



# *Iqbal*

## *A Scientific Approach*



**Prof. M. M. Taqui Khan**



*Bismillah-hir-Rahman-nir-Raheem.*

**Iqbal**  
**A Scientific Approach**

By

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**IQBAL ACADEMY**

Hyderabad India

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Dedicated

*To*

My Wife

(Late)Professor Badar Taqui Khan



## Preface

We know that there are very few books written on the subject of the Iqbal Scientific approach, because in order to fulfill the vast and untouched treasures of this subject, one has to be the Master of Modern Science, with day-to-day experimental affairs of discoveries and implications of its actions in order to present the truthful results to the society. Prof. Taqui Khan spent his whole life in transferring this approach with his continued Scientific efforts. In a comparative sense of perception, he was deep in love with the grand works of Allama Iqbal both in the poetry and in the Sermons, since he saw and met Iqbal in the Childhood in Hyderabad, India.

I was honoured when a few weeks prior to his death, Prof. Taqui Khan asked me to write a preface for this notable book on Iqbal's Scientific approach. Now the world can see the unexplained and hidden facts which were brought to the light by the modern scientific results which made this eminent work to reach the dept of Iqbal's understanding to the logic of scientific values.

Prof. Taqui Khan was one of the top most scientist of the Indian subcontinent and also a literary figure. He had command and authority in Urdu, Persian and English languages.

Prof. Mirza Muhammad Taqui Khan who was born to a respected and religious family with Royal blood in his



veins, had his school education in a prestigious institution of that time “Mufeedul Anam” in the old city of Hyderabad. He did his Bachelor, Masters and Doctoral degrees from the Osmania university. The university also recognized him a few years before his demise by the most honourable life achievement award. He was also the visiting professor to the American Texas A and M University and was holding visiting affiliation in United Kingdom Imperial College at London U.K.

He was a dynamic, intelligent, hardworking scientist of the chemistry domain and guided more than 70 seventy doctorate theses. There are more than (300) three hundred research articles published to his credit.

He was brought up in an honourable family that was reflected in his personality and in his character. Being an elegant person, he was down to earth, when anybody irrespective of his or her status met him. He was not only a teacher and the head of college, the director of any institution or the leader of the project, he contributed and recognized the respect of human beings. He taught the world we all are equal and born to live freely in cultural equilibrium. He was completely supported by his wife Prof. Baderunisa, to whom his book is dedicated and his six notable daughters, who are now spreading his timeless research across the globe.

This book narrates the salvation of body and spirit needs and its short comings. At one front, the author helped the treatment of hypothyroid people due to Iodine deficiency by extracting the iodine from the marine algae and putting into salt as iodized salt. Prof. Taqui Khan also purified the polluted water in India and saved the lives of

the villagers and poor people. On the other field, he worked with the spiritual confidence and reality of unseen with the logic and scientific acceptable approach which is also supported by the divine scripture Quran and thus it helped to understand and to solve the many unsolved theories and treatise for centuries. This grand work of the great author Prof. Taqui Khan helped to understand many philosophical verses and narrations of Iqbals sermons in the light of modern science knowledge, which is truthfully authentic in the chapters of this book.

I would like to present a few detached lines from this book as an explanatory and an exemplary abstract, where Iqbal said in his famous verse:

یہ کائنات ابھی ناتمام ہے شاید  
کہ آرہی ہے دما دم صدائے کُنْ فَيَكُونُ

Prof. Taqui Khan wrote:

God said in the holy Quran in Suratul Anbiya (21-30)

"Why do not the disbelievers see that the earth and the skies were united, we have separated them"

The author discussed here the "Big Bang" theory, separation of time, space, force and matter.

According to the Big Bang Theory, which states that the universe was started about fourteen million years back instantly from a very minute particle  $10^{-38}$  cm size in a fraction of second  $10^{-45}$  by the separation of time, space, force and matter, which resulted in a huge explosion and from that incident the universe is growing and expanding with constant velocity. It is the nature of the universe that

it has different appearances in different environments at different time and places.

In “Javed Nama”, Iqbal made the angel of space and time “Zardan” with half of his face dark and half bright with one sleepy eye with the other waken eye.

The weather and nature changing behavior was discussed both in Quran, Science and the narrations of Iqbal which were discussed in a simple way so that everyone can understand the complicated descriptions.

Quran said: “and from my signs one day and night and sun and the moon” (حم السجده 41-37)

The sun is in a corner of our milky way galaxy three hundred thousand light years from the centre of the galaxy.

The galaxies, their clusters, and sheet all one expanding universe and all one in motion.

The **Sun** is the center of solar system. It is a nuclear fusion furnace. It is 90 million miles from the earth (Means nine in light minutes) Sun is 110 times greater than earth. The Sun diameter is 850,000 Miles. The outer surface of sun consists of 70% hydrogen and 30% helium. This mixture continuously produces heat, light, and energy in its nuclear fusion furnace. The Sun has been doing this for 5 million years and it is expected to continue for another 10-15 million years. The outer sun temperature is 3300 degree and the core is 20 million degrees. The sun completes its orbit in its galaxy in one hundred million years.

The **moon** is the sign of god, like the sun. It is a satellite of earth. It does not have axial motion, the face of the moon facing the sun is extremely hot and the opposition face is very cold and dark. The orbit of moon around the earth is 1.2 million miles, which the moon completes in 29 or 30 days, at a speed of 3 miles per second. The Tidel waves at the time of full moon originate because of the gravitational pull of the moon.

This book talks about the concept of human beings, their formation, their existence, their progress, their rights and their cultural achievements in relation to Iqbal message in the poetry and the sermons. The respected author elaborates it further with the divine light of holy scripture Quran.

The philosophy of Kun Faya Kun (Be-, and it is) theories, the cosmos expansion and the secrets of the nature deal in such hormones pattern that you don't want to leave the book till you read to the end. There is a bucket of knowledge in every sentence decorated and authenticated with about 90 (Ninety) Quranic verses and more than a hundred Urdu and Persian verses. The author talked about the signs of Allah described in the holy Quran more than 288 times where it elaborates microcosm and macrocosm. The time of "AMAR" may be less than a twinkling of the eye.

This Elegant work engulfs the mind and spirit in the path of truth because the author is a pious honest obedient servant to the Almighty and its chosen fourteen masoomeen.

In Summary, Prof. Taqui Khan's dynamic and elegant research book is a scientific thrilling approach in the

modern Iqbal's studies. Though we have more than six thousand books, written about Iqbal which also includes about a thousand books in English language, this book merits a very new visionary pathway in our 21 century's Global village sociopolitical spiritual ideas and solutions.

The facts discussed in this book may be helpful in the understanding of the Iqbal's materialistic and spiritual value as the learned author presented the thoughts and the treatises with the logic and with authenticated references of the Quran and the natural events of the Scientific world as it is the prime, central and important part of the universe because the human beings presence is related to this earth planet.

I am hopeful this book will be like a beacon light in the stormy thoughts of our lives.

**Syed Taqi Abedi**

Toronto, Oct. 2024

## Foreword

Allama Iqbal was the Poet of the East. He was born in the united Indian Sub-Continent in 1877 at Sialkot, under the British Dominion. He was a lawyer by profession and at the same time, he obtained a Doctorate in Persian Metaphysics from the University of Munich in Germany travelled in Europe in the early twentieth century. He is at first had a nationalistic approach. later after his study of Persian mysticism, he began writing in Persian, hoping for a wider readership. He left behind a good corpus both in Urdu and Persian till his death in 1938, which established his lasting legacy among the Muslims.

He chose the Islamic themes and rousing of the pan Islamic community as his forte and wrote prolifically deriving inspiration from the Quran and Hadith and drawing inferences from Islamic History and Heritage. To inspire the demoralized and disillusioned Muslim diaspora all over the world in the late nineteenth and twentieth century. Two third of his work is in Persian and one third in Urdu. Some of his famous works are *Asrar-e-Khudi*, *Rumuz-e-Bekhudi*, *Baal-e-Jibraeel*, *Zarb-e-Kaleem*, *Javed Nama*, for which he hoped he would be awarded the Nobel Prize. He was conferred the Knighthood for his literary renderings and was a much sought after intellectual and statesman during his time.

During his travels in Europe, he was influenced by the German philosophers Goethe, Nietzsche and French philosopher Bergson and others and got to witness and study the western civilization and philosophy.

He was deeply influenced by Persian Poetry and took Rumi as his spiritual guide. Allama Iqbal began his literary career writing nationalistic poems and songs in the then united India sub-continent, which soon became very popular among the masses. One of his early songs, *Sare Jehan se Accha, Hindustaan hamaara*, is still the national song of India, sung with pride and fervor all over the world. He went to Europe in the early Twentieth century for his Law and Doctoral Studies. There, he got exposed to western thoughts and ideas. The turmoil and turbulence in Europe in the early twentieth century and the new forces and movements that were shaking and stirring, uprooting the old orders with new directions and dimensions of the world, influenced his writings. This was the age of industrial development with new discoveries in Science and Technology. The world civilization seemed to be going through a turmoil, ushering a totally new world order. All the developments and movements of the world were studied and meditated upon by Iqbal who was deeply influenced by them.

He had a passion and pain for the Islamic world and its fate and state among the committee of Nations and in the world at large. He knew the great Islamic civilization had contributed to the world civilization and to the progress of humankind. At the same time, he was deeply pained by the utter chaotic and pathetic state and condition of the Muslim countries and masses, in terms of education and progress in tune with other countries. Muslims were lagging in every field, culturally, socially, economically,

politically and educationally. He was deeply pained by this sorry situation of the people who had once lorded over the entire world, excelling in every human field of activity. Muslims had ruled vast multitudes of continents for centuries and excelled in every field, be it science, philosophy, art or culture.

Prof. M. M. Taqui Khan, has been a professor of Chemistry all his life, a scientist of great repute, esteemed and acknowledged among his peers. Not just confining himself to Chemistry, he has kept abreast in the developments of various others scientific disciplines of pure sciences. At the same time, he has a depth of knowledge in the social sciences and literature, especially the Sufi philosophy and esoteric.

The study of Iqbal has been a passion for him all his life since his boyhood, having seen Iqbal in person on one of Allama Iqbal's visits to Hyderabad. He is one of the very few who have been able to expound and explain Iqbal's work in scientific terms, in tune with the latest developments and discoveries in pure sciences. Iqbal, who in general view, is just considered to be the man behind the ideal of Pakistan, was more of a scientific poet as much a political or historical one.

This work is only just the beginning of delving on the scientific aspects of Iqbaliyat. It calls for an in depth and serious study of Iqbal in the light of the sciences and the discoveries that are going on. Alas, there is no one of the caliber or understanding of Prof. Taqui Khan today who can expound and express and make Allama Iqbal's



scientific thoughts plain to the common public. We hope in the future, more scientists like Prof. Taqui Khan would step up to take forward the work.

We extend our thanks to Mohammed Liquaul Haq and Dr. Sheher Banu Mohsin for taking the pain of going through the manuscript and editing.

M. Ziauddin Nayyar

President Iqbal Academy

# Introduction

Muztar Majaz

Among all the Urdu and Persian Poets, Iqbal is unique, in so far as his philosophic content of thought and his scientific approach is concerned. There is no doubt that Ghalib has an edge over him. It is also a fact that Ghalib could not have the access to modern science and philosophy while Iqbal by virtue of his approach to the modern science and philosophy, could enrich his thoughts and expand his vision. This advantage he exploited fully. Still his restless soul could not find solace and spiritual salvation in it. So much so that he says:

*I have embraced the knowledge of orient and Occident, but  
alas, my soul is still restless.*

Our scholars have studied his poetic exposition, his art and his etymology. However, not many have studied his scientific approach. Prof. Taqui Khan's first love has been Science. He has been a University Professor of Chemistry of Osmania University and the director of the Central Salt and Marine Institute, a CSIR Institute in Bhavnagar, Gujarat. He has been studying Iqbal in the light of modern science and has found that Iqbal's poetry is not just traditional but has deep scientific and mystic inferences and references.

His knowledge of science helped him to understand the scientific depth of Iqbal's thought and writings, that it had a world vision. Quite a good number of scholars have

studied Iqbal in the light of Quranic knowledge, but Prof. Taqui Khan has studied Iqbal with a dual approach, one with the timeless knowledge of the Quran that enlightens us and the other, the ever-changing scientific knowledge. Thus, it is a combination of Physics and meta-physics. As far as my limited knowledge goes in the field of Iqbaliyat, this approach is unique and by its very uniqueness it is for the first time that Iqbal is being studied with a dual approach. In this approach, the Author has kept the Book of all books, the Quran always in one hand as a spiritual guide and knowledge of the modern science in the other. Thus, he blended body and soul while studying Iqbal. It can rightly be said:

*“That both his hands proved to  
be useful to him.”*

He discussed at length the scientific trends in the thoughts of Iqbal. He has discussed in detail the place of motion and rest in Iqbal's thoughts, enriching it in the light of the Quranic verses. In explaining Iqbal poetry, he has revealed and explained the facts of the universe. He has discussed various aspects of intention and action and how they leave an impact on each other. Man, and the universe as they appear in Iqbal's poetry and the concept of life and death.

In short, the book is a good guide to philosophic content of Iqbal's poetry and specially for the present generation who are not well conversant with Urdu and Persian. We must be thankful to the Author for opening a

window to investigate Iqbal's thought and philosophy as found in his poetry.

## Introduction

Dr. Mohammed Ziauddin Ahmed Shekeb

The study of Islam and the study of Iqbal are possible from different points of view, sometimes even contradictory. Science and Islam and scientific approach to Iqbal is again a hard task. Both Islam and Iqbal's poetry are based on a foundation which is supernatural, and which is beyond the domain of reason. Islam has its own realm of Iman, believing in God, angels, the unseen and so on which Iqbal brings in HEART as against MIND and develops a separate system of argument. In this situation, it becomes very difficult to present Islam and Iqbal both just on a scientific and rational basis.

Dr. Taqui Khan who is a very well-known scientist, started to study Iqbal from a very rational and scientific point of view. He is thoroughly equipped with the background of oriental and occidental knowledge. He advances his argument very logically using lucid and crisp language. I am sure it shall make the lovers of Iqbal to rethink about the great poet with an enlightened mind.

*Bismillah-hir-Rahman-nir-Raheem.*

## Introduction by the Author

One of the greatest challenges for the Muslims in the 21<sup>st</sup> century is to recognize and know Islam as a school of thought that gives dynamism to an individual and the society at large. The practice of Islam as a set of rituals and beliefs brings about stagnation, which is the source of insecurity and superstition. Quran and Islam are the names of an intellectual revolution, a revolution that has brought man remarkably close to nature. Quran claims that there is no difference between the nature of human beings and the religion of Islam, Islam by itself is nature (Al Quran, Surah 30:30). As nature is alive, dynamic, and multidimensional, so are Islam and the Quran.

There are many untouched topics in the Quran with their coverage so versatile and comprehensive that they cover all aspects of human sciences, history, sociology, political, psychological, ethical systems, several aspects of cosmology, biology and human anatomy. Quran itself claims the versatility of coverage in the statement, "that there is nothing wet or dry that is not there in the manifest book" (Al Quran, Surah 6:59). Any seeker of knowledge who wants to find something of his interest, can find it in the Quran.

A scientist can take guidance from certain Aayaat of the Quran and the Hadiths of the Holy Prophet (S.A.W.S) and try

to understand them by means of contemporary science. This does not mean that by this method one tries to prove the facts of religion by science. The facts of Quran are universal truth for all times, whereas scientific knowledge is limited and timely. We can strengthen our beliefs and get further guidance from Quran if we analyze them properly with the knowledge of science. The basis of the dynamism of Islam is the concept of the unity of God "Tauhid" which emphasizes the uniqueness of the creator. The most fundamental teaching of the Tauhid is to deny all association with Allah and the denial of the other God's that may take shape of the centers of power, oppression, and suppression of people. Before Islam, man considered all forces and the phenomenon of nature as God. Any power that frightened him was considered either God or something that possesses Godly powers. This resulted on one hand in rulers being considered as sacred incarnation of God and on the other hand the worship of the forces of nature and animals.

The Pagan culture that is still followed is based on this fear concept. This worship of power that Islam calls "Shirk" are association with God resulted in superstition, worship of the phenomenon of nature and an end to the spirit of enquiry and progress. The idolators that considered moon as sacred could not have thought of stepping on the moon. The earth was considered as the center of the universe and devotion. This resulted in a very strong opposition to the new scientific methods of Galileo, Copernicus and Kepler. This was the starting point of the conflict between

rationalism of science and the dogma. People started to consider science as antagonistic to religion.

Islam suppressed and negated all types of association with God and propagated Tauhid as its foundation. This opened all the avenues of thinking and research in nature. The backwardness of the earlier dark ages was because of Shirk, and the progress of mankind in the frontiers of knowledge is an impact of the freedom of Tauhid. Islam opened new avenues of thinking and pondering over the phenomenon of nature that God considered as his science.

Thus, the sun, the moon, the stars, the changing night and days, the changing seasons are signs of God intended to be understood by Mankind to live comfortably on earth. The phases of the moon give us an idea of the flow of time (Al Quran, 2:189) the stars show us the direction. The lightening of which man is scared, and the tidal waves are also signs of God. Allah says all these signs are for those who can think, who concentrate who are intelligent and who are knowledgeable. Reason rationality and thinking were thus made part of Islamic belief and thought. Accordingly, scientific reasoning is not different from religion and revelation in Islam; they are one and the same.

The method adopted by Quran to educate people is different from that of science. In science there is first observation, then hypothesis and then the conformation of the hypothesis by experiment to create the theory. The observation and the inference are based on a limited aspect of nature. With improved observation, the

influence of a theory can change with time, in Quran, however it is first a general statement of facts, followed by the support of the facts by examples and leaving them to be confirmed by the intellect.

The Aayaat of Quran represent the fundamental unchanging truth and will be there forever to guide the seeker of knowledge. It depends on the depth of the perception and the thinking of the person to acquire knowledge from Quran. It is stated in Al Quran (32:4), that God created the heaven, the earth, and the in-between in six steps. The heaven and the earth constitute only 10% of the total matter present in the cosmos. The remaining 90% is a form of matter that constitutes "the in between" the nature of this form of matter is not known with certainty and is referred to as black matter or axioms. It is thus a new avenue of research for mankind to find out the nature of this form of matter.

Some of the Aayaat of the Quran have clear meaning and explain without ambiguity the facts of science. Al Quran says (Al Quran, 36:83) that when God decrees anything, he just says "be and it is". The duration of time between 'be and be it is' is less than the wink of an eye (Al Quran, 32:4). The formation of the universe took place in six steps (Al Quran, 32:4). The days or Ayyam of God must be interpreted as steps rather than days of equal duration. The Big Bang theory now explains the formation of the universe in six steps of unequal duration ranging from 10<sup>-43</sup> second, (the beginning of time) to one billion years.



Quran does not interpret the idea of a static universe. Even until the time of Einstein, motion was relative to a static universe. Quran says that every creation of God is in motion. The sun, the moon, the planets are all moving with respect to each other to an unknown destination known only to God (Al Quran, 36:38). The expansion of the universe is so uniform that God claims (Al Quran, 67:3,4) "there is neither a discrepancy nor a gap in the universe". Man's progress is the evolution of his spirit from the animal origin to one of the vicegerents of God. The dynamic concept of nature is the very essence of the progress and the decree of God on humans to be in tune with the dynamic nature.

Another general statement of Quran is the creation of all life from water (Al Quran, 24:45). Water is so important for life that God says that he has sent rain from heaven to make the dead earth alive. Without water earth cannot sustain any form of life. With water, millions of microbes in the earth survive and become active. The nitrogen-fixing bacteria for example maintain the fertility of the soil by the synthesis of ammonia. There are innumerable other bacteria that perform their work only in the presence of water. The planets where water was once present also had life. Water is now discovered on some stars and moon of Jupiter. This opens up the possibility of the presence of some primitive form of life on those celestial bodies, which Quran had already pointed out.

In 1859, Darwin presented his theory of evolution. According to this theory, the species adapt themselves to

the environment and transfer their qualities to subsequent generations. There advantageous qualities produce species with characteristics much different from the original species. This was referred to as evolution by natural selection. The theory thus refutes creation and supports materialism with matter as the basis of creation.

The time at which Darwin proposed the theory the sciences of genetics, microbiology and biochemistry were not developed. In the first half of the 20th century geneticist such as Led Yard Stebbins and Theodosius Dobzhansky, zoologist such as Ernst Mayor and Julian Huxley and paleontologist such as George Gaylord Simpson and G.L. Jepson and mathematical geneticist such as Ronald Fisher added another parameter, mutation to the evolution by natural selection.

According to this theory, the first living organism originated by chance under primitive conditions and then by the conditions of natural selection and mutation to advanced forms of life. Probability calculations have however, shown that even a simple protein molecule cannot be produced by chance. Natural selection through ages should have produced intermediate species with mixed characteristics. All the attempts of the zoologists to dig out evidence of species intermediate between amphibians and fish, between fish and birds and between amphibians and mammals totally failed to detect any such species.

The fossil record of Lake Turkana in Africa and the Burgess Shale that have revealed the fossils of the

amphibians of the Cambrian period have indicated that they have the same structure anatomically as their counterparts. Comparative anatomy has revealed that species supposed to be evolved from each other have different anatomical features. Indicating that they never could have been ancestors or descendants of each other. Mutation has always been found to be small, random and harmful and cannot lead to evolutionary development. Every effort put into generating a useful mutation has failed, Neo-Darwinism therefore did not support evolution.

In the late decades of the last century, new Darwinism theory of slow and gradual evolution was replaced by punctuated equilibrium or evolution by discontinuous jumps mostly by American paleontologists Niles Eldridge and Stephen Jay Gould. This group claimed that evolution did not take place as a result of minor genetic variation but in great changes. The only purpose of this model was to provide justification for the gaps of intermediate species in fossil records. It is also hard to believe that gigantic changes took place in biological and genetic material to the extent that a bird came out from a reptile egg, or the land mammals turned into whales and bats. The fossils record on earth proved that all living organisms appeared simultaneously in the Cambrian period 500 and 550 million years ago; the big bang of biology.

To fit the ideas of evolution paleontologist have always distorted the fossil record to their advantage and came up with totally speculative conclusions. The public is made to

believe that the presence of species half-man and half-ape the same is the story of the fossil of the human skull by the paleoanthropologist Charles Dawson. The Darwinians of today claim that man has evolved from some ape like creature 4 to 5 billion years ago. The stages are Australopithecine, Homo habilis, Homo erectus and Homo sapiens. Fossils such as Java man, Peking Man and Lucy were reported to belong to one of these species. The species that were claimed to an ancestor of each other were later found simultaneously in many parts of the world, indicating that they are skeletons of either man or ape.

Today the unsolved problem of biology is the origin of life. Evolutionists claim that life originated by chance by coming together of components is not valid. No laboratory in the world has produced life in simple components. The basis of life, the cell is the most intriguing structure. It consists of proteins composed of amino acids, just twenty in humans but can be as large as 500. An average protein with 250 amino acids and twenty components has  $20^{250}$  different ways of arrangement to form a protein. This is an astronomically large number, far exceeding the number of atoms in the observable universe. Out of these, only one form in a billion possible forms gives the desired molecule of three-dimensional stable conformation, and the rest are useless. The amino acids also exist in D and L forms, which are left and right-handed. Out of this nature selects only L, but leaves the D, the chance of selecting L amino acids for proteins further complicate the probability of these

molecules to be formed by chance even after billions of years.

The other molecules of interest are the genes composed of nucleic acids DNA that are constituents of about 30 trillion cells. The DNA are the constituents of about 20,000 protein coding genes that constitute part of the human genome, which has been completely mapped recently. The comparison of human genome from various parts of the world and from different races has indicated that they have similarities in the mitochondrial DNA that comes from the mother's side. This remarkable discovery indicates that all human beings are the children of the same woman who lived in Africa or Asia about 200,000 years ago.

The scientific finding is the strongest support for the creation of all humans and everything living on earth by almighty God. The basic characteristics of a person such as color, height, color of the hair and other characteristics are determined by the variation of the components of the genes and their coding. The genes are coded for the synthesis of amino acids by the variation of the four components A, G, C, and T, adenine, guanine, cytosine and thymine. Their sequence in the DNA determines the genetic code. All the information of the cell is coded in the genes. The DNA of a single cell carries the information of bones, muscles, connective tissues, nerves and other hundred trillion cells in the body.

The coding is also complete for the parts of a plant or animal cells. If any part of a plant is allowed to grow in a

culture it will give the complete plant. In the recombinant DNA technique, one only puts together bits of information already coded in the genes. The same is true of cloning to reproduce an animal. The human ingenuity has so far not produced a single cell. Whatever God creates is perfect.

The cell also contains centers for producing energy in the mitochondria and for utilization of this energy are thousands of reactions regulated by the body in the metabolism of a cell to keep it alive.

All these facts put together is not the result of chance; it is the result of creation by Almighty God who is the creator, the designer, and the planner. (Al Quran, 59:24).

There are several Aayaat in Quran that urge Muslims to ponder over nature and study Quran in depth. God says, "why do they not ponder over Quran, are their hearts locked" (Al Quran, 47-24). "Why do they not think about the creation of the camel, how we have raised the sky, how we have fixed the mountains, and how we have spread out the earth" (Al Quran 88, 17-20). "Take your imagination around and see how we have created the Universe" (Al Quran). There are many other Aayaat in Quran that direct humanity to a rational thinking process, the basis of science.

With the examples quoted, it is wrong to think that Islam has no connection with science, that science is also a thinking process, different from religion and whatever was done in the early period of Islam cannot be revived in the present age. Some western thinkers suggest that Muslims should concentrate on training and not on science. This is

a misconception of the broad dimensions of Islam where static spirituality without action has no place. In Islam, the thinking process that leads to science is a form of prayer with more reward than an unintelligible prayer.

Another source of knowledge and heritage in Islam is the Hadiths of the Holy Prophet (S.A.W.S). The prophet has said in a Hadith quoted by many books of Sunnah that, "The acquisition of knowledge is a must for Muslim men and women". In scholarship and intelligence, the Holy Prophet (S.A.W.S) has not made any difference between the sexes. He also said, "Acquire knowledge even if it is found in a different place such as China". Imam Jafar as Sadiq A.S. who was the renowned Imam and the greatest scholar of the second century A.H had remarked that "the time spent by a scientist in a laboratory is much better than thousands of prayers of an ignorant person. Imam Ali A.S. has said, "Knowledge is your best companion which nobody can steal from you". He said, "wealth gets reduced in spending but knowledge increases on spending".

Bertrand Russell has quoted in his book, "The History of Philosophy", that knowledge was transferred from the Greeks to the Muslims and was given back to the western world by the Muslims. The question is if knowledge was there with the west why did they remain in the dark ages for almost a thousand years? The Greek knowledge and philosophy were so static that it could not create even a very simple appliance. The Renaissance of Europe in the fourteenth century was because of the transfer of practical science from the Muslims through the University of

Cordova and other centers of Spain. Robert Bouffant had written in his book. "The Making of Humanity", that the progress of the Greeks was only in art and philosophy. Their knowledge was theoretical and they did not emphasize practical research and observation as this was against their nature. Bouffant further remarked that "what we consider science now was the result of the new experiments and observations of the Arab scientists transferred to Europe.

The Holy Quran, the Hadith of the Holy Prophet (S.A.W.S) and the countless lectures of Muslim Scientists was the background of Iqbal's knowledge of Islamic science.



*Chapter - I*

## The Scientific Trends in The Thought of Iqbal.

Much has been written on the poetry and writings of Iqbal, more than any of the past or contemporary poets. Iqbal was a multi-faceted personality. His poetry was a manifestation of his lofty creative thoughts and their rational expressions combined with the most creative and effective use of words and languages. One of the aspects of the rational thinking of Iqbal is the scientific trends in his thoughts. Understanding nature and human values are two aspects of the same reality. While the study of nature requires intelligence and creativity, an evaluation of human nature is impossible without love. 'Ishq' or "love" in Iqbal's poetry has many dimensions.

It is human endeavor, perseverance, and constant efforts to achieve a goal or objective along with obeying Allah and love of the Holy Prophet (S.A.W.S). A beautiful combination of love and intelligence is the very nature of man. Iqbal emphasizes a balance between the two capabilities. Iqbal was not a student of science but when he expresses his opinion on scientific subjects, such as time and space, motion and rest and special relativity, his arguments and conclusions are so weighty with intelligence and logical conclusions, that they are acceptable to every rational mind.

