Moslem community interpret the Qur'an liberally.[11]

To compare the Qur'an with science is not easy task to do. It is not merely a work of matching the Qur'anic verses with scientific facts and principles. The Qur'an and science have different patterns. The Qur'an talks about God, faith, rewards for good and bad deeds, and general truths of nature, while science elucidates truths and facts of nature in detail, instead of in general.

Avijit Roy, a humanist liberalist, says that the fundamentalist Mullah and other Islamic scholars dogmatically claim that Qur'an miraculously predicted numerous inventions of modern science. Rejecting that claim, Roy proposes several arguments. Two of his arguments stated that: *first*, if it was indeed that scriptures contain scientific facts and principles then human beings wouldn't need popular science books to explain scientific facts to common people. But the fact contradicts that. *Second*, the Qur'an is not a book of science, because it has no specification on what branch of science it is.[12]

The opinion of 'Abd al-Bārī al-Nadwī, a liberalist Moslem, is about alike. He says that science and religion will never meet each other. There is a separation and no connection between science and religion. He analogizes them as two trains, which if the system goes well, they will never collide one another. This analogy is perhaps such an ordinary matter. How about if the gap between a train and a sea? So, the disconnection will be almost definite. Because, it is impractical for a train to be driven on the sea, as impossible as a ship to be driven on the ground. That's the analogy for science and religion. The entrance of science into the area of religion is as impossible as a train walk on water or a ship on the ground.[13]

Despite their extremely liberal approach, Avijit Roy and al-Nadwī give good critiques to whoever relate religion or the Qur'an with science blindly without satisfying epistemological foundation. It is indeed correct that the Qur'an is not a scientific book, but itis a Holy Book and a divine revelation. But it doesn't mean that the Qur'an has no correlation with scientific facts.

The argument of Sir Sayyed Ahmad Khan, the pioneer of Indian Muslim reform, is quite interesting to be cited. According to Ahmad Khan, the Qur'an was the word of God and the nature was the work of God: a disparity between the two was unthinkable. Revelation (*al-waḥy*) and reason are identical. The latter operates in man's scientific investigations as much as in his concept of deity, his distinction between good and evil, his views on divine judgment and retribution, and his belief in life after death. For Ahmad Khan, reason alone is the right instrument of judging truth.[14]

The work of comparison on the Qur'an with science will be possible, if we lay it on limited and specific bases of thought. Initially, a basic foundation has to be made, i.e. that the Qur'an is truly a divine revelation. So,

the Qur'an has to be put in the highest place beyond any scientific inventions and theories. The revelation of the Qur'an had finished by the passing away of the Prophet. But, the interpretation endeavors on the Qur'an will never end.

Secondly, on opposite way from the unchanged Qur'an, science is always changing, because of the change of nature, scientific method, and the observer. Science is also imperfect, because it is limited by its own methods. As Nabi Naqvi says, the scientific method is not a fixed technique. It varies with the nature of phenomenon under study.[15] As written by Waheeduddin Khan, theories, as scientific facts, merely represent an analogy of humans' ways of observation that are very limited.[16] While, in the word of Murtadha Muthahhari, because science is based on synthesis between theory and experiment, instead of on solely rational truth, the character of this realm has been and will always vary from day to day. Theory and experiment have temporary values only.[17]

Thirdly, on the operational level, it has to be emphasized that the Qur'an only reveals general symptoms of nature. The Qur'an never describes the facts of realm in scientifically detailed conception. Likewise, the Qur'an usually uses allegories, metaphors, aphorisms, and even maxims when talking about natural phenomena. On the contrary, science examines natural phenomena in empirically detailed conception. Science uses mathematical and physical calculation, methods, trial and error, and many more detailed conceptions. So, the only way in order that the Qur'an and science can be put equally face to face, is by performing the comparative study for finding scientific global conclusion only, not including specifically mathematical calculation.

The Big Bang Theory

1. The History

Cosmological theory in general and the Big Bang Theory in particular are currently based on the theory of gravitation advanced by Albert Einstein in 1916 —others say it in 1915[18]— and known as the General Theory of Relativity.[19] Though the predictions of the general theory have little effect in the limited sphere of the Earth, they dominate on as large a scale as the universe.[20]

At first, Einstein formulated a principal hypothesis, which was deemed rational at the time. The theory contains that: first, universe was homogenous and isotropic[21] —also known as *cosmological principles*.[22] These two assumptions have been verified in observations. *Second*, the universe is curved and constant which later becomes the basis of the steady state theory. *Third*, the universe is static and motionless. It means that all celestial bodies (planets, stars, galaxies, nebulas, satellites, etc.) are static, not moving, possessing standard inter-objects distance, permanent on their locations, and the universe's density is equal from time to time.[23]

According to Einstein's theory, space is malleable and the effects of gravity can be represented by a space-time that is curved or warped by the presence of matter and energy in it. Objects try to follow the nearest thing to a straight line in this curved space. However, because it is curved their paths appear to be bent, as if by a gravitational field.[24] In simpler sentence, we can say: "Matter tells space how to warp, and warped space tells matter how to move." This is what gravity is: warped or curved space.[25]

In 1917, when Einstein applied his theory of gravity to the Universe as a whole, he found that the galaxies seemed to have a restless need to be on the move. Einstein s model of universe was unstable: it could only be expanding or, on the contrary, contracting.[26] The reason is clear. Every galaxy is pulling on every other galaxy with the force of gravity, so the net effect should be to pull all the galaxies together.[27]

Einstein himself initially believed that the universe was static. When his equations[28] seemed to imply that the universe was expanding or contracting, Einstein added a constant term in his equations to cancel out the expansion or contraction of the universe[29] —he called the term as "the cosmological constant."[30] This is certainly bewildered and bizarre. Later, among scientists, this case was well known as 'Einstein s dilemma'.[31]

One of the first people to accept Einstein's theory of gravity was a friend of his, the Dutch astronomer, Willem de Sitter. In 1917, he had applied the theory to the entire universe too. But unlike Einstein he did not insist that the density of the Universe remain constant for all time. Instead, he looked at the equations with a slightly more open mind.

De Sitter discovered an entirely different design for the Universe, which also obeyed Einstein s equations. In one way it was greatly at odds with the universe we live in because it was completely void of matter. But it had

another property that was remarkably like the universe we live in: its space was expanding.[32]

In other words, de Sitter's mathematical model of the universe described a completely empty universe with no matter in it at all. The spacetime of this empty universe stayed still by itself. But if any matter at all were added to this model of universe —even a few grains of sand—it began to expand violently.[33]

Apart from having a rather interesting expansion law, de Sitter's universe did not have much going for it. After all, it was empty of matter. But in 1922, a Russian astronomer called Aleksandr Aleksandrovich Friedmann at the University of Petrograd rectified this. He discovered a whole class of universe which obeyed Einstein's equation and which, like the real universe, contained particles of matter.

Friedmann found that his universes would almost certainly not be motionless, they would change their appearance with time, by either expanding or contracting. Astronomers call such universes, which change with time, "evolving",[34] to distinguish them from static universes that stay the same.

In 1927, the evolving universes of Friedmann were discovered independently by Georges Lemaitre. A characteristic feature of the universes of Friedmann and Lemaitre was that they began with a violent expansion from a small and highly compressed state: "a big bang". Particles of matter were born on the move and have been flying apart ever since.

Lemaitre went on to speculate about what had actually caused the explosion at the beginning of the universe. He knew about the phenomenon of radioactivity in which an atomic nucleus disintegrates releasing a lot of energy. It was therefore natural for him to suppose that the Universe had begun when a giant "*primeval atom*"[35] exploded sending all of creation flying apart. There was little evidence for this but at the time no one had a better idea.[36]

Because of its speculative and hypothetical calculation, Lemaitre's and the previous experts' concept was less paid attention until at a certain point in time when Edwin P. Hubble announced his discovery on galaxy's recession in 1929. Using the newly built 100-inch reflector (telescope) on Mount Wilson above Pasadena, Hubble experientially found that the universe had not existed forever, as most astronomers believed, but it had a

beginning. The theory, which previously judged abstract, was finally endorsed by interpretatively factual evidence.

The groundwork of Hubble's greatest discovery was laid on the work of Vesto Melvin Slipher, an astronomer at the Lowell Observatory in Flagstaff, Arizona.[37] In 1912 and 1925, Slipher obtained Spectra of 41 galaxies; from the red shift in these spectra, the velocities of the galaxies were calculated as ranging from 300 km/sec for those moving toward us to 1,800 km/sec for those receding. Later, after a correction was made to allow for solar motion around the center of the galaxy, all the velocities of distant galaxies were found to be receding from us.[38]

Before everyone knew about galaxies, Slipher had been painstakingly measuring the lights patterns from spiral nebulae. Just as in sunlight, the light from these nebulae was a mixture of colors. Each color corresponded toa particular wavelength of light: the longest was red and the shortest was blue.[39] The red light is named *red shift*, and the blue one is called *blue shift*.

