A Review of Existing Challenges between Contemporary Philosophy and Knowledge and Traditional Islamic Thought

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Abstract: The purpose of this paper is introducing traditional Islamic teachings as subjects which are in conflict with various modern sciences in education, knowledge, philosophy, and engineering. This review can lead to a deeper understanding of the real nature of these sciences and the existing conflict between disciplines proposed by traditional Islam and modern world. An introduction to traditional Islamic teachings in any of the specialties, i.e. the fields that do not concern the general public, is required for highlighting the obvious existing conflicts. Both Islamic education and modern sciences cover a wide spectrum of logical space over a historical perspective. Therefore, it is not possible to provide a simple judgment on either one. The only possible way for making sound judgment is to evaluate the principles of both disciplines and highlight their strong points. Samples provided in this paper about Moslem achievements were intended to explain the principles and highlight strong points. This paper does not attempt to account for all Moslem achievements as such an attempt will make several volumes.
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IntroductionQuran: The Root of Knowledge

The education system and knowledge base developed in Islamic world over many centuries essentially have Islamic qualities regardless of their historic origins. The dynamic Islamic civilization has acquired knowledge from many sources from China to Alexandria and Greece. The more knowledge acquired by dynamic Islam, the more progressive it has become. It is not important where knowledge has come from. What is important is that they all have Islamic characteristics. Islamic training and education along with Islamic science have been mixed with Islamic divine revelations and Quran spirit.

The root of knowledge lays in Quran according to traditional Islamic view. However, Quran does not provide scientific details in any knowledge. Some of those who argue that Quran is the root of all branches of science have taken upon themselves to introduce Holy Quran as a scientific text in the sense science is known today.

Quran explains subjects to the extent that some interpreters take it as a complete treasury source of wisdom. The other name of this holy book is "Forghan" meaning "differentiation". This name is selected because Quran is the best scientific tool for differentiating truth from fallacy.

Quran is called *Om lketab* meaning the mother of all books because its contents come from truth and include all which were mentioned in prior Holy books. Quran is a guiding book for human beings. It not only includes moral guidance but also provides educational directives. Its guidance and teachings are good for every human being. They have the deepest and the most comprehensive meanings. Therefore, Quran (Devine Orders) as the origin and purpose of education and Islamic science may be considered as the source of inspiration, guidance, and purpose for other fields of science.

Moslem lives are the proof of continued training and learning processes based on manifestation and meanings of divine revelations, as it was mentioned in Holy book and practiced by Prophet Mohammad. From the time, *Shahadatain* is whispered into child's ears, to the time when one succumbs to death, Quran's expressions and the Prophet words provide the required teachings, proper environment, and the basic principles and objectives for Moslems' souls and minds. Devoutness and learnedness collectively make the Islamic educational system which facilitates feeling in presence of a Holy being.

Islamic science reflects deep Islamic beliefs. This is not because the subject of every science has been defined by the Holy God. Rather, it is mostly because what is understood by human is also a divine giving. The inherent ultra-natural capacity of human being is a reflection from nature with all its greatness. Even logical concepts are reflections of divine knowledge projected on human mind.

1. Genuine Education: Main Aspect of Islamic Teaching

Islamic teaching is a reflection of Divine Orders and addresses all human beings irrespective of gender. Islamic teaching is not merely concerned about mental development. Rather, it aims at the collective development of human beings. Islamic education does not concentrate merely on transfer of knowledge. Rather, it focuses on the development of humans as whole beings.

A teacher is not merely responsible for knowledge transfer in Islamic teaching. He is also a coach responsible for the development of intellectual and spiritual capacities of every individual. This is true to the extent that the word teacher also connotes coach and they have become one by tacit moral implications.

The prevailing conditions in today's world completely exclude morality from education and information transfer, especially in higher education. However, Islamic education does not segregate intellectual and spiritual development in its teaching process. In this system, knowledge transfer or science acquisition without proper morality and manner is considered incommensurate. Becoming a scholar without proper mannerism is dangerous. *Sanayee*, an Iranian poet, called scholars without morality and spirituality thieves in his poem: "As a thief comes with light takes more selectively."