In his lectures, Iqbal says, "Science cannot guide us in our spiritual pursuits, nevertheless science is very important for man and humanity in general". He further says, "The study of nature is the study of the creative action of Allah. When we study nature, we get closer to the Absolute Ego (Allah), and this is also prayers".

He expresses these thoughts in his poetry:

لوح بھی تو قلم بھی تو تیرا وجود الکتب  
گنبدِ آگینہ رنگ تیرے محیط میں حجاب  
عالمِ آب و خاک میں تیرے ظہور کا فروغ  
ذرهٴ ریگ کو دیا تو نے طلوعِ آفتاب  
(ذوق و شوق)

*The knowledge of Names is the excellence of Adam.*

*The nature of things is the protection for Adam. Knowledge is immense good; God says wherever you see this good go and acquire it.*

*Keep your eyes open on the incidents of nature,  
so that you get a mastery over nature.*

According to Quranic teaching, the main influence for Iqbal, the universe is not static but in motion. Every macroscopic or microscopic object of nature is in motion to a particular destiny fixed by Almighty Allah. The motion of every object is the result of the will of Allah. Iqbal opposes the idea of a stationary universe of Newton or Einstein. He says,

فریبِ نظر ہے سکون و ثبات  
تڑپتا ہے ہر ذرّہ کائنات  
ٹھہرتا نہیں کاروانِ وجود  
کہ ہر لحظہ ہے تازہ شانِ وجود  
(ساقی نامہ)

*Motion and rest are only a mirage of observation.*

*Every particle of nature is in a state of motion.*

زمانہ صبحِ ازل سے رہا ہے مجھ سفر  
مگر یہ اس کی تگ و دو سے ہو سکا نہ گھن  
(آدم)

*Time and space are in motion right from the time of  
their creation. And they have not gotten tired due to  
incidents of time and space.*

Iqbal was much influenced by Einstein and wrote a poem about him in "Pyam-e-Mashriq". In "Khutbat" he expresses his opinion about relativity. Einstein's theory of special relativity has presented a new concept of nature and has enabled us to view important problems of religion and science in the light of the new ideas in trying to solve them. Motion and rest are not absolute according to relativity, there is no difference between uniform motion and rest. Thus, what we consider as rest is a mirage of observations, since every article on earth is in a state of uniform motion along with the rotation of the earth.

Isaac Newton and the earlier philosophers had considered time and space as two independent entities. According to Einstein's special relativity time and space are two aspects of the same reality. They are one, "time-space". According to relativity, the "when and where" of each observer depends on his speed and the gravitational pull or force. Time and space are different for different observers according to his own framework of time and space.

احوال و مقامات پہ موقوف ہے سب کچھ  
ہر لحظہ ہے سالک کا زماں اور مکاں اور  
(حال و مقام)

For every observer, his time and space depend on his conditions, his speed and his location (gravitational pull) Iqbal expresses the same idea in his "Khutbat". The observation of any object is relative to the observer. The density, shape and dimensions of an object depends on the speed and location of the observer. Motion and rest are also relative to the observer. These facts are expressed by Iqbal in "Javed Nama" in the expression of "Zardan", the angel of time and space.

زان سحابِ افرشتہ کی آمد فرود  
با دو طلعتِ این چو آتشِ آن چو دود  
آن چو شبِ تاریک و این روشنِ شہاب  
چشمِ این بیدار و چشمِ آن بخواب

بال او را رنگهای سرخ و زرد  
سبز و سیسین و کبود و لاجورد  
چون خیال اندر مزاج او رمی  
از زمین تا کلهکشان او را دی  
هر زمان او را هو اے دیگری

According to Iqbal every particle of nature is in motion.

This is applicable to every particle of the microcosm or every object of the microcosm. Every particle of an atom is in motion. This is expressed in the form of light that has a constant velocity of the 186,000 thousand miles per second, a universal constant of nature. One of the aspects of the special theory of relativity is the famous equation  $E=mc^2$ , that shows the equivalence of matter and energy, which are two aspects of the same reality.

Light is the form of energy, the magnitude of which depends on its wavelength. The shorter the wavelength, the greater the energy. The universe is full of radiation with different wave lengths and energy that constitutes a spectrum of electromagnetic radiations. Our eye is sensitive to only a part of the spectrum, the rest are not visible. They are however detected by other means of detection and measurement.

Matter absorbs energy and undergoes an excitation. It releases back this energy in the form of light of a particular wavelength characteristic of the atom.

Thus, the excitation of every particle is by the absorption of energy.

Every particle in motion has an associated field. The interaction between atoms to form molecules takes place by the overlap of these fields and by the exchange of particles of light. Atoms and molecules are always in constant motion. The existence of matter is because of the interaction between atoms and molecules that gives matter a particular shape which is always regular and uniform. The solid matter has also an effective field around it; the gravitational field then affects the other matter by attraction.

The motion of matter is in a particular direction dictated by gravitational field. The universe is expanding with a constant velocity. The rate at which stars recede from us is inversely proportional to their distance from us. The distant stars are receding with a higher speed as compared to the nearer stars. The expansion of the universe is according to the second law of Thermodynamics a change from order to disorder, a phenomenon associated with an increase in entropy. Every particle of matter follows this rule, the change from non-equilibrium to equilibrium. The violation of this principle requires energy, as exhibited in the change from disorder to order in the process of life. The higher the value of entropy the greater will be the disorder or the chaos. The motion of the universe, light and matter are always in the direction of positive entropy. The same is true for the arrow of the time from the past to future.

The theory of relativity has not altered the flow of either time-space or the matter since these directions are

fixed by the laws of nature. The sequence of events in time-space is the same for each observer. These sequences determine the order of cause and effect which cannot be reversed by a change of the co-ordinates and the framework of an observer. The effect can never precede the cause. This unbroken law of cause-and-effect conscience according to Iqbal's philosophy.

It is instruction or 'Hidaya' from Almighty God.

الَّذِي خَلَقَ فَسَوَّىٰ وَالَّذِي قَدَّرَ فَهَدَىٰ (سوره الاعلىٰ 3-87)

*Who created and proportioned and who destined and guided.*

There are four stages of creation: creation, giving shape, giving attributes and finally the conscience. This conscience is in every particle of nature that testifies the creator.

ہر چیز ہے جو خود نمائی  
ہر ذرہ شہید کبریائی

*Every object engages in self-expression.*

*Every particle testifies the creator.*

Information is an important constituent of nature along with matter and energy. The information contents increase with order and decreases with disorder. This information content of the universe is used in art, architecture, science, civilization and culture. That is the flow of information. By the use of information, we proceed

towards order and the store of information shifts this order to disorder. The information stored in one discipline is used in another. The information of arts is used in science and the science in civilization and architecture. The cross flow of information has enabled man for better living and the growth of culture and civilization. Man creates order by collecting and processing of information and his status is of an information collector. In these process, scientists, poets, architects, and other experts create designs and patterns from bits of information already available. The shift form disorder to order is nonspontaneous with a negative entropy and requires energy for collection of information. The search for order is the search for the deposit of information and to utilize them. Without information there can neither be means nor a real world. The search for information requires observation. Iqbal emphasizes this aspect in his poetry...

یہ دنیا دعوتِ دیدار ہے فرزندِ آدم کو  
 کہ ہر مستور کو بخشا گیا ہے ذوقِ عریانی  
 (حضرتِ انسان)

This world in an invitation for observation to the children of Adam, for every hidden is bestowed with full expression (full of information).

اُس کی نگہ شوخ پہ ہوتی ہے نمودار  
 ہر ذرے میں پوشیدہ ہے جو قوتِ اشراق  
 (بیداری)



Only an inquisitive eye can bring out the hidden power of self-expression from every particle.

یہ کائنات چھپاتی نہیں ضمیر اپنا  
کہ ذرے ذرے میں ہے ذوقِ آشکارائی  
کچھ اور ہی نظر آتا ہے کاروبارِ جہاں  
نگاہِ شوق اگر ہو شریکِ بینائی  
(نگاہِ شوق)

This universe does not hide its heart since every particle is bestowed with self-expression. This invitation to observe nature and to learn its secrets from the signs of God is a salient feature of the Holy Book Quran.

إِنَّ فِي ذَلِكَ لَآيَاتٍ لِّقَوْمٍ يَعْقِلُونَ (سورہ الروم 24-30)

*All these signs are for those who are intelligent (and can collect information)*

To search the heart of nature, one requires an inquisitive eye.

جہانِ تازہ کی افکارِ تازہ سے ہے نمود  
کہ سنگ و خشت سے ہوتے نہیں جہاں پیدا  
(تخلیق)

*New worlds are the outcome of new thoughts. Dead stones and dust cannot create a new world.*

Al-Quran calls their new thoughts "Tadbeer" that impresses on an inquisitive mind.

أَفَلَا يَتَدَبَّرُونَ الْقُرْآنَ أَمْ عَلَى قُلُوبٍ أَقْفَالُهَا (سوره محمد 24-47)

*Why do they not ponder over the Quran. Are their hearts locked?*

To know the secrets of the universe one must have an insight and urge to understand the self-expression of particles. The question arises as to what extent particles possess the capacity of self-expression. Are they any limits? For the particles of the microcosm, such as light or an electron one cannot determine two properties at the same time with the same degree of precision. This uncertainty is not because of the defects in the measurements techniques but these are the limits imposed by the particles. If one measures the correct velocity and momentum, the location becomes probable. The particle acquires the characteristics of a wave.

The particle has a dual character wave or a particle. It is not 50% wave and 50% particle so we cannot observe it as a wave or a particle at the same time. If you design your experiment in such a way that it should appear as a wave. It appears as a wave or alternatively as a particle. In the same manner man is "spirit as well as matter but one cannot get the cognizance of both at the same time, under materialistic considerations. Man is material and if you consider the conscience, the spirit, the self and the facts of the hereafter. He is spirit. Iqbal says,

وَجُوْدِ حَضْرَتِ اِنْسَانٍ نَهْ رُوْحٌ نَهْ نَهْ بَدَنٌ  
(آدم)

*The nature of man is neither spirit nor matter.*

The extent of the effect of the observation and the conscience of the observer on the observed was expressed by the intuition of Iqbal much before the discovery of the Entropic principle by Von Neumann and others. Iqbal says,

وہی جہاں ہے ترا جس کو تُو کرے پیدا  
یہ سنگ و نشت نہیں، جو تری نگاہ میں ہے

*Your world is what you create for yourself.*

*It is not the stone and dust that you see. He further says:*

کچھ اور ہی نظر آتا ہے کاروبارِ جہاں  
نگاہِ شوق اگر ہو شریکِ بینائی  
(نگاہِ شوق)

*Initiative and insight are the conscience of the observer that creates new reality otherwise at the lowest level of the conscience trivialities such as stones and dust become of the real world.*

The most effective and philosophical institution of Iqbal was his insight into the holistic view of nature. When he presented his view, it has only a philosophical thought. But the heights of the knowledge of man in the 21st century made him convinced of the reality of the Holistic view. All forms of energy and forces distributed in the microcosm and the macrocosm, such as gravitation, electromagnetism, the weak and strong forces of the atom

and matter have a common source. This is the journey of physics from diversity to the unity of all motion in the world.

The harmony and perfect order of nature is the design of the system that is governed by a set of precise physical laws. It is a complicated but an organized system where the parts are related and tied to each other like the bits of the Jig-saw puzzle. The four forces of nature are designed to act in a specific manner. Gravitation is the weakest force, and this force is only attractive in nature. It depends only on the mass of the matter and their separation. Under this action of the force bits of matter comes together to form large masses such as stars, planets and galaxies. If its value was slightly less, even to extent of 1 part in a billion the matter would not have gathered together to form large masses of the universe, it would have become a gas. If it was slightly more, than all matter would have come together and squeezed by the immense of force of gravity to form a small mass of infinite density, black hole or a neutron star. This is the last stage in the life of a star mentioned in the Quran.

إِذَا الشَّمْسُ كُوِّرَتْ (سوره التكویر 1-81)

*When we windup the sun in its volume.*

The second force is electromagnetism that is both attractive and repulsive. It helps in the formation of atoms and molecules of life. A slight increase or decrease in the magnitude of the force would have stopped the formation of atoms. Strong and weak nuclear forces were involved at

the earlier stages of the formation of atoms from small fragments. Quarks, Neutron, Protons, Electrons etc. their magnitude keeps the atom in a stable configuration.

One of the important facts of the organization of the universe is the uniform distribution of matter and its expansion. If we look at any part of the universe from some other part, the distribution of matter looks uniform. The balance of forces in nature, the organization the precision of its law's points to a creator, the planner and the designer.

هُوَ اللَّهُ الْخَالِقُ الْبَارِي الْمُصَوِّرُ (سوره الحشر 24-59)

For the uniform distribution of matter, Allah says in Quran:

الَّذِي خَلَقَ سَبْعَ سَمَاوَاتٍ طِبَاقًا ۗ مَا تَرَىٰ فِي خَلْقِ الرَّحْمَنِ

مِن تَفْوُوتٍ فَارْجِعِ الْبَصَرَ هَلْ تَرَىٰ مِنْ فُطُورٍ (سوره الملك 3-67)

*He is God that has created the seven skies in layer after layer. Do you see any discrepancy in the creation, raise your sight do you see any gaps.*

This means that the organization is so perfect that it is free from gaps and defects. For this holistic view of universe. Iqbal says:

زمانہ ایک، حیات ایک، کائنات بھی ایک  
دلیل کم نظری، قصہ جدید و قدیم  
(علم اور دین)

*This time is one, life is one and the observer is one. It is short sightedness to talk about, old and new.*

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## The Dominance of Knowledge in The World

Iqbal has placed much emphasis on the acquisition of Knowledge. In the "Khutbat", he thinks that for an overall economic and scientific growth, scientific knowledge is particularly important, and an endeavor should be made to acquire it. It is equally pertinent to place stress on moral values and development of conscience. In the absence of moral values man becomes a lifeless machine. His ideas of self as expressed in "Ramoze-e-Khudi" is that of the balanced personality with equilibrium of knowledge and intelligence and moral values highlighted in the concept of "Ishq". "Ishq" has a broad significance and meaning in Iqbal's poetry. It is an effort for the achievement of a goal and a target, perseverance with a firm belief in Allah and Holy Prophet. "Ishq" is total belief and belief is the key to success.

عشق سراپا یقین اور یقین فتح باب  
(علم و عشق)

The creation of a variety of things in the universe both known and unknown is an expression of the attributes of the creation by Allah. Every item of creation in the universe is a proof of the creativity of Allah and points to Allah as a creator. Along with the creation of time, Allah

has also created an "Observer" who is a manifestation of His attributes on earth. The first observer "Adam" was made the vicegerent of Allah on earth and was taught the names of things and their properties.

وَعَلَّمَ آدَمَ الْأَسْمَاءَ كُلَّهَا (البقره 2-31)

The knowledge given to Adam of the properties of things was an introduction of the observed to the observer. Allah has directed the progeny of Adam to continue this observation of nature.

قُلْ سِيرُوا فِي الْأَرْضِ فَانظُرُوا كَيْفَ بَدَأَ الْخَلْقَ (العنكبوت 20-29)

*Study nature and see how we have created the universe.*

This is the direction for man to uncover the hidden information stored in every creation of Allah. He should organize his information for his dominance over nature. Iqbal's says:

علم اسماء اعتبار آدم است  
حكمت اشياء حصار آدم است

The knowledge of things is the superiority of Adam over creation and the secrets of their properties are the protection. The knowledge of things is the relationship of the observer with the observed and the properties of things, the knowledge of nature is a protective wall for Adam.

The importance of wisdom is revealed in Quran. Allah says,



يُؤْتِي الْحِكْمَةَ مَنْ يَشَاءُ وَمَنْ يُؤْتَ الْحِكْمَةَ فَقَدْ  
أُوتِيَ خَيْرًا كَثِيرًا وَمَا يَذَّكَّرُ إِلَّا أُولُو الْأَلْبَابِ (البقره 2-29)

*He grants wisdom to whomsoever he wills, and he who has been given wisdom has abundant good and none realizes this except those who had been given the wisdom by Allah.*

Iqbal was always impressed and guided by the Quran.  
He says:

گفت حکمت را خدا خیر کثیر  
ہر کجا ایں خیر را بینی نگیر  
(حکمت خیر کثیر است)

*Allah has designated wisdom as immense good. Wherever you find this good go and acquire it.*

In a holy Hadith the Prophet (S.A.W.S) says, the acquisition of knowledge is necessary for all Muslims men and women. In another Hadith he says: Acquire Knowledge even though it may be found at a faraway place like China.

The earliest knowledge of man was about the universe, its phenomenon, the macrocosm for where the observer and observed are both its parts and components. Man acquired detailed information about his surroundings and objects by his observation and experiments. Civilization and knowledge of man are intimately related. Centers of civilization grew in India, China, Egypt, and Babylon. The ancient Mayan culture of South America and later in Persia

and Greece was a period of immense intellectual activity in the fourth and fifth century B.C. In Greece several well-known philosophers such as Aristotle, Plato, Leucippus, Lucretius, and Euclid presented theories about the universe and the unchanging Changer (Allah) that had a profound influence on human thinking for the next two thousand years. The idea of an ultimate particle of matter, the atom prevailed until the end of nineteenth century. The knowledge of Greeks was only theoretical; they were arm-chair philosophers with no practical skills. The revolution in experimental sciences was started by Arabs in the second century Al-Hijri when Jaber-Ibne-Hayyan (Gaber of the West) found experimental chemistry. Mathematics by Al-Khwarizmi and Al-Beruni, optics by Al-Hazen and the science of medicine by Avicenna (Bu Ali sena). It is a fact that the Arabs acquired theoretical knowledge from the Greeks but if they had not contributed to experimental science, this knowledge would have remained theoretical and would not have brought industrial revolution to the west. The European renaissance was entirely by the efforts of Arab Scientists and Philosophers who had developed new insights into scientific methodology and spread this through Spain and Europe.

Robert Bouffant<sup>1</sup> had expressed his views in the book "The Making of Humanity" that the progress of the Greeks was only in pure arts and philosophy. Their knowledge was theoretical, and they never insisted on experiments since practical work was not in their nature. He further says,

"what we call science is the experimental finding of Arab scientist that was transferred to Europe".

In the seventeenth century, Newton and Galileo had formulated the motion and force that were responsible for the development of technology in the eighteenth and nineteenth centuries and the nucleus for the industrial revolution of Europe. The most important was the discovery of the steam engine. The latter half of the nineteenth century witnessed the discovery of an important source of power, electricity, and magnetism. The carriers of electromagnetic force are waves that have a definite wavelength and energy contents. This discovery was responsible for the invention of wireless, telegraph, telephone, and the transmission of electromagnetic radiations from one point to another. Man was so overwhelmed by these discoveries and inventions that in the eighteenth and nineteenth centuries, matter was God. The materialists denied the existence of God and argued that the laws of nature are so deterministic and precise that the world does not need a caretaker. One can study the behavior of an object in the past and predict its future just based on laws of motion and energy. This was the period of scientific determinism.

The beginning of twentieth century started with an unusual and extraordinary revolution in knowledge. Atom that was considered indivisible to the Greeks was proved to be divisible and to consist of a positive massive nucleus with external electron, just as the solar system with the sun and its planets. The nucleus was further shown to

have neutral particles called neutrons. These particles held a sway on science till the end of the twentieth century when Murray Gell-Mann proved that the neutrons and protons in the nucleus of an atom are not elementary but consist of an elementary unit called Quarks. The Quarks three of them are held up by short atomic forces and cannot be separated. The neutrons and protons are also held up by a force, the weak nuclear force. In the microscopic world of atoms, nobody knows yet what an elementary particle means. According to Einstein's theory of Relativity they are all bundles of energy with different energy content. How they got originated at the beginning of creation is still a secret. It is now generally agreed that the universe started from nothing about 14 billion years ago when space, time, motion, energy was all together packed in a small point  $10^{-33}$  cm in size (Planck's length) and created with a big bang in  $10^{-43}$  seconds. The smallest particle of space is  $10^{-33}$  cm and  $10^{-43}$  second, the smallest duration of time (Cronon). Matter was created as small bundles of energy, the super string, which vibrated with different frequencies each corresponding to an elementary particle. The universe at the starting point had 11 dimensions, seven of the dimensions disappeared and the universe was left with four dimensions, three of space and one of time.

When we consider the beginning of matter as super strings, or small bundles of energy, there was no primary matter in them. Since energy is related to activity and processes, every particle of matter or strings is in motion.

This idea of vibrating pieces of the universe was expressed by the intuitive poetry of Iqbal when he says,

فریبِ نظر ہے سکون و ثبات  
تڑپتا ہے ہر ذرّہ کائنات  
(ساقی نامہ)

Stability and rest are only a mirage. Every particle of the universe is in a state of motion.

The actual count of particles in nature is impossible since a given quantity of energy always personifies a particle. The basic constituent of matter is energy. The particles of matter are created from energy and converted back to energy. Some of the real particles have a known energy content and the rest of the particles are virtual that are constantly converted into particles of light. These virtual particles are all related and reactivity is a part of their existence. Matter cannot be separated from reactivity as Iqbal had expressed in his above couplet.

According to Einstein theory of general relativity every particle is surrounded by its influence of action which is called the "Field". Two bodies interact with each other through the overlap of their fields of influence. The field is not an empty space but unoccupied space as energy. The vast universe has large stars and galaxies surrounded by their respected field, in proportion to their mass. If we estimate the matter distributed in space it accounts only to 10% of the matter in space, the remaining 90% are only fields. Energy particles are produced and then they

disappear in the field. No one knows so far about the real nature of particles or their state of matter. They are called axioms or black matter. For this unknown matter there is indication in Quran about their existence.

الَّذِي خَلَقَ السَّمَوَاتِ وَالْأَرْضَ وَمَا بَيْنَهُمَا (الفرقان 25-59)

Allah has created the earth and skies and whatever is there in-between them. The intermediate matter referred to as in between is the field due to which the universe is constantly expanding. When the action of these fields will cease to operate the universe will start to contract and end up in a big crunch. The existence of the universe is thus because of the intermediate field. Matter can be considered as a bundle of energy associated with its field. This field contributes to its environment. Matter and its field are intimately related and represent the unity of the universe.

Every particle of the macrocosm and microcosm is bound by this unity.

The universe has forces all associated with their respective fields. The first force is gravitational associated with the mass and inertia of matter gravitational force is the field created by matter. Its action is only attractive. It is the weakest force, but this effect becomes significant with large masses such as big stars (million times or more than the mass of the sun) or galaxies. The particles of matter are bound by electromagnetic force or field. Its action is both attractive and repulsive. Its value is much more than

gravitational force. This force is responsible for the built-up of atoms, molecules, large clusters the molecules of life, finally the third force is called the weak nuclear force which converts a proton into a neutron in radioactive decay. The fourth force is the strong nuclear force which acts at small distances and binds quarks into protons and neutrons. The Scientists are now working on the unity of these four forces that is responsible for the creation of the universe according to Prof. Abdul Salaam.

Dr. Weinberg was able to unite electromagnetism and the weak force in one unit. No one has yet been able to combine all the four forces in one unit. The challenge of the 21<sup>st</sup> century is to uncover the source of both matter and energy. Thus, movement of science from diversity to unity may bring it nearer to its creator.

Newton's law of motion is applicable only to the macroscopic world. But for the microscopic world, the deterministic laws of Newton break down. In the microscopic world, the principle of uncertainty prevails according to which we cannot determine the position and the momentum of a particle such as electron at the same time. If the position is determined with certainty, its momentum becomes uncertain and probable. This is not a limitation imposed by the experiment, but it is the law of the microscopic world. This uncertainty of the microscopic world shook the foundation of the materialistic world where everything can be measured with certainty. What was certain in the macroscopic world became a probability for the particle world. If we are dealing with the

probability of location, then this probability is spread throughout in space. We can only talk about the maximum probability of the location of a particle and not its location per se. This is also true for the duality of a particle's behavior. Light can be a particle or a wave. Since our brain is a part of the microscopic world, we cannot ascertain true duality. Since as observer our observation effects the observed, so the outcome of observation depends on what we would like to observe. The behavior of light changes according to our set-up of observation. This relationship of the observer with the unobserved indicates the unity of nature. Light in the observation is either a particle or a wave.

David Bohm has done experiments on the unity of the observer and the observed in the realm of particles of the microcosm and presented his holistic view of nature. According to his theory there is an ultimate and basic relationship between the phenomena of nature. This is due to an underlying organization of nature which makes it one holistic unit. The external observation of time and space and matter and life is because of this internal organization arising out of sensational reality which Bohm called "Holo order"- the external organization of the geosphere, plant and animals become part of the internal order.

Prof. Bell performed experiments on the coupled particle, of light separated by one light year. He discovered that if a change is made in the direction of spin of one particle the effect is felt immediately by the other particle at one light year. The other particle adjusts its spin



immediately even though the two are located at the distance of one light year. This extraordinary behavior of the two particles revealed the fact that information travels much faster than light. Paul Newman has called this conscience which has no set limits. This experiment also proves that there is conscience in all the particles of nature and in every object. Science has now concluded that what we had regarded as lifeless also have conscience and the entire world is bound in a holistic unit which is the unit of the conscience. But there is however a hierarchy of conscience. The conscience of the human being is higher than geosphere, the conscience of animals higher than plants and that of the human being, the highest. The presence of conscience in every aspect of creation is indicated by Allah.

يُسَبِّحُ لِلَّهِ مَا فِي السَّمَوَاتِ وَالْأَرْضِ (الجمعة: 1-62)

*Everything in the universe prays and they obey Allah  
(because of (conscience))*

According to Iqbal the reality of everything is manifested  
by conscience.

نہ صہبا ہوں نہ ساتی ہوں، نہ مستی ہوں نہ پیمانہ  
میں اس میخانہ ہستی میں ہر شے کی حقیقت ہوں  
(تصویر درد)

*I am neither the wine, nor the bartender, nor the  
intoxication or the cup. I am in this place of existence, the  
reality of everything.*

The reality of everything is the conscience that God has created in all his creation and for the human being this is the brightest point of self, the center of existence (Nafs).

فرشتہ موت کا چھوتا ہے گو بدن تیرا  
ترے وجود کے مرکز سے دُور رہتا ہے  
(موت)

*The angel of death though touches your body is away from the center of your existence.*

In the endeavor to acquire knowledge of things one travels from the microcosm to the macrocosm, a journey from the world of probability to the world of certainty. If we start this journey from energy, then the particles of matter are bundles of energy with their accompanying fields. These particles form atoms, molecules and then the aggregate of molecules by the overlap of their fields. There is always a difference between aggregate molecules and a single molecule. The properties of the sum total are more than the sub total of the units. A single molecule of water cannot wet our finger but the aggregate of water molecule in liquid water does. Aggregate of molecules in super molecules of life have the properties of self-aggregation and self-reproduction and self-recognition, not present in individual molecules. The density of matter comes from molecular aggregation or by tight binding of atoms. The evolutionary journey of an atom starts from an atom, then to molecules, then the aggregates and structures, genes and cells, which produce variety of living cells. In all forms of life genes are common. The genes are formed from molecules of

DNA and RNA that have storage of information. They are akin to the software of a computer with complete instructions as to which part of a living cell they will components, plants or animals. DNA has the same elemental composition as any other organic molecule. These elements get scattered in the geo sphere after the death and purification of the cells. Thus, the journey of life is continuous through the cycle of life and death and from a simple order to a complicated order. Every suborder and order of the universe has a dynamic motion all connected in a web of relationship. Iqbal says:

ٹھہرتا نہیں کاروانِ وجود  
کہ ہر لحظہ ہے تازہ شانِ وجود  
سمجھتا ہے تو راز ہے زندگی  
فقط ذوقِ پرواز ہے زندگی  
(ساقی نامہ)

*The caravan of existence and creation is not stationery but exhibits a new aspect every moment. The ignorant thinks it is static.*

*But the expressions of life emerge again and again. You think that life is a secret. It is only a lust for motion to greater heights.*

When man thinks about the universe, he will find in every step the manifestation of an order. He can only look at an exceedingly small portion of the order. The information obtained is divided into cells, of physics, chemistry, botany, zoology, Mathematics, and social

science etc. according to his convenience. Thus, division of knowledge is a small window which reveals to us certain aspect of the universe. To search order, we go through the complicated internal organization. Relativity and quantum mechanics do not offer the explanation of all the phenomenon of nature. They are the windows of human effort to uncover the reality. In our attempt to discuss the unity of nature. We want to go to a vantage point from where nature offers a wide vision.