Hubble found out that galaxies are moving away from us. Based on Slipher's calculation, Hubble's finding can be explained in the way that the waves in the light from an object that is receding in this way are indeed stretched and red shifted, and the amount of red shift reveals the speed at which the object is moving. In a similar way, an object moving towards us emits light, which is blue shifted by its motion, with the waves squashed together. The whole process can be understood due to the Doppler Effect,[40] which is familiar to anyone who has noticed how the pitch of a police siren changes as it speeds across us, becoming higher as it approaches then deeper as it recedes into the distance.[41]

We might expect that if all the galaxies are moving at random through the universe, about half of them would be coming towards us and half moving away, so that astronomers would detect roughly equal numbers of red shifts and blue shifts. But Hubble discovered that, outside our immediate cosmic neighborhood, there are no blue shifts to be seen in the spectra of galaxies. There are only red shifts.

While staring at the data, it begun to become obvious to Hubble that the red shifts of the galaxies were not random at all. There was a pattern: the further away a galaxy, the faster it seemed to be hurtling into the void. In fact, the velocities of the galaxies increased in step with their distances. The red shifts of a galaxy are proportional to its distance and they also indicated its velocities. A galaxy that was twice as far away as another

turned out to be receding from us at twice the velocity, a galaxy three times as far away was receding at three times the velocity. This pattern would come to be known as Hubble's law.[42]

Hubble's law had two implications. First, distances across the universe could now confidently be measured in millions of light years. But, the second implication of Hubble's law was even more dramatic. It said that the entire universe was expanding —that every galaxy is moving apart from every other galaxy. As time passes, galaxies get farther apart and the space between them widens. Which means, of course, that if we look back in time, in our imagination, galaxies used to be closer together, with less space between them. Taking this discovery to its logical conclusion, there must have been a time when all the galaxies were on top of one another, with no space between them. It was this interpretation of Hubble's law that led to the idea of the Big Bang—the idea that the universe was born in a super dense fireball at a definite moment in time.[43]

This was the real significance of Hubble's discovery. The discovery that the far galaxies are receding with velocities increasing with distance —500 or 600 km/sec per million parsecs as modern cosmology found— presents such a curious and strange phenomenon that upset all our former concepts of the universe.[44] For the first time, scientist would be able to ask where the universe —with its galaxies, stars, planets, nebulae, and living organism— had come from and where it was going. At the time, Cosmology — the most audacious of sciences was born.

An analogous theory advanced to explain the enigma of the expanding universe was made public by George Gamow. In 1934, after emigrating from the Soviet Union, Gamow was appointed professor of physics at George Washington University in Washington, D.C. There he collaborated with Edward Teller in developing a theory of beta decay, a nuclear decay process in which an electron is emitted (1936).

Soon after, Gamow resumed his study of the relations between small-scale nuclear processes and cosmology. He used his knowledge of nuclear reactions to interpret stellar evolution, collaborating with Teller on a theory of the internal structures of red giant stars (1942).

Gamow and Teller were both proponents of the expanding-universe theory that had been advanced by Friedmann, Edwin Hubble, and Georges Lemaitre. Gamow, however, modified these theories and named

his version the "big-bang". Gamow and Ralph Alpher published this theory in a paper called "the Origin of Chemical Elements" (1948). This paper, attempting to explain the distribution of chemical elements throughout the universe, posits a primeval thermonuclear explosion, the big bang that began the universe.[45] In his deductively theoretical prediction, Gamow showed the existence of cosmic background radiation residues that appear from big bang. Because of universe's expansion and cooling process, the radiation's wavelength had turned to be microwave.[46]

Between 1963 and 1965, Arno Allan Penzias and Robert Woodrow Wilson of Bell Telephone Laboratories in Holmdel, New Jersey, were testing a new well-calibrated horn-shaped radio antenna originally designed for signal reception from communication satellites. Penzias and Wilson discovered an isotropic source of radio noise whose strength was independent of time of day and of season, and whose intensity at the observing wavelength of 7.5 cm (2.8 inches) was equivalent to that which would be emitted by a blackbody —an idealized radiating substance—at temperature of about 3 degrees (-454^0F) impinging on Earth from all directions.[47]

In 1965, Robert H. Dicke, P. J. E. Peebles, R. G. Roll, and D. T. Wilkinson at Princeton, not knowing of the earlier work of Gamow, Alpher, and Herman, independently interpreted the radiation discovered by Penzias and Wilson as the remnant of the birth of our cosmos. A prior theoretical prediction, made in the late 1940s by George Gamow and two young associates, Ralph Alpher and Robert Herman, was then recalled.[48]

The best current observations of the background radiation are from NASA's *Cosmic Background Explorer* (COBE) spacecraft. The spectrum is in excellent agreement with a blackbody curve at 2.735 ± 0.060 K, 2.735^0C (4.92^0F) above absolute zero. Though most of the apparent ripples seen in all-sky maps are noise, calculations show that some are real signals, showing inhomogeneities in the early universe. The fluctuations seem to be the same on all observed scales, matching predictions of the inflationary-universe version of the Big Bang Theory. The background radiation continues to be strong evidence for the Big Bang Theory that the universe started with a hot, dense phase.[49]

Besides empirical research on background radiation, the evidence for the ancient big bang can also be found by radio emission observation. In 1959, radio astronomers at Cambridge, England, prepared a catalog of sources of radio emission known as the 3C (third Cambridge) survey. The

positions of the radio sources were precise enough for optical identifications to be made. In 1963, when spectra of these objects were obtained with the Hale telescope, Marteen Schmidt discovered that two of the objects (3C 273 and 3C 48) most suitable for the study respectively showed red shifts of 0.15 and 0.31 the velocity of light. The rate of energy emission of these objects —now called *quasars*[50]— is 100 to 1,000 times that of the ordinary galaxy, although they are much smaller than galaxies; hence they form a class of objects by themselves.

So far, a few hundred quasars are known, and the maximum red shift is over 3, corresponding to a recession velocity of more than 85 percent of the velocity of light. Although the nature of quasars and their role in the evolution of the universe are still unclear, they may be related to evolutionary processes at very early stages.[51]

2. The Theory

The universe —space, time, matter, and everything— came into existence at one set moment in time named "Big Bang," between 15,000 and 20,000 million years ago.[52] The studies by Fred Hoyle in England, Martin Schwarzschild and Allan R. Sandage in the United States found it 20,000 million years ago.[53] Other version records that the evidence occurred about 18,000 million years ago.[54] While *the New Encyclopedia of Britannica* gives a note that it happened at least 10,000 years ago.[55] But, purely based on Hubble's constant measurement —which expresses the expansion rate of the universe, it can be concluded that the universe is somewhere between 10,000 and 20,000 million years old.[56]

The Big Bang Theory seeks to explain what happened at or soon after the beginning of the universe. Scientists can now model the universe back to 10" seconds after the big bang. For the time before that moment, the classical theory of gravity is no longer adequate to explicate this special phenomenon of nature. Scientists are searching for a theory that merges quantum mechanics and gravity,[57] but have not found one yet. Many scientists have hoped that *string theory* will tie together gravity and quantum mechanics and help scientist explore further back in time.[58]

Because scientist cannot look back in time beyond that early epoch, the actual Big Bang Theory does not explain what existed before the big bang. It may be that time itself begun at the big bang, so that it makes no sense to discuss what happened "before" the big bang.[59]

According to the Big Bang Theory, the universe expanded rapidly in its first microseconds. A single force existed at the beginning of the universe, and as the universe expanded and cooled, this force separated into those we know today: gravity, electromagnetism, the strong nuclear force, and the weak nuclear force. A theory called the electro-weak theory now provides a unified explanation of electromagnetism and the weak nuclear force theory. Physicists are now searching fora grand unification theory also to incorporate the strong nuclear force. String theory seeks to incorporate the force of gravity with the other three forces.[60]

The evidence for the big bang involves the observations of the cosmic background radiation, the helium (^{3}He)[61] abundance in stars and galaxies, and the presence of deuterium (^{2}H)[62] in space.[63]

One widely accepted version of Big Bang Theory includes the idea of *inflation*. In this model, the universe expanded much more rapidly at first, to about 10^{50} times its original sizes in the first 10^{-32} second, then slowed its expansion. The theory was advanced in the 1980s by American cosmologist, Alan Guth, and elaborated upon by American astronomer, Paul Steinhardt, Russian American scientist, Andrei Linde, and British astronomer, Andreas Albrecht. The inflationary universe theory solves a number of problems of cosmology. For example, it shows that the universe now appears close to the type of flat space described by the laws of Euclid's geometry: we see only a tiny region of the original universe, similar to the way we do not notice the curvature of the earth because we see only a small part of it. The inflationary universe also shows why the universe appears so homogeneous. If the universe we observe was inflated from some small, original region, it is not surprising that it appears uniform.[64]

Once the expansion of the initial inflationary era ended, the universe continued to expand more slowly. The inflationary model predicts that the universe is on the boundary between being open and closed. If the universe is open, it will keep expanding forever, even though the rate of expansion will gradually slow, or indeed stop. If the universe is closed, the expansion of the universe will eventually stop and the universe will begin contracting until it collapses. Whether the universe is open or closed depends on the density, or concentration of mass, in the universe. If the universe is dense enough, it is closed.[65]

By measuring the amount of matter —the number of galaxies— in the volume of space we can see, cosmologist get an indication of what the density of matter is throughout the universe. Intriguingly, but annoyingly, the best estimates we have are that the universe is balanced on a knife-edge. As far as it can be told, there is either just enough matter to "close" the universe and make it, eventually, collapse, or there is not quite enough, so that it will expand forever. Most astronomers at present seem to prefer the continuously expanding model. They could be wrong, for one this is clear: we are not going to find any less matter in the universe, while there might well be material, we don't yet know about[66] such as cold gas between the galaxies or black holes at present undetected.