Although traditional Moslems completely project Islamic education, yet there is a long way from achieving Islamic totality. Parents play the role of teachers and coaches in children's early education. This education includes religious issues plus subjects related to language, culture, social habits and the like. At the end of family education, children go to Quran schools which are similar to elementary or intermediate schools. Later, they go to schools which are equivalent to high school or college preparation institutes. Students finally enter into universities or official higher education institutes. In many Islamic countries, schools are integrated with universities and provide an education which covers high school and university course materials.

2. Quran Schools: A Place for Religious Teaching

Old Quran schools taught basic religious principles applicable for living, society, and civility. These principles were also the base for language teaching. Although training conditions of Arab Moslems are different from non-Arab Moslems, yet literature is mixed with religious concepts in both groups turning reading and writing into religious activities.

The word "ghalam" refers to an important writing tool used by children to write down their first words. The use of *Ghalam* in Quran reflects the importance of the tool applied by Holy God in recording Divine Revelations. Similarly, the word "book" refers to any type of texts. When book is used to make references to Quran, it shall include Islamic connotations. The habit of traditional Moslems in respecting any writings stemmed from the fact that they considered writing as a sacred activity.

In non-Arab world, children learn their own language which is influenced by Arabic verbiage and religious thoughts subscribed in Quran. Learning own and Arabic languages are not contradictory for Moslems. They are rather complimentary.

Many children learn either at home or at school. This is the case for both girls and boys. Children receive excellent verbal teaching based on Quran and traditional literature. However, literacy does not necessarily completely correspond to official education. Considerable knowledge of many Moslems without official schooling could be a good reason to strengthen unofficial schooling and verbal education.

Islamic history indicates that schools were official places for education. These schools were the platform for creation of the university system and have ultimately turned into early universities during fourth to tenth centuries. These educational institutions and their affiliates were so successful in their endeavors that became important elements in Islamic world in a short period of time. They played an important role in the formation of higher educational institutes in Europe - a role which has only been recognized recently.

Unpretentious early Islamic schools with 100 to 200 students turned into recognized large historic universities, such as Karavin University with more than 1100 years, Al-azhar University in Egypt with more than 1000 years as the seat of Sunni scholars, and Shiite school in Najaf with more than 900 years of history. Other schools worth mentioning are schools established in Baghdad and Khorasan by Khaje Nezam Al-molk of Saljooghian era. These schools turned into higher educational centers with multiple buildings and courts.

Most schools were well equipped with sufficient funding to pay for students living expenses. These schools were built in scenic areas. Schools in many Islamic countries are closely connected to local mosques. Some of them are architectural landmarks such as "Gharaviyin" school in Mostansarieh in Baghdad and "Chaharbagh" school in Isfahan.

Islamic wisdom is intertwined with manifestation of Great Holiness especially in logical sense. Islamic education has always been offered in pleasant surroundings. Great attempts were made to create an atmosphere to help students acquire divine teachings and learn religious aspects of the educational materials, all of which were presented in structured ways.

3. Basic Activities of Religious Schools

The main activities of religious schools were teaching religious studies, divine orders or *Sharia*, Islamic principles, and jurisprudence. The study of Islamic principles was based on careful study and interpretation of Quran, paraphrasing Prophet's tradition or *Sunnat*, and review of Islamic history which all required complete mastery of Arabic language and its grammar.

Schools offered courses in speech or *Kalam*, a subject which has been studied since first century of Islam and were further developed throughout fourth to tenth centuries. This branch of science called *Oloom-e Naghli* (narrative sciences) influenced studies in many schools.

Islamic educational programs included other branches of science including logic, mathematics, natural science, and philosophy. The presentation of these fields of science was different from religious subjects. These branches of science are collectively called *Oloome- Aghli* or logical science and complement narrative science. Division of scientific subjects in school curriculum indicated that logical and narrative sciences were included in school study programs up until few centuries ago.