For the search of order, we depend on the compartments made by human endeavor. But this outcome also has its own limitation. The nature that we see is what is revealed to us by Allah. Beyond this we extend our vision through, our perception, conception, thought and by solving complicated mathematical equations. The secrets of nature before us are our guess about them and abstract ideas. Gödel the famous mathematician had pointed out that any logical system cannot reveal the nature of its own reality and uniformity. We always are in search of another theory, another height and a higher vantage point. This is the continuous journey of man towards perfection. Man has neither an absolute vantage point nor in possession of eternal realities. In the search or order we design words to fit our ideas or discover some unknown mathematical equations we can however never say with certainty that our thoughts are depicting the reality. Then we go after the third, the fourth and so on with theories. But how far can we go? We must stop somewhere and look around us for certainty. This certainty is the same which the Designer, the Planner and the Creator of the

universe has asked us to believe. This belief is in the unseen that is above our heights of perception and conception. The dimensions of reality are beyond our comprehension. This is the only absolute truth, and the rest is search for truth.

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## The Signs of Allah and The Thoughts of Iqbal.

In the Holy Quran Allah Says,

سَنُرِيهِمْ آيَاتِنَا فِي الْأَفَاقِ وَفِي أَنفُسِهِمْ حَتَّىٰ يَتَّبِعِنَ لَهُمْ أَنَّهُ الْحَقُّ  
(سورة حم السجده فصل 41-53)

*Very soon we shall show them our signs in the cosmos and  
within their own self so that it may become clear to them  
that He is the truth.*

The signs of God are the fingerprints of His creation that point towards the Creator. The attributes of action of Allah, the Caretaker, the Creator, the Benevolent, the Forgiver and the Wrathful are applicable only when there is a creation. The idea of a Creator without creation, the caretaker without his dependents, the authority without the subordinates would have been just abstract and theoretical. The signs of Allah are His creations. Allah has talked about His signs in the Quran 288 times. The signs are spread both in the macrocosm and microcosm. The macrocosm consists of the sun and the moon, the stars, the galaxies, the spread of matter and energy, rocks and minerals, plants, animals and man. The microcosm has within its domain spirit the self and the conscience that are related to perception, conception, and the intellect.

Allah has stressed at many places in the Quran the importance of "Aayaat", his signs and the significance of their study and understanding.

لَنْ فِي ذَلِكَ لَآيَةً لِّقَوْمٍ يَعْقِلُونَ (سُورَةُ النَّحْلِ 67-16)

لَنْ فِي ذَلِكَ لَآيَةً لِّقَوْمٍ يَتَفَكَّرُونَ (سُورَةُ الرَّعْدِ 3-13)

*Indeed, we have made our Aayaat manifest for those who are intelligent. Our signs are for those who think about them.*

The significance of these "Aayaat" is the fact that man should think about them and maker of them. Iqbal says:

هر چه می بینی ز انوار حق است  
حکمت اشیا ز اسرار حق است

*Whatever you see are from the manifestation of the real.*

*The knowledge of things is amongst its secrets.*

هر که آیات خدا بیند خراست  
اصل این حکمت ز حکم انظر است

*Whoever observes with open eyes the signs of God is reality free.*

*The root of his wisdom is the order observe:*

کوه و صحراء دشت و دریا بحر و بر  
تختة تعلیم ارباب نظر

*The mountains and the forests, the deserts and the rivers are the means of knowledge for the intellect.*

The entire cosmos is a field for the acquisition of knowledge for the intellect. All the signs of the cosmos, the sun, the moon, day and night, the thunderstorms, the rain, the winds, tidal waves, and the changing seasons are all alternate non-conventional sources of energy and are important for the ever-increasing demand of energy for man. They are also important to sustain his life on this planet and are all within the control of man.

ہیں تیرے تصرف میں یہ بادل، یہ گھٹائیں  
یہ گنبدِ افلاک، یہ خاموش فضا میں  
یہ کوہ یہ صحراء، یہ سمندر یہ ہوائیں  
تھیں پیش نظر کل تو فرشتوں کی ادائیں  
آئینہ ایام میں آج اپنی ادا دیکھ  
(بال جبریل)

*These clouds, the rains bearing clouds, the cosmos, the silent winds the mountains and the forests, the seas and the winds are within your control. Till yesterday the actions of the Angels were important. Today you see the reflections of your actions in the mirror of time.*

Let us discuss in some detail the signs of God. Allah says in Quran.

وَمِنْ آيَاتِهِ خَلْقَ السَّمٰوٰتِ وَالْاَرْضِ (الروم 22-30)

And amongst My signs is the creation of the earth and the skies



This creation was completed in six steps.

هُوَ الَّذِي خَلَقَ السَّمَوَاتِ وَالْأَرْضِ فِي سِتَّةِ أَيَّامٍ (الحديد 4-57)

*And it is Allah who has created Heaven and Earth in six days.*

The "days" in the above verse has a broad meaning. The day in Quran represents different time durations from a fraction of second to one thousand years to 50,000 years.

وَمَا أَمْرُ السَّاعَةِ كَلَمْحِ الْبَصَرِ أَوْ هُوَ أَقْرَبُ (النحل 77-16)  
وَإِنَّ يَوْمًا عِنْدَ رَبِّكَ كَأَلْفِ سَنَةٍ مِّمَّا تَعُدُّونَ (الحج 47-22)  
تَعْرُجُ الْمَلَائِكَةُ وَالرُّوحُ إِلَيْهِ فِي يَوْمٍ كَانَ مِقْدَارُهُ خَمْسِينَ أَلْفَ سَنَةٍ (المعارج -  
(704)

*The time for his order "Amr" is the twinkling of an eye and even less.*

*The day for your Lord is equivalent to one thousand years of your calculations.*

*The Angels and Gabriel will be present before the Lord in a day equivalent to fifty thousand years.*

This means that the earth and skies were created in six steps of different durations as is indicated in the accepted theories of the creation of the universe. The meaning of creation is to create something from non-existence. In the creation of the universe there was no prior existence, of matter and energy or time and space. We cannot ask "When" and "Where" because there was neither time nor

space. The world was created with time and not "in time". The time and space, matter and energy were confined within a tiny dot with a diameter of  $10^{-33}$  cm. (Planck's Length) and was created in the duration  $10^{-45}$  sec (Planck's Time). These are the smallest units of space and time. The beginning of the universe took place about fourteen billion years ago as a tiny dot, where all the forces of the universe, matter and energy, time and space were combined. The separation of time and space from matter took place in a big bang lasting for  $10^{-45}$  seconds. This is the beginning of time. The togetherness of time and space or matter is revealed in the Quran.

أَوَلَمْ يَرَ الَّذِينَ كَفَرُوا أَنَّ السَّمَوَاتِ وَالْأَرْضَ كَانَتَا رَتْقًا فَفَتَقْنَاهُمَا (الانباء 21-30)

*Why do not the disbelievers see that the earth and the skies were united (time-space or matter) we have separated them.*

The small dot created in time and space, started to expand, and time and space, forces of nature, and matter separated in six steps, which varied in duration from  $10^{-45}$  sec to a billion years. The first three steps of the formation of the universe lasted for 3 minutes in the duration energy was covered into components of matter, the Quarks, then the components of the nucleus, the neutron and the proton and electron and then the atoms of elements. In the fourth stages of the formation of universe that lasted for 300,000 years, the universe was in the form of a super fluid of ions and radiation, discovered very recently by the satellite Cabos 4. The radiation from this stage of matter

that was very hot in the beginning has cooled down by the time it has reached us in 14 billion years. This super fluid was in a state of agitation of violent rotating mass. This was the first proof of the big bang theory of the creation of the universe about 14 billion years ago. In the fifth and sixth stages of the formation of the universe, matter was distributed in space in the gaseous state. By the action of gravity, it started to take shape in the form of galaxies and stars.

The arrangement of matter took place around the nucleus of an erst-while star converted into a black hole. These black holes have enormous mass packed in a small volume and thus possess tremendous gravitational force. The swirling masses around these black hole centers took the shape of spiral galaxies and elliptical galaxies. Every galaxy has a black hole at its central core. The galactic materials condense to form stars of diverse sizes. The elevated temperatures of the stars, produced by gravitational forces increased their internal pressure and ignited within them nuclear fusion reaction that converted hydrogen into helium.

The thermonuclear reaction of stars converts about 25% of hydrogen into helium and a constant ratio of 75% hydrogen and 25% helium is maintained. The reaction results in the elevated temperature and the light from the stars. The temperature of the core of the sun is about  $10^5$  C and the outer layer about 4000 C. The sun provides light and energy for the twelve planets that surrounds it since they do not have a nuclear reaction to generate energy. Thus, thousands of stars are lit the sky every night. Allah says, we have decorated the sky of the earth with lights.

The equilibrium in stars is achieved by two opposites forces of gravitation that try to squeeze them and the nuclear pressure that expands them. Every galaxy has about 100 million stars and there are about 100 million galaxies. The distances in the universe are so enormous that we cannot measure the distance in terms of kilometers or meters, they are computed in terms of light years. Light has a constant velocity and travels at 186,000 miles per second. In one-year, light travels 5.8 trillion miles,  $5.8 \times 10^{12}$  miles. Our own galaxy milky way is fifty thousand light years away from us. And its extension is one hundred thousand light years. Our sun and the planets are in a corner of our galaxy and sun is about nine light minutes from us. The universe in which we live has an extension of about fifty billion light years. We know only a small corner of the universe. There are planets located places in the universe from where light has not yet reached us. The distribution of matter is so uniform in space that if from any location of the universe you observe it looks as if it is the center.

یہ کائنات ابھی ناتمام ہے شاید  
کہ آرہی ہے دما دم صدائے کُن فیکوُن

*This universe may be still incomplete,*

*since every time we hear, the voice of "Be and Be it is".*

Most of the stars in our galaxy, the milky way is surrounded by planets these planets have been discovered recently by radio telescopes. The planets around the sun revolve around in orbits. The orbit of earth around the sun is 580 million miles and the earth completes this orbit in 365 days at the rate of 18.5 miles per second. The sun completes its orbit around the milky way in one hundred million light years. The neutral-gravitational attraction of the galaxies from the clusters. The galaxies revolve around the cluster in billions of years. The nearest galaxy to our

milky way is Andromeda which is at 2 million light years from us. These galaxies also contain about one hundred billion stars of varied sizes and age. If we make a cube of ten million light years, it contains at least 6 galaxies. The small galaxies are attracted by the gravitational pull of the large galaxies and get absorbed in them. The nearest clusters of galaxies around us are the Virgo cluster which is at 50 million light years. These clusters come together and form a sheet like structure. One of these structures is the great wall which is at 200 million light years from us. Very distant galaxies at ten billion light years have now been discovered by radio telescopes. These galaxies are called Quasars. The sheets of galaxies are arranged in a layered structure in space. The distance between one layer and the other layer of sheets of galaxies is enormous. We are getting far from estimating the distances between them. The sheet of galaxies of our universe is the nearest to us, which Allah says,

زَيَّنَّا السَّمَاءَ الدُّنْيَا (سُورَةُ الْمَلِكِ 5-67)

*The earth is decorated with stars.*

The space between two layers of sheets of galaxies is fixed with dark matter or "axioms" which accounts for 90% of matter in the universe.

This matter is called dark matter since it cannot be detected by a spectroscope. It does not absorb or emit light. It can only be detected through its gravitational pull. Some of these constituents of the dark matter are very small stars where the nuclear fuel could not be ignited, so they are dark. There is also a particle called neutrino which is so small that it has almost zero mass and no charge. Billions of neutrinos can pass through the earth undetected. This dark matter has a check over the expansion of the universe since it pulls the galaxies and the

sheets towards it. Now much is known about dark matter so far. Thus, man is continuously engaged in finding out the secrets of nature.

یہ ہیں سب ایک ہی سالک کی جستجو کے مقام  
وہ جس کی شان میں آیا ہے علم الاسماء  
مقامِ ذکر، کمالاتِ رومی و عطار  
مقامِ فکر، مقالاتِ بوعلی سینا  
(ذکر و فکر)

*These are all the points of endeavor of a single endeavor who was given the knowledge of the names of articles. These are the places of excellence of Rumi e Attari and the thoughts of Avicenna (Bu-Ali-Sena).*

Matter and time and space are intimately related as pointed out of the general of every relativity. An important property of matter is the gravitational attraction which is a force directly proportional to the masses of the two bodies and inversely proportional to the squares of the distance between them. The larger the masses and the shorter the distance between them the stronger is the force. Gravitation also effects time and space by causing a curvature of dip is the web of time space. The time and space get dilated by increase gravity. Gravity also causes a curvature in the pain of light. In the neutron star and black hole. The density is almost infinite. The time and space in these cases are distorted to such an extent that completely time stops. If a man can search such a spot, he will ever remain forever at the same age since there is no effect of time. To overcome gravitational pull, one requires speed.

To come out of the gravitational attraction of the earth, the speed of the rockets is about 11 km/sec. the force

necessary to overcome gravity depends on mass and density. If the density increases many million times nothing can come out of pull or gravity. This is the situation inside a black hole that sucks even light, and gravity and it cannot come out of it. It is called black, since everything gets darker near it, be any light or energy for sustaining life on earth. In a day, the energy released from the sun is  $3.86 \times 10^{26}$  watts equivalent to the energy consumption of an entire year on earth. Thus, energy is obtained from sun rays that have radiations of various wave lengths and energy contents from ultraviolet to radio waves. Along with the light, sun also emit heat. The heat from sun rays can be concentrated by large mirrors to produce steam or electricity. By the help of silicon chips, the energy from the sun can be converted into electricity, which can be used for different purposes. For this purpose, chips from a silicon crystal are cut into wafers and joined together to form a solar panel. These panels can be used in far off places where electricity cannot be supplied for lighting or to drive pump sets and for irrigation purposes. Electricity from solar cells is stored in a battery for various purposes. The present efficiency for the conversion of photo energy into electricity is about 35%. The only obstacle for large scale use is its cost. If cheap silicon chips are made from amorphous silicon its cost can be reduced significantly. In this case instead of coal or hydropower, electricity produced from silicon chips can be used as a source of power. Saudi Arabia and Iran have large photo harvesters in deserts to produce electricity.

The natural material for the conservation of solar energy is through plants when they convert it into

biomass. The biomass can be used as a fuel or as a source of power. During this process, the plants also get rid of excess of carbon dioxide from atmosphere by the process of photosynthesis. For this purpose, some plants are harvested that give maximum biomass in a minimum time. Such plants for which water is not required can be utilized for conversion of waste land into fertile land. Some plants cultivated around the world produce about two hundred million tons of biomass per year. About 10% of this is converted into electricity and heat and constitute about 10% of the alternate source of energy. This source is a renewable source and is utilized throughout the world for the utilization of waste lands and for the presentation of biodiversity. Allah has mentioned in Quran that he has made the sun and moon subservient to us. It is now left for man to completely utilize sun as source of life and energy for his survival on earth.

Black holes are distributed in the universe and are related to universe through their gravitational pull. This is the point of "singularity" at the beginning of the universe, and they constitute the core of all the galaxies. In some of the galaxies the black holes have the masses of millions of suns. These are the quasars that emit continuously X rays. M87 the black hole of the Virgo clusters has the mass of thirteen billion suns. The black hole of our galaxy milky way has a mass of 250 million suns. The universe has started with a singularity, and it will end up with a different singularity.

The sun and moon constitute the other important signs of God useful to mankind. Allah Says,



وَمِنْ آيَاتِهِ النَّهَارُ وَاللَّيْلُ وَالشَّمْسُ وَالْقَمَرُ (حم السجده 37-41)

*And from my signs are day and night and sun and the moon.*

Sun is in a corner of our milky way galaxy at three hundred thousand light years from the center of the galaxy. The sun and the moon, the galaxies, their clusters, and sheet are all in an expanding universe. Allah says, they are all in motion.

كُلٌّ فِي فَلَكٍ يَسْبَحُونَ (يسين 3-36)

The sun is the center of the solar system and is a nuclear fusion furnace. It is nine light minutes or ninety million miles from the earth. The diameter of the sun is 850,000 miles and it is about 110 times larger than the earth. The outer layer of the sun consists of 70% hydrogen and 30% helium. This mixture continuously produces heat energy and light in its nuclear fusion furnace since the past five million years and is expected to continue for another 10 to 15 million years. The temperature of the external surface of the sun is 3300 and its core has a temperature of twenty million degrees. At this temperature of the core the sun converts hydrogen into helium; the other elements cannot be synthesized. The sun is an important sign of God.

وَسَخَّرْنَا لَكُمْ الشَّمْسَ وَالْقَمَرَ دَائِبَيْنِ وَسَخَّرْنَا لَكُمْ اللَّيْلَ وَالنَّهَارَ

(سوره ابراهيم 33-14)

*We have made the sun and moon subjected to you and the days and nights.*

Moon is the second sign of God mentioned in the above-mentioned Aayah and is the satellite of earth. It has no axial motion, consequently the face of the moon towards sun is extremely hot and the opposition face very cold and dark. The orbit of the moon around the earth is 1.2 million miles which the moon completes in 29 or 30 days. Its average orbital speed is three miles per second. The moon is much smaller compared to earth since as is nearer to earth, compared to the sun the effect of its gravity is felt on the earth. The tidal waves at the time of the full moon originate because of the gravitational pull of the moon. These waves are one of the alternate sources of energy for producing electricity. About moon Allah says,

يَسْأَلُونَكَ عَنِ الْأَهْلِ قُلْ هِيَ مَوَاقِيْتُ لِلنَّاسِ وَالْحَجِّ (البقره 189-2)

*They ask you about the moon; tell them it is for recording time and the period of pilgrimage.*

هُوَ الَّذِي جَعَلَ الشَّمْسُ ضِيَاءً وَالْقَمَرَ نُورًا وَقَدَّرَهُ

مَنَازِلَ لِيَتَعَلَّمُوا عَدَدَ السِّنِينَ وَالْحِسَابِ (يونس 5-10)

*Allah has made the sun as a source of light and lighted the moon and fixed its stages so that you can reckon the years and other calculation.*

*Certainly, the creation of the earth and skies and the changes of days and nights are the signs for the wise (3-190)*

Allah says the changes of day and night are the signs for the wise these changes are especially important for the maintenance of life on earth.

At the equator earth's diameter is 7900 miles and its circumference 24,900 miles. The earth is tilted towards its axis at an angle of approximately 23.44°. This tilt causes not only the difference in the duration of night and day but also causes changes in the weather. From June to November when the northern hemisphere has summer, the southern hemisphere has winter and vice versa from December to May. These changes in the season and the temperature difference between the two hemispheres are responsible for the direction of the winds and the ocean currents. Because of the tilt in the earth's sphere the sun does not rise at the same time and sets at the same time around the globe. The section of the earth which according to its longitude is inclined towards the sun has an earlier sun rise. Thus, from north to south for every section the sun rise is different as expressed in Quran:

فَلَا أُفْسِمُ بِرَبِّ الْمَشَارِقِ وَالْمَغَارِبِ إِنَّا لَقَدِرُونَ (المعارج 4-70)

*By the Allah of many easts and many wests. He is the authority.*

The wind and the ocean currents are responsible for bringing rain on earth.

وَتَضْرِبُ الرِّيحُ السَّحَابَ الْمُسْحَرَّ بَيْنَ السَّمَاءِ وَالْأَرْضِ لآيَاتٍ لِّقَوْمٍ يَعْقِلُونَ  
(البقره 2-164)

*The driving of the winds and the suspension of clouds between the sun and earth are the signs for the intellect.*

It is indicated in Quran that large droplets of rain are converted into smaller droplets just before the rain fall as

agreed by the meteorologists. Quran expresses the phenomenon of rainfall:

اللَّهُ الَّذِي يُرْسِلُ الرِّيحَ فَتَنِيذِرُ سَحَابًا فَيَبْسُطُهُ فِي السَّمَاءِ كَيْفَ يَشَاءُ وَيَجْعَلُهُ  
كِسْفًا فَنَزَلُ

الْوَدْقَ يَخْرُجُ مِنْ خِلْفِهِ فَأَذَا أَصَابَ بِهِ مَنْ يَشَاءُ مِنْ عِبَادِهِ إِذَا هُمْ  
يَسْتَبْشِرُونَ (الروم 48-30)

*He is Allah who makes the clouds to fly and then spreads them in space as He wishes, then breaks them into pieces and makes the rain to fall on earth. Then it reaches those whom he intends, and they get happy.*

And of his signs is lightening which is the center of terror and hope. He sends rain from the sky, and this makes the dead land alive. In all these are instructions to those who are wise.

The friction of clouds in the atmosphere creates an electric charge; since drops of water are nonconductive the electric charge separates into static positive and negative charges. The coming together of clouds causes these charges to get discharged in the form of thunder and lightning. This is static electricity which causes terror. The lower layer of the clouds can produce electric changes in any constructing material on earth; the static current then goes from earth to the cloud. This is called lightening which produces so much heat that wherever it falls, things turn to ashes. Lightening is not so common in Asia, but it is very common in the parts of North America which sometimes convert the prairie land to ashes.

Allah also speaks about lightening as a hope. The lightening produces a local temperature of about 3000<sup>0</sup> C. At this temperature oxygen and nitrogen of the atmosphere combine to form nitric oxide and then nitrogen dioxide. These oxides react with water to form nitric acid washed with rain to the soil and produces the nitrates that maintain the fertility of the soil. These nitrates are utilized by plants in their growth.

The other aspect of hope from lightening is the fact that man learnt to control the electric current and found materials to produce the current and to store electricity.

Electricity can also be produced by burning coal or from the hydropower of a waterfall. Photocells also convert light from the sun to electricity. Nuclear power reactors are used to convert water to steam which drives a turbine to produce electricity. The modern age in the century is the age of electronics and photonics and man has completely utilized the thunder, the sign of God.

The second part of the Aayah deals with water as a source of life for the dead earth. This means, that water is the source of life on earth and other planets. In the planets of the solar system and other planets wherever there is water there are signs of life. Water was discovered on mars and one of the moons of the Jupiter. Dry canals of water were also found on moon. In the planet Century Proxima, which is at one light year from us, there are indications of preliminary forms of life.

The Aayah says, we have made the dead earth alive from water. The soil contains useful bacteria that survives on water. A square inch of the soil contains as much

bacteria as the entire population of the earth. When water falls on dry soil it emits a very pleasant fragrance. And this is due to the bacteria Actinomyces. The soil also contain nitrogen fixing bacteria that convert nitrogen into ammonia and finally to nitrates. This process requires water as a source of hydrogen.

Water is also an important source of power since its decomposition gives hydrogen and oxygen. Hydrogen is now being used as a source of power in automobiles and in fuel cells to convert oxygen and hydrogen back to water. Water is thus a non-pollution source of power for the future of mankind.

## Motion and Rest in the Light of Iqbal's Philosophy and Science

We can define motion in the simplest possible way as the movement of an object from one point to another in a given time. This elapsed time can be measured with the help of a watch or by any other standard method. In the same manner, the distance elapsed between two points in space can be measured with a scale. The time to cover a certain distance is called velocity. The theoretical meaning of zero velocity is rest. For motion we need space. Space can be defined as a container of things. Space does not have shape of its own but can acquire the shape of the container. We cannot think of space without an object. The Greeks thought that objects are so located in space that they are congruent to each other and there is no existence of such a thing as total vacuum. The Greek philosopher Zeno thought that the space can be divided indefinitely into smaller bits. When these bits are together there is no empty space between the bits. In the absence of space in between there was no possibility of an object moving from one point to another so Zeno considered motion as a mirage and not a reality.

The absence of motion made the Greeks believe that the world is static. The geometry included only two-dimensional points, lines and shapes since two

dimensional spaces are not changed by motion. Euclidean geometry was only two dimensional. The Greeks had no idea of a three-dimensional world.

Islam was the first to present the idea of a three-dimensional world. The idea of the arrangement of skies in three dimensional is indicated by Quran.

الَّذِي خَلَقَ سَبْعَ سَمَاوَاتٍ طِبَاقًا (الملك 3-67)

*It is God who has created the seven skies in layers.*

Along with the length, breadth the idea of height as a third dimension was first presented in the Quran. The word "Samawat" in the Quran is used in the broad sense of time and space and matter and energy.

The second important theory of Islam is the motion of bodies in space. Nothing in the universe is static everything is in motion. This was the negation of the theories that were in vogue till the periods of Newton and Einstein, that the world is static. The motion of celestial bodies from one place to another in space is mentioned in the Quran.

وَالشَّمْسُ تَجْرِي لِمُسْتَقَرٍّ لَهَا ذَلِكَ تَقْدِيرُ الْعَزِيزِ الْعَلِيمِ ۝ وَالْقَمَرَ قَدْرَهُ مَنَازِلَ حَتَّىٰ

عَادَ كَالْعُرْجُونِ الْقَدِيمِ لَا الشَّمْسُ يَنْبَغِي لَهَا أَنْ تُدْرِكَ الْقَمَرَ وَاللَّيْلُ سَابِقُ النَّهَارِ

وَكُلٌّ فِي فَلَكٍ يَسْبَحُونَ (يسين 36-38)



*The sun proceeds to its destination which is known only to Almighty God. The moon completes its states and appears as the twig of a date palm. Neither the sun chases the moon nor does the night to the day. Everything floats with constant speed in space.*

The idea of motion has no place for rest since rest means zero speed. There is no absolute rest in nature. What appears to be at rest is in a state of constant speed. Since there is no difference between uniform motion and rest, things float with constant speed in space.

The importance of Iqbal's philosophy of motion is the fact that he is influenced by the Holy Quran and considers change and motion as the criteria of matter. Only the absolute existence of Allah has no change. Iqbal says:

سکوں محال ہے قدرت کے کارخانے میں  
ثبات ایک تغیر کو ہے زمانے میں  
(ستارہ)

*Absolute rest is impossible in the working of nature.*

Only change is certain for everything. Nothing can remain without a change.

کہتا تھا قطبِ آسماں قافلہٴ نجوم سے  
ہم رہو، میں ترس گیا لطفِ خرام کے لیے  
(کوششِ ناتمام)

What is mentioned as "Qutub" of the skies may be the sheets of galaxies the great wall that is itself in motion. This Qutub says to the group of stars that it longs for rest.

The Caravan of existence from a particle of atom in the microcosm to galaxies, stars, and atoms and all the varieties of life from a single cell to man is only motion at every stage and a flight to perfection. Iqbal says:

ٹھہرتا نہیں کاروانِ وجود  
کہ ہر لحظہ ہے تازہ شانِ وجود  
(ساقی نامہ)

*The caravan of existence does not stop. It has new manifestation at every moment. As revealed in Quran (Al-Rehman).*

*At every moment He has a new manifestation.*

سمجھتا ہے تو راز ہے زندگی  
فقط ذوقِ پرواز ہے زندگی  
(ساقی نامہ)

*You think life is a secret. Life is only an urge for the flight to perfection.*

رازِ حیات پوچھ لے خضرِ نجستہ گام سے  
زندہ ہر ایک چیز ہے کوششِ ناتمام سے  
(کوششِ ناتمام)

*Ask the secret of life from Khizr who moves. Constantly  
(He will tell you) that everything is alive because of its  
constant repeated trials.*

In the light of Iqbal's theory of motion, if we will re-examine Zeno's theory of non-motion, we conclude that the speed of a moving body can never be zero. There is a difference between location and space. Location is that part of space where the body lies. This cannot be changed. But place is part of the body and moves along with the body. For example, if a ship is in motion, its location changes, constantly but the places of the various parts of the ship that move along with the ship do not change. The universe is constantly expanding, this expansion causes a change in location but not in the absolute position of things. When the universe is expanding our location in space changes but not our position on earth. In Zeno's motion what is changing is the location of the object but not its position, therefore it cannot be in a state of non-motion.