If the open model —which the universe will continuously expand forever and die—is the ultimate destiny of the universe, we are very lucky to be around at a time when it is relatively young and active, and with so many interesting phenomena to observe.[67]

Whereas, if the universe is closed, the expansion will eventually stop, and red shifts will become blue shifts (contracting phase). After a certain time, the universe will return to the state of being a singularity —an epoch where the present laws of physics say the universe had zero size and infinite temperature and density[68]— and vanish in a second big bang.[69]

Yet, however, the closed universe model is much more interesting. Apart from anything else, it removes the puzzle of the "beginning". For now, we can say that before the big bang there was another cycle of expansion and collapse, and that these oscillations have been going on forever, and will go on forever.[70]

Conclusively, as stated by the Big Bang Theory, this universe was, is, and will be undergoing three kinds of phase: *The first phase*, remarked by the existence of primeval atom, the universe was experiencing a theoretically possible but empirically unthinkable infinite density of zero volume. At last, after a certain period of time, this primeval atom blasted of in a gargantuan explosion. Thus, at the moment, the age of the universe was begun to be reckoned.

The second phase, the universe is expanding. The velocities of the receding galaxies were calculated as about 1,800 km/sec showing red shifts all around the universe.

The third phase, the future of the universe is as on the knife-edge, between closed and open. If the universe is open, it will expand forever and

all bodies in the universe will die in the void of the darkness and coldness. On the contrary, if the model is closed, the universe will begin contracting and fall again into the second big bang.

The Qur'an on the Creation, Persistence, and Destruction of the Universe

1. The Creation

The creation of the universe from a single super massive fireball as proposed by the Big Bang Theory is equal with what divine guidance revealed. One of the most recited argumentations used by Islamic scholars is what Allah says in sura al-Anbiyā':

> *"Have not those who disbelieve known that the heavens and the earth were Joined together as one united piece, then We parted them? And We have made from water every living thing. Will they not then believe?"* (al-Anbiyā': 30).[71]

It can be concluded from the Qur'anic verse above that at the time when the universe was created by Allah, it at the start was a narrow-pressed thing. Afterwards, by the will and the power of Allah, the universe begins to expand. This kind of genesis will be repeated again on the judgment day.[72] It is when the universe will be contracted again as its origin.[73] Yet, however, for more detailed elaboration, the next paragraphs will propound how the tafsir in the prophetic era interpreted this verse.

There are some noteworthy words that must be underlined from the verse cited above, viz.: *yara*, *al-samawat*, *ratqan*, and *fatq*. Word "*yara*" is a present form from "*ra'a*", which literally means to look at, to see, and to watch. Not merely to watch using eyes, but "*yara*" also means to watch from scientific-academic point of view, to contemplate, to comprehend, to think, and to figure out.[74] They, the unbelievers, don't believe what Allah has said, because they don't think and contemplate it. So that, they become unfaithful.

Al-samawat is a plural form from *al-sama'*, which means the heaven or the universe.[75] In contemporary tafsir, *al-sama'* is interpreted as whole objects in the universe. Initially, all particles exist on the earth, on the sun, on the moon, on the entire planets and stars, and everything between them is originated from one object. Subsequently, Allah separated them.[76]

According to Ibn Abbas, what so-called the heaven here is rain clouds split from the earth as He says in sura al-Tāriq, verse 11-12:

"By the sky (having rain clouds) which gives rain, again and again. And the earth which splits (with the growth of trees and plants)." (al-Tāriq: 11-12).[77]

A similar interpretation comes from Ubay ibn Ka'b who had opinion that the split process between the heaven —which means rain cloud—and the earth is caused of the wind created by Allah between both of them.[78] Likewise the opinion of Hasan and Qatada.[79] The meaning sense of heaven is rain clouds, because wind becomes one of the supporting instruments in evaporation process from water to clouds.

The others that must be underlined are the words "*ratqan*" and "*fatq*". *Ratqan* is antonym from *fatq*.[80] The first mentioned means cohesiveness, coherency, and adhesion one another.[81] While, *fatq*, which originated from the word "*fataqa*", means separation between two adhering things.[82]

In the early times, the sky and the earth are one matter. At the time, there is nothing to be mentioned as sky, and there is also nothing to be called as earth. The only existence is "something", without any term, name, expression, or phrase. Next, by His power, knowledge, and wisdom, Allah create from that "something" the shape of the sky —along with its entire contents: stars, galaxies, planets, and so forth—and the earth—including its whole matters: human beings, animals, plants, and materials.

Formerly, the sky and earth are a heap or a pile of thing, resembling sperm which embryo grows from it. From the sperm, a baby is born, whereas, previously he is an extremely small thing. This is prevailed to all His creations (the sky, etc.).[83]

Al-Marāghī emphasized that this verse was in fact giving details the occurrence of the earth and planets rotating the sun. The sun is a big fireball that has been being rotating on his axis for million years. Once upon a time, because of highly speed rotary motion, some parts of the sun were detached. One of the fractions became the earth spinning on his pivot and revolving around the sun.[84]

2. The Persistence

Big Bang Theory is a developed model from formerly Expanding Universe Theory, which was initially proposed by Friedmann and later proved interpretatively based on natural symptoms by Hubble. Our universe has the same property as an inflated balloon or elastic bubble, expanding to all

directions. Actually, the sky that we see every night is always on the moving to all direction with high speed.

Not only Big Bang Theory states the expansion of the universe, but also the Qur'an as explicitly noted in several of its verses, Divine guidance had shown to all human beings that Allah the Almighty has the power to enlarge the universe. For the knowledge limitedness and the low rate of science at the time, the Qur'an usually used proverb and special terms in explaining this natural phenomenon. In a verse, He says:

> *"Do they not look at the camels, how they are created? And at the heaven, how it raised?"* (al-Ghāshiyah: 17-18).[85]

Sura al-Ghāshiyah, verse 18, constitutes one of *naqli*[86] —reference to relevant citation of the Qur'an evidence concerning the occurrence of universe expansion. It is said in sura al-Ghāshiyah: "and at the heaven, how it raised?" That is to say how Allah raises (lifts up) the sky above terrestrial surface;[87] the so high sky without prop (supporting foundation).[88] Next, He embellished and adorned it with sun, moon, and plentifully functional stars[89] in favor of earth dwellers. And He also formed the air, which is undeniably vital in support of the creatures on the planet.[90]

An erroneous interpretation seems most likely had been done by Quraish Shihab. According to him, the notion that the sky has been raised means that it moves such a way on the road to all direction from the whole surface of the earth. Because of the spherical form of the planet, it implies that the sky covering the earth must be expanding toward every path.[91] The comprehension is that the earth is the axis of the universe. What a fatal blunder! Copernicus's cosmos investigation, later continued by Galileo Galilei, had proved that the earth is not the midpoint of the universe, as in *geocentric* concept.[92]

Toward direction is the sky rose? Human being is unable to answer such question. For the reason that if the direction of the universe expansion is recognized, the center of the universe will also be identified. If it indeed happens, human being will be able to predict when the denouement of the drama, the doomsday. This is indisputably impossible. Allah swt. unequivocally stated that the end of the world will come out of the blue, suddenly, and no one knows it except Him the Almighty.

Concerning the matter of expanding universe, another Qur'anic verse revealed that the construction of the universe calls for power and strength, including its expansion. In sura al-Dhāriyāt, Allah says:

"With power did We construct the heaven. Verily, we are able to extend the vastness of space thereof." (al-Dhāriyāt: 47).[93]

It is said in sura al-Dhāriyāt above: "With hands (power) did We construct the heaven." Word "*ayd*" is a plural form from "*yad*" which literally denotes "hand". Ibn 'Abbas deciphered word "*yad*" as *al-quwwa*, indicating "power".[94] *Yad* can also signify *al-qudra* (power, ability) and *al-ni'ma* (comfort, luxury, pleasure).[95]

Another statement that must be underscored is "*lamusi'una*" connoting "to extend", that is to extend the universe. In term of this, Ibn Zaid said: "*Lamusi'una*, Allah *'Azza wa Jalla*, the Great, expand the cosmos." Sufyan added: "Who created (universe) in seven levels." This utterance will also indicate: "Who widen livelihood and prosperity," if "*yad*" is understood as pleasure.[96] On the word of Ibn "Abbas, what intended as *lamusi'una* is *laqadiruna* (Who is Able, who has Power).[97]

As a result, there are three kinds of interpretation. First, what explicitly said that the term *lamusi'una* is intended as "expansion", that is to say the expansion of the universe space, because the object of the verbal phrase *lamusi'una* is the universe. Secondly, the companions, among them is Ibn "Abbas, interpreted *lamusi'una* as *laqadiruna*, or "to be able". Allah was able and had strength to construct the universe. Third, the argumentation that the object of verbal expression *lamusi'una* is yad. Whereas, what is set to yad is pleasure.