Teaching of logical science was terminated in certain Arab communities after the end of period between eighth to fourteenth centuries. However, offering logical courses by schools in Iran, Turkey, and Indian Peninsula continued well into recent era. Study of philosophy has seriously been continued in Iranian schools.

After infiltration of the new European educational system into Islamic world, schools dropped their prior educational system which offered different branches of science especially mathematics, natural and medical science.

Students learned logical science, excluding logic and philosophy, outside of school system even during the heightened periods of activities in Islamic science. This was the result of undermining the dynamic Islamic educational system offered from early years of Islam.

School activities in traditional Islamic societies were developed by two centers: scientific institutions and private sector. Scientific institutions were expanded in Islamic world to play wider roles. For example, hospitals were turned into centers of scientific education, research, and observation. These centers were instrumental in training many practitioners in medical fields.

Famous Iranian physicians such as Mohamm Ebne- Zakaria Razi were engaged in treating patients and teaching medical sciences in Baghdad Hospital from third to ninth centuries. There are documents showing how students received practical and theoretical trainings, took exams, and were certified in medical fields.

The first observatory was built in Islamic world as a center for scientific studies. The earliest astrological science institute was established in Islamic world, where courses in mathematics, astrology, and related subjects such as logic and philosophy were offered. The first observatory was established in Maraghe by order of Khaje Nasireddin Toosi.

Non general courses were offered to certain students similar to especial courses now offered in Iran as extra curriculum subjects. Adapting this educational system was for two reasons: 1) to remain safe from objections of religious scholars to these course offerings and 2) to provide a more cordial atmosphere for teaching logical science courses. Any serious research into traditional Islamic educational system should pay close attention to adaptation of this type of course offerings, especially in the field of Islamic philosophy.

4. The Role of Sufi Centers

Sufi centers influenced Islamic educational system. These centers were called *Zavieh* in Arabic language and *Khaneghah* in Farsi, Hindu, and Turkish languages. Some of these centers were called *Tekkieh* during Osmani era.

Sufi centers were places to introduce the best form of cognition especially *Marefat* (wisdom) or *Erfan-e Elahi* (Divine theosophy) which were collectively called Holy Knowledge. Educational activities in these centers were highly centralized.

Sufism concerned itself to teaching human soul in preparation of accepting God's presence. It looked to training as a way of reaching the highest level of learning. Sufism payed especial attention to the wisdom instructors provide to students. The wisdom was metaphysical in nature with physical and psychological dimensions. Sufism always emphasized on literary and rhythmic teaching approach on the highest order. Therefore, Sufi centers have traditionally been centers for training artists.

In certain Islamic periods, such as the period after Moghol invasion which destroyed official educational system, Sufi centers adapted official educational system and became the only centers offering notable educations for a long period in certain Islamic communities. Sufi centers are considered as one of the original educational entities in Islamic world. They were also gathering places for God believers where God presence could be happily experienced and celebrated.

5. Islamic Art Education: The Main Educational Element of Traditional Islam

Any discussion of Islamic education would not be complete without mentioning about training arts and handicraft. Formation of unions and training individuals at home or at art centers were not solely for production of carpets or clay works. The learning of any trade had major and minor significance. It was directly related to the lives of leaners as means of developing their souls as they made artistic pieces of work. The learning craftsmen received trainings which directly related to nature of objects they were making. They paid attention to especial features of work during the designing process.

Islamic arts were the same as Islamic knowledge and vice versa. Many of those who had learned carpet weaving or clay working were not informed about the global importance of symbolization and its metaphysical depth or the form and colors of the objects they were dealing with.

A part of required knowledge was acquired in childhood. Children's artistic skills developed as they grow older. They came to acquire directly more knowledge about the nature of the materials they used in their works. They learn about different approaches they could use to create admirable forms.

Traditions had verbally transferred to others for many centuries. These traditions enabled architects to create lasting and extraordinary buildings or properly ordered plantations. Higher knowledge had been protected and transferred to others for many years during the life of traditional arts, as they are preserved today. This is called *Training Process*. This process which is considered as the basic element of traditional Islamic educational system required technical knowledge and artistic abilities.