In the Islamic philosophy, the "Ashaira" have a special place for the theory of motion. At the top of the list is Allama Fakruddin Razi, who in his book "Mabahis e Mashraqiya" has discussed motion in detail. Other philosophers are Al Hazen, Sheik Nasiruddin Tusi and Abul Barkat. In the theory of Kalam of the Ashaira's, Aristotle's theory and attributes are replaced by atoms and incidents. In this concept, time and space and matter are composed of indivisible particles called atoms. The properties of things are in the three-dimensional time and space.

Motion is the change in location of the atoms in space and this motion is not continuous. The atoms during their motion do not pass through every point in space. This motion is restricted to a few points and a Jump through the points. The idea of a discontinuous motion through jumps is like the quantum theory of Plank about the motion of subatomic particles. According to this theory, the change of energy levels of subatomic particle such as an electron are not continuous but quantized through certain energy levels. The electronic motion around the nucleus is restricted to only certain orbits and there is space between orbits.

The supporters of the jump motion, give an example of the wheel. If two points are located on the inner and outer rims of a wheel, then during a rotation the inner and the outer point cover different distance. The outer point because of its greater circumference covers more distance than the inner point. Since the time taken by both the points to cover the respective distances is the same, the speed of the outer point will be more than that of the inner. This means two points in the same body revolve with different speeds. Ashaira explained this by the proposal that the inner points have fewer jumps than the outer point, so the time covered is the same. According to the modern concept, particles on a wheel are subjected to a centrifugal force which is proportional to its distance from the center. The further the particle is from the center; the greater will be the force. So, the force on the external particles will be more than on the inner particles, so it rotates faster than the inner particle. The acrobats in

a circus rotate faster when they fold their hands closer to their bodies.

Iqbal has criticized this concept of the Ashaira in his Khutbat. According to the concept of Iqbal, time and space cannot be separated. The two together form an instant where the motion of a particle is continuous without any break. This concept of Iqbal is like Bergson's idea of motion. According to Bergson, motion cannot be divided.

If motion stops even for an instant, it becomes rest. Motion is a continuous change, a continuity of incidents like a series of shots in a movie reel which form a continuous sequence. If these pictures are rotated with a particular speed, they create the sensation of motion. Any one picture is the static depiction of a continuous motion. Motion is also slight change absorbed by our brain and connected into a sense of motion. If we stop the sequence, then only one picture emerges, and this will not be in motion. If we stop the motion and start again the next motion will not be a sequence of the first but a new motion. Thus, in the Ashaira's theory of jumps, every jump will be a discontinuous motion, a new motion starting all over again which both Iqbal and Bergson think as untenable.

An important development in the concept of space is the fixation of the location of a point in space. This is the distance of its location from a reference point. In three dimensions, the location of a point is based on the values of the coordinates of length, breadth and height from a reference point. This is called the Cartesian coordinate

system. Other systems of coordinates such as the distance of a point from curvilinear center is also used. By the use of these coordinates, we can find out distance, between any two points. Thus, space becomes a system on which experiments can be done and the location of a point measured in terms of its coordinates, the coordinates of space become a necessary condition for other measurements.

In the beginning of the seventeenth century, the geometry of space became an important criterion for the explanation of motion. Newton's theories of motion are dependent on the concept of absolute time and absolute space. Their theories are based on the assumption based on experience and do not require any proof. They do not require any support on the basis of the fact that time and space, motion and location is the experience of everybody. The main pillars of Newton's theories are force and mass. To explain his theories, Newton coined the words absolute and relative for time, space and motion. Now we know that his term absolute for time, space and motion has no meaning since everything is relative. His contention was relative time and space, and relative motion are components of absolute time and space and motion. His mechanics were based on the universal concept of ether which is absolute, stationary and the basis of his absolute time and space.

Till the end of nineteenth century, the idea of ether was very firmly established in the minds of people. The experiments on the velocity of light proved that absolute

and stationary ether is nonexistent. Moreover, there is no stationary point in space which can be used as a reference of absolute space for competing motion. Up till the beginning of twentieth century Newton and Einstein considered the universe as stationary.

The experiments of Hubble in 1915 proved that the universe is constantly expanding at an average velocity of  $1/10$  of the speed of light. The various planets of our solar system rotate in their respective orbits with an average speed of 3-20 miles per second. The sun along with the solar system rotates around the galaxy, the milky way and the milky way towards a sheet of galaxies, the great attractor. Since Newton had to assume of the theory of motion as stationary point, he coined the concept of absolute space that has no significance. For absolute time, Newton assumed the existence of an absolute time which flows by itself without any reference. The relative time is a part of absolute time. Apart from these assumptions Newton could not provide an explanation for his ideas of an absolute time and space. The exchange of criticism between Leibniz and Newton was based on the latter proposal of absolute time and space which Leibniz denied. This concept has however been proved wrong based on Einstein theory of special relativity.

Despite the theoretical short coming of absolute time and space, in Newton theories of motion, his concepts of force and momentum had an immense success and impact on the industrial revolution of the seventeenth and eighteenth centuries. Newton first theory of motion was

"A body can remain in a state of absolute rest or constant motion unless it is acted upon by a force. Up till the end of the sixteenth century, there was no method to measure time accurately. In 1583, Galileo discovered the pendulum which was used as a means to measure time. In 1630, Galileo discovered that there is no difference between the states of rest and the uniform motion of a body. If we close the windows in a moving train and the train proceeds with a uniform motion, we will not have any sense of the motion of the train unless it undergoes an acceleration. We are all in a state of uniform motion along with the earth that rotates around the sun with a uniform speed of 12 miles per second, yet we do not sense this motion. For uniform motion there is no necessity of a force. Iqbal says:

رفقار کی لذت کا احساس نہیں اس کو  
فطرت ہی صنوبر کی محرومِ تمنا ہے  
(انسان)

*Sanobar (plant) cannot sense the sensory of motion since it is a part of its nature.*

The constant rotation of the earth around the sun with uniform speed was recognized by Iqbal. Accordingly, to him it gives maturity and importance to the cup of life. The constant motion is the reason for the eternity of life.

چُختہ تر ہے گردشِ پیہم سے جامِ زندگی  
ہے یہی اے بیخبر رازِ دوامِ زندگی  
(حضرتِ راہ)



The change of speed with time is called acceleration that takes place by the action of a force on the body. Gravity is also a force which causes acceleration. The magnitude of the action of this force on a body depends on the product of the mass of the body and the acceleration. This is Newton's second law of motion. Newton's first and second law were in fact discovered by Galileo. Newton's third law however that action and reaction are equal, and opposite were his own original contribution. To compute and calculate these forces, Newton discovered calculus. These laws are so accurate that if we know the momentum (mass times velocity) of body at given instant we can compute them at a future instant. The greatness of Newton is reflected by the facts that he predicted that the laws of motion that are applicable on earth are also applicable to celestial bodies. He deduced very successfully the timings of solar and lunar eclipse and the motion of the planets around the sun and their orbits. This was the greatest success of his theories of motion.

Though Newton himself was a believer in God, his theories of motion and the determinism it introduces in nature for predicting its future behavior helped the materialist in their belief that the universe is mechanical and does not require God to maintain it. This deterministic idea of the materialist was defeated by quantum theory which proves that in the microscopic world everything is probable and not certain. The deterministic view of nature was changed by the quantum principle of uncertainty.

The greatest discovery of nineteenth century was the field surrounding a magnet or an electric current. If one keeps a magnet and sprinkle iron fillings, the fillings are arranged around the magnet in a particular pattern which is the field of action of the magnet or its magnetic field. If we rotate a bundle of wire in a magnetic field, then it produces an electric current. This was the principle behind the discovery of the dynamo. At the end of the nineteenth century, Maxwell combined these ideas and presented his theory of electro-magnetism that the magnetic and electric fields are mutually interdependent. The electric and magnetic fields travel in space like particles and this motion is in the form of a wave called photons or electromagnetic radiation. The light that is visible to us has a particular wavelength and frequency. There is an entire spectrum of electromagnetic radiation varying in wavelength from long wavelength and low frequency radio waves to high frequency small wavelength cosmic and X-rays. With every electric change there is accompanying field that is both attractive and repulsive. Gravitational force is only attractive force without any repulsion. The gravitational force has a field around each body. Thus, we come to the important conclusion that space can be occupied not only by particles but also "fields". Fields have the same reality as particles. The electric and magnetic fields can be defined accurately by Maxwell's field equation, one of the great discoveries of the nineteenth century. These equations indicate how an electric field affects the magnetic field and the electric current. And how a magnetic field affects the electric fields with time.

One of the important deductions of Maxwell's electromagnetic field equation is the discovery of the fact that light travels with a constant speed of 186,000 miles per second. Thus, the velocity of light is the universal constant of nature. Light has a dualistic nature, a particle, or a wave with the same reality that of an electromagnetic radiation Iqbal says:

حقیقت ایک ہے ہر شے کی، خاک کی ہو کہ نوری ہو  
لہو خورشید کا ٹپکے اگر ذرے کا دل چیریں  
(طلوع اسلام)

*The reality of everything is the same whether it is material or celestial.*

*If a particle is open, it will emit energy of the sun.*

Compares the energy of a particle to the blood of the sun, the essence of the sun, and its energy. Iqbal thus hints on the equivalence of matter and energy.

The velocity of light is an important constant of nature on which other theories especially the relativity of Einstein is based. One of the earlier proposals of relativity was from Galileo who proposed that the condition of rest or uniform motion of a body are equivalent. The question arises whether Galileo's theory of the equivalence of uniform motion and rest can be applied to the velocity of light. The basic idea behind Einstein's theory of Relativity was the question whether we can chase a ray of light? According to the common principle of physics, if we chase light with a greater velocity of that of light its effective speed will be

reduced to the extent of the speed of the appear. If we approach light from the other direction its velocity should increase. According to Michelson Morley's experiment, no matter what one does the speed of light will be constant. 186,000 miles per second obeys Maxwell's field equations. The relation of Newton and Galileo should not obey Maxwell's equation.

To solve the crisis, Einstein presented his special theory of relativity according to which the velocity of light or Maxwell's field equation cannot change with the reference framework of a stationary or moving observer with constant velocity. In this situation for a very fast-moving observer, the laws of motion of Newton and Galileo should change. In 1905 Poincaré pointed out that if matter obeys Maxwell's field equations, then its uniform velocity can never be detected. If matter is in motion within the field of its mass, then its velocity cannot be detected. This is a mirage which we consider as rest. Einstein concluded that for fast moving observer, the idea of absolute time and space has no meaning. In 1908, Minkowski, the teacher of Einstein presented the four-dimensional picture of time-space. According to this theory, time and space are not separate units but they constitute a single unit. This idea of a four-dimensional time-space cannot be easily comprehended. We can however understand this in the three dimensions if we assume two dimensions of space in a plane and a vertical dimension of time and calculate the distance in the two dimensions in terms of time-seconds (186,000 miles). In this plot the velocity of light will make an angle of 45° with the vertical. If we rotate this line

around the vertical it forms cone with zero as the origin and start extending in space. The motion of any other object will be represented as a time with this cone. Since nothing can travel faster than the velocity of light. This time is called world-time and every point on this world time will represent an incident in time and space. Every observer will have his own world. Line that represents his life history. For a static object the world line will coincide with the vertical, since the object does not change its place time. Every point outside this cone will represent a velocity greater than the velocity of light which is not possible. The volume inside the cone is called time zone and outside the cone space zone. Any object outside the time zone will occupy every place in the space zone at the same time.

The consequences of the four-dimensional time-space are remarkably interesting. First, the space-time framework for a stationary and a moving object will be different and will be his own. The space time of a fast-moving object will be squeezed; his time gets slow, and his mass will get reduced. This fast-moving object when returns to earth his age will be much less than the age of the stationary observer on earth, because of the dilation of time. If we travel with the velocity of lights, then his one day in the rocket will be equal to thousands of years on earth. The relativity of time has been explained in Quran.

A day with your Lord is equivalent to thousand years of your time. The angels and Gabriel will be presented to Him

in a day equivalent to fifty thousand years. (Al Miraj) Iqbal says.

احوال و مقامات پہ موقوف ہے سب کچھ  
ہر لحظہ ہے سالک کا زماں اور مکاں اور  
(حال و مقام)

*Everything depends on conditions and places.*

*Every moment the time and space will be different for the observer.*

In this concept, condition is the speed of the moving observer and places indicate the gravitational pull at the place. If the value of the gravity increases, the time dilates. Inside a black hole where the gravitational pull is infinite, time stops, and space will vanish. Einstein has shown by examples that of the two observers, if one is stationary and the other travels with a uniform speed, then an incident will be simultaneous for both. But if they are in different framework of space-time one stationary and the other in motion, then simultaneity will not be applicable to them. What is simultaneous for one will not be for other. The order of incidents will be different for both. This proves that space-time is not absolute, but they are relative. In the same way distance between two moving objects has no meaning. It depends on who is measuring the distance, the stationary or the moving person. Since time is relative, space is also relative. As Iqbal says, it depends on his condition and location and the observer's own framework of time and space.

According to the theory of special relativity not only time and space are relative, the mass and forces are also relative since force depends on mass and the distance. Galileo performed historical experiment by dropping a heavy and light object from a tower and proved that they come to the earth at the same time. The heavier article does not drop first as compared to the lighter object. The reason is that the gravitational force is directly proportional to mass and acceleration is inversely proportional to mass. The effect is the total cancellation of the mass effect and the fall of the objects on the ground is called the "free fall".

We can explain force in different ways. If a train moves with uniform velocity, we do not feel the motion if it stops suddenly, we are forced forward and a ball on the floor of the train moves forward. The forward motion of the ball is because of gravitational pull for an outside observer it is the momentum of the train. So, force is also relative, and it depends on the observation. It is a condition of space and time which is expressed as force. Water falls from a height to a lower height because of difference in space. Since water uses as easier course for itself.

In 1915 Einstein presented his general theory of relativity where gravitation is the curvature of space time. Every object according to its mass, effect space time and causes curvature. Since sun is massive the curvature of space time will be shine in the velocity of the sun earth falls in the orbit and rotates around the sun since it is the path of lowest energy for the earth. According to general

theory of relativity force is the property of space time. In the presence of matter, the geometry of space time is not flat, but it is curved. The particles of light are also affected by this curved geometry and acquire a curved path. The ground theory of relativity was tested by Sir Arthur Eddison in 1918 in a total solar eclipse when he observed the rays of light from a slowly stress curved by the field.

According to the general theory of relativity, energy has a place in terms of the mass of an object. Mass and energy are two aspects of the same reality related by a single equation,  $E= mc^2$ , here E is the energy; m is the mass and C is the velocity of light. The equation, the most important equation of twentieth century caused a revolution in the world. Man for the first time learnt the importance of nuclear energy and its controlled use in the fusion reactor to destroy Hiroshima and Nagasaki. From the philosophical viewpoint, it was the end of materialism in the world.

Materialist used to argue that matter is eternal and the basis of everything. They also argued the impossibility of creation of matter by a non-matter Allah. Einstein proved that energy can be converted into matter and matter is not eternal. The creator of both matter and energy is Allah. Allah says in Quran that Allah is the light of heaven and earth and the creator of both matter and energy. Iqbal expressed his opinion about relativity in his Khutbat. The theory of relativity does not affect the importance of nature, but it supports this view that matter is only a relationship of nature.



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## The Metaphysical Aspects of Motion and Rest

The earliest theory of motion was proposed by Aristotle, the peripatetic.

Philosophers mostly followed Aristotle's philosophy of motion. One of the most important peripatetic philosophers was Avicenna. According to Avicenna's theory, motion does not cause any change in a moving body. Motion is only an accident for an object. Since Greeks in general did not believe in motion, they thought that only articles exist in space and time. Motion has no existence in space and time, since it is not a stable and perfect attribute. It can undergo an increase or decrease. The causes of motion in an object are external. Internally a body cannot create motion. To be in motion is not a characteristic in nature. Consequently, when an object moves it is not its natural condition and it would like to return to its natural state.

There are two types of motion. The past motion is retained in the memory as a continuous unit. The second is the unchanged, permanent condition of the moving body between the beginning and the end of the motion. This aspect is not motion but a resting concept of a moving body. This is called intermediate motion. Thus, Avicenna's thought influenced by Aristotle considered motion only as a mental concept. Nature is a sound stable system which produces a change and motion is one aspect of the change

in nature. This change is external to the system but not internal.

The other philosopher who has given a concept of motion is Bergson. Iqbal was very much influenced by the concept of Bergson that considered motion as a creative evolution. Life is like the motion of a wave which protects the past and creates the future. The meaning of movement in Bergson's theory is the fraction of time which creates an image in the mind. The concept of time is the pure activity of existence, "to be".

This requires a moving object which after the change becomes the required object. In the absence of motion, the body remains in the same state as it was or becomes a frozen unreachable entity. Thus, motion and moving bodies and realities, and motion signifies the existence of a moving body. The reality is a flowing object which is constantly in motion. The motions of bodies are not relative, since there is no standard of flow for life. This is an unceasing flow which does not stop or repeats itself. It is always flowing and changeable. Thus, life is a duration. It is a moment.

Mullah Sadruddin Shirazi also known as Mullah Sadra was a great philosopher of the seventeenth century and a contemporary of Sir Isaac Newton. In his book "Asfar Al-Arba'a" travel in four directions, he has given his philosophy of motion and spiritual evolution. This philosophy was first presented by Iqbal in his dissertation. According to the philosophy of Mullah Sadra, the atom is the center for accidents and motion. The "Johar" or atom

of Sadra is not the fundamental particle of matter in the atomic sense. It presents a broader concept of "Being" that includes the shape and attributes of matter and its essential reality which Sadra calls, "Hayula". The shape and attribute cannot be represented from the essential reality; they are the two aspects of matter. There is a fundamental difference between shape and attribute and reality. The shape and attributes keep and maintain the identity of a substance but the reality of "Hayula" is capable of change. This change is the capacity to proceed towards perfection and to achieve it. For objects, this reality is to acquire their individual identity. This reality for the geosphere is their conscience, for plant it is their growth, for animals it is their instinct and for humans it is the spirit. In this sense "Hayula" is a reality which has many manifestations in its unity. It is the qualitative and quantitative aspects of change in the existence. After death, the shape and attributes are destroyed but the main reality "Hayula" remains.

Every simple existence has stages and steps that are not external but an internal part of existence. "Hayula" is the estimate of the basic capabilities of a thing and the change in capabilities is an estimate and explanation of personality. "Hayula" is not a mental concept but a real existence.

For changes and motion to substantiate, matter is essential. Matter that has attributes, qualities, mass and shape. These aspects contribute to the potentiality of matter which is a long-term effect and related to other

qualities, quantities and places. The potentiality of existence is in an essential aspect of matter its spirit or conscience which is the reflection of its attributes. The potentiality is matter and pure essential reality is the essence of Allah. The creation of Allah used their potentialities to move towards realities and perfection. Thus, motion is referred to by Mullah Sadra as "motion of the atom". Motion is the first step towards perfection. Thus, motion is not a cause for change but a change in itself. This is the main difference between the philosophers Mullah Sadra and Avicenna. Avicenna does not consider motion as a change but for Mullah Sudra motion is the journey towards perfection.

The center for change in matter is not matter or its attributes but it is its essence or Hayula. According to Aristotle and Avicenna the motion is an external component which joins a moving object from outside. Since motion is external to the moving object it does not change matter. Any change in the quantity of the substance means a change in the internal structure. According to Sudra's philosophy motion does not cause a change in the structure or shape of the moving body but changes only its essence of Hayula which does not destroy the substance. Motion brings about a new and gradual change in essence this is not a sudden change which completely transforms one substance into another; it is only a gradual change in the essence without a change in general or the nature of the species.

It is not the essential in the Darwinian sense where the species change over a period of many suns. Sadra has

given a very good example of this change from black color. If we say that the intensity of the black color increases in the moving object, this blackness is not getting added from outside. It is only a subjective increase in intensity of the color where the blackness increases gradually from one stage A to another B without a change in substance. The increase in darkness does not mean that it is an external substance added to black color, but blackness is the new form of the same substance. It is only a subjective increase in intensity of the color where the blackness increases gradually from one stage to another without a change in the substance. The identity of the darkness remains from beginning to end. There can be infinite shades of darkness which is a continuous sequence of existence without a change in the nature of quiddity of the substance.

The center for the change in Sadra's transcendental motion is not the nature or shape of the substance but its essence. In every form of matter there is a shape and nature and its essence, but motion requires a moving object. The real mover is the absolute essence and truth the absolute reality Allah. Allah endows in every substance motion as its internal attribute and thus constitutes the nature of a substance. The real matter exerts its influence on the moving object as its internal attribute which is the cause of motion. The attribute of motion in the nature of a substance was given the name "inertia" by Newton and the capacity of motion as "inertial mass". Motion is also the reason for growth in plants which Sadra has called physical motion. The cause of motion can also be an external force agency. This is a part of matter. According

to the general theory of relativity of Einstein, matter creates a distortion in time and space, and this is gravitational force, which is property of the mass of the substance. Thus, for motion force does not come from outside but it is a part of the nature of the substance. The action of an external force can cause a change in motion, the acceleration. Sadra recognized this accelerating effort and called it motion by force.

The internal motion of an object is by its internal nature, and it regenerates the moving body in every instant. The idea of rest is stability and non-motion which is impossible in nature. Nature by its composition and arrangement is dynamic from the tiniest particle of an atom in microcosm to cluster of matter in stars and galaxies, the only essence that is stable and does not change is Almighty God which brings about change in everything by his command. According to the Holy Quran.

كُلُّ يَوْمٍ هُوَ فِي شَأْنٍ (الرحمن 29-55)

A new phase at every instant is created by Allah in his creation and this change or motion is the essence of existence. It is for all the aspects of existence celestial or earthly. It is a part of every creation. The diversity of creation produces different types such as minerals, plants, animals and humans. In this diversity of creation, the existential unity is the nature of things which is center for change. Allah says in Quran.

فِطْرَةَ اللَّهِ الَّتِي فَطَرَ النَّاسَ عَلَيْهَا (سوره الروم 30-30)

Your nature is the same as the nature of the other creation. Every creation of Allah maintains its genera and within the genera proceeds through the stages of creative evolution. This is its journey from potentiality to reality. In this type of journey creative evolution, one type does not change into another. A fly cannot become a frog, or a monkey cannot become a man. This is the Darwin's idea of evolution which to date has not proved to be a theory from a set of assumptions. Creative evolution is the journey of the soul towards perfection. It is the journey of the conscience of a substance. Allah says in Quran.

يُسَبِّحُ لِلَّهِ مَا فِي السَّمَوَاتِ وَمَا فِي الْأَرْضِ (سوره الجمعہ 1-62)

*Every particle in the earth and skies prostrates before Allah.*

Prostration is an act of conscience, and it is the new journey towards the destination set by Allah in the potentiality of the substance. In the journey, the stages of the changing essence are indistinguishable from one another. This journey is unidirectional towards perfection and cannot be reversed. Relativistic motion is physical, but the transcendental motion of Sudra is with a purpose and this purpose is fight to reality and perfection.

The life of a human being is itself a continuous journey, a continuous motion where the external features of a person and his quality does not change. We cannot even detect this motion since one cannot differentiate between uniform motion and rest. If this motion is towards perfection, it is progress otherwise in the other direction it is demotion. Motion is a flowing river where



existence and its recognition change every moment. The journey towards reality with a potential force passes through several stages of existence and the stations of the spirit to come near reality. Prayers, supplications and meditation also become a progress in the condition of the spirit. The person on the divine road to prayers can detect his spiritual position and continues the journey. His stages are unseen and undetected since this is a journey without any sense involvement. The journey towards perfection is belief and the higher stages are sincerity to do good. This journey to reality is the gradual emanation of existence and the final stage is perfection.

According to Iqbal's metaphysical concept of motion there are two aspects of life material and spiritual. This does not mean that man is 50% material and 50% spiritual. We cannot separate matter and spirit, it is death. Iqbal says:

’وہو و حضرت انساں نہ رُوح ہے نہ بدن،!  
(آدم)

*The existence of man is neither matter nor spirit.*

This duality of being of man is reminiscent of the duality of wave and particle for a subatomic particle and motion. The particle can exhibit one of the features at a time. Similarly, man can become totally material and drop down to the level of an animal or he can attain spiritual progress by efforts. The body of man is matter and form, his spirit is "Hayula" which remains after death. The two cannot be separated in life. According to Iqbal the ego which is

related to spirit has two aspects "efficient ego" and "appreciative ego". Efficient ego is related to matter, its purpose is to make a contact with time and space. Efficient ego maintains its individuality and its relational identity. This is a continuity of duration in time and space, and it appears as an accidental in time space, and a point on the world line. Its dimension is the coordinates on this world line. Appreciative ego is the experience of our conscience. This is our spirit and "Hayula" of Sadra. Allah has asked in the Quran for its development. We are so much involved in the continuity of efficient ego that we forget the development of appreciative ego.

There is conscience in every particle of atom. From sub-atomic particle to galaxies and their collection. The purpose of every aspect of existence is progress and to go towards stability. This journey or motion is continuous every moment, it is not in our knowledge. We hardly notice it. Spirit is not a continuity of incidents in time and space, its existence is in pure duration of Bergson.

According to Einstein's general theory of relativity, this is the region where time loses its existence and only possibilities remain. Here all the changes and motion become undivided and the continuity of past, present, and future appears as a single point. Beyond this is Allah's time "Sarmad" where the possibilities also disappear.

وَمَا أَمْرُنَا إِلَّا وَاحِدَةٌ كَلَمْحٍ بِالْبَصَرِ (سورة القمر 54-50)

*And our decree is only one, the twinkling of an eye or much less.*

This undivided moment of Allah for his decree becomes the time for efficient ego and divide into years, days, hours, minutes and seconds.

Then the efficient ego requires time, it is the framework of space time.

هُوَ الَّذِي خَلَقَ السَّمَوَاتِ وَالْأَرْضَ وَمَا بَيْنَهُمَا فِي سِتَّةِ أَيَّامٍ

(سوره الفرقان 25-59)

It is Allah who has created the heavens and earth and what is in between in six steps. All the creation of Allah is time bound. These six steps are the duration for the efficient ego which for the appreciative ego is just a "moment".

With the development of spirit, the appreciative ego is manifested as a holistic reality. These are the attributes of hearing and sight, which do not require matter for manifestation. Iqbal was certain in his beliefs that in the spiritual experience of the conscience we can decide between continuous duration and pure duration where change and motion is not the continuity of different stages of existence, but it is continuous creation. This is the ego of the absolute where there is no tiredness of sleep.

لَا تَأْخُذُهُ سِنَّةٌ وَلَا نَوْمٌ (سوره البقره 2-50)

In the philosophy of Sadra or Iqbal, the real motion is a relative action which goes from action to intelligence from

instance to inspiration from potentiality to actuality. Iqbal in his theory was able to bring together concepts of motion and time and space in a single philosophical thought. One aspect of his thought is the holistic nature of space time which is a holistic unit in one aspect and in the other it is molecular, atomic and sub-atomic. He was successful in his thought that the duration of appreciative ego is a holistic reality which is the cause of the creative motion. In efficient ego, the atomic duration is divided. Thus, ego has one side in eternity and the other side in continuity of duration. The concept of Islamic elevation is a harmonious balance between the two.

خرد ہوئی ہے زمان و مکاں کی زنجاری  
نہ ہے زماں نہ مکاں، لَا إِلَهَ إِلَّا اللَّهُ  
(لَا إِلَهَ إِلَّا اللَّهُ)

*The intelligence is a captive of space and time. There is no space and time except Allah and there is no God except him.*

The existence and nonexistence are to be "observed" and are not only the reflections of a thought. Matter and energy are two aspects of the same reality; and are not different from each other. Matter is the name of the spirit when it is confined in time and space. Iqbal says in his "Khutbat" that the unit known as man is matter if we look at his action in the external world and it is spirit if we look at the goal to achieve reality. The efficient ego cannot complete its journey without the participation of the appreciative ego since this requires action. If man was made only of the spirit, he could not have demonstrated

his talents. So, to activate his efficient ego he was sent to the earth for a limited time (the duration of his life) to achieve the height of his creative talents and capabilities. The continuity of space time and incidents are for the development of efficient ego. The world is a place of action with the results and rewards/punishment are for the life hereafter. For every action there should be a reaction. The action in the world appears as reaction in terms of reward/punishment in hereafter.