Among those three kinds of interpretation, the most acceptable and appropriate point of view among the majority s opinion of the scholars is the first one, which explicitly turn out to be the evidence of the expansion of the universe, and because of the presence of similar verses, which is congruent with the verse, as in sura al-Ghāshiyah, verse 17-18.

3. The Destruction

What will be the destiny of the universe? Should it be open, s0 that the big bang happens once in a lifetime? Or otherwise, the age of the universe will end in an amazing contraction. Is it true that the second drama of colossal detonation repeated? However, transcendental clues inform us as elaborated below. God says:

"And when the stars have fallen and scattered." (al-Infiṭār: 2).[98]

It is mentioned that "*al-kawākib*", which means "stars"[99] will suffer "*al-intithar*", or "to fall each other".[100] In similar sense, He says:

"And when the stars shall fall," (al-Takwīr: 2).[101]

Like "*al-kawākib*", "*al-nujūm*" also indicates "the stars". While, "*al-inkdar*" is similar with "*al-intithar*", "to fall".[102] In short, both sura al-Infiṭār: 2 and al-Takwīr: 2 tell us that at a certain point of time in the future, the stars —certainly along with all celestial bodies will fall.

In another place, Allah also says:

"And the sun and moon will be joined together (by going one into the other or folded up or deprived of their light)." (al-Qiyāmah: 9).[103]

Regarding God's saying, "*wa jumi'a al-shamsh wa al-qamar*" (And the sun and moon will be joined together), Mujahid said that both of them, the sun and moon, would be blended and mixed one another on the judgment day. It is the same with what Ibn Jarij said. While, concerning the same utterance, 'Atha' ibn Yasar said that both the sun and moon would be joined and amassed in the end of the world. Then, as 'Atha' ibn Yasar said, the sun and moon would be thrown to the sea and become the big fire of Allah.[104]

"And (remember) the Day when We shall roll up the heaven like a scroll rolled up for books. As We began the first creation, we shall repeat it. (It is) a promise binding upon Us. Truly, we shall do it." (al-Anbiyā': 104).[105]

There are more than a few opinions regarding word "*al-sijill*". Prophet s companions, 'Atiyya and 'Umar ibn Khattab, said that *al-sijill* is the name of an angel. Abu Ja'far al-Baqir added, *al-sijill* is an angel, to whom Harut and Marutangels that had ever been sent by Allah as humans—assist. Mujahid interpreted it as "*al-sahifa*", a piece of paper or page. Ibn "Abbas understood it as a man who worked as a clerk or secretary for the Prophet saw. In another narration, it is said that Ibn "Abbas interpreted "*ka-tayy al-sijill li-al-kutub*" as "*ka-tayy al-saḥifa 'alā al-kitāb*", (like scroll of paper in a book).[106]

Narrated by Ibn Jarir, as regards to "*kama bada'na awwala khalqin nu'iduh*", Ibn 'Abbas expressed in his interpretation: "*nahliku kulla shay' kama kana awwala marra*", [We destroy everything as they are at the beginning].[107] This means that, on the judgment day, Allah will devastate everything without any exception as what was in the first creation.

Moslem classic scholars (*salaf*) tended not to give wider interpretation on sura al-Anbiyā', verse 104, as excerpted above. The evidence of universe rolling up is one of God's secrets, as He Says:

"And there is not a thing, but with Us are the stores thereof. And we send it not down except in a known measure." (al-Ḥijr: 21).[108]

While, in more modern discourse, we find that those verses represent strong evidence for contemporary scientific discovery.

In other part of the Qur'an, it is mentioned:

"They made not a just estimate of Allah such as is due to Him. And on the Day of Resurrection the whole of the earth will be grasped by His Hand and the heavens will be rolled up in His Right Hand, Glorified is He, and High is He above all that they associate as partners with Him!" (al-Zumar: 67).[109]

Prophet's explanation on this verse is what narrated by Abū Hurayrah.: "I heard Allah's Messenger saw. Saying: (On the Day of Resurrection) Allah will grasp the whole planet of earth (by His Hand), and roll ali the heavens up with His Right Hand, and then He will say, "Tam the King, where are the kings of the earth?"[110]

The *raison d'être* or revelation motive from sura al-Zumar, verse 67, is that once upon a time, a Jew (person of Hebrew) another narration Said it was a Jewish religious leader (rabbi) —come to the Prophet and ask doubtfully regarding Allah's capability to amass the universe and all its contents in His hand. Later on, Allah revealed al-Zumar, verse 67.[111]

Perceiving God's saying: "The whole of the earth will be grasped by His Hand and the heavens will be rolled up in His Right Hand." Ibn 'Abbas said that the whole universe will be grasped, including the seven layers of the earth and the seven levels of the heavens.[112]

The Convergence Points of Qur'an and Science on the Big Bang Theory

1. The Origin of the Universe from One Substance

As described in sura al-Anbiyā', verse 30, the space of the universe ("*al-sama*" [the heaven]) and the matter ("*al-ard*" (the earth)) were joined together before Allah separated them. So, at first, the universe was something united: one unit. The key points that brought the author to this conclusion are word "*al-ratq*" and "*al-fatq*". The first word indicates the universe at early creation, while the second one indicates the further process of the creation.[113]

Therefore, the episode of *al-fatq*, the separation of earth and the heaven, is possibly caused by the existence of extraordinarily imposing high

energy that exploded. If it is the case, then the Big Bang Theory will agree with the explanation in sura al-Anbiyā': 30.[114]

This divine explanation is exactly the same with what scientific empirical exploration had found. But, however, scientific observation has a hole of imperfection and limitation. The Big Bang Theory has an assumption that there was a kind of primeval atom —or solid primordial matter,[115] which became the origin of the universe. This is the weak point of the theory, because this assumption was purely based on mathematical and physical calculation "*an sich*". And even that modern astronomical investigation had proved its truth by interpreting the phenomena of nature, but who has ever seen the existence of a kind of primeval atom directly by his or her eyes?

The weakness of the science on the subject study of the universe is that the concept is practical and uncertain. Science is always changing. Science is also imperfect and limited, because it is trapped in human's mind. According to science, the character of this realm has been and will always vary from day to day, because science is based on synthesis between theory and experiment, not based on solely rational truth. Theory and experiment have temporary values only. Therefore, science concept of the always-changing universe is not appropriate to be an ideological foundation for religious faith. Religion requires more constant basis for its faith.[116]

In this way, sura al-Anbiyā', verse 30, becomes the foremost support for the justification of the theory, asserting the unity of the universe along with all matters in it. Scientific explanation may say the unity as primeval atom, or something else, yet the Qur'an describes it as "*al-ratq*", which means the action of fusing, or binding together elements to make a homogenous whole.[117]

The unity of space and time as stated in sura al-Anbiyā': 30 can only be understood if both of them were placed in a unique condition of singularity[118] —an epoch where the present laws of physics say the universe had zero size and infinite temperature and density.[119]

At this point, the next question is: "How could a condition of singularity be possible?" Indeed, such condition could likely be potential when we analyze it by physical calculation. But what so called as a Singularity is hard to be approved by our mind. It is hard to imagine a matter with mass absolute zero and infinite temperature. It is also hard to imagine that this universe was created from nothing [*creatio ex nihilio*].[120] Yet, however, this

extraordinary phenomenon shows the power of God the Almighty. In His hand, nothing is impossible.

Regarding this separation, the Qur'an indeed doesn't explain how the process is. The Qur'an, in sura al-Anbiyā': 30, only mentions phrase "*fafataqnahuma*" [then We parted them]. The key word contained in the phrase is "*al-fatq*", which means the action of breaking, diffusing, and separating.[121] But, the unity of the universe and the next separation had been justified by scientists' empirical observations. Their separation occurred in a gargantuan explosion or big bang that flung entire matters of celestial body to every corner of the universe that has been expanding in a flash.

So, there is no disagreement between what God had revealed trough His Messenger in the Holy Book of Qur'an and what scientific investigation just found in the field of astronomy and cosmology. There is only mutual correlation between divine guidance and science. The Qur'an gives information, and science proves it. The Qur'an illustrates the picture globally in general expression, whereas science hypothesizes, elaborates, and observes it in empirically more detailed conception.

2. The Expanding Universe

The universe was calculated containing approximately 200 quintillion galaxies. From the found evidence, this universe is convinced not having definite form, but continually expands, as confirmed by the Qur'an:

> *"With power did We construct the heaven. Verily, we are able to extend the vastness of space thereof."* (al-Dhāriyāt: 47).[122]

Someone who lived in the 9th century would say that word "*al-sama*" means "heaven" in the sense that heaven is a kind of super ball, which has firm radius of length, rotating on its axis. At night, the brightly sparkling stars lay on the wall of this super ball-shaped heaven. This ball provided a place for all universe space and its extraterrestrial bodies. He believed that his perception concerning the universe was appropriate to everything ably watched every day, at whatever time. Stars seemed having unchanging position one to other, and the universe as a whole rotated once in a day.