6. Slam's Ability in Creating Different Fields of Science

Islamic educational system had been instrumental in advancement of logical science which its development and extraordinary achievements made an important part of Islamic civilization. Geographical expansion of Islam from East of China to mountainous areas of North France proves Islam's ability to drive scientific development in most of scientific fields with long history.

Schools in a major part of the world including Odessa, Antioch, and other Western cities were under influence of Alexander era teachings. This influence was dominant during the first century of Islam when foundations of traditional Islam were laid. Islam was known to many Farsi language scientists, and more so for Hindu scholars.

Information on achievements made by Islam was spread out to many locations in the world from higher educational institutes in *Jundi Shapour*, where current scientific knowledge including astrology and medicine were taught in organized forms. These institutes continued their activities up to the period when Abbasian dynasty chose Baghdad for their Capital and all scientific activities were moved to the new Capital.

Islam also contains some Babylon teachings and intuitive elements of Greek science. Traces of Chinese works and Alchemy are evident in second to eighth century Islamic resources. Islam, as the last religion, has manifested itself in all ancient scientific fields. Therefore, Islam established scientific fields which, apart from being Islamic, inherited the wealth of scientific works left from prior civilizations.

These educational centers were created with the objective to acquire then current scientific knowledge by translating their original sources into Arabic language. However, the appearance of this knowledge base was not the only means which generated the great revolutionary movement in Islamic world. Moslems had no need to study Hindu or Aristotelian medical recommendations when considering military, economic, or political situations in Islamic world. They had already turned into the most powerful empire in the world.

Moslems interest in such scientific knowledge was mostly from logical and spiritual points of view and not because of their applications. Their interest was directly related to the nature of Islam as a revelational religion based on wisdom. Islam was a religion with special learning approaches and therefore could not be indifferent to learning methods of other fields of science or philosophy especially those with the claim of having the ability to explain the nature of things.

Islam had accepted earlier religions as revelationals including Judaism and Christianity. Islam had also accepted, to some extent, the ideas of Sabaism, Hinduism, and Buddhism. Consequently, Moslems had entered into verbal and philosophical discussions with the followers of these religions that had over time expanded on their own verbal and

philosophical points. Therefore, Moslems had to meet the challenges from learning approaches of ancient fields of science and philosophy plus beliefs of Middle Age religions.

7. Moslems Scientific Endeavors in Challenging Beliefs of Middle Age Religions

Moslems undertook to translate philosophical and scientific works from other languages such as Greek, Sirac, Sanskrit, and Pahlavi into Arabic. They selected a group of skilled translators from different religious minorities especially Christians. They also engaged researchers such as Honain-ebn-e Eshagh who spoke Arabic.

Schools and translation centers such as *Baitol Hakame* in Iraq were established funded by people. These efforts produced results in a period less than two centuries extending from end of seventh to ninth centuries. The importance of this undertaking became more obvious when leaners became more skillful, mastered the course subjects, and increased their understanding of the principals used for new inventions.

Traditions established over many centuries were passed along from generations by words of mouth. Architects could build glamorous and lasting domes or create very well arranged plantations and landscapes by applying these traditions.

Advanced Islamic sciences and arts were introduced to the learners in such a way that made them survive in time as they still exist today. This process could be referred to by anything other than "education". Therefore, these scientific, technical, and artistic subjects cannot be considered as major principles of the traditional Islamic educational system.

8. Characteristics of Islamic Philosophy

Philosophy or *"Hekmat Elahi"* (divine wisdom) is on top of Islamic logical field of science. Islam has created one of the most enriched traditional philosophies - a philosophical thought which is spiritually very important to Moslems and has survived till today as a continuing tradition.

Acquaintance with Pythagorean, Platonian, Aristotelian, Neo-Pythagorean, Hermeneutic, and Neoplatonian philosophies, together with collection of knowledge from branches of Skepticism and later schools of Hellenistic teachings helped Islam to create a powerful and original philosophy in a logical world based on Abraham monotheism and Quran revolution. This philosophy was in harmony with that part of Greek philosophy which was in line with Islamic monotheism. Those principles which are known as Middle Age Philosophy could be found in Islam, whether originated from Judaism or Christianity.