فَمَنْ يَعْمَلْ مِثْقَالَ ذَرَّةٍ خَيْرًا يَرَهُ وَمَنْ يَعْمَلْ مِثْقَالَ ذَرَّةٍ شَرًّا يَرَهُ (سوره زلزال 9-99)

*Whoever does a speck of good he will get the rewards and whoever does even a particle of bad deeds he will get the punishment.*

الَّذِي خَلَقَ الْحَيَاةَ لِيَبْلُوَكُمْ أَيُّكُمْ أَحْسَنُ عَمَلًا (سور الملك 2-67)

*He has created death and life so that he evaluates who does good and beautiful deeds.*

In this verse death is mentioned before life. Death which we consider as the end of life is the end of the efficient ego but a beginning of the appreciative ego, where there is neither time nor space.

تیرے شب و روز کی اور حقیقت ہے کیا  
ایک زمانے کی رُو جس میں نہ دن ہے نہ رات  
(مسجد قرطبہ)

*What is the reality of your days and nights?*

*It is only a sheet of time where there is neither day nor night.*

*The person who measures the time of his efficient  
ego by only days and night is ignorant*

اے اسیر دوش و فردا اور نگر  
درد دل خود عالم دیگر نگر  
ورگل خود تخم ظلمت کاشتی  
وقت را مثل خطے پنداشتی  
باز با پیمانہ لیل و نہار  
فکر تو پیبود طول روزگار  
تو کہ از اصل زماں آگہ نہ  
از حیات جاوداں آگہ نہ

*Oh, the captive of days and night, see! In your own heart  
there is a different world. You sow the seed of darkness in  
your own day and measure the line as a time. Leave the  
measure of the days and nights. You measure only the  
duration of the day. You are not aware of the real time and  
the eternal life.*

The physical time which is one of the dimensions of the four-dimensional space time is relative. But pure duration has been called by Allah "His decree" which is the other name of pure duration. If is freed from the shackles of time and space and the alteration of day and night. To be present in the real time is to get free from the limitation of time. In the creative elevation one can look at reality and

create the continuity of time at any moment. This pure creative motion of time has a major impact on life. The force necessary to come out of the web of time and space is called "Sultan" in Quran. This is the height of creative evolution. In "Javed Nama" Iqbal has discussed in terms of the angel of time "Zardan" who had taken Iqbal on a tour of the skies.

برمکان و برزماں اسوار شو  
فارغ از پیچاک این زتار شو  
چشم بکشا بر زماں و برمکان  
این دو یک حال است از احوال جاں

*Ride on space and time and get yourself free of their bound. Keep your eye open over time and space. They are won by your feelings and thoughts.*

In his poem Iqbal has described the ascension of the Holy Prophet (S.A.W.S) in terms of Rumi.

از شعور است این کے گوئی نزد و دور  
چیست معراج؟ انقلاب اندر شعور  
انقلاب اندر شعور از جذب و شوق  
وا رہاند جذب و شوق از تحت و فوق

*It is only the conscience that decides near and far. What is 'Miraj' it is only a revolution of conscience. It is a revolution of dedication and anxiety. There, feelings are free from dimensions.*

The appreciative ego guides the efficient ego for action and their guidance is through intelligence, which is a medium between spirit and self, in between effective ego and appreciative ego. Intelligence is the inner dimensions of spirit, and this is nature as described by Allah.

فِطْرَةَ اللَّهِ الَّتِي فَطَرَ النَّاسَ عَلَيْهَا (سوره الروم 30-30)

*This is nature on which we have created man.*

This nature is the self of Adam which Allah taught the knowledge of names and nature is present in every self and is responsible for motion. Nature always guides towards good. When animal instinct overcomes this nature, man falls in the darkness of ignorance and the link between intelligence and spirit is broken. The extent to which man uses his nature and intelligence for his guidance, he approaches reality to that extent, the light of appreciative self. The purpose of the appreciative ego is to guide effective ego and this guidance results in practical and theoretical intelligence.

Einstein's special theory of relativity deals with time and space and motion and the general theory with matter, energy and force. These are the aspects where the mathematical equations can be applied. Roger Penrose and Stephen Hawkins who are experts in quantum geometry and quantum cosmology have come to the conclusion that when time enters the higher stages of consciousness, the continuity of past, present, future disappears, and only pure duration remains. Beyond this all the dimensions of mathematical computation are over; the region is incomputable. Pure duration is a creative action where there is no continuity. In the lower stages of



conscience, which is not different from animal instinct, the pure duration divides into continuous duration so that action can be divided. This is the flow of time which is divided by our conscience.

*Reference:*

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## The Holistic View of Universe in the Light of Iqbal's Philosophy

The reality of this world of color and life and of variation is a related and connected web of forces where there is organization, precision, proportion and shape. Many questions can be asked about this organization. Is it a result of an internal organization and force where there is no disparity or a gap? Allah says in the Quran in Sura Al-Mulk:

*Do you see any discrepancy in the creation of Allah? Do you find any gap?*

Discrepancy and gaps are results of a bad organization. If you look at the universe from any point, it appears perfectly homogenous, and this is also true of the energy and forces. They are all intimately related with a fine balance and ratio between their values.

The holistic view of the universe is based on the natural relationship between things and incidents. All the manifestations of nature are the manifestations of a single reality and exhibit mutual dependability. These are the signs of a single and indivisible reality. In our life, we are not aware of the unity of cosmos and divided the word into things and accidents. This is not the real picture of reality but is based on our experiments, derivations,

interpretation and convenience. If we consider our abstract theories as the realities of things and accidents, it will be only an illusion of our thoughts.

The holistic nature of the universe is a new finding in modern physics. Its importance and manifestation are very obvious in the microcosm. What appears as a holistic phenomenon to us divides up into connected realities on a minute observation. When we consider matter, all its constituents appear to be intimately related and connected. They are mutually dependent and related, and should not be understood as individual realities, they are a connected whole.

The mutual relationships of the components of nature are revealed to us as a quantum relationship. The theory appears beautiful in mathematical equations, but its physical model has not yet been understood in reality. According to Carter, quantum theory depicts the direct relationships in nature. The physical realm can be divided into the observer and the observed. The observed is an atom or its constituent particles and the observers are the equipment and one or more investigators. One of the difficulties in this theory is the fact that the observed is from the microcosm and the observer from the macrocosm. The classical laws of physics that are applicable to the components of macrocosm are not applicable to the microcosm and its particles. The consequence appears in the form of the uncertainty principle of Heisenberg. According to this principle an observer of the macro world cannot deduce two properties of the microcosm with the same precision at the same time. This is not due to either an error in the

experiment or a limitation of the instrument. This is a limitation imposed by the system on itself. If you determine the momentum of particle with precision its position becomes a probability. The meaning of probability is the fact that we can show the probability of existence of the particle in a part of space, but we cannot locate its precise position, this later probability is a basic principle of the quantum world which is equally applicable to matter and processes. The constituent particles of an atom have probable rather than a real existence.

The difference between the macrocosm and the microcosm is exhibited in the difference between the explanation of observed and the observer. Earlier, we describe on the basis of classical physics and the latter by quantum mechanics. The experimentalist and the experiment exert their influence on the observed by the way in which the experiment is set. The conscience of the experimental world, the observer and the observed are tied down as one unit.

If you change the condition of the experiment than the observed will appear in a different condition and cast itself according to the condition of the experiment. An example is the effect of the condition of experiment on the duality of light. If the experiment is setup in such a way that it would reveal light as a wave, it will appear as wave; if the setup force is to appear as a particle, it will appear as a particle. If the real condition of the observed is to be seen, it should be separated from the environment and condition that effect outcome of observation, which is difficult to achieve. According to Carter, whatever we

observe is the outcome of the influence of the conscience of the observer on the observed.

David Bohr has considered experiments on the holistic nature of the world especially the relationship between the inanimate and the objects. He discovered that there is a deep fundamental unity amongst the phenomena which prevails over the whole nature. As a result, the universe becomes a single unit. Matter energy and the external organization of life is a result of this internal organization. Bell conducted an experiment on coupled particles of light (photons) separated from each other by a light year's distance. He forced a change in the spin of one particle, the effect was immediately observed in a change in the spin of the other particle. The fact that is not understood so far is how the information about the change of spin of one particle is conveyed immediately to the other particle at one light year. This shows that information is connected with the conscience of particles can moved faster than the speed of light.

Determined only by interaction with other fields, the individual quanta are only the fundamental reality. The universe is not just a sum effect to its components but a complicated web of relationships. A so-called fundamental particle has no separate existence, but it is a part of the web of relationships which connects other things. The experiments are the reactions.

Is it our conscience that cause actions or the incentives to an action? Heisenberg said that science is not an explanation of feature, but it is a medium between us and nature. In the quantum theory, the role of an observer is

not only to observe but also to express the properties of the observed. The nature that we see is not true nature but is the reality generated in our minds by questions. The scientist does not remain an uncommitted observer, but he becomes a part of the observation to the external to which he can influence the attributes of the observed. Wheeler said that instead of observer we should use the word a “companion”.

The universe is bound in a single bond of conscience and its external arrangement is the result of an internal order. Instead of dividing nature into components we should look at the universe as a single holistic order. This thought or aspect of perception is the outcome of a broader thought where the different subdivisions of nature such as physical, biological, psychological, economic, and social sciences become part of a single relationship which is dictated by mutual dependence. This concept is called the Holistic view of nature where different thoughts, viewpoints, theories, models and social systems become a part of a single system. The Holistic view of nature provides such a web of an interconnected order where we deal with the whole order with its constituent's subunits. We do not discuss individually these subunits but the basic laws that bond them together. This view takes a step further when we discuss the living system. The cell is a collection of self-ordering molecules. The biological genera and types are different arrangements of the genes. The self-ordering of the species gives rise to sociological patterns such as the honeycomb of bees or the house of ants or the collected flight of birds. The same is true of the relationship

between individuals and the sociological order and sub sections.

The complete organizational unit of the universe is an outcome of inter relations and interdependence of the individual components. This phenomenon is called transaction. If these parts are separated it brings an end to the holistic order. The holistic unit is not just a sum of parts but with a new characteristic arising from the connection and dynamism of individual parts. In the physical world, matter is also a dynamic relationship of parts. In order to understand the order, we have to know the components of order. Thus, scientists and social scientists study only an aspect of nature or behavior or social order.

Self-arrangement is the basic principle of nature and this order bears within its folds, the individuality and total free will of the components. At every level of the order, we have a dynamic system in operation. This renovates and regenerates its components. The entire system is thus connected and related by dynamic, constant motion which retains the individuality of the components. If we look at the component cells of our body the cells of the body change in thirty days, the blood in three days and the brain cells in a month. In this way within a month our entire system is full of new cells. We hardly notice these changes since they do not affect our individuality which remains intact. In nonliving systems there is an exchange of molecules. In the molecule the atoms are linked by a constant exchange of electrons, the main reason for bonding. The individuality and wholeness increase with the complexity in structure. This is most complex in

humans whom Allah has named, the best of creation. Self-renewal is an important aspect of self-order. All the components of the world that proceed from order to disorder are accompanied by an increase in the entropy. They represent a closed system in which there is no exchange of matter and energy. Iqbal was inspired by the dynamism of life when he said:

مُخْتَه تَر هے گَرْدَشِ پَیْمِ سَے جَامِ زَنْدَگِی  
هے یَہِی اے بَیخَبْر رَا زِ دَوَامِ زَنْدَگِی  
(حضرتِ راہ)

*The cup of life is maintained by constant motion and oh ignorant.*

*This is the cause of the eternity of life.*

Iqbal further says:

تُو اَسَے پَیْمَانَهٗ اَمْرُوزِ وَفَرْدَا سَے نَہ نَآپ  
جَاوَدَاں، پَیْمِ دَوَاں، ہَر دَمِ جَوَاں هے زَنْدَگِی  
(حضرتِ راہ)

*You do not measure it by the measure of day and night.*

*life is eternal always in motion and always young.*

The self-renewal system is always orderly. They get this order from outside and use it in such a way that energy is created. This keeps the order intact. Such systems exchange energy and matter with the environment and are always in a condition of non-equilibrium. The difference between living and non-living system is not that



of conscience but that of equilibrium and non-equilibrium; it is the difference between self-renewal and reproduction. The living systems are more complex than the non-living. With the complication in order, their interaction and dependence on other systems also increases, and they become part of a multi central system. The order and the mutual support system of the environment produce patterns that are responsible for economic and social development. In the holistic view of nature, the environment is not different from nature; it is itself an order that has capacity for adaptation and evolution.

In living systems, the mutual relationship is totally cooperative and depends on co-existence. This is the theory of stratified co-existence where every level has its own order of complexity every level has its own units of self-order, which can become part of a larger unit. This relationship is akin to the branches in a tree that have interdependence and are interrelated. Every unit has its interaction with the environment and the complex inter-related units becomes part of the ecology. The order of one unit and level becomes the self-order of a higher level and this proceeds on. These are the aspects of the holistic order of the universe where the creator of the universe occupies the highest level. He is the Creator, the Designer and the Planner. He is the Creator of beautiful and perfect shapes, without any defect and discrepancy.

هُوَ اللَّهُ الْخَالِقُ الْبَارِئُ الْمُصَوِّرُ (سورة الحشر 24-59)

In self-renewal, organisms are created and destroyed, and the cycle of life and death goes on with the purpose of

the survival of the unit. Man lives to a certain extent and even if he is not sick his organs get degenerated and weak, and he finally dies. Death is not destruction but a survival of the holistic unit. Man is part of an environment, and the environment has also its life. If one considers the life of earth as a self-order, it is not an exaggeration. Take for example the atmosphere of the earth, there is a fixed ratio of oxygen and nitrogen whenever one goes on earth. This ratio of 75/25 is the perfect ratio to maintain life. The temperature of the surface of the earth is to maintain life. The amount of total salt in the ocean is 5% and the ratio of various elements in sea water is to maintain life. Sea water has the same ratio of elements as the human body, the ratio of calcium to magnesium, sodium to potassium and the other rare elements. This supports the fact expressed in Quran that the life has originated from water.

وَجَعَلْنَا مِنَ الْمَائِ كُلِّ شَيْءٍ حَيًّا (سوره الانبياء 21-30)

And Allah has created every life from water. The entire earth is a living unit and we become part of this unit. Our life and death are to maintain the eco-balance of this system. The living earth is part of the solar system which continues for some time till the life of the sun. The sun ultimately becomes a supernova shatters the element in the space and become ultimately a black hole. The star dust finally collects to give birth to new stars and planets. The elements of our body had originated from some star when it has burst as a supernova and will again become part of some new star.

According to the holistic view of nature, matter, energy and life are aspects of the self-organization that are

interconnected and interrelated. Allah asked us to maintain this eco-balance on earth.

وَالسَّمَاءِ رَفَعَهَا وَوَضَعَ الْمِيزَانَ أَلَّا تَطْغَوْا فِي الْمِيزَانِ (سوره رحمن 8-7-55)

*God has raised the sky and fixed the balance, do not disturb the balance.*

Matter and conscience are also parts of a holistic reality. The question one can ask is, "Is matter related to conscience?" According to Bohr, electrons can also assume the state of a wave, but this wave is a probabilistic wave possibly with conscience. Gary Zukav has stated that particles are centers for conscience and information. One of the wonderful properties of probabilistic matter is the fact that they penetrate through a barrier and are found on the other side of the barrier. This is called tunneling effect which has application in different areas of electronics. One is not certain whether this tunneling is an outcome of conscience. Energy and conscience are equivalent. At the lower level it is matter and at the higher level it is conscience. Iqbal designates these levels as effective ego and appreciative ego. The effective ego has relationships with matter and the appreciative ego is related to conscience and spirit. Effective ego is dependent on the continuity of time and space. The actions of humans are related to effective ego. But the appreciative ego is the domain of pure duration. There are stages of conscience, but every stage of the holistic system has conscience. This is an internal order which is the source of the external order. The progressive hierarchy of the systems is the relationship of the particles of atom with each other. The relationship between molecules, the

density of matter and the collection of molecules to form part of a metabolism. The metabolism has relationship with the living cell, the living cell which forms DNA and the genes and the species of plants and animals. Man, and his place in the ecosystem are also stages of conscience. The higher the complexity of the system the higher will be the level of conscience. The lower level of that is responsible for structure in the order they are the lower levels of the mind, and the most complicated order is mind itself. The ecosystem also constitutes a part of the state of the mind. The highest level of organization is a sum of the various conditions of the mind and the highest stage of the mind is conscience that rules over the body. Thus, by rule, conscience is the result of the highest self-order. It is with matter, and it is different from matter. It is a sum total of dynamic relationships as matter is an aspect of the dynamic relationships. Conscience and mind are organized awareness. This is an awareness which open the door of knowledge and information of the universe which is a dynamic order with its creator as total knowledge and "Aql" in such a way that every moment the creator has a new creative elegance, and this universe is a sign of his creativity.

Man concentrates his attention on a small portion of the cosmic. For this we divide our vision in small windows which express only one aspect of the cosmos. We form and extend theories based on this observation and want to reach a point of elevated vision where the universe looks to us as a single unit. With the help of our limited capabilities bestowed on us by Almighty God, we look at reality to the extent possible and possibilities within

limitations. Beyond this we seek the help of complicated mathematical equations our perceptions, and conceptions to uncover the hidden facts of nature. This continues throughout the life span of a person.

A new aspect of the anthropic principle was depicted by Ludwig Boltzmann in the concept of entropy. The increase in entropy is always an indication of the disorder of a system in going from order to disorder. The expansion of the universe is a change from order to disorder and results in an increase of entropy. The chances of the entropy to become negative are very small since disorder and inhomogeneity increases. Here the emission of the observed is the mental existence created by the perception, conception experience experiment and imagination of the observer. In the absence of an observer and a witness, this world would have been imaginary. The witness is thus the center of the universe in the absence of which there is no external existence of the world. The objects that are not in the conscience of the observer are non-existent. The objective existence of the universe is because of the mental perception of the observer. This theory is also supported by quantum theory according to which the existence of an object is only a probability. There are countless probabilities and in order that one of them becomes a reality it should be chosen by the deserver. When only this observation becomes a reality and the other probabilities disappear, the other wave functions just vanish.

In the micro world, the behavior of particles and as curtaining their properties depend on observation. If one wants to know whether light is a particle or a wave, then

one cannot see the behavior at the same time. If the arrangement is in such that one wants to observe light as a wave, then it would appear as a wave otherwise it will appear as a particle. The duality of the nature of light changes into any one aspect on observation is article or wave. Every object in the universe has conscience. The conscience of the observer, those of the instrument for observation and the observed are all linked up in a single bond of conscience. The real observer are the countless neurons of our brain. The conscience of the observer effects the conscience of the observed. Thus, what we see is not nature, but the nature created by our perception, observation and argument. Barrow and Tipler elaborated the anthropic principle that the universe produces, the observer and the observer the universe. Thus, man is at the elevated position that the power of this observation and experiments can produce reality. Iqbal says,

وہی جہاں ہے ترا جس کو تُو کرے پیدا  
یہ سنگ و نِشت نہیں، جو تری نگاہ میں ہے

*Your world is the world that you create.*

*it is not the stone and dirt that are in front of you.*

Iqbal further says:

عالم آب و خاک و باد! برّ عیاں ہے تُو کہ میں  
وہ جو نظر سے ہے نہاں، اُس کا جہاں ہے تُو کہ میں

*The hidden secret of the world of the water the earth and  
air are it you or me? That which is hidden from sight, its  
world is you or me?*

The answer is that the hidden cause of the universe is man; Allah is the creator of both, but the cause is the observer, the man; this observer was created by Allah and elevated to the position of the trust bearer of Allah on earth and also his vicegerent. The bearer of the lower from of conscience the earth the skies the stars and the plants could not bear is burden of responsibility. The bearer of higher conscience man had taken the responsibility and accepted the burden (Al-Ahzab). Iqbal says,

ہے ترے نور سے وابستہ مری بود و نبود  
باغباں ہے تری ہستی پئے گلزار وجود  
(انسان اور بزمِ قدرت)

Oh Allah! My existence and non-existence are because of your light your existence is the cause of the garden of existence.

According to the mental interpretation of the anthropic principle, the purpose of the universe of facts and reason and that of time and space is the existence of man. Man is the trust bearer of Allah.

گفت آدم؟ گوتم از اسرار اوست  
گفت عالم؟ گفتم او خود روبروس

*If you talk about Adam, He is one of the secrets of Allah  
and if you talk about the universe, it is before Adam, it is  
manifested by him.*

Matter and energy, matter and conscience, particle and wave, existence and non-existence are not absolute realities; they are the two aspects of reality. Our

conscience enclosed in the four-dimensional time and space, cannot perceive both at the same time and consider it as duality. Till the instant at which our conscience expresses any one of the aspects of reality, it remains a duality. The example of the duality is the rotation of an article on a famous wheel. If you keep your sight up it will appear up to you and if you keep your sight down, it will appear down. The duality vanishes with the observation of the observed. The obvious duality in our understanding of the attributes of Allah can be understood in the same manner. Allah is forgiver and He is also wrathful. He is kind and also harsh. These attributes are not different and for Allah, they are his Absolute Essence. The benevolence and wrath of Allah are the results of our action; they are not the duality in his essence. Whichever of these attributes our action and conscience deserve, that attribute is manifested by Allah.

There are two interpretations of the anthropic principle. According to the first interpretation, which is called the weak anthropic principle the universe does not exist without perception and conscience of man. This is one aspect of the reality. It is a fact that the world existed before the appearance of man on earth. The life of the universe is about 15 billion years and that of the earth about 4.5 billion years. Man came to earth according to the most liberal of the estimate about 50 million years ago. The order of the universe and its precise laws were there much before the appearance of man. Then what is the reason for the creation of a conscious thing. According to Carter & Wallis, the conditions of the universe, the precise order in the arrangement, the inter connectedness in the laws of the universe are such that they were



responsible for the creation of a conscious life being without this precise order in other parts of the universe there is no evidence of any existence of a conscious life so far and the absence of such an order in this universe we would have been non-existent. The universe gives the truth and responsible for the conscious being. The harmony in the order of the universe and its condition, the alternate aspects of matter and energy, the cosmological order in the galaxies, clusters, stars and planets, their alteration of reasons, day and night, maintenance of the proper temperature an atmospheric pressure, the value of the gravitational constant, the ratio of oxygen and nitrogen in the atmosphere and the factors responsible for the maintenance of human life. All these conditions were existent in this universe and on this planet. The geological and cosmological time frame for the begging of the universe, to the creation of earth and the existence of other forms of life on earth before the arrival of man was such that it produced the right conditions on earth for the maintenance of life. It is the arrangement made in a guest house before the arrival of the guest to take care of his comforts. The conditions in the universe are the phenomenon of nature signs of God in the cosmos and man is asked to study them, so that he gets a mastery over the forces of the universe.

لَنْ فِي ذَلِكَ لآيَاتٍ لِّقَوْمٍ يَعْقِلُونَ (سوره الروم 24-30)

*There are the signs for those who have intelligence.*

Our universe that supports life has four dimensions, three of space and one of time. If instead of four, there were five dimensions of space, then the gravitational force would have followed the inverse cube law instead of the inverse

the square law and would have become very weak. In this case the clustering of matter to form the galaxies and stars would have been impossible and the universe would have been in the form of gas. If the dimensions were less than four, then there would have been a tremendous increase in the gravitational force and every object would have been squeezed to "black hole". The force that keeps the particles of an atom together is called the strong nuclear force. It is only attractive and acts at very short distance. If the value of his force was greater than what it is, then everything would have been converted into heavy elements and the hydrogen and helium that constitute the fuel in stars would have been all consumed.

*Reference:*

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1. John D. Barrow and Frank J. Tipler; *The Anthropic Cosmological Principle* (1986).
2. Carter, B; Large number coincidences and the anthropic principle in cosmology (1974)

## Belief and thought in the Light of Iqbal's Poetry.

There are four steps in the construction of self. They are belief and thought, intention and action. Belief shapes the thoughts and provides directions and path, to all levels including intention and action. For belief Allah says:

وَاعْبُدْ رَبَّكَ حَتَّىٰ يَأْتِيَكَ الْيَقِينُ (الحجر 99-15)

A prayer is the highest training ground for man. Prayer kindles the thoughts and directs it to an infinite stage and destination and removes from the heart the veils of ignorance and sin. It allows in the existence of man the nurture of good habits. All the creations on this earth continue and proceed towards the journey of perfection. The perfection of man is in the development and progress of the society which depends on an attainment of order in the system. This is possible only when the individuals who control society follow the rules and regulations, understand their responsibilities and avoid friction and clash of interest. Prayers and good actions are responsible for the development of positive potential in humans. When these come to their perfection, they kindle high capabilities and potentials proceeding to higher levels of perfection, in the stages of belief. Belief is the zenith in the capabilities of a person achieved through the prayers. Belief in God is to be contented on the will of Allah. It

depends on him and to bow over in submission and surrender to Allah and to surrender one's deeds and actions totally to Allah's wish.

Since belief has a direct bearing on the action of a person, one of the important aspects of the belief is action, to have confidence is one's goal and to achieve them with persistence and constant struggle. In order to achieve his aims, one should not usurp the rights of others or to hold someone else responsible for his actions. The perfection of belief is to thank Allah on one's achievement and to exercise patience in the case of failure. Thus, a belief is mental tranquility, and it covers the entire existence of man, when he does not feel himself forsaken. Allah says:

أُولَئِكَ لَهُمُ الْاَمْنُ وَهُمْ مُهْتَدُونَ (انعام 6-82)

*These are the people for whom there is peace and tranquility, and these are the people who are guided.*

Peace of mind and tranquility are the signs of belief. Allah says that he sends down tranquility to the hearts of the believers that they have some faith added to their faith and Allah is the knower of what is in hearts of heaven and earth and Allah is knowing wise.

To be firm in belief is faith added to the faith and to achieve tranquility. To understand belief, it is important to understand its opposite which is doubt. To have no doubts is the perfection of belief. In the opening statement of Quran Allah says:

ذَلِكَ الْكِتَابُ لَا رَيْبَ فِيهِ هُدًى لِّلْمُتَّقِينَ ۝ الَّذِينَ يُؤْمِنُونَ بِالْغَيْبِ (بقره 2-2)

*This is the book where there is no doubt a guide to the pious and those who believe in the unseen. To believe in the unseen is the highest level of belief.*

Allah further says in Quran:

إِنَّمَا الْمُؤْمِنُونَ الَّذِينَ آمَنُوا بِاللَّهِ وَرَسُولِهِ ثُمَّ لَمْ يَرْتَابُوا (الحجرات 15-49)

*The believers are those who believe in Allah and his apostle and that they do not doubt.*

If there is an equal probability of a thing to be or not to be then it is called doubt. If there are greater chances of its being and less of its not being, then it is conjecture. The meaning of belief is 100% existence and being of where there is no specter of a doubt. If the belief is not firm, then the avenues of action are paralyzed. To have a total belief in the book is the highest level of faith. Doubt and hesitation are the diseases of ignorance. Doubt is akin to blindness. A blind person doubts about his surroundings since he cannot see the nature.

If person and his mind and heart are in favor of something and then if a doubt arises about the thing, then it is the disease of the heart, the blindness of faith.

There are three stages of belief in Quran. Belief by Knowledge, belief by sight and belief of the reality. The first stage of belief by knowledge is the stage when a man behaves a thing or based on evidence, logic and arguments and has not seen the thing. For example, if one observes a

smoke, it is an indication of fire. This is lowest level of belief. The second stage is seeing and believing for example when he actually witnesses the fire. Belief in reality is that stage of belief when man becomes a part of the phenomenon when he enters fire and feels it. In Iqbal's philosophy belief is the belief in reality which Iqbal calls firm belief.