In this case, what assumed by the person from the 9th century is very plain and ridiculous. He is absolutely incorrect, because his conception is unable to accommodate the indication revealed by sura al-Dhāriyāt, verse 47.

A spherically shaped universe with a definite radius is not an expanding universe. Moreover, if the universe surrounds entire cosmos space along with all its contents, it will be nothing bigger than that. A correct idea on the subject of the universe must be able to be used for explaining all phenomena pictured in the Holy Book. The idea has to correspond and match with cosmological views of the Qur'an.[123]

The reference to heavens mentioned in sura al-Dhāriyāt, verse 47, deals with, and explains, the borders of the visible universe and their vastness or expansion in the course of times. This phenomenon, or result, is the strangest of all scientific conclusions reached in the last century. Since the meaning of the verse is quite clear, no more explanation will be required. Therefore, contemporarily scientific elocution and eloquence could not be overlooked.[124]

In the history of the Big Bang Theory emergence, Hubble finds that the farther a galaxy, the faster it moves against us; twice as far, twice as fast. The easiest way to envisage the expansion of the universe is not by imagining that all things get away one another, but rather that the space is widened. As batter of wheat flour that mixed with raisins to make bread. We can visualize the batter as the universe and the raisins as cluster of galaxies. If the batter is toasted in an oven, it will expand. As a consequence, the space between raisins will broaden. In the same way, galaxies get farther each other when the universe expands.[125]

It could be for that reason—because of the expansion and the conditional change of the universe, the Arabic words that been used are always in plural appearance, viz.: "*alamin*", as plural form from the utterance "*'alam*", which means the "world".[126]

Thus, human beings absolutely cannot imagine the power implicated in the creation of this universe and the one able to throw approximately 10^{21} (10 million quintillion) stars —each with weight about the weight of the sun –to every corner of the universe. From this kind of comparison, we are able to know that finally, physics, which advanced to find out truth, also reaches to the facts showed by the Qur'an. This fact provokes the physicists in general —especially they who are atheistic: because the creation of the universe from nothing, or *creatio ex nihilio*, necessitates the existence of God the Creator and the Almighty. The cause is that purely scientist who tends to be atheist only believes in something empiric or detectable by equipment.[127]

3. The Contraction Phase

Astronomers today cannot say for certain which type of universe we live in. On the one hand, some believe that the red shift magnitude relation indicates a closed universe. Other astronomers stress the evidence from the deuterium abundance, which suggests that the universe is open. They point out that intergalactic matter has not been conclusively observed in spite of great attempts and efforts to do so.

Which group is right? No one could be able to give the solution. We can hope to answer this question only by further observation. Yet, however, the Holy Book of Qur'an has given such answer on the subject of the judgment day.

Sura al-Infiṭār: 2, al-Qiyāmah: 9, al-Takwīr: 2, and a-Anbiyā': 104 are talking about the day of resurrection, and there are many more similar verses that describe natural condition at the time (at the judgment day[128]), for instance: human beings fly all around as butterflies and mountains are scattered all over the space as feathers (sura al-Qāri'a); a horrifying earthquake, the earth is in tumult, hullabaloo, and disordered (sura al-Zalzalah); tectonic tremor on the sea, the sky is in commotion, the stars fall each other (sura al-Qiyāmah), etc.

One interesting natural phenomenon on the day of resurrection portrayed in the Qur'an is the accumulation of celestial bodies stars, planets, nebulae, galaxies, asteroids, and all the like. In sura al-Infiṭār and al-Takwīr, the words "*al-kawākib*" and "*al-nujūm*" are mentioned. Both of them are plural form derived from "*al-kawkab*" and "*al-najm*", which mean stars.[129] Those stars experience "*al-intithar*" and "*al-inkidar*", which have equal meanings, viz. "to fall each other".[130] So, all the stars in the cosmos will fall and smash each other in the end of the day.

The first emerging assumption from the word "fall" is the change of position from the upper toward beneath, or being released and descended downward fast.[131] This prevails on the surface of the planet. In wider scope, the universe, we will find that what is supposed to be beneath is the core, the central point. Plainly, we can say in this way: A, who stands up on a specific geographical spot of the earth, let's say it's on Indonesian Archipelago, will point toward his toes, if he is asked where the down is. On the other way, what is pointed by A's index finger will direct to B, who stands up on United States of America, also pointing at the same time with A toward the ground as sign for "down". Thus, if we stand on the moon,

we will see that A and B are pointing each other when they say: "I point downward." So, what A and B mean as down is the core or the center of the earth.

Itis also the same when the stars fall each other. They won't fall downward as same situation we stand on earth. The stars will crash one another in the core of the universe.

Then, in sura al-Qiyāmah, verse 9, it is also said that the episode is when the sun and moon are gathered together in the day of final catastrophe: "And the sun and moon will be joined together." According to Ibn Mas'ud, this impossibly happens in the world.[132] His argument is based on God's saying:

> *"It is not for the sun to overtake the moon, nor does the night outstrip the day. They all float, each in an orbit."* (Yāsīn: 40).[133]

In this case, it seems that Ibn Mas'ud had made a mistake. Sura al-Qiyāmah, verse 9, gives details the order on the doomsday. While, sura Yasin, verse 40, above constitutes evidence for the divine law or the law of nature. The sun and moon will never admittedly crash one another, because of "centrifugal force"[134] of the moon toward the earth and sun. But, however, it will not be valid anymore on the judgment day later on. The moon, the earth, the sun, and the Milky Way—our galaxy —and the entire extraterrestrial bodies will be pulled together, will fall and melt in the core of the universe.

Another sentence explaining that great occurrence—and all at once as Allah's guidance regarding the end of the universe —is His saying in sura al-Anbiyā', verse 104. "Like a scroll rolled up for books," itis the adage and maxim that Allah uses to show how the state of heaven and earth in the early creation. The words "*ka-tayy al-sijill*" [as scroll of sheets of paper] constitutes part of explanation for the term "*ratqan*" [something solid, clump] in sura al-Anbiyā': 30.

Allah also gives additional explanation, which informs the episode of universe folding up in the doomsday, as in sura al-Zumar, verse 67. This verse expresses the grandeur and the power of Allah, and it's Him the only one Who has the control in the day of resurrection. The significance of "the right hand" is the power and strength to roll up the entire universe.

Thus, the Qur'an asserts that the destiny of the universe is to be closed. The contraction of the universe into the condition as it was at early creation, becomes the way of its destruction.

Conclusion

This study has an aim to solve such problem: "Does the Qur'an as divine guidance justify Big-Bang Theory on the creation, persistence, and destruction of the universe?" The study on the Qur'an is limited to several verses that are related to the study, while the analysis on the Big Bang Theory is focused not on its mathematical-physical calculation, but only on its general conclusion.

Instead of its difficulties and even impossibilities, comparative effort on the Qur'an with science will be doable, if it is done under specific rule. In short, the rule is that because the Qur'anic guidance only explains the phenomena of nature in general, consequently the Big Bang Theory is studied merely on its scientific general conclusion, instead of on its mathematical-physical calculation.

Conclusion on the study of the Big Bang Theory states that this universe was, is, and will be undergoing three kinds of phase. Those all three phases are evidently justified by divine guidance as reflected in the Qur'an, viz.:

1) The first phase: "the creation": the origin of the universe from one substance—illustrates that the universe was originated from a kind of primeval atom that exploded some million years ago –is confirmed by sura al-Anbiyā': 30. The word "*al-ratq*" in sura al-Anbiyā': 30 represents the concept of "primeval atom" or the unity of space, while "*al-fatq*" signifies the explosion or the big bang.
2) The second phase: "the persistence": the expanding universe —expressing the expansion of the universe with speed around 1,800 km/sec as proved by the picture of red shift in the entire of the universe— is verified by sura al-Ghāshiyah: 17-18 and al-Dhāriyāt: 47. In both verses are mentioned the word "to extend" and "to raise" with the universe as their objects. Both words stand for the concept of expanding universe as supported by the Big Bang Theory.
3) The third phase: "the destruction": the contraction of the universe. Even has the same possibility in either to be closed (the universe will contract and fall into the second big bang) or open (the universe will expand forever), the universe was determined by the Qur'an to be closed as substantiated in sura al-Infiṭār: 2, al-Takwīr: 2, al-Qiyāmah: 9, al-Anbiyā': 104, and al-Zumar: 67. Utterances

mentioned in those verses are: "the stars have fallen", "the stars shall fall", "the sun and moon will be joined together", "We shall roll up the heaven... As we began the first creation", and "the whole of the earth will be grasped... and the heavens will be rolled up." Those statements denote the concept of closed universe as one predicted by the enhancement of the Big Bang Theory. []