As a philosophy which did stem from thoughts of certain individual(s), traditional Islamic philosophy managed to develop schools and views which have remained unchanged for many centuries. They are still applicable today and contemporary philosophers follow them even after centuries.

Mashaiee philosophy was the school of thought adopted during the period from third to ninth centuries. It reflected Plato, Aristotel, and Platonius thoughts within an Islamic framework. Al- Kindi was the founder of this school of thought. Scholars such as Farabi, Amiri, Abu Yaghoob Sajestani further developed Mashaiee philosophy from fourth to tenth centuries. Mashaiee School of philosophy reached its pinnacle with the contribution made by Ibn Sina who became a model figure in Islamic history for scientists and philosophers.

Ghazali, Shahrestani, and Fakhreddin Razi, who were among well-known *Motekallemin*, challenged this school of thought. This school lost its standing in Eastern parts of Islam after a short period. However, Ibn Baje, Ibn Tofail, and Ibn Roshd who were the well-known advocates of this school of thought in Western parts of Islam helped it survive a longer period especially in Spain.

Khaje Nasireddin Toosi revived Ibn Sinna School. This schools became an important logical tradition for many centuries and survived from seventh to thirteenth centuries.

Another Islamic philosophy was developed parallel to Mashaiee philosophy. This philosophy was closer to interpretative tradition (Hermeneutic) than Mashaiee Tradition. This philosophy was further enriched and developed into a distinguished philosophy with great variety. This philosophy whose well-known name was *Maktab-e Mashaiee* (Mashaiee School) reached to its pinnacle by contributions made by philosophers such as Abu Hata al-Reza, Abu Solaiman Sajestani, Hamiddodin Kermani, and Naser Khosro. The development of this school took place at the time when the complicated subject of "*Om Al-Ketab*" was under consideration. *Ekhfan al-Saffa* Doctrine, which was developed from fourth to tenth centuries in Iraq and had Pythagorean tendencies, was related to this school.

Esmaieelieh Philosophy, which survived after Fatemioon dwindled, was dominant in parts of Fars, Yemen, and finally India which was the last home for this branch of Shiite sect.

A new logical view introduced by Shahab al-Din Suhrawardi after *Elahian (Eshraghian)* (Illuminationist school) challenged Abu Ali Sinna

school of philosophy. This new logical view was developed from sixth to twelfth centuries. Suhrawardi's works have not been translated into English and, therefore, his ideas remain unknown to West.

Suhrawardi established *Eshragh School* and claimed that he had revived a lasting philosophy existed in Ancient Greek and Iran. He believed that *Noor* (light) was the source of wisdom. He also believed that *Johar-e Kaihani* (Cosmic Essence) laid somewhere between light and shadow.

Eshragh School was further developed during seventh to thirteenth centuries by scholars such as Mohammad Sham al-Din Suhrawardi and Ghotb al-Din Shirazi. This school has found many new followers in recent years in Iran and India.

In recent centuries, Arab philosophers logically merged philosophy with other branches including Islamic theosophy and philosophical Kalam. New philosophical schools have been developed in Iran and nearby countries including India, Iraq and Turkey. In the meantime, branches of philosophy such as *Masha philosophy*, *Eshragh Scool*, and *Elahiat and Metaphysic Theosophy* have come closer together.

Islamic philosophy began a revival period in Safaved era initiated by Mirdamad, founder of Isfahan School. His work was continued by one of his students by the name of Sadr al-Din Shirazi, who was the greatest recent Islamic scholar in metaphysics.

Eshragh School became associated with the name of Sadr al-Din Shirazi during the few years that logical school of thought was offered in schools. He became a well-known personality in philosophy along with the famous names like Ibn Sinna, Suhrawardi, and Ibn Arabi. Ideologies offered by these scholars became subject of much debate in schools. Many issues have been raised about this school of philosophy with some of them still remaining unresolved.

Understanding the basic principles of traditional Islamic philosophy, with all their varieties and