یقین محکم، عمل پیہم، محبت فاتحِ عالم  
جہادِ زندگانی میں ہیں یہ مردوں کی شمشیریں  
(طلوعِ اسلام)

*Firm belief constant action and love of the conqueror of the world (the Holy Prophet) are the weapons for the brave in the struggle of life.*

Firm belief is the equivalent of belief in reality and with this constant action and the love of the Holy Prophet are the weapons and the means for brave. Belief accompanied by constant action even though the action may be less is better than the constant action without belief. Iqbal further says,

جب اس انگاروِ خاکِ میں ہوتا ہے یقین پیدا  
تو کر لیتا ہے یہ بال و پر رُوحِ الٰہ میں پیدا  
(طلوعِ اسلام)

*Belief gives such courage to the mortals that they acquire the wings of the angel Gabriel to fly to the highest point of the "Sadaratul Muntaha".*

Knowledge and belief are the two most important bounties of Allah. The position of belief is that important level of knowledge where the aberrant is converted into observed. This is the level of believing in unseen in Quran. According to one of the Hadith of the Holy Prophet if there is knowledge there should be application, if there is a belief there should be action. Do not even change your knowledge to ignorance and belief to doubt. The opposite of belief is doubt and whenever there is doubt and doubt over doubt it is a sickness of heart. Iqbal says:

*The Eagle of Knowledge will be caught in your web.*

If you have belief, then do not be a captive of doubt and uncertainty. If you desire action, then make firm your belief. See one, search for one and get attached to one.

To see one and getting attached to one is following the best trails and of the actions of Holy Prophet, where the Quran says, "beautiful action".

There are some conditions for the soul of a person. It is either dead or alive, awakened or asleep, healthy or sick. The life of the soul is knowledge and ignorance its death; being dormant is the sleep of the soul and its awakening is knowing Allah. The health of the soul is belief, and its disease is doubt. When man gets the means of health of the soul, which is his belief then the reality of heart removes its contaminations of disease and find itself on the road. According to Hazrat Ali, give illumination to your heart by knowledge and strength by your belief, the strength of your heart is belief, the strength of the spirit is belief, the pinnacle of knowledge is belief, the life of a

nation is belief and the builder of the faith of a nation is belief.

یقین افراد کا سرمایہ تعمیرِ ملت ہے  
یہی قوت ہے جو صورتِ گرتقدیرِ ملت ہے  
(طلوعِ اسلام)

*The belief of the individuals is the wealth for the construction of a nation. This is the force that shapes the destiny of nation.*

The basis of belief according to analysis is the fear of Allah, hope and love without knowledge one cannot get the fear of Allah. Allah says,

إِنَّمَا يَخْشَى اللَّهَ مِنْ عِبَادِهِ الْعُلَمَاءُ (فاطر 2-35)

Fear of Allah is the level of acceptance of the will of Allah, a level which gives belief and frees a person from fear. The second factor for belief is hope; without hope there is no belief. The being in whom one has confidence is also the center of hope, and the secret of hope is demand. Demand from the being where the treasure is always bountiful. Hope and demand are both aspects of prayers as expressed in the verses of Quran:

وَاعْبُدْ رَبَّكَ حَتَّىٰ يَأْتِيَكَ الْيَقِينُ (انعام 82-6)

The third factor of belief is love. Love is the doorway of belief, if there is no hope, and then there is no belief and no fear of Allah. Therefore, Iqbal gives emphasis on the love of the best trails, the Holy Prophet and his Sunnah,



three factors of the level of self are belief, action and love. Belief is related to knowledge and fear of Allah. Action is related to perseverance of hope and love is related to as far as action goes in the individual and collective life. Perseverance and steadfastness are very essential. Allah says:

يُثَبِّتُ اللَّهُ الَّذِينَ آمَنُوا بِالْقَوْلِ الثَّابِتِ فِي الْحَيَاةِ الدُّنْيَا وَفِي الْآخِرَةِ (ابراهيم)

(14-27)

Allah confirms those whose belief conforms to the signs of the world in this world's life and in the hereafter and Allah causes the unjust to go astray, and Allah does what he pleases. Allah gives stability and steadfastness when they are firm in their saying. The task should be free from all kinds of confusion and doubts. This promise of stability is only for those who are believers and firm in their action and speech and do not change them. To be firm in action and saying and steadfastness is not easy to overcome in life and to achieve this trail one has to have strength of character and self. Even in changing conditions and difficulties one should not change his mind and all his actions should be based on the truth. The absence of steadfastness gives rise to doubt and that is injustice Allah says:

وَمَا يَدَّبُّ الْقَوْلَ الَّذِي وَمَا أَنَا بِظَلَّامٍ لِلْعَبِيدِ (سوره ق 28-50)

*My word is not changed, and I am also not unjust to the servants.*

The change of word is doubt and doubt is injustice, steadfastness and stability of action is compared in Quran to a sacred tree whose roots are firmly embedded in soil

and its branches spread in space. It gives fruits all the time (Abraham 25, Sura 14). Its opposite is a wicked tree whose roots are unearthed and has no stability. Thus, parallel of a wicked tree with no stability is that of doubt that has no base.

Belief is related to knowledge which is not material but casts its influence on matter similar to a magnetic field around a magnet. Information and knowledge are the components of time and space, there are never lost knowledge affects directly mind and self. Since they are not material mind can affect matter. According to the Quantum theory, material and mind are aspects of the same reality, they are not separate. Descartes famous statement that "I think, therefore I am", shows that the existence of matter is because of the thought. Material and mind appear to be separate like matter and energy, but they can exert influence on each other. Iqbal says:

’وَجُوِدِ حَضْرَتِ اِنْسَانٍ نَهْ رُوْحٌ هُوَ نَهْ بَدَنٌ  
(آدم)

The existence of man is neither matter nor spirit, thus knowledge affects mind and conscience. What we know, how we know and about whom we know changes the characteristics of the known and knowledge of the knower, this observation is intimately related to the conscience of the observed. Thus is the phenomenon of the Quantum world where knowledge changes the color of the mind and also changes the virtual reality of the observed since we are extracting information from it. In the physical world as there is an exchange of matter and

energy in the level of the conscience, there is exchange of information.

Recently there is much progress in the Quantum physics of the self. When mind and self-become part of matter they do not exist separately but become part of a holistic reality. Where the self is not lost this is the situation where the material reality progresses as a virtual spiritual reality. Here the knowledge of the self is secret and in this condition knowledge and existence becomes one and loses the uncertainty. This is the condition of the real belief. In this second stage where the self-interacts with other self's or matters and forgets that it is a part of the holistic unit, it becomes part of the matter and exchanges information with the surroundings. Thus, information at the Quantum level causes uncertainty. According to Heisenberg's theory, of uncertainty one cannot determine accurately two properties of Quantum particle at the same time. If one is observed precisely the other becomes a probability. This uncertainty is not due to any defect in measurement, but it is the law of nature. If we consider self or mind as consisting of virtual particles, then its interaction with matter is with real particles. In the first case of a holistic existence, the real and the virtual particles become one, in the case of an exchange as is the real case, it is either real or virtual, not both and information is exchanged.

The two conditions of the self, holistic or interactive were conceived by Iqbal in the last century. Iqbal considers two aspects of the ego; one was named by him as "efficient ego" and the other "appreciative ego" efficient ego has relationship with matter and its function is to

create contact with time and space. The efficient ego is a space and time continuum as is manifested as an accident in time and space. The equivalence of effective self in Quantum physics is the condition of the self as virtual particles interacting with matter as real particles. The information derived is fuzzy and subjected to Quantum uncertainty and probabilities.

When self-belief parts of matter act as a holistic unit of a holistic reality, its equivalence is to appreciative ego in Iqbal's thought and this is totally a conscious experience, the holistic existence of the self or the appreciative ego and it is in the pure duration. According to Einstein's general theory of relativity, this is the condition where time and space continuum disappears and the past, present and future appear as a single point. The uncertainty totally disappears. This conscious knowledge becomes real belief at the spiritual level. In order to achieve this state one has to go through the rest of prayers and the evolution of spirit.

Iqbal was the first to introduce the concept of "pure lover", Ishq in his philosophy. Ishq according to Iqbal is not just physical love or affection but it is used in a very broad sense of determination of causes and action, focused hurt on Allah, the total dedication achieves the target and with a firm belief it is spiritual and with a purpose and has the status of a value in life. If we consider "Ishq" as belief in latter, then many complications of the philosophy of "Ishq" are gone. Iqbal says:

عشق سراپا یقین اور یقین فتح یاب

"Ishq" is total belief and thus belief is conquering khaiber where the stage of "Ishq" and belief is considered by Iqbal as the first leader. The entire basis of religion is on belief, in the absence of belief it just becomes a conglomeration of ideologies. All the counter parts and the substitutes of religion proposed and ideologies with no part played by belief.

عقل و دل و نگاہ کا مُرشدِ اولیں ہے عشق  
عشق نہ ہو تو شرع و دین بُت کدہٴ تصوّرات  
(ذوق و شوق)

*All the dynamics of nature and the manifestation of the knowledge are the expressions of Ishq.*

عشق کی گرمی سے ہے معرکہٴ کائنات  
علم مقامِ صفات، عشق تماشاۓ ذات  
(علم و عشق)

According to Iqbal perfect belief is the key to the completion of ego and the perfection of human being lies in the fact that is suffered overcome all the obstacles that come in the way of completion of ego and gets an authority to rule nature. The nature offers obstacles to man, but the suffering of man over nature is in his capacity to crowning these obstacles and creating his creative capabilities. In this win over nature man gets help from the trail of Ishq.

در دشت جنون من جبریل زبوں صیدے  
یزدان بہ کمند آور اے ہمت مردانہ

In the forest of my madness, Gabriel is a captive,  
Oh, the gallantly of man overcome nature by your trap.

When the thoughts of Momin or believer goes through the paths of true love "Ishq" when the wing of nature searches paths of perpetual action, the thought of a believer is remembering Allah and to think about the creation of the universe. These are the targets of those with vision and thought where the routes to conquer nature become evident. Allah has distributed vision and thought to those who remember Allah on all occasions. Silly it is to stand and recite and not to wonder about the creation of the cosmos and to think that God has not created them in vain. (Al Imran (19) Sura 3). In "Payam-e-Mashriq" Iqbal says:

*My thought creates new ideas at all times.*

*It is captured in one trap if released from the other.*

*Reference:*

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## Intention and Action in the Light of the Thought of Iqbal and Science.

Intention and action play a very important role in the shaping of ego. These are the two important aspects of human nature that have a direct bearing on intellect and neutrality. The minerals and geo systems have no freedom in their action. The pattern is already set for them. In the same manner the future is frozen for other physical components of the universe, they are interwoven in the web of time and space. The actions of plants and the majority of the animals is a part and consequence of their instinct. There is no part of conception and perception in them. But man can have a full control over his nature and the aspects and forces of nature. The laws of nature follow very precise rules displaying the capacities and action indebted in their nature. Man studies these forces and nature presents many alternatives to him and he has full power to accept any of these. The freedom of man however is trusted to a certain extent. Though he is free from all the internal mechanical constraints which are the fate of other creations, externally his free will is bound within the framework of the laws and working of nature over which he has no control. These are quakes, storms, eruption of the volcanoes that can be predicted but cannot be stopped. He can only hold protective measures

against them. The internal freedom of man is an implicate order whose extension and relationship with other parts of nature gives rise to a clear explicate order. Iqbal says:

ناچیز جہانِ مہ و پرویں ترے آگے  
وہ عالمِ مجبور ہے، تُو عالمِ آزاد  
(اسرارِ پیدا)

*The world of sun and moon are insignificant before you.*

*It is a determined world, but your world is free.*

The free world of man is the implicate order of his intention which cannot be determined, and the determined world is the world of the cosmos that forms an explicate order. Man has been given limited powers for intention and action but along with his freedom are also the constraints of duties, obligations and responsibilities. Freedom and responsibilities are tangled with each other. If man was also a captive of explicate order as are nature and its laws, then he would have been free from responsibilities, and this could have affected the values of life. This could have perturbed his social equilibrium and there would not have been any difference between man and animal. But man is distinguished from other beings by his freedom of intention and action. He can distinguish between good and bad and act accordingly. He can maintain the moral standards and the value system.

The internal freedom of intention and action are subjected to the obligations of the society and restrictions of the religion. Rules are designed for our social responsibilities and obligation as to what we can do and



what we cannot do. If we disobey the law on the pretext that we are free to do anything and our dislikes and likes are more important, then what we witness in the society today is the wrong use of individual freedom which are all those materialistic views where no place for human values of conscience is. This materialistic individualism gives place to narcissism where a person thinks that his likes and dislikes count and the rest is nothing. The relationships with other human beings are most likely, external and are based on rotation based on necessity. This concept is deprived of the idea of sin or fear of Allah and man ultimately turns into an animal.

The other aspect of the internal freedom of man is determinism that the free will of a person becomes a mirage. In this concept there is neither the freedom of intention nor free will. The predecessors of the view were the Greek Philosophers who believed in fate and determinism. A parallel concept of 'time' as the sole deterministic factor was prevalent among the pagan Arabs. They believed that their actions have no meaning. Nobody kills except time.

وَمَا يُنَلِكُونِ إِلَّا الدَّهْرَ

Conditions are present and whatever we do is not in our hands. The Protestants believe that our conditions are never free since a holy destiny is behind them. Things happen because of the omnipotence of Allah. Islamic philosophers, however, believe that man is neither totally helpless nor totally free. Our intention is limited in the broad framework of destiny of Allah, and it should be directed in the light of our intellect and the decree of Allah.

Iqbal says:

تقدیر کے پابند نباتات و جمادات  
مومن فقط احکام الہی کا ہے پابند  
(احکام الہی)

*The followers of the fate are the plants, the rocks,  
the mountain, who depends only on the decree of God.*

Quran mentions two types of intentions, the intentions of Allah and the intention of Satan. The decision between the two intentions is directed by one intellect.

We have shown both the way of either thanking God or disobeying God. The greatness of man and his superiority on all other beings is because of the free will. He should use this freedom to decide between good and bad and this is the Holy trust of which man is the bearer.

Iqbal considers intention and action as the key to the cosmos, and this is the destiny of man. In the language of Quran which Allah says:

ذٰلِكَ التَّشْدِيْرُ الْعَزِيْرُ الْعَلِيْمُ (سورہ یسین 36-38)

This is the decree of the all-powerful and all-knowing Allah, it is an evolving, dynamic, holistic view of nature. This order is free from cause & effect and is an explicit order of the universe which we feel.

This order changes into the nature of the components and the implicit order. God has created everything and has decreed attributes, properties then nature. The decrees of Allah are the hidden probabilities in a thing which is expressed without any external pressure. Iqbal says:

عمل سے زندگی بنتی ہے جنت بھی، جہنم بھی  
یہ خاک اپنی فطرت میں نہ نوری ہے نہ ناری ہے  
(طلوعِ اسلام)

*It is the action that creates either Heaven or Hell.  
Thus, earthy being by nature is neither a destined dweller of  
Hell nor Heaven.*

The future of anything is a frozen reality in the web of time and space which cannot be changed. But for man the future is not frozen, they are probabilities that cannot be predetermined. For man it is destined that he should either carve himself according to the forces of nature or to shape them to fall in line with his limits and targets. This is the dynamic fate of man which is a guide by Allah and in the entire mechanical world of Newton man has neither place nor can he fulfill any role in a design of the universe except to yield himself useful into mechanical forces of nature. This view gave birth to materialism and atheism that matter controls over the universe. Bertrand Russell had once quoted that in the face of the distinction between good and evil, matter is progressing. This view promotes inaction, the weakness of intention and ruthless expediency. Man is misguided by the assumption that it is immaterial what he thinks or does if everything is predetermined; he is just a part of the mechanical determined system.

In classical physics nature of man is mechanical where there is no place for conscience and self.

The founder psychologist Freud had commented that man has not control over his psychology meaning thereby

that our conscious decisions are guided by unconscious forces. Our decisions are just a mirage with no part of conscience in them. This scientific determinism has affected our psychology to an extent that the freedom of intention is an article of doubt and suspicion. The harmful effect on the freedom of thought has also affected the freedom of our choice. For human psychological behavior Freud thinks that the behavior of man depends on the neurons or the compulsions beyond the control of a person of which he has no knowledge. Morally he is not responsible for his behavior. Our current psychological thinking is a mine of deterministic theories and ideals mostly derived from materialistic philosophy.

The idea that the freedom of intention is a function of instincts, or it is dependent on history negates the conscience. Allah does not change the fate of a Nation unless they pray for a change in themselves. If man makes suitable changes in his action and self, then that can change his fate; which is a Holy decree?

تری خودی میں اگر انقلاب ہو پیدا  
عجب نہیں ہے کہ یہ چار سو بدل جائے

*If a revolution is brought in your ego,  
then no wonder the surroundings will change.*

By his intention and action, a man can mold himself in any way he likes. Though he is not totally free, he is free to a great extent because the forces of nature are made subservient to man. Allah's knowledge has all the probabilities which take place in nature but the freedom of action of a man is not affected or confiscated by Allah's

knowledge. His freedom of action can turn Allah's probabilities into realities. If one destiny is not suitable for man, then Allah provides another destiny to him. This is the height of the ego of man that Allah converts his chosen probability as his final destiny.

خودی کو کر بلند اتنا کہ ہر تقدیر سے پہلے  
خدا بندے سے خود پوچھے، بتا تیری رضا کیا ہے

Raise your ego to a height that God should ask man about his intention and likes. In Iqbal's philosophy future is an open probability which is a creative and dynamic reality in the holistic essence of Allah. It is always in the form of a probability and not set incidents and actions with determined features.

Another form of determinism is mechanical determination in classical science which has affected the freedom of our intention and action at two places. One is the position of man in the universe and the superiority of a human being. According to the current theories of sociologist and psychologist the behavior of a person is a consequence of environmental effects, wealth, his family and friends and other sociological and economic factors. Man is not basically bad or corrupt, but he is depressed. All these factors result in the lack of responsibilities in human beings. The political and social implications have a long-term effect, and they are already a part of the judicial system. The famous American lawyer, Clarence Darrow had presented arguments in the defense of criminals that whatever a criminal does is beyond his control. He is subjected by forces beyond his control. If we accept these views that everything is predetermined with no part

played by human conscience, then fate takes the place of mechanical determination. The importance of God is not more than mechanic who had set the universe in motion and now has no part in it, if such is the case then the earth is not the place for beings but a Parra soma of moving mechanical dead creatures. Thus, we are dead human beings since life is not dynamic and is in the subservience of the cosmos. Iqbal says:

فقر مؤمن چیست؟ تسخیر جهات  
بنده از تأثیر او مولا صفات

*The pride of a believer is the subservience of the life. And because of its effects a servant gets the characteristic of a master.*

Scientific determinism has also affected human ego. One cannot deny human ego based on experiments and observation. In classical physics ego has no place. Since, it has only laws without an absolute authority. The present Quantum model has explained human conscience. It is free from the web of time and space where everything is predetermined and where the future is frozen. The human ego is the secret of coherent Quantum condition that has designated us as Bose-Einstein condensate. Intention causes a vibration in this condensate which spreads over a large part of the brain. This vibration also causes a vibration of the neurons in the brain. According to classical physics this vibration can give rise to a predetermined intention. The uncertainty of the Quantum system gives rise to many probabilities as Quantum wave functions. In these wave functions of the conscience after the selection

of one possibility the other disappears and the single selected probability becomes a reality and provides a path for ultimate action. The Quantum nature of intention and Quantum uncertainty provides the incentive for the free will.

As far as, our thinking goes we are all effected by Quantum uncertainty. Light is a particle and a wave. Out of these two possibilities one that is a result of our observation and action becomes a reality. In the same manner the path of good and evil are always open. Allah says:

وَهَدَيْنَاهُ النَّجْدَيْنِ (البلد 10-90)

We have shown them the two paths, but man must select one of them, good or evil is his personnel choice. The selection based on animal instinct is the bad self. (Nafs Ammara). Which directs a person to evil. Allah helps in the selection of good and the self-responsible for this is the accusing self of (Nafs Lawwama) Human will is the selection of any one of these possibilities. Allah says, he succeeds who purifies his soul and he drowns who pollutes it.

The free will according to Iqbal is human ego. Ego has many possibilities that are levels of conscience. Each level of conscience which materializes provides an avenue of action. The Quantum possibilities are the lines of conscience, and the bright point of ego is the intention and selection of the average action. Iqbal says:

خودی وہ بحر ہے جس کا کوئی کنارہ نہیں  
تُو آئو سے سمجھا اگر تو چارہ نہیں

*Ego is an ocean with no banks, if you think it to be a small pond then it is a defect of your thinking.*

In the external physical world Iqbal believes in determinism but in the world of personnel conscience he believed in free will. The ego is the Quantum uncertainty that creates its own world, and this is incentive for the freedom of the ego.

اپنی دُنیا آپ پیدا کر اگر زندوں میں ہے  
سرّ آدم ہے، ضمیر کُن فکاں ہے زندگی  
(حضرتِ راہ)

*Create your own world if you are alive.  
Life is the secret of Adam and the heart of be and be it is.*

Quantum possibilities are those vague pictures which we turn into reality by our conception and perception. A good verse or the work of art of an artist is always in the language of sign and expression. By concentrating one's thought one can get a plethora of meaning from such work of art or poetry. These vague pictures and thoughts are the basis of our creative ability. Creativity without freedom of will and action is impossible. Every perception and conception convert our fuzzy ideas into reality. The concentration of thought will enable the conversion to a single reality of many possibilities and the other possibilities disappear. Thus, every concentration of thought is the source of a decision or choice. Since it



cannot be predicted as to which of the possibility, we will concentrate our thought. Here the thinker and thought are both subjected to the uncertainty. But the choice is the outcome of the concentration of thought.

This point can be explained by a simple example. When in my leisure hours I am bored of sitting then I have many possibilities to overcome the boredom. I can sit outside, I can relax, and I can read a book, drink tea, see a program on television or talk to a friend. My boredom provides possibilities to me but the selection of one of them to terminate my boredom is my own choice. After our selection the other possibilities disappear. My mind offers difficult reasons for my selection and for each selection there is a valid reason but to select one of them is my Quantum freedom. Based on the Quantum nature of our conscience, we can explain our choice and the conditions under which we made the choice. All these choices are free because their conscience levels are all uncertain.

The question arises, if I am free in my selection then why is it that sometimes a wrong selection is made? So, with what exercise can I overcome the Quantum uncertainty and how is my freedom responsible for my action? The answer to the first question is that the right choice is the outcome of rationality. Rationality demands that I should be aware of the consequences of my decision. The freedom and responsibilities are both outcomes of my rational capabilities.

For every selection there is a reason which explains the selection. For other selections there may be other reasons. For example, if I am a smoker and want to quit smoking, I

have two reasons: The first is the long-term ill effects of smoking on my health and the reason for not quitting is smoking removes my mental tension. So, selection in out of the two contradictory reasons is not my selection but they are the intellectual and rational reasons. Out of the two possibilities the selection is of my conscience whether the short-term tension of my mood is more important or the long-term damaging effects of smoking on my health. The wrong choice of not quitting is short term choice which requires less energy and efforts. The other choice of quitting requires efforts since I had to overcome my habit of smoking and overcome attraction. To leave the pleasures of the present for the long-term benefits of the hereafter is also a war against self. This power has been given to man in the form of his free will. To think about the sin and the hereafter fighting against the self is the highest example of the holy war. This requires energy and will power. Usually, a low energy path is taken which is the wrong choice.

Our correct choice also depends on the environmental effects and our experiences of the past, but based on rationality the correct choice becomes easier, it builds the balance towards the right choice but is not responsible for the outcome. Man can control Quantum uncertainty based on his correct reasons. Our facts can enlighten the results, and it sets a direction for the direction of the free will.

The Quantum reality of our conscience is we take the path where there is the least expenditure of thought and energy. This is called habit and most of the part we are the slaves of habit. Habit is the cause of the mental state which requires less mental effort. Habit is the reflection of

a particular work again and again which becomes lazy in the long term. It is very difficult to form a habit but breaking the habit is even more difficult. It is therefore important to acquire good habits right from the childhood. Habit cannot induce creativity since there is no question of any selection. A slave of habits loses his creative capabilities. The advantages of habits are that if we make the routine duties of day to day as our habits then we can use the potential energy of the mind for creative activities; good habits become a criterion for creativity.

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## The Ascension of the Holy Prophet in The Light of Modern Science and The Philosophy of Iqbal

The event of "Miraj" is the ultimate triumph over the limitation of time and space and is an expression of the freedom of human will vis-a-vis nature. The triumph over time and space in the language of modern science is such that man can travel his future or time and space can be distorted in a way that he can time travel and enter the past. But this type of travel allowed by the distortion of time and space or by considering between two universes is the venture of this universe and alike a phenomenon of multi verse subjected to events and incidents in multi dimensions of time and space. This has its own limit, the time being the incapacity of matter to go through an infinite gravity where time and space stop to a point. Matter cannot go beyond a certain point unless it is propelled with extraordinary force to overcome the infinite barrier of forces. Allah says in Quran:

يُمَغْشِرَ الْجِنَّ وَالْإِنْسَ إِنِ اسْتَطَعْتُمْ أَنْ تَنْفُذُوا مِنَ السَّمَوتِ

وَالْأَرْضِ فَانفُذُوا إِلَّا بِسُلْطَنٍ (سوره الرحمن 33-55)

*Oh, the group of Jinn and Human it is possible to get over the edges of time and space, but you cannot do it without a force 'Sultan'.*

The spirit wants to get free from the objective limitations of time and space. To be limited is an obstacle for spirit. But with "Sultan" is the force provided by Allah to the perfect Man (S.A.W.S) who overcomes the hindrance of time and space Iqbal says:

گفت اگر سلطان ترا آید بدست  
می توان افلاک را از هم شکست  
هر زمان و هر مکان آسوار شو  
فارغ از پیچاک این زتار شو

*If the power of "Sultan" is allowed by you then you can conquer the heavens. So, ride on the (vehicle) of time and space and overcome its limitations.*

Based on this strength given by Allah the perfect man (S.A.W.S) overcomes the boundaries of the universe and that of time and space and enters a domain of time and space when time is a pure duration. According to the general theory of relativity this is a portion of space where time stops and there are only possibilities, and every possibility appears in the form of a new dimension of time and space. This is in Quran, the duration of "Dahr" which is one of the possibilities of creation and our Prophet (S.A.W.S) is the mercy for all universes.

وَمَا أَرْسَلْنَاكَ إِلَّا رَحْمَةً لِّلْعَالَمِينَ (سوره الانبیاء 107-21)

The ascension journey of the Holy Prophet (S.A.W.S) in the duration of "Dahr" was a journey through possibilities. His companion in this journey was Hazrat Gabriel. The

strength to go from the universe of time-space to a time-less universe was given by Allah through the sublimity and elegance of his light "Noor". This strength is referred to as "Buraq". This vehicle has an infinite speed not attachable by material particles since these particles cannot travel more than the speed of light. Thus, Almighty Allah says about this journey in Quran:

سُبْحٰنَ الَّذِيْٓ اَسْرٰى بِعَبْدِهٖ لَيْلًا مِّنَ الْمَسْجِدِ الْحَرَامِ اِلَى الْمَسْجِدِ الْاَقْصٰى  
الَّذِيْ بَرَكْنَا حَوْلَهٗ لِنُرِيَهٗ مِنْ آيٰتِنَا اِنَّهٗ هُوَ السَّمِيْعُ الْبَصِيْرُ (سوره اسراء 1-17)

Time travel is the most popular topic of today's contemporary physics. The boundary of world time is possible according to the general theory of relativity. According to general theory of relativity gravitation is the curvature of time and space. Severe curvature of time and space comes in black hole where the gravity is enormous due to high density of the black hole. Here time and space collapse to a single point and there is no distortion of past and present. The analogy will be points at the north or south Pole and east-west, north-south collapse to a single point. Black holes are formed on the path of a star where the gravity as such courses it into a small value with the density or mass of millions of stars. The gravitational field in such black holes are infinite such that even light is picked by them.

Gödel had calculated that if the entire universe can be ordered within a circumference of 100 billion miles, then the gravity will be increased to a point that the world time can be distorted, and one can enter the past and can go back as much as he wants. In this way he will be able to see the truth of his God father. Einstein's general theory of

relativity talks of the existence of worm hole, this is a hole in the black hole where past is on one side and future and present on the other side. One can pass through the worm hole and encounter the past. But the journey through the worm hole is one sided, unidirectional, the person cannot return to his present. The other limitation is the fact that matter cannot survive in the black hole, and nothing can pass through, thus one must have a non-material body to pass through it.