Endnotes

1. This essay is the summarized edition from the Thesis entitled "The Qur'an and the Big Bang Theory: A Comparative Study on the Creation, Persistence, and Destruction of the Universe," Jakarta: The Faculty of Islamic Theology and Philosophy, the Syarif Hidayatullah State Islamic University, 2004.
2. *Cosmology* is the study of the origin, constitution, structure, and evolution of the universe. It is used in the field of the theory of gravitation, relativity, Riemannan geometry, and the observation of extragalactic systems. HongYee Chiu, "Cosmology (Astronomy)", in Bernard S. Cayne, et.al., (eds.), *Grolier Academic Encyclopedia*, 4th Edition, (USA: Grolier International, Copyright © Arete Publishing Company, 1983), vol. 5, p. 282; See also G. C. McVittie, *Fact and Theory in Cosmology* (New York: Macmillan Company, 1961).
3. *Cosmogony* is the term used to describe the study of the origin of the universe. Cosmogony may be considered a branch of cosmology. Cayne, *Grolier Academic Encyclopedia*, vol. 5, p. 282.
4. "The Big Bang Theory", accessed on April 6, 2004, from http://liftoff.msfc.nasa.gov/academy/universe/b-bang.html, updated on December 2, 1997.
5. Mu'adz D'Fahmi, "Teori Big-Bang dalam Perspektif al-Qur'an, Hidayah Samawi tentang Penciptaan Alam Semesta," accessed on October 10, 2002, from http://www.at-tin.org, published on October 10, 2002.
6. There are numerous references to help finding those Qur'anic verses and to be basis for the made classification: viz.: Ali Audah, *Konkordansi Qur'an: Panduan Kata dalam Mencari Ayat Qur'an*, (Jakarta: Litera Antarnusa, 1991); Fachruddin HS., *Ensiklopedia Al-Qur'an*, (Jakarta: Rineka Cipta, 1992); and Rachmat Taufiq Hidayat, *Khazanah Istilah Al-Qur'an*, 5th Edition, (Bandung: Mizan, 1995). While, verses which throw light on the process of creation, or systematized Qur'anic verses in the topic of "Creation", see Masudul Hasan, *The Digest of Holy Qur'an*, 2nd Edition, (New Delhi: Kitab Bhavan, 1992), pp. 75-77.
7. Mannā' Khalil al-Qaṭṭān, *Mabāḥith fi 'Ulūm al-Qur'ān*, 39 Edition, (Riyad: Huqūq al-Tab' Mahfuza, [s.a]), p. 274.
8. As referred by Arkoun from Abū al-Ḥasan al-'Amirī, *Al-I'lam bi-Manāqib al-Islām*. Mohammed Arkoun, *Nalar Islami dan Nalar Modern: Berbagai Tantangan dan Jalan Baru*, translation by Rahayu S. Hidayat, (Jakarta: Indonesia-Netherlands Cooperation in Islamic Studies — INIS, 1994), p. 105.
9. Mohammed Arkoun, *La Pensèe Arabe*, (Paris: P.U.F., 1975), p. 9.
10. Mohammed Arkoun, *Rethinking Islam Today*, translated by Ruslani, *Islam Kontemporer: Menuju Dialog Antar Agama* (Yogyakarta: Pustaka Pelajar, 2001), p. 6.
11. But, after the development of *fiqh* (Islamic jurisprudence) throughout the end of 7th until 8th century, which was characterized by the emergence of an analogical and technical thinking tradition (*'ilm al-mantiq*), the 'ulama's of *fiqh* strictly bound their selves and the Moslem community to the text of the Holy Book of Qur'an, so that, the contents of Islamic law and theology were enclosed by the weight of textualism. Fazlur Rahman, *Islam*, translated by Ahsin Mohammad, *Islam*, 4th Edition, (Bandung: Pustaka, 2000), p. 46.
12. Avijit Roy, "Does Qur'an Have Any Scientific Miracles? 10 Top Most Scientific Myths About Qur'an", accessed on April 21, 2004, from http://www.humanists.net/avijit/article/10_myths_about_Quran.htm.
13. 'Abd al-Bārī al-Nadwī, *al-Dīn wa al-'Ulūm al-'Aqliyya*, 3rd Edition, (Beirut: Dār Ibn Hazm, 1995), p. 20.

14. "Sir Sayyed Ahmad Khan [1817-1898]" in "Islam and Modernism", accessed on April 21, 2004, from http://www.ghazali.net/book2/chapter6/page_2/body_page_2.htm, modified on December 5, 2000.
15. Syed Sibte Nabi Naqvi, *Islam and Contemporary Science*, (Karachi: The World Federation of Islamic Missions, 1973), p. 16.
16. Waheeduddin Khan, *Ilme Jadeed ka Challenge*, translated by Zafarul Islam Khan, *Islam Yatahadda*, translated by A. Rafi'ie Utsman, *Islam Menjawab Tantangan Zaman*, (Bandung: Penerbit Pustaka, 1983), p. 52.
17. Murtadha Muthahhari, *Man and Universe*, translated by Ilyas Hasan, *Manusia dan Alam Semesta: Konsepsi Islam tentang Jagat Raya*, (Jakarta: Lentera, 2002), p. 52.
18. Stephen W. Hawking, A *Brief History of Time: From the Big Bang to Black Holes*, (Toronto: Bantam Books, 1988), p. 42.
19. The general theory of relativity is related to Einstein's concept established before. In 1905, Einstein proposed a series of new ideas concerning the nature of space, time, and matter. This set of ideas, known as the Special Theory of Relativity, tells what happens when travelling very near the speed of light. William J. Kaufmann, *Relativity and Cosmology*, 2nd Edition, (New York: Harpen & Row, 1977), p. 22.
20. Sybil P. Parker & Jay M. Pasachoff, (eds.), *MeGraw-Hill Encyclopedia of Astronomy*, 2nd Edition, (New York: McGraw-Hill, 1993), p. 52.
21. "Homogenous" means that the density of matter (galaxies) is the same everywhere. While, "isotropic" is used to explain that the distribution of matter (galaxies) is the same in every direction. Cayne, *Grolier Academic Encyclopedia*, vol. 5, p. 287.
22. *Cosmological Principles* are imposed: first, the universe is homogeneous the density of matter (galaxies) is the same everywhere. Second, the universe is isotropic —the distribution of matter (galaxies) is the same in every direction. Cayne, *Grolier Academic Encyclopedia*, vol. 5, p. 287. The simplest assumption to make is that if we viewed the contents of the universe with sufficiently poor vision, it would appear roughly the same everywhere and in every direction. "Big Bang Cosmology", accessed on April 6, 2004, from http://map.gsfc.nasa.gov/m_uni/uni_101bbl.html, updated on December 12, 2003.
23. William K. Hartmann, *Astronomy: The Cosmic Journey*, (Belmont, California: Wadsworth Publishing Company, 1987), pp. 451-452.
24. Stephen W. Hawking, *Black Holes and Baby Universe and Other Essays*, (London: Bantam Press, 1993), p. 92.
25. Marcus Chown, *Afterglow of Creation: From the Fireball to the Discovery of Cosmic Ripples*, (London: Arrow Books, 1993), p. 18.
26. Parker & Pasachoff, *McGraw-Hill Encyclopedia of Astronomy*, p. 52.
27. Chown, *Afterglow of Creation*, p. 18-19.
28. For more details about the equation, see Lincoln Barnett, *The Universe and DR. Einstein*, 11th Edition, (New York: Mentor Books, 1958) and Amir D. Aczel, *God's Equation: Einstein, Relativity, and the Expanding Universe*, (New York & London: Four Walls Eight Windows, 1999).
29. Jay M. Pasachoff, "Big Bang Theory" in Microsoft Encarta Encyclopedia 2004 (Compact Disk), Redmond: Microsoft Corporation, 2003.
30. Parker & Pasachoff, *McGraw-Hill Encyclopedia of Astronomy*, p. 52. Cosmological constant is a sort of universal antigravity force that Einstein proposed and then discarded as inelegant. Michael D. Lemonick, "Cosmic Close-Ups: Stunning New Photos from the Hubble Space Telescope put the Mysteries of the Universe into Sharp Focus", the *Magazine New York TIME International*, November 20, 1995, p. 47.

31. Donald Goldsmith, *The Runaway Universe: The Race to Find the Future of the Cosmos* (Cambridge: Perseus Books, 2000), pp. 7-13.
32. Chown, *Afterglow of Creation*, pp. 19-20.
33. John Gribbin, *The Birth of Time: How We Measured the Age of the Universe* (London: Weidenfeld & Nicolson, 1999), p. 115.
34. Modern cosmologies also called this widely known theory as "expanding universe". Evry L. Schatzman, *Our Expanding Universe*, (New York: McGraw Hill, 1989).
35. 'Adnan al-Sharif, *Min 'Ilm al-Falak al-Qur'ānī: al-Thawabit al-'Ilmiyya fi al-Qur'ān al-Karīm*, 2nd Edition, (Beirut: Dār al-'Ilm li-al-Malayin, 2001), p. 29. Lemaitre imagined that the primeval atom was approximately thirty as big as the size of sun. This primeval atom burst out into pieces that later became atoms, stars, and galaxies. John Gribbin, *In Search of the Big Bang, Quantum Physics and Cosmology* (London: Corgy Books, 1987), pp. 129-130.
36. Chown, Afterglow of Creation, pp. 20-21. George Gamow, *The Creation of the Universe*, 2nd Edition, (New York: The Viking Press, 1952), p. 4.
37. Chown, *Afterglow of Creation*, p. 13.
38. Cayne, *Grolier Academic Encyclopedia*, vol. 5, p. 282.
39. Chown, *Afterglow of Creation*, p. 13. Alexander S. Sharov and Igor D. Novikov, *Chelovek, otkryushi-vzryv Vslenno-,* translated by Vitaly Kisin, *Edwin Hubble: The Discoverer of the Big Bang Universe*, (Cambridge: Cambridge University Press, 1993), pp. 47-56.
40. The term "Doppler Effect" is taken from the name of its founder, Christian Doppler of Austria, in 1838. "Creation of Cosmology: Big Bang Theory", accessed on April 6, 2004, from http://ssscott.tripod.com/bigbang.html ©1998 and 2002.
41. Frederick J. Bueche, *Principles of Physics*, 5th Edition, (New York: McGraw-Hill Inc., 1988), p. 316.
42. Sharov and Novikov, *Edwin Hubble: The Discoverer of the Big Bang Universe*, pp. 56-74.
43. John Gribbin, *In the Beginning: The Birth of the Living Universe*, (London: Penguin Books, 1993), pp. 6-7; Chown, *Afterglow of Creation*, pp. 15-16; Kitty Ferguson, *Stephen Hawking: Pencarian Teori Segala Hal*, (Jakarta: PT. Pustaka Utama Grafiti, 1995), pp. 58-59.
44. A. Pannekoek, *A History of Astronomy*, (New York: Interscience Publisher Inc., 1961) p. 488.
45. Robert McHenry, et.al., (eds.), *The New Encyclopedia Britannica*, 15th Edition, (Chicago: Encyclopedia Britannica Inc., 1993), vol. 5, p. 107.
46. Achmad Baiquni, *Teropong Islam terhadap Ilmu Pengetahuan*, (Solo: Ramadhani, 1989), p. 43.
47. Amo Allan Perzias, "Autobiography", accessed on April 6, 2004, from http://www.nobel.se/physics/laureates/1978/penzias-autobio.html. For this discovery, Arno Penzias and Robert Wilson won the Nobel Prize for Physics in 1978. "Arno Allan Penzias", accessed on April 6, 2004, from http://www.nobel-winners.com/physics/arno_allan_penzias.html, and Sharov and Novikov, *Edwin Hubble: The Discoverer of the Big Bang Universe*, p. 145.
48. Martin Harwit, *Cosmic Discovery: The Search, Scope, & Heritage of Astronomy*, (New York: Basic Books Inc., 1981), p. 148.
49. Parker & Pasachoff, *McGraw-Hill Encyclopedia of Astronomy*, p. 53; Goldsmith, *The Runaway Universe*, pp. 166-168.
50. Quasars are star-like objects so bright they can be seen halfway across the universe. Lemonick, "Cosmic Close-Ups", p. 47.

51. Cayne, *Grolier Academic Encyclopedia*, vol. 5, p. 285.
52. Patrick Moore, *Patrick Moore's A-Z of Astronomy*, (Wellingborough: Patrick Stephens, 1986), p. 20; Patrick Moore, *New Guide to the Planets*, (London: Sidgwick & Jackson, 1993), p. 5.
53. Thornton Page & Lou William Page, (eds.), The Macmillan Sky and Telescope Library of Astronomy. Volume 6: *The Evolution of Stars: How They Form, Age, and Die*, (London: Macmillan Company, 1968), p. 19.
54. Martin Ince, *Dictionary of Astronomy*, (Middlesex: Peter Collin Publishing, 1997), p.17.
55. McHenry, *The New Encyclopedia Britannica*, vol. 2, p. 205.
56. Eric Chaisson & Steve Macmillan, *Astronomy Today*, (New Jersey: Prentice Hall, 1993), p. 595.
57. Discussion on quantum mechanics is involved in the concept of Quantum Theory. For explanation on this theory at a glance, see J. P. McEvoy and Oscar Zalate, *Quantum Theory for Beginners*, translated by Ahmad Baiquni, *Mengenal Teori Kuantum for Beginners*, 3rd Edition, (Bandung: Mizan, 2000).
58. Chaisson & Macmillan, *Astronomy Today*, p. 600.
59. Chaisson & Macmillan, *Astronomy Today*, p. 600.
60. McHenry, *The New Encyclopedia Britannica*, vol. 2, p. 205.
61. Scientists have determined the abundance of helium in large number of objects. Helium is produced in stellar interiors and ejected into the interstellar medium where it is available to form new stars. Helium is very difficult to destroy because it has such a stable nucleus, so the present helium abundance should exceed 26 percent by mass. If less helium existed anywhere, the big bang model would be in serious trouble. George B. Field, et.al., *Cosmic Evolution: An Introduction to Astronomy*, (Boston: Houghton Mifflin Company, 1978), p. 258.
62. Deuterium, or "heavy hydrogen," containing 1 proton and 1 neutron. Its nucleus is called "deuteron". Field, *Cosmic Evolution*, p. 252.
63. Field, *Cosmic Evolution*, pp. 256-262.
64. Parker & Pasachoff, *McGraw-Hill Encyclopedia of Astronomy*, p. 55.
65. Chaisson & Macmillan, *Astronomy Today*, pp. 599-603.
66. Cosmologist now think that much of the universe—perhaps 99 percent—is dark matter, or matter that has gravity but that we cannot see or otherwise detect. If the inflationary version of Big Bang Theory is correct, then the amount of dark matter that exist is just enough to bring the universe to the boundary between open and closed. Pasachoff, "Big Bang Theory", Microsoft Encarta Encyclopedia.
67. John Man, *Illustrated Encyclopedia of Astronomy*, 28 Edition, (London: Chancellor Press, 1996), p. 151.
68. Chaisson & Macmillan, *Astronomy Today*, p. 600. During its earliest moment the universe was very hot and dense—its temperature and density were infinite and its size was zero. Field, *Cosmic Evolution*, p. 262. Thus, Einstein's general relativity can no longer be used as a descriptive tool. It must be replaced by a description of space-time using quantum mechanics. Bernard Johnston, et.al., (eds,), *Collier's Encyclopedia*, 41st Edition, (New York: Macmillan Educational Company, 1990), vol. 7, p. 369.
69. Will the universe be recreated from this singularity again (oscillatory universe)? If we refer to Einstein's theory, we will figure out that the answer is No. However, Einstein's theory is not likely to be valid when the density is too high. Therefore, there is no answer to this question as yet. Cayne, *Grolier Academic Encyclopedia*, vol. 5, p. 289.
70. Man, *Illustrated Encyclopedia of Astronomy*, p. 151.

71. *The Noble Qur'an in The English Language*, translated by Muḥammad Taqiyy al-Dīn al-Hilālī & Muḥammad Muḥsin Han, 15" Edition, (Riyad: Darussalam, 1996), p. 593.
72. There are several terms used by Qur'an in giving details the picture of the end of the world, viz.: "Day of Decision" [*yawm al-fasl*], "Day of Resurrection" [*yawm al-qiyāma*], "Day of Reckoning" [*yawm al-ḥisab*]. Abdul Basit, *The Essence of the Quran: Commentary and Interpretation of Surah al-Fatihah*, (Chicago: ABC International Group, Inc., 1997), p. 29.
73. Musthafa KS., *Alam Semesta dan Kehancurannya menurut Al-Qur'an dan Ilmu Pengetahuan*, (Bandung: PT Al-Mar'arif, 1980), p. 29.
74. 'Allama al-Sayyid Muḥammad Ḥusain al-Tabatabā'ī, *al-Mizān fī Tafsīr al-Qur'ān*, (Beirut: Mu'assasa al-A'lami li-al-Matbu'at, 1991), vol. 14, p. 278.
75. There is an opinion that the Qur'an interprets "sky" or "heaven" as a huge dome or cupola. This belief is mistaken. Explicitly, the Holy Qur'an doesn't construe sky, heaven, or universe as an enormously blue-colored dome seen by human beings since the beginning of their existence. Muhammad Jamaluddin el-Fandy, *On Cosmic Verses in the Qur'an*, (Cairo: The Supreme Council for Islamic Affairs, 1967), pp. 24-25.
76. A.R. Sahab, *Tafsir Assamawat*, (Surabaya: C.V. Karunia, 1978), p. 107.
77. *The Noble Qur'an*, p. 1098.
78. Muḥammad ibn Jarīr al-Ṭabarī, *Tafsīr al-Ṭabarī: Kitāb Jamī' al-Bayān fī Tafsīr al-Qur'ān*, (Beirut: Dār al-Fikr, 1978), vol. 7, part 17, pp. 17-18.
79. Muḥammad 'Alī al-Ṣabūnī, *Ṣafwāt al-Tafāsir* (Beirut: Dār al-Fikr, [s.a]), vol. 2, p. 261.
80. Louis Ma'luf, *Al-Munjid: Fī al-Lugha wa al-A'lam*, (Beirut: Dār al-Mashriq, 1986), p. 248; Sharif, *Min 'Ilm al-Falak al-Qur'ānī*, p. 32.
81. Ṭabaṭabā'ī, *Al-Mizān*, vol. 14, p. 278.
82. 'Ala' al-Dīn 'Alī ibn Muḥammad ibn Ibrāhīm al-Baghdādī al-Khazin, *Tafsīr al-Khazin: al-Musamma li-Bāb al-Ta'wil fī Ma'ānī al-Tatrīl*, ([s.l]: Dār al-Fikr, [s.a]), vol. 3, p. 258.
83. 'Abd al-Karīm al-Khatīb, *Tafsīr al-Qur'āni li-al-Qur'ān*, ([s.l]: Dār al-Fikr al-'Arabī, 1970), vol. 9, pp. 867-868.
84. Aḥmad Muṣṭafā al-Marāghī, *Tafsīr Al-Marāghī*, (Beirut: Dār al-Fikr, 1946), vol. 6, chapter 17, p. 24.
85. *The Noble Qur'an*, p. 1101.
86. "*Naqli*" is derived from "*naqala*", which stands for "to transfer" something. Mahmud Yunus, *Kamus Arab-Indonesia*, (Jakarta: Yayasan Penyelenggara Penterjemah/Pentafsir Al-Qur'an, 1990), p. 466. In the domain of academic discussion, idiom *naqli* is usually translated as normative. "Normative" express the act of concerning rules, or forcing people to obey rules. Michael Rundell, et.al, (eds,), *Macmillan English Dictionary for Advanced Learners*, (Oxford: Macmillan Publishers Ltd., 2002), p. 963.
87. Ibn Kathīr, *Tafsīr al-Qur'ān al-'Aẓīm*, ([s.l]: Syarika al-Nūr Asia, [s.a]), vol. 4, p. 503.
88. al-Ṣabūnī, *Ṣafwāt al-Tafāsir*, vol. 3, p. 552.
89. Human beings make use the picture of stellar constellation for cardinal point assistance.
90. Ṭabaṭabā'ī, *Al-Mizān*, vol. 20, p. 310.
91. M. Quraish Shihab, *Mu'jizat al-Qur'an: Ditinjau dari Aspek Kebahasaan Isyarat Ilmiah dan Pemberitaan Gaib*, (Bandung: Mizan, 1998), pp. 171-172.
92. The idea of geocentric is used for explaining universe in Ptolemaists view that placed the earth as the center of the universe. Hassan Shadily, et.al., (eds.), *Ensiklopedi Indonesia*, (Jakarta: PT. Ichtiar Baru - Van Hoeve), vol. 2, p. 11-16.
93. *The Noble Qur'an*, p. 946.
94. al-Ṭabarī, *Tafsīr al-Ṭabarī*, vol. 9, part 30, p. 42.