According to modern theories, man cannot enter past and future at the same time. Either he can travel past and enter the future, or he can cross wormhole and enter the past. To observe both past and present simultaneously is impossible. This is only possible when man can go from four-dimensional time and space to a domain of pure duration when the time and space gets frozen and from here to the absolute domain "Zaman Sarmad" where there are only possibilities and one can see past and present and future at the same time. According to Newton's theories of time and space were absolute realities. The flow of time is independent of all the incidents of the universe which take place at the same time. There was no possibility of any change. The special theory of relativity however indicated the time and space are flexible and relative with respect to a certain frame of observation. The measurement of time and space depend on the speed and the conditions of the observer. Relative to a still observer, for a fast traveler in motion in a rocket near the velocity of light has time and space contracted but the traveler of a rocket at 9% of the velocity of light, his ten years will be equal to 10,000 years on earth for a rocket traveler has

time spent relative to a still observer on earth is entering his future, ten thousand years ahead. If he comes back, he will be still going, and nobody would be aided to recognize him. The velocity of light is constant at 186,000 miles per hour and according to the special theory of relativity nothing can travel faster than the speed of light with increase in speed, the energy of motion will be converted into mass and this mass will increase to infinity. According to Minkowski's explanation of the four-dimensional time and space, every incident in nature is recorded into the four-dimensional web in the form of a point. If all the points are connected the web is called the world time which depicts the history of a being from birth to death. In the point of life is past, then the present instant and future. The world time goes from past to future. Past and future are so much related by cause and effects that every effect follows the cause. In this travel of time, you cannot go backwards then this will reverse the natural order of cause and effect in such a manner that the effect will precede the cause. The father will be born after the son, and this is impossible. The world times cannot cross each other. This is possible only when the time is sent in such a manner that it crosses each time in such a way the past or future crosses the present. Then only we can enter the past. This journey is called time travel and is possible only when a substance can travel faster than the speed of light dimensions. In spite of this limitation the extent of our known universe is estimated to be about 50 billion light years. One light year is about 3.5 billion miles. We cannot estimate the exposure of our own universe. The Holy Prophet travelled through not only this universe but all the possible multi verses in the span of only a few hours. We



cannot even comprehend the speed to cover all this since we do not know that the distance involved.

In the physical world, according to special relativity no material object can exceed the velocity of light, the speed of light is the limit set for matter. Recently some particles, the Tachyons had been proposed where the man is imaginary or virtual. Such particles can travel more than the speed of light and emit light during their motion. Since their velocity is more than the speed of light, they cross the time domain and can be found at more than one location in the space domain at the same time.

If we consider the nature of the body of the Holy Prophet (S.A.W.S) obviously Allah had given him a type of body with virtual mass that can travel at a universe speed much more than the Tachyons spreading his light during the journey. There are Hadiths that narrate that there was no shadow of the body of the Holy Prophet (S.A.W.S) such a body can travel the exposure of all the universes and where of the laws of the material world are not applicable to him. He spreads his light in a manner that Allah has called him a lighted lamp. His mercy spreads over all the universes and He is present everywhere.

The real nature of the imaginary particles Tachyons is not known though there are many conjectures about their real nature which needs some being who is moving alive with light of his speed. Such a being is not with us, and we are all material with our limitations.

The other aspect of the ascension of the Holy Prophet is time travel into the past and entering the future.

According to the modern theories of science man cannot enter his past.

سبق ملا ہے یہ معراجِ مصطفیٰ سے مجھے  
کہ عالمِ بشریت کی زد میں ہے گردوں

*We have learnt lessons from the ascension of the Holy Prophet that the Heavens are within the reach of humanity.*

The incident of "Miraj" shows that the heights to which a human can rise to the level of "the two arcs" and in the material world he can conquer time and space. Miraj is the lesson of the high values of life and the conquest of dimensions that the Holy Prophet gives to his followers. He had entered a domain from the constraints of time and space, where the future and past can be seen together and where all the infinities merge in the essence of the creator.

وَأَنَّ إِلَىٰ رَبِّكَ الْمُنتَهَىٰ (سورہ النجم 43-53)

Iqbal says:

عشق کی اک جست نے طے کر دیا قصہ تمام  
اس زمین و آسمان کو بیکراں سمجھا تھا میں  
کہہ گئیں رازِ محبت پردہ دارِ یہاںے شوق  
تھی نغاں وہ بھی جسے ضبطِ نغاں سمجھا تھا میں

*One leap of love had settled the affair. I was thinking this heaven and earth as ocean without end. Whoever gets from his determination the taste of flight? He can destroy the domain of sun and the moon.*

In the Holy Ascension Huzur (S.A.W.S) covered the distance between the two sacred mosques in a very short time without any material help and then continued to the domain of the last possible domain of human fear. If we consider this travel, it looks as if all the laws of the physical world were either inapplicable or he travelled under the guidance of a system that we are not aware of. If we consider the exposure of our known universe, it does not constitute even 1/10 of the material universe, this universe of four dimensions Praise to Almighty Allah who had taken his servant (S.A.W.S) in the duration of the night from the sacred mosque at Mecca to the sacred Mosque Al-Aqsa that surrounds our blessings, so that we may show him our signs.

Allah is all hearing and all seeing. Asra in Arabic is the night travel and "sair" is the day travel. The entire journey of the messenger of Allah was in a portion of the night. In those days the distance between Mecca and Jerusalem of about 300 miles was covered under ordinary conditions in weeks. This journey was completed by the Holy Prophet in a portion of the night the word "Abdahi" indicates that this journey was not a dream but through the actual body and day is the period of awaking. The travel from Mecca to Jerusalem was only a part of the journey, but "Huzur" had seen the major signs of God in this journey, according to Holy Quran.

سُبْحَانَ الَّذِي أَسْرَى بِعَبْدِهِ لَيْلًا مِّنَ الْمَسْجِدِ الْحَرَامِ إِلَى الْمَسْجِدِ الْأَقْصَى  
الَّذِي بَرَكْنَا حَوْلَهُ لِنُرِيَهُ ...

مَا زَاغَ الْبَصَرُ وَمَا طَغَىٰ لَقَدْ رَأَىٰ مِنْ آيَاتِ رَبِّهِ الْكُبْرَىٰ (سوره النجم 17-53)

The Holy Prophet had seen the major signs of Allah. His signs neither got distorted nor they had limits. This means that his sight and signs are free from delusions and doubts. According to Tafseer Ibn Kaseer, Huzur (S.A.W.S) had seen the east and the west and seen incidents of the past and the events to come. He had seen the incident of about 4000 encountered years back when a fish swallowed Hazrat Yunus and in the future he had seen "Aim Dahr" entering the paradise. Huzur (S.A.W.S) then sees the end of two bows according to Holy Quran.

فَأَوْحَىٰ إِلَىٰ عَبْدِهِ مَا أَوْحَىٰ (سوره النجم 10-53)

Then He revealed to his servant what was to be revealed. Iqbal says creation is possible with the power and knowledge of the creator whose knowledge covers all aspects of creation. Such as omnipotent and his omnipotence can create a human being exactly like the original. This is resurrection which God has promised. This is not cloning, since the clone is a lot smaller to the original in all aspects. Here not only the person comes back, but he comes back with all his capabilities, and the human body has about a million genes. A human genome can create about infinite different human beings. To code just a human being, we need a computer with infinite capacity. The information of all aspects of the universe will require a computer with a capacity which we cannot comprehend. If the creator with such a capacity was to generate a human being again, he can do it in  $10^{-120}$  of a second. This will be a new world where permanent life is possible. In such a

created world, the created being will have all capacities at its peak. So, the Hadith of the Holy Prophet says, if man wills all the diseases of the material life will be over. In fact, all the capabilities will be manifold that he can really have his new life in the parallel.

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## Iqbal's Basic Philosophy of Life

Iqbal had presented a dynamic view of life in his poetry.  
Life is a flowing river Iqbal says:

سمجھتا ہے تُو راز ہے زندگی  
فقط ذوقِ پرواز ہے زندگی  
(ساقی نامہ)

*You think that life is secret, it is nothing but an aptitude to  
fly to greater heights.*

بہت اس نے دیکھے ہیں پست و بلند  
سفر اس کو منزل سے بڑھ کر پسند  
(ساقی نامہ)

*It has seen many ups and downs. It likes motion more than  
a destination*

ہر اک مقام سے آگے مقام ہے تیرا  
حیاتِ ذوقِ سفر کے سوا کچھ اور نہیں

*Your destination is beyond any other destination. Life is  
nothing but an aptitude for motion.*

The source of life is water and that has been mentioned  
in Quran.

وَحَلَقَ كُلَّ شَيْءٍ حَيٍّ مِنَ الْمَاءِ (النبا 21-30)

*We have created every living being from water.*

The aptitude to be dynamic fulfills the following conditions. Reproduction is the first sign of dynamism of life to create a duplicate. This characteristic is also found in crystals. One can grow a crystal from another crystal. But the true characteristic of life is self-reproduction. Here genes are transferred from one generation to another. This is the continuous motion of life. The second aspect of the dynamism of life is metabolism. If the self-reproductive cycle of life is such that a molecule comes back in a cycle of a few steps, then it is called a loop. The combination of two or more loops is metabolism. These loops are so maintained that one part of the cell maintains energy which is used to produce molecules in the second part of the cell. Life is an organization of molecules, and this organization requires energy. The energy needed reorganization comes from the solar energy. The energy that radiation from the sun gives to earth organization is the reduction of entropy and this is not a spontaneous process and requires energy. In the absence of sun this planet would have been dark, with no life. Planets and the lower form of life such as bacteria can obtain the energy needed for life directly from the sun and animals get this from plants. In the universe energy flows from higher to lower level and this is the direction of the increase in entropy, as seen in the direction of the expansion of the universe or direction of fall of water from a higher to a lower level. The process of life is exactly the reverse. From a thermodynamic viewpoint this is a condition of non-

equilibrium. To remain in this condition life systems, get energy from the environment and exchange information from it. Since they conserve energy living systems are always in the conditions of non-equilibrium till death returns the system to equilibrium and change to non-living elements. According to Iqbal:

زندگی کیا ہے عناصر میں ظہور ترتیب  
موت کیا ہے انھیں اجزا کا پریشاں ہونا  
(برج نرائن چکبست)

*Life is an arrangement of elements and death is the scattering of these elements.*

Another characteristic of life is the self-recognition of molecules, their union and a pattern recognition which is possible only after the expenditure of energy. This energy comes from environment and is returned to the environment. Thus, the basic criterion of life is the complex organization of molecules. Is this organization possible on its own by the living species. If we collect small molecules, can they become a complex molecule? These questions are akin to the crude assembling of a collection of bricks, can this collection result in a structured building on its own accord? For this structured building one requires a designer, a planner and an architect.

Kauffmann et al had shown that under some special conditions small molecules can aggregate into larger units. If we heat water gradually the group of water molecules assumes the shape of a honeycomb. But such an arrangement of molecules is not the result of an



instruction of direction. Molecules do this under the influence of electromagnetic forces of attraction and repulsion, in this case hydrogen bonding. An organization requires for direction and instruction a software. The collection of words can be a dictionary, but it cannot become a book which can express one's feelings. The collection of molecules thus needs instructions to get the required characteristics.

Beginning from the lowest form of life to the highest, it is a collection of cells. Every cell has a structure which is its hardware and a set of instructions which contributes the software. The hardware of a cell are proteins which make the cell, and the software are the genes of DNA and RNA molecules that have complete instructions about the making of a cell. These instructions are found in the center of the cell. The unity of life is indicated by the fact that right from the single cell species and algae and bacteria to the plants, animals and human DNA forms a common structure which provides the genetic code with its information. All the forms of life use a single genetic code, the DNA molecule. The unity of life is a structured and layered unity with its elements as the living system, the population, and the environment. All these levels in their competition are the mutual relationship and interactions contributes a basis for the stability of the system. Iqbal says:

زمانہ ایک، حیات ایک، کائنات بھی ایک  
دلیل کم نظری، قصہ جدید و قدیم  
(علم اور دین)

*The universe is one, life is one and time is one. It is only short sightedness to discuss about old and new and the time factor.*

حقیقت ایک ہے ہر شے کی، خاکی ہو کہ توری ہو  
لہو خورشید کا ٹپکے اگر ذرے کا دل چیریں  
(طلوعِ اسلام)

*The nature of all things is the same whether it is material or spiritual. If you cut a particle, you will get the essence of the sun.*

The basic structure of life is the DNA molecule. Its structure is an interconnected double helix with four basic units. A, G, C, T which forms complementary pairs with each other. The counter parts of A and C are G and T respectively. The A and C of one loop form a pair with C and T of another loop. Thus contribute a set of pairs. Allah says in Quran that he has provided pairs for everything, that produced from the earth, those within our own selves and those that we are not aware of.

سُبْحٰنَ الَّذِیْ خَلَقَ الْاَزْوَاجَ كُلَّهَا مِمَّا تُنْبِثُ الْاَرْضُ مِنْ اَنْفُسِهِمْ وَمِمَّا لَا یَعْلَمُوْنَ

سورہ یسین 32-36

We are aware of the pairs in plants and animals and man. But Allah says that for many we have no knowledge. As the frontiers of knowledge increase and expand such unknown pairs as the complementary pairs of DNA are now being known and understood. The two pairs of DNA

are complementary to each other. Man, and women are described as complementary in Quran.

The simplest form of life is bacteria. In the process of self-replication, the two strands of DNA get separated and each strand forms a counterpart and its complement. This is the process of reproduction or self-replication in bacteria. The software of DNA is the genetic information which is created by the combination of three bases of DNA, ACC and AGC etc. Every pair produces an amino acid. There are 66 such codes that produce the 20 amino acid the constituent of proteins. The genetic code is read by other molecules such as RNA. The Code is also read mRNA or messenger RNA and transferred to RNA which makes the required amino acid. This amino acid is then transferred to Ribosome where protein is manufactured. Iqbal's inspirational poetry expresses these hidden facts of dynamism of life.

اُس کی نگہ شوخ پہ ہوتی ہے نمودار  
ہر ذرے میں پوشیدہ ہے جو قوتِ اشراق  
(بیداری)

*The power to express that is there in every particle is guided by the order of Almighty God in its hidden capacity to grow.*

ہر شاخ سے یہ نکتہ پیچیدہ ہے پیدا  
پودوں کو بھی احساس ہے پہنائے فضا ک  
(تسلیم و رضا)

*This complicated fact is the evident from every branch of a tree that they are aware of the domains of space and environment.*

یہ کائنات چھپاتی نہیں ضمیر اپنا  
کہ ذرے ذرے میں ہے ذوق آشکارائی  
(نگاہ شوق)

*This universe does not hide its heart since every particle has the capacity of self-expression.*

Sometimes the combination of bases produces a wrong message, if this message is read it is translated into a wrong amino acid. If these wrong components become part of a cell, they produce complications and are harmful for human life. Such cancerous cells are produced by genetic defect. Biotechnology and Ribosome research has reached a stage where such genes can be removed and replaced by healthy genes.

Proteins contribute the hardware and contribute the structure of a cell in human body. There are 300,000 genes and every gene has a DNA which has of instructions. These instructions are so complete that they have details as to the effect which protein should go to which part of the body such as legs, neck or brain etc. All these instructions are in genes. Instruments also guide where the genes should form a plant or an animal. Thus, the difference in the genetic code forms the bases of variety of life on earth. Iqbal says,

وجود کیا ہے، فقط جوہر خودی کی نمود  
کر اپنی فکر کہ جوہر ہے بے نمود ترا  
(افرنگ زدہ)

*What is existence it is just an expression of the elements  
of self? It is a pity that you are not aware that your essence  
is devoid of expression your essentiality.*

جو ہے بیدار انساں میں وہ گہری نیند سوتا ہے  
شجر میں، پھول میں، حیواں میں، پتھر میں، ستارے

*Whatever essence is there in man is dormant in trees, in  
flowers, in animals and in stones.*

There can be changes in the species with a change in environment. This change is called mutation, which is restricted to changes within a species. Because of these changes we get better species such as good quality seeds or good quality animals. Darwin proposed his theory of evolution in 1865 which states that natural selection within species results a thousand of years in the adaptation of new characteristic and results, in the formation of new species that are different from their predecessors. Such species that are better remain and survive and the rest perish. This theory is called Survival of the Fittest.

Kauffmann on the bases of quantum biology discovered the fact that as there are energy levels in an atom there are also levels in the species of life. These levels are called attractors. These attractors are a limitation or barrier in which the known species of life divide into three groups

and within each group there are species such as Arthropoda, Mollusks, Anilids, Chlorophyta and Mammalia. The importance of the finding is that the species of one level cannot be converted into another, the evolution and changes are within the group and the new species. This means that a bird cannot become a monkey but can evolve to become a better bird. Allah has also mentioned about these types of groups in Quran.

Allah has created all the animals from water of those there are some that crawl those that move on two legs, that those that move on four legs creates whatever he likes and has control over all things.

The question now arises about the beginning of life on this planet. It is an established fact that self-recognition and self-organization are not responsible for the beginning of life. Horowitz was the first to show that there are levels of life where the laws of chemistry combined with metabolism occupy a central role. He prepared a universal chart of metabolisms that has fifty basic compounds that are common in all the forms of plants and animals. This chart has the same importance in biology as the periodic table is for chemistry. Horowitz thinks that the chemicals are not a result of chance but of necessity and are not the result of the internal structure of a species. On the bases of computer programming Kauffmann proved that the aggregation of molecules is not a result of self-enforcement due to which it is organized. He concluded that self-enforcement is not a result of either other molecules or groups or environment. Therefore, it is not evolution but development. With the species this is the evolution within a structure which results in the

development of fetus of a human being. Therefore, evolution is not the conversion of one species to another but the development within in a single species.

There are now two groups in the experts of biology, one group is Adaptation that believes in Darwin's theory of evolution. The other is structural that believes in self-organization. The rules and the factors responsible for natural selection are not clear. Darwin's theory discusses only the changes in frog but does not deal with the creation of the frog. For existence self-organization is essential but the latter fine tuning is a result of evolution. Life is a consequence of self-organization and self-capabilities.

The biologist Fontana was of the opinion that from a single cell to multicellular organisms is not a consequence of matter but there are hidden rules operative. The most important of these are Altruism and sacrifice. Altruism is the sacrifice of individual for the collective gain of the species. According to Kauffmann the loops exert an influence over each other, so that an organized system comes into existence. He computed that 100 genes can give rise to ten cells and the 100,000 genes of human can create 270 cells.

These days the biological scientists are not able to decide between evolution and creation. But now evidence accumulates that the creation is responsible for the presence of different species in the world. One species cannot be converted into another species. Just like the beginning of the world with a big bang about 15 billion years ago. There was an explosion of creation about 20

million years ago. The fossils of the animals discovered in the Burgess shale in Canada dates back to 60 million years ago indicate that the structure of their bodies and the constitution of their DNA are similar to the animals, of present day on earth. If evolution is the conversion of one species into another, then live question arose as to why in past 60 million years have no change in the structure of the cells of the species. The biological explosion took place about 20 million years ago in the Cambrian period. At that time most of the species found today were created at the same time, based on comparative anatomy one comes to the conclusion that the species that are considered to be related by evolution have different anatomical features which point out that they cannot be descendants of each other's.

To save Darwin's evolution, Stephen Gold has presented the theory that Darwin's gradual evolution in the result of unequal and sudden evolutionary jumps from time to time. This theory was presented because of the inability of scientists to discover the link between one species and another. Moreover, Kauffmann quantum evolution does not permit the conversion of one species to another by jumping the quantum level, attractor. The meaning of evolution is thus not Darwinian, the conversion of one species to another but the evolution within the same species which were present 20 million years ago. Allah says in Quran:

لَا تَبْدِيلَ لِخَلْقِ اللَّهِ

*There is no change in the creation of Allah.*



Every creation is complete. Thus there is no question of any change in the creation of Allah. Whatever God has created it is perfect and most beautiful.

الَّذِي أَحْسَنَ كُلَّ شَيْءٍ خَلَقَهُ

One of the most important discoveries of the present century is the finger printing of DNA which gives evidence of the ancestors. This evidence is now even utilized as a proof of crimes and to establish one's heritage. Allen Welter from the University of California discovered the important fact that there is no resemblance of DNA between gorilla and human being. The genome bank acquired from all over the world indicated that the mitochondria DNA of human from the mother indicate a common heritage of human beings.

The scientist has concluded that all the human beings are the offspring of a single woman who lived in Asia or Africa about 300-400,000 years ago. Science has now come to the same conclusion the belief of the monotheistic religions that all the human beings are created as children of Eve and Adam. Quran says:

وَهُوَ الَّذِي أَنْشَأَكُمْ مِنْ نَفْسٍ وَاحِدَةٍ فَمُسْتَقَرٌّ وَمُسْتَوْدَعٌ

قَدْ فَصَّلْنَا الْآيَاتِ لِقَوْمٍ يُفْقَهُونَ (الانعام 98-6)

*You have been created from one being, and then Allah has made arrangement for a depositor (male) and a replaced (mother). We have kept our signs for all those who understood.*

Modern scientific research had established the fact, that atoms molecules, cells and species have the capacity of self-organization not as an outcome from outside, but it is an internal factor arising from perception and conscience. The entire universe is based on a single bond of conscience. The categories of life give rise to morphogenesis which is a variation in the characteristic and the structure of species. If in a two cellular embryo we divide one cell, into two then we get the whole animal not the half.

In this way every cell has got a complete program and software for self-replication. From the tissue culture of plants one can get the complete plant Iqbal says,

آشکارا ہے یہ اپنی قوتِ تسخیر سے  
گرچہ اک مٹی کے پیکر میں نہاں ہے زندگی  
(حضرتِ راہ)

*It is aware of its internal powers; life is hidden in an outer cover of body.*

خدا اگر دلِ فطرت شناس دے تجھ کو  
سکوتِ لالہ و گل سے کلام پیدا کر  
(جاوید کے نام)

*If Allah gives you a heart that can feel nature, then from the silence of flowers create a conversation and understood the silence of plants.*

There is a structured destination for each species. Where the creation and the conscience of the created, follow a program the software of the conscience. The indicator of the conscience of animals is their collective conscience Paul Sheldrake had given examples of this collective behavior in the spider's web that has a perfect geometrical pattern, the house of wood ants that is cool in extreme summer of deserts. And the collective behavior of being in collective house. The same conscience is exhibited in the genetic code of DNA that has all the characteristics of the species. The genetic experiments on genome have made it possible to locate the centers of these characteristics and to control them by the recombinant DNA techniques to form a new species. The same is the procedure for cloning where one cell of the animal is fused with another cell to form a clone or a replica of the animal. Better yielding crops and seeds are being cloned by this technique. This is not creation of a species by humans, man is making only the use of the information already stored in the cells of the species. Allah says,

أَمْ خُلِقُوا مِنْ غَيْرِ شَيْءٍ أَمْ هُمُ الْخَالِقُونَ (الطور 35-52)

*Are they created from something else, or they are self-created.*

هُوَ اللَّهُ الْخَالِقُ الْبَارِي الْمَصَوِّرُ (الحشر 24-59)

*The bestower of conscience to atoms, molecules and cells is the absolute essence who is the Creator and Planner and the Designer of the world.*

The important point to consider is about the beginning of life on this earth. It is now firmly established fact what the beginning of life is not by self-structuring and self-organization. Even up to the beginning of the 21<sup>st</sup> century the idea prevailed that the beginning of life is by the simple prokaryotic cell. This cell that existed in water about 2 billion years ago is found by the photo decomposition of H<sub>2</sub>S. This was the time when the violet bacteria and halophytes prepared H<sub>2</sub> by the decomposition of water. At that time the earth atmosphere had no oxygen and the process of photosynthesis had not started.

Recently some bacterial species were discovered that live under extra hot conditions of about 120<sup>o</sup>C in the dark regions of the sea. These thermophiles obtain their energy from heat and the food from minerals. These organisms are strange in that they survive under conditions where the other species die. These organisms were present on earth about 3.8 billion years ago. Earth itself was created about 4.5 billion years ago. This means that the organisms were present about 0.75 billion years after the creation of the earth. Some super halophytes were discovered in a chip of the Mars of Antarctica. The fossils of these super-halophytes were 3.9 billion years old. This indicates that life was present on Mars about 3.9 billion years ago. It was terminated because of unfavorable condition on Mars but present up to date on earth.

It is an established fact that Oxygen, Nitrogen, Carbon and other elements came to our earth after the destruction of stars in the form of supernova. The question arises whether life had come to earth from other stars or

generated on earth. The accidents from comets and super comets had frequently occurred on earth in the past. Not only are the super halophytes but there is also an evidence of certain carbohydrates present in the fossils. If the oxygen of life was in the cosmos, then the DNA reached the earth from these comets. But how do they reach the comets. Science has not yet reached that stage. The earth and mars had conditions fit for the survival of life, but irrespective of the origin there is no change in the structure of DNA since 3.9 billion years ago. These facts contradict the theory of evolution of Darwin. About 3.9 billion years ago the halophytes came from the lower strata of the earth to upper strata. In due time they produced hydrogen. But the first spaces of photosynthesis cells of blue algae came about 1 billion years ago, and the process of photosynthesis started to produce oxygen. The Caravan of life started to move with new designs and patterns.

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## The Concept of Life and Death According to The Philosophy of Iqbal.

Iqbal wrote a long poem at the sad demise of his mother. In this poem Iqbal has expressed his philosophy of life and death and has depicted death as the beginning of an eternal life. This thinking is in accord with science and the teaching of Quran. The Holy Quran talks about death and the final annihilation of everything material in this world.

كُلُّ مَنْ عَلَيْهَا فَانٍ وَيَبْقَى وَجْهُ رَبِّكَ ذُو الْجَلَالِ وَالْإِكْرَامِ (سوره الرحمن 27-55)

*Everything perishes except the face of Allah.*

كُلُّ شَيْءٍ هَالِكٌ إِلَّا وَجْهَهُ لَهُ الْحُكْمُ وَإِلَيْهِ تُرْجَعُونَ (سورة القصص 26-28)

كُلُّ نَفْسٍ ذَائِقَةُ الْمَوْتِ ثُمَّ إِلَيْنَا تُرْجَعُونَ (سوره العنكبوت 57-29)

In these Aayaat, Allah has used three expressions to indicate the instability of the world; they have a wide annotation according to the expressive depth of Quran. Everything will be annihilated except the being of Allah. In the second Aayah the word perished is used and Allah has also talked about returning to Him or a resurrection of the dead. In the third there is no mention of death or

annihilation but to the fact that everybody must taste the taste of death. This means that death has also a taste bitter or sweet. The taste is sweet for those who has taken care of the life hereafter in the life of their spirit and had concluded their spirit to be alive. For those for whom materialism, events and material life is the reality, death is bitter or darkness. Every object that comes under the definition of matter, creation, plant, animal, or humans have to perish even the rocks and the celestial objects have their own life and get terminated at an appointed time. The phenomenon of nature is also temporary. Every essence of existence is non-existence. The total matter in the universe will be annihilated at the proper time and the duration of time, past, present, and future and space will collapse to a single point. This single point will have the stars of information of every single event in the universe and a collection of information. The point where the universe will collapse is called the omega point and this point is imperishable, omnipotent and covers everything. According to the Aayaat of Al-Quran, the face of Allah will remain. There is also mention in Al-Quran of being start back or of resurrection. Thus, there is mention of life after death and life after getting presented. This is the resurrection of life. Iqbal says:

زندگی محبوب ایسی دہدہ؟ قدرت میں ہے  
ذوقِ حفظِ زندگی ہر چیز کی فطرت میں ہے  
موت کے ہاتھوں سے مٹ سکتا اگر نقشِ حیات  
عام یوں اس کو نہ کر دیتا نظامِ کائنات



آہ غافل موت کا راز نہاں کچھ اور ہے  
نقش کی ناپائیداری سے عیاں کچھ اور ہے  
(والدہ مرحومہ کی یاد میں)

*Life is so much dear in the egos of the creator that the instinct to save life is in the instinct of every creation.*

*If the template of life is to be annihilated by the hands of death, then it would have been so common in the system of nature.*

*Oh, the illiterate the hidden secret of death is something else, the instability of the template depicts something else.*

Some points arise from these couplets and thoughts of Iqbal:

1. What is the nature of life? Is it only duration between life and death?
2. Is life only a material duration in this world?
3. Are we confined only to this four-dimensional world, or a multi-dimensional existence is awaiting us?
4. Does the physical system of this world become part of a complete and holistic system at some future time?