95. Ṭabaṭabā'ī, *Al-Mizān*, vol. 17, p. 385.
96. al-Ṭabarī, *Tafsīr al-Ṭabarī*, vol. 9, part 30, p. 42.
97. al-Ṣabūnī, *Ṣafwāt al-Tafāsir*, vol. 3, p. 257.
98. *The Noble Qur'an*, p. 1084.
99. Hans Wehr, *A Dictionary of Modern Written Arabic*, (Beirut: Librairie Du Liban, London: Macdonald & Evans Ltd., 1974), p. 846 & 945.
100. al-Raghīb al-Asfahānī, *Mu'jam Mufradat Alfaẓ al-Qu'rān*, (Beirut: Dār al-Fikr, [s-a]), p. 44.
101. *The Noble Qur'an*, p. 1081.
102. Abū Isḥāq Ibrāhīm Ibn al-Sari al-Zajjāj, *Ma'āni al-Qur'ān wa I'rābuh*, (Beirut: 'Alim al-Kutub, 1988), vol. 5, p. 295; Muḥammad al-Amīn ibn Muḥammad al-Muḥtar al-Jakaniy al-Shanqitī, *Adwa' al-Bayān fī Idah al-Qur'ān bi al-Qur'ān*, (Kairo: Maktaba Ibn Tamiyya, 1988), vol. 9, p. 62.
103. Abū Hurayrah ra. reports that: The Prophet saw. said: "The Sun and the moon will be folded up (or joined together or deprived of their lights) on the Day of Resurrection." *The Noble Qur'an*, p. 1060.
104. Jalāl al-Dīn al-Suyūṭī, *al-Dūrr al-Manthūr fī Tafsīr al-Ma'thūr*, (Beirut: Dār al-Kutūb al-'Ilmiyya, 1990), vol. 6, p. 465.
105. *The Noble Qur'an*, p. 603.
106. al-Suyūṭī, *Al-Dūrr al-Manthūr*, vol. 4, pp. 610-611.
107. al-Suyūṭī, *Al-Dūrr al-Manthūr*, vol. 4, p. 611.
108. *The Noble Qur'an*, p. 472.
109. *The Noble Qur'an*, p. 841.
110. Al-Bukhārī, *Ṣaḥīḥ al-Bukhārī*, (Beirut: Dār al-Fikr, 1994), vol. 3, part. 6, Hadith no. 4812, p. 39.
111. al-Suyūṭī, *Al-Dūrr al-Manthūr*, vol. 5, p. 627.
112. al-Suyūṭī, *Al-Dūrr al-Manthūr*, vol. 5, p. 629.
113. Sirajuddin Zar, *Konsep Penciptaan Alam dalam Pemikiran Islam, Sains, dan Al-Qur'an* (Jakarta: PT. Raja Grafindo Persada, 1994), pp. 135-136.
114. Musthafa, *Alam Semesta dan Kehancurannya*, p. 30.
115. Malik Ben Nabi, *The Quranic Phenomenon*, translated by Farid Wajdi, *Fenomena al-Quran: Pemahaman Baru Kitab Suci Agama-agama Ibrahim*, (Bandung: Marja', 2002), p. 101.
116. Muthahhari, *Manusia dan Alam Semesta*, p. 52.
117. Maurice Bucaille, *La Bible, le Coran et la Science*, translated by Alastair D. Pannell & Maurice Bucaille, *The Bible, the Qur'an and Science: The Holy Scriptures Examined in the Light of Modem Knowledge*, 3rd Edition, (Selangor Darul Ehsan: Thinker's Library, 1996), p. 146.
118. Achmad Baiquni, *Al-Qur'an dan Ilmu Pengetahuan Kealaman*, (Yogyakarta: Dana Bhakti Prima Yasa, 1996), p. 212.
119. Chaisson & Macmillan, *Astronomy Today*, p. 600; Field, *Cosmic Evolution*, p. 262.
120. It is worth remarking that many Christian theologians, both Catholic and Protestant, do not regard the idea of *creatio ex nihilio*, or creation from nothing, as either stated or implied by the biblical text However, it is undeniable that the Western Christian tradition has assumed that *creatio ex nihilio* is implicit in the Old Testament writings. John D. Barrow, *The Universe that Discovered Itself*, 6th Edition, (New York: Oxford University Press Inc., 2000), p. 253.

121. Bucaille, *The Bible, the Qur'an and Science*, p. 146; Khazin, *Tafsīr al-Khazin*, vol. 3, p. 258.
122. *The Noble Qur'an*, p. 711.
123. Achmad Baiquni, *Al-Qur'an, Ilmu Pengetahuan, dan Teknologi*, 4th Edition, (Yogyakarta: Dana Bhakti Prima Yasa, 1996), pp. 31-32.
124. El-Fandy, *On Cosmic Verses*, p. 52.
125. Ferguson, *Stephen Hawking*, pp. 58-59.
126. Mir Aneesuddin, *The Universe Seen Through the Qur'an*, translated by Machnun Husein, *Fatwa Al-Quran tentang Alam Semesta*, (Jakarta: Serambi, 2000), pp. 25-27.
127. Hence, some physicists try to deny *creatio ex nihilio* by arguing for counterpart theories. One of the theories is the Steady State Theory, proposed in 1948 by Hermann Bondi, Thomas Gold, and Fred Hoyle, which states that galaxies could be moving apart, but new galaxies will be born and fill the left spaces. Later, in 1964, after Wilson and Penzias found radio emissions as residues and excess from the big bang, the Steady State Theory is not valid anymore. Baiquni, *Al-Qur'an, Ilmu Pengetahuan, dan Teknologi*, p. 15.
128. For more information on the subject of the judgment day as revealed in the Qur'an at a glance, see Machmud Ranusemito, *Memahami Peta Kandungan Al-Qur'an bagi Masyarakat Umum* (Tangerang: Hikmah Mahligai Pilihan, 2000), pp. 186-189.
129. Wehr, *A Dictionary of Modern Written Arabic*, p. 846 & 945.
130. al-Asfahānī, *Mu'jam Mufradat Alfaẓ al-Qu'rān*, p. 444.
131. Ananda Santoso, *Kamus Lengkap Bahasa Indonesia*, (Surabaya: Duta Media, [s.a]), p. 145.
132. 'Abd al-'Alim 'Abd al-Raḥmān Hudrī, *Al-Manhaj al-Imānī li al-Dirāsat al-Kawniyya fi al-Qur'ān al-Karīm*, 3rd Edition, (Jeddah: al-Dār al-Su'udiyya, 1987), p. 25.
133. *The Noble Qur'an*, p. 798.
134. The term "centrifugal force" is used to denote the tendency of a body in motion to move away from a centrally restraining force. Robert H. Baker & Lawrence W. Fredrick, *An Introduction to Astronomy*, 7th Edition, (New Jersey: D. Van Nostrand Company, Inc., 1968), p. 352.

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