If we consider life only as a duration spent in this world and nothing beyond them, all the attractions and hopes in life will be over and man will be scared of death as is the case is in the materialistic philosophy. Life is also not the perpetual repletion of life cycle in this world as believed in incarnation and rebirth. The physical system of death and the instability of the template is a motion, a flight to perfection. This is flight from a limited system to an

unlimited system, a flight to the multi-dimensional existence which awaits our arrival. Life does not seem logically to be our material existence in this world. Allah says in Quran:

الَّذِي خَلَقَ الْمَوْتَ وَالْحَيَاةَ لِيُبْلِغَكُمْ إِلَيْكُمْ أَحْسَنُ (سوره املک 6-67)

*He is Allah who has created death and life to judge you as to who does beautiful deeds.*

This verse mentions death before life. The reverse order of what we experience. What we consider death is the beginning of another life. Death is thus a turning point between two phases of life, the temporary life and the eternal life and is a journey towards eternal life. Iqbal says:

موت تجدید مذاق زندگی کا نام ہے  
خواب کے پردے میں بیداری کا ایک پیغام ہے  
(والدہ مرحومہ کی یاد میں)

*Death is the revival of the love for life. It is a mirage of awakening in the veil of sleep and a dream.*

Thus, death is a revival of life. It is an act of purification to remove all dirt and material contamination from the spirit. Hazrat Ali says that death is sweeter than the milk of the mother. He said die before death overtakes you. The meaning of death is freedom from the bitterness of matter and the start of an eternal journey. Allah says:

فَتَمَتُّوا الْمَوْتَ إِنْ كُنْتُمْ صَادِقِينَ (سوره الجمعہ 6-62)

This Aayah was in reference to the disbelievers that if you are true then wish for death. The life of a person drowned in materialism is only unidirectional and one sided. He is engulfed in the vacuum of life and is away from spirituality. According to Iqbal the revival for the lust of life is the journey of the spirit in this world to perfection by good actions called beautiful actions by Allah. A journey towards a multi-dimensional existence, the resurrection of life promised by Allah and believed by more of the monotheistic religions is the unlimited favor of Almighty God bestowed to man. Every action of Allah is under a plan and goal. That which we think as an outcome of our knowledge and understanding is a manifestation of natural order in our system. Allah says:

فِطْرَةَ اللَّهِ الَّتِي فَطَرَ النَّاسَ عَلَيْهَا (سوره الروم 30-30)

*We have created you in the pattern of our nature.*

The purpose of Allah is that man should rise about the animal instincts and create spiritual values in his life. He must attain these values by his free will and intention and gradual progress. Universe is an organized and arranged system where the laws are very precise and correct. This organization covers the particles of microcosm and the stars, planets, galaxies and clusters of the microcosm that are in dynamic motion in the universe. They are all governed by the law of cause and effect. There is a destiny for all the creatures in the world, so man has also a destiny, an aim for his life and is responsible and accountable for his actions. The salvation of man depends on his physical wellbeing and spiritual animation. His spiritual progress is the aim of his life in this world. Iqbal

has beautifully elucidated it, that the end of life is not dust, life is an unbreakable pearl, and the purpose of living is to polish this pearl that is virtually spirit and self. The example of a pearl is very apt for spirit. As to get it out a pearl, we must break the oyster shell.

## The Philosophical Basic of Islam as a Scientific Religion

One of the greatest challenges for the Muslims in the 21<sup>st</sup> century is to recognize and know Islam as a school of thought that gives dynamism to an individual and the society at large. The practice of Islam as a set of rituals and beliefs brings about stagnation, which is the source of insecurity and superstition. Quran and Islam are the names of an intellectual revolution, a revolution that has brought man remarkably close to nature. Quran claims that there is no difference between the nature of the human being and the religion of Islam. Islam by itself is nature. Allah says:

فَأَقِمْ وَجْهَكَ لِلدِّينِ حَنِيفًا ط فِطْرَتَ اللَّهِ الَّتِي فَطَرَ النَّاسَ عَلَيْهَا ط لَا  
تَبْدِيلَ لِخَلْقِ اللَّهِ ط ذَلِكَ الدِّينُ الْقَيِّمُ قَلَّا وَلَكِنَّ أَكْثَرَ النَّاسِ لَا  
يَعْلَمُونَ (سوره الروم 30-30)

As nature is alive, dynamic, and multidimensional so are Islam and Quran. There are many untouched topics in Quran with their coverage so versatile and comprehensive that they cover all aspects of human sciences, history, sociology, political, psychological, ethical systems, various aspects of cosmology, biology, and human anatomy. Quran itself claims the verticality of coverage in the statement "that there is nothing wet or dry not there in the manifest book" [Al Quran, sura 6]. Any seeker of

knowledge who wants to find something of his interest in Quran can find it. A scientist can take guidance from certain Aayaat of Quran and the Hadiths of the holy Prophet [saws] and try to understand them by means of contemporary science. This does not mean that by this method one tries to prove the facts of religion by science. The facts of Quran are universal truth for all the time whereas scientific knowledge is limited and timely. We can strengthen our beliefs and get further guidance from the Quran if we analyze them properly with our knowledge of science. The basis of the dynamism of Islam is the concept of the Unity of God "Tauhid" which emphasizes the uniqueness of the creator. The most fundamental teaching of tauhid is to deny all association with Allah and the denial of other gods that may take the shape of the centers of power, oppression, and suppression of people. Before Islam, man considered all forces and the phenomenon of nature as God. Any power that frightened him was considered either God or something that possesses godly powers. This resulted on one hand in rulers being considered as sacred incarnation of God and on the other, the worship of the forces of nature and animals. The pagan culture that is still followed is based on this fear concept. This worship of power that Islam calls "shirk" are association with God resulting in superstition, worship of the phenomenon of nature and an end to the spirit of inquiry and progress. The idolaters that considered moon as sacred could not have thought of stepping on the moon. The earth was considered as the center of the universe and devotion. This resulted in very strong opposition to the new scientific concepts of Galileo, Copernicus, and Kepler. This was the starting point of the

conflict between rationalism of science and the dogma. People started to consider science has antagonistic to religion.

Islam suppressed and negated all types of association with God and propagated tauhid as its foundation. This opened all the avenues of thinking and research in nature. The backwardness of the earlier Dark Ages was because of shirk, and the progress of mankind in the frontiers of knowledge is an impact of the freedom of tauhid. Islam opened new avenues of thinking and pondering over the phenomenon of nature that God considers as his signs. Thus, the sun, the moon, the stars the changing night and days, the changing seasons are signs of God intended to be understood by mankind to live comfortably on earth. The phases of the moon give us an idea of the flow of time. Allah says:

يَسْأَلُونَكَ عَنِ الْأَهِلَّةِ ۖ قُلْ هِيَ مَوَاقِيْتُ لِلنَّاسِ وَالْحَجِّ ۗ ط  
وَلَيْسَ الْبِرُّ بِأَنْ تَأْتُوا الْبُيُوتَ مِنْ ظُهُورِهَا وَلَكِنَّ الْبِرَّ مَنِ اتَّقَى ۗ ج  
وَأْتُوا الْبُيُوتَ مِنْ أَبْوَابِهَا ۚ وَاتَّقُوا اللَّهَ لَعَلَّكُمْ تُفْلِحُونَ (سورة البقرة  
(2-189)

The stars show us the direction. The lightning of which man is scared, and the tidal waves are also signs of God. Allah says all these signs are for those who can think, who can concentrate, who are intelligent, and who are knowledgeable. Reason, rationality, and thinking are thus made part of the Islamic belief and thought. Accordingly,

scientific reasoning is not different from religion and revelation in Islam; they are one and the same.

The method adopted by Quran to educate people is different from that of science. In science there is first observation, then hypothesis and then the conformation of the hypothesis to create the theory. The observation and the inference are based on a limited aspect of nature. With improved observation, the influence of a theory changes. In the Quran, however it is first a general statement of fact, followed by the support of the fact by examples and learning them to be confirmed by the intellects. The Aayah of Quran represent the fundamental unchanging truth and will be there forever to guide the seeker of knowledge. It depends on the depth of the perception and the thinking of the person to acquire knowledge from the Quran.

It is stated in Al Quran [32;4] that God created the heaven, the earth, and the in-between in six steps. The heaven and the earth constitute only 10% of the total matter. That which constitutes "the in between", the nature of this form of matter is not known with certainty and is referred to as black matter or axioms. It is thus a new avenue of research for mankind to find out the nature of this form of matter.

Some of the Aayaat of Quran have very clear meaning and explain without ambiguity the facts of science. Al Quran says:

لَئِنَّمَا أَمْرُهُ إِذَا أَرَادَ شَيْئًا أَنْ يَقُولَ لَهُ كُنْ فَيَكُونُ (سورة يس 36-82)



*That when God decrees anything, he just says "be and be it is." The duration of time between "be and be it is" is less than the wink of an eye.*

اللَّهُ الَّذِي خَلَقَ السَّمَوَاتِ وَالْأَرْضَ وَمَا بَيْنَهُمَا فِي سِتَّةِ أَيَّامٍ ثُمَّ  
اسْتَوَى عَلَى الْعَرْشِ ط مَا لَكُمْ مِنْ دُونِهِ مِنْ وَلِيٍّ وَلَا شَفِيعٍ ط  
أَفَلَا تَتَذَكَّرُونَ (سورة السجدة 4-32)

The formation of the universe took place in six steps [Al Quran 32:4]. The "Ayyam" of God must be interpreted as steps rather than days of equal duration. The Big Bang theory now explains the formation of the universe in six steps of unequal duration ranging from  $10^{-43}$  seconds, [the beginning of time] to one billion years.

Quran does not interpret the idea of a static universe. Even until the time of Einstein, motion was relative to a static universe. Quran says that every creation of God is in motion. The sun, the moon, the planets are all moving with respect to each other to an unknown destination known only to God. Allah says:

وَالشَّمْسُ تَجْرِي لِمُسْتَقَرٍّ لَهَا ط ذَلِكَ تَقْدِيرُ الْعَزِيزِ الْعَلِيمِ (سورة يس  
36-38)

*The expansion of the universe is so uniform that God claims:*

الَّذِي خَلَقَ سَمَوَاتٍ طِبَاقًا ط مَا تَرَى فِي خَلْقِ الرَّحْمَنِ مِنْ  
تَفَوتٍ ط

فَارْجِعِ الْبَصَرَ لَا هَلَكَ تَرَى مِنْ فُطُورِهِ  
 ثُمَّ ارْجِعِ الْبَصَرَ كَرَّتَيْنِ يَنْقَلِبْ إِلَيْكَ الْبَصَرُ حَاسِبًا وَهُوَ  
 حَسِيرٌ (سورة الملك 4-3-67)

There is neither a discrepancy nor a gap in the universe.' Man's progress is the evolution of his spirit from the animal origin to one of the vicegerents. The dynamic concept of nature is the very essence of the progress and the decree of God on humans to be in tune with the dynamic nature.

Another general statement of Quran is the creation of all life from water:

وَاللَّهُ خَلَقَ كُلَّ دَابَّةٍ مِنْ مَّاءٍ ج فَمِنْهُمْ مَنْ يَمْشِي عَلَى بَطْنِهِ ج  
 وَمِنْهُمْ مَنْ يَمْشِي عَلَى رِجْلَيْنِ ج وَمِنْهُمْ مَنْ يَمْشِي عَلَى أَرْبَعِ ط  
 يَخْلُقُ اللَّهُ مَا يَشَاءُ ط إِنَّ اللَّهَ عَلَى كُلِّ شَيْءٍ قَدِيرٌ (سورة النور 24-45)

Water is so important for life that God says that he has sent rain from heaven to make the dead earth alive. Without water earth cannot sustain any form of life. With water, millions of microbes in the earth survive and become active. The nitrogen-fixing bacteria for example maintain the fertility of the soil by the synthesis of ammonia. There are innumerable other bacteria that perform their work only in the presence of water. The planets where water was once present also had life. Water is now discovered on some stars and the moon of Jupiter.

This opens the possibility of the presence of some primitive form of life on these celestial bodies, which Quran had already pointed out.

In 1859, Darwin presented his theory of evolution. According to this theory, the species adapt themselves to the environment and transfer their qualities to subsequent generations. These advantageous qualities produce species with characteristics much different from the original species. This was referred to as evolution by natural selection. The theory thus refutes creation and supports materialism with matter as the basis of creation.

The time at which Darwin proposed the theory, the sciences of genetics, microbiology, and biochemistry were not developed. In the first half of the 20<sup>th</sup> century geneticist such as Led yard Stebbins and Theodosius Dobzhansky, Zoologist such as Ernst Mayor and Julian Huxley, and paleontologist such as George Gaylord Simpson, and G.L. Jepson and mathematical geneticists such as Ronald Fisher and Sewall Right added another parameter, mutation, to the evolution by natural selection.

According to this theory, the first living organism originated by chance under primitive conditions, and then by the conditions of natural selection and mutation to advanced forms of life. Probability calculations have however, shown that even a simple protein molecule cannot be produced by chance. Natural selection through ages should have produced intermediate species with mixed characteristics. All the attempts of the Zoologists to dig out evidence of species intermediate between

amphibians and fish, between fish and birds and between amphibians and mammals totally failed to detect any such species. The fossil record to Lake Turkana in Africa and the Burgess Shale that have revealed the fossils of the amphibians of the Cambrian period have indicated that they have the same structure anatomically as their counterparts. Comparative anatomy has revealed that species supposed to be evolved from each other have different anatomical features. Indicating that they never could have been ancestors or descendants of each other. Mutation had always found to be small, random and harmful and cannot lead to evolutionary development. Every effort put into generating a useful mutation has failed. Neo-Darwinism therefore did not support evolution.

In the late decades of the last century, new Darwinian theory of slow and gradual evolution was replaced by punctuated equilibrium of evolution by discontinuous jumps mostly by American paleontologists Niles Eldridge and Stephen Jay Gould. This group claimed that evolution did not take place because of minor genetic variation but by great change. The only purpose of this model was to provide justification for the gaps of intermediate species in fossil records. It is also hard to believe that gigantic changes took place in biological and genetic material to the extent that a bird came out from a reptile egg, or the land mammals turned into whales or bats. The fossils record on earth proved that all living organisms appeared simultaneously in the Cambrian period 500 to 550 million years ago; the big bang of biology.

To fit the ideas of evolution, paleontologists have always distorted the fossils record to their advantage and came up with totally speculative theories. The public is made to believe in the presence of species half man and half ape. The same is the story of the fossil of the human skull by the paleoanthropologist Charles Dawson. The Darwinians of today claim that man has evolved from some ape like creature 4 to 5 billion years ago. The stages are Australopithecine, Homohalibis, Homoerectus, and Homosapians. Fossils such as Java man, Peking man, and Lucy were reported to belong to one of these species. The species that were claimed to be an ancestor of each other were later found simultaneously in many parts of the world, indicating that they are skeletons of either man or ape.

Today the unsolved problem of biology is the origin of life. Evolutionists claim that life originated by chance. No laboratory in the world has produced life in simple components. The basis of life, the cell has the most intriguing structure. It consists of proteins composed of amino acids the minimum number of which is fifty but can be as large as 400. An average protein with 250 amino acids and twenty components has  $20^{250}$  different ways of arrangement to form a protein. This is an astronomical amount. Out of all of these, only one form makes the desired molecule, and the rest are useless. The amino acids also exist in D and L forms, which are left and right-handed. Out of this, nature selects only L but leaves the D. The chance of selecting L amino acids for proteins further complicate the probability of these molecules to be formed by chance even after billions of years.

The other molecules of interest are the genes composed of nucleic acids DNA and RNA that are constituents of 300 trillion cells. The coding and non-coding DNA are the constituents of 40 thousand genes that constitute the human genome, which has been completely mapped recently. The comparison of human genome from different parts of the world and from different races has indicated that they have similarities in the mitochondrial DNA that comes from the mother's side. This remarkable discovery indicates that all human beings are the children of the same woman who lived in Africa or Asia 10,000 years ago.

This scientific finding is the strongest support for the creation of all humans and everything living on earth by all mighty God. The basic characteristics of a person such as color, height, color of the hair and other characteristics are determined by the variation of the components on the genes and their coding. Genes are coded for the synthesis of amino acids by the variation of the four components A G C T, adenine, guanine, cytosine, and thymine. Their sequence in the DNA determines the genetic code. All the information of the cell is coded in the genes. The DNA of a single cell carries the information of bones, muscles, connective tissues, nerves and other hundred trillion cells in the body.

The coding is also complete for the parts of a plant or animal cells. If any part of a plant is allowed to grow in a culture, it will give the complete plant. If an animal egg is cut into two halves, it will not give half an animal but a complete animal. In the recombinant DNA technique, one only puts together bits of information already coded in the

genes. The same is true of cloning to reproduce an animal the human ingenuity has so far not produced a single cell. Whatever god creates is perfect and does not need any evolution.

The cell also contains centers for producing energy in the mitochondria and utilization of this energy in about 400 different reactions in the metabolism of cell to keep it alive. All of this put together is not the result of chance it is the result of creation by all mighty God who is a creator, a designer, and a planner:

هُوَ اللَّهُ الْخَالِقُ الْبَارِئُ الْمُصَوِّرُ لَهُ الْأَسْمَاءُ الْحُسْنَى ط

يُسَبِّحُ لَهُ مَا فِي السَّمَوَاتِ وَالْأَرْضِ ج وَهُوَ الْعَزِيزُ الْحَكِيمُ (سوره الجمعہ 6-62)

There are several Aayaat in Quran that urge Muslims to ponder over nature and study Quran in depth. God says "why do they not ponder over Quran; Are their hearts locked? Why do they not think about the creation of the camel, how we have raised the sky, how we have fixed the mountains, and how we have flattened the earth" [Al Quran 78; 17-20].

ه أَلَمْ نَجْعَلِ الْأَرْضَ مِهْدًا ۖ وَالْجِبَالَ أَوْتَادًا (سُورَةُ النَّبَا 5-6 78 )

*Take your imagination around and see how we have created the universe.*

There are many other Aayaat in Quran that direct humanity to a rational thinking process, the basis of science.

With the examples quoted, it is wrong to think that Islam has no connection with science. Science is also a thinking process not different from religion. Whatever was done in the early period of Islam can be revived in the present age.

Some western thinkers suggest that Muslims should concentrate on training and not on science. This is a misconception of the broad dimensions of Islam where static spirituality without action has no place. In Islam the thinking process that leads to science is a form of prayer with more reward than an unintelligible prayer.

Another source of knowledge heritage in Islam is the Hadiths of the holy prophet [saws]. He said in a Hadith quoted by many books of sunnah that "The acquisition of knowledge is a must for Muslim men and women". In scholarship and intelligence, the holy prophet [saws] has not made any difference between the sexes. He also said, "Acquire knowledge even if it is found in a different place such as China". Imam Jaffer as Sadiq a.s. who was a renowned Imam and the greatest scholar of the second century A.H. had remarked that "the time spent by a scientist in a laboratory is much better than a thousand of prayers of an ignorant person". Imam Ali a.s. had said "knowledge is your best companion which nobody can steal from you". He also said, "wealth gets reduced in spending but knowledge increases on spending".

Bertrand Russell has quoted in his book "The History of philosophy", that knowledge was transferred from the Greeks to the Muslims and was given back to the western world by the Muslims. if knowledge was there in the west,



why did they remain in the Dark ages for almost thousand years? The knowledge and philosophy of the Greeks was so static that it could not create even a very simple appliance. The Renaissance of Europe in the fourteenth century was because of the transfer of practical sciences from the Muslims through the University of Cordova and other centers of Spain, Robert Bouffant had written in his book "The making of Humanity", that the progress of the Greeks was only in art and philosophy. Their knowledge was theoretical, and they did not emphasize on practical research and observation as this was against their nature. Bouffant further remarked that "what we consider science now was the result of the new experiments and observations of the Arab scientists transferred to Europe".

The pivotal points of Islamic sciences and thought were the scholastic teaching and sermons of Imam Ali a.s. His sermons, sayings, and letters, which were authentically compiled by Syed Razi in the fourth century A.H., have been published in the "Nahjul Balagah". The sermons of Imam Ali a.s. contain deep insight on the Unity of God "Tauhid", Human sociology, sciences, [Biology, Cosmology, etc., jurisprudence, and government. Allama Ibn Abi Hadid Moutazali has compiled an exhaustive commentary and explanation of Nahjul Balagha in eighteen volumes. He has commented that the book in its contents is below the Book of Allah [the Holy Quran] but much above any worldly books. Henry Corbin in his book, "The History of Philosophy" has quoted that the book "Nahjul Balagha" in the elegance of knowledge and thoughts could have been written only by the Imam. It is the greatest source of

Islamic knowledge and heritage. Sermon# 1 is included in the appendix of this book for reference.

Imam Ali says in the first sermon of Nahjul Balagha, "that the might and power of God is such that he created the universe from nothing without any previous plan. Coming into existence from nothing is inconceivable by human minds since they do not experience this in their daily life. We create objects only by imaging together of things. The whole science of chemistry is concerned with such changes. Imam Ali says that "when God created the Universe, He had no previous examples." Here we cannot talk of previous since time and space were also created along with matter. Imam Ali points to this fact in the statement, "In the beginning, time and space was dissolved in matter and energy." Now we know from the Big Bang Theory that the universe was created 14 billion years ago from nothing in a small, tiny dot  $10^{-33}$  cm in diameter [Plank's length] in  $10^{-43}$  sec [chronon]. The dot was very dense, very hot  $10^{33}$  K and had all the known forces of nature. It expanded in six steps to form the sun, moon, stars, and galaxies. The steps varied in duration from  $10^{-43}$  sec to one billion years. Our galaxy was born 14 billion years ago, the sun formed 4.6 billion years ago and our earth 4 1/2 billion years ago.

In the first three minutes of the formation of the Universe that cover the first three steps, matter and energy existed in the form of a fourth state of matter called "plasma." Imam Ali in his sermon designated this form as "Maa" and described this as a highly turbulent, rotating, swirling mass.

This was discovered in 1993 by the "Cosmos" satellite in a region of space thirty million light years across giving the first direct evidence of the Big Bang. He continued the description of the formation of galaxies and stars in sermon#1. "The agitated mass that was foam-like, started to collect together by the action of a new force, halted the expansion of the Universe and started in traction. This new force we now know as 'gravitation which is the weakest of the forces of nature but becomes very strong with large masses of the stars.

In one of the sermons of Nahjul Balagha [sermon 260], Imam Ali had described the condensation of the molten mass of the Earth in 'layers' which we now know consists of the central core, the mantle [inner and outer] and the crust. He says that "The earth rests on 'liquid' which is the molten mantle. He continues to describe the layer of seven gases that form the atmosphere of the earth.

When Imam Ali was asked about the differences in people in their color, features, and character, he replied that the difference is because of the difference in their clay and 'tinah'. Resemblance in clay also causes a resemblance in them and a difference result in 'tinah'. He commented that the clays are of four types. By clay he refers to the four components of the genetic code, A, G, C, T [described earlier] and by 'tinah' the genes or the genome. The appearance of a person, black and white, color of their hair, and other physical features and attributes, such as dull and sharp, weak, and brave, intelligent, and stupid, are all determined by the genetic code and collectively by genes.

The knowledge about birds and other animals is shown in Nahjul Balagha by Imam Ali at a time when the systematic science of zoology and botany were not known. He has gone to the details of even describing the anatomy of birds. In sermon 184 of Nahjul Balagha, he describes the digestive system of an ant, its belly, eyes, and ears, the perfect symmetry of the body and the distribution of its weight over the legs. With its strong legs it can pick up a weight many times greater than the weight of its body. It collects food for the winter during the summer and stores it in a designated place. He describes a peacock in sermon 162 as the most amazing creature that Allah has created in the most symmetrical dimensions. He repudiates the belief that the peacock progeny continues by the female drinking the tears of the male. He commented that the peacock fecundates the female by the usual method of the birds.

The creation of the bat is discussed in Sermon 154. Imam Ali says that the eyes of the bat can see in the darkness [sensitively to the infrared] and that their sight is obstructed during the daylight. They therefore hide during the day and come out during the night. The most important comment is towards the fact that bats do not possess ears, their veins near the wings act as their ears. Now we know that bats receive and deliver messages through sonar to which their veins of the wing are sensitive. The bats have teeth characteristic of mammals and are indeed mammals amongst birds.

One of the astonishing statements in Nahjul Balagha is about the spontaneous creation of animal species. In the statement, "He brings them into existence from non-existence in strange external shapes and composed them

with joints and bones and covered them with flesh. This comment that the animals were brought into existence from non-existence strongly contradicts the evolutionary theory and supports that Allah's creation as perfect and complete.

The towering personalities of Islam who had a profound influence on Islamic thought and sciences are Imam Jafar-as-Sadiq and his father Imam Mohammad-al-Baqir, the great grandson of Ali. They established a University in Medina in 105 A.H. and taught Quran, Hadith, Jurisprudence, Kalam, Sciences, and Cosmology for about 40 years. Historians record that about 30 different subjects were taught in this school. Some of the students of Imam Jafer-as-Sadiq are Abu Hanifa, and Imam Malik who became independent exponents of Fiqh and Jurisprudence, and were founders of Hanafi and Maliki, respectively. Imam Shafaii and Imam Ahmed Ibn Hambal who lived in the 3rd century A.H. were also influenced indirectly by Imam Jafar-as Sadiq. The Imam's student Hisham bin Hakim was the founder of the science of Kalam [scholasticism].

The founder of experimental Chemistry who is referred to as the 'father of chemistry' was Jabir Ibne Hayyan [Gaber] who was a student of Imam Mohammed Baqir and later of Imam Jafer-as Sadiq. Jabir was the first to discard the Greek theory that the earth is an element. Based on his experiments, he concluded that earth has many simple substances, some of them are mercury-like [Metals], some are Sulphur like [non-metals] some are salt-liked [compounds]. He also introduced purification techniques such as filtration, distillation, sublimation, and

crystallization in chemistry. Through these techniques, Jabir was able to isolate about thirty pure compounds. Geber was different from the Greek Alchemists who were interested in the transmutation of Mercury into gold, Jabir's interest was to pursue chemistry as a knowledge.

Imam Jafar-as Sadiq was also the first to make the distinction between a star and a planet. He also explained the difference in the color of the stars as due to the distance from the Earth. The science of Astronomy was so well established in the Arab world, that Al Khwarizmi calculated the diameter of the earth as 6500 miles [present value 7260 miles] and its circumference as 20,000 miles [present value 24,100 miles]. The value of the dimension of the Earth was later used by Al-Biruni to calculate the heights of mountains. Sheikh Nasiruddin Tusi was the first to establish an observatory in Baghdad in 670 A.H. [1270 A.D.] and published the trigonometric tables to calculate the position of stars.

Abu Ali Hassan Ibn al- Haytham [died 1021 A.D.] was the first to describe the inertia of material objects. The motion of a moving object from the position of its rest was given by Newton in 1630 as the first law of motion. Some of the philosophers of Islam such as, Sheikh Sadruddin Shirazi [Mulla Sadr] were not influenced by Greek philosophy of motion but had their own original ideas.

Mulla Sadr who lived about the same time as Newton, presented his revolutionary ideas about time, space, and motion, in his famous book "Asfar Arba'a." He was the first to suggest that time and space are not absolute quantities but are flexible. He suggested time as the fourth

dimension, an idea mathematically expressed by Einstein in his special theory of relativity.

The knowledge of the anatomy of the human body by Imam Sadiq and his remedies were greatly expanded by subsequent Muslim scholars. Noted amongst the Muslim scholars were, Shaik bu Ali Ibne Sina, who lived in the 9th century A.H. His "Canon of Medicine" is still considered as one of the original books on the subject.

The three aspects of this Chapter, Islamic Heritage, Islamic personalities, and Islamic behavior, provide the dynamic elements for a progressive Islamic society. In Islam, self-interest and individualism is always discouraged in lieu of social interest and interest of the Ummah. The strong elements of Islamic personality, self-respect, piety, fear of God, and the pursuit of truth are meant to give shape to elements and bricks of a dynamic knowledgeable Ummah, with strong faith in God. Knowledge is universal. There is no difference between Muslim science and knowledge, and Christian or other religious knowledge. Bonds based on knowledge and the Unity of God as emphasized in Quran will make the whole world a fraternity. The message is for the Muslim youth to pick up these elements of Islamic thought and practice and make themselves better elements of the society useful to themselves as well as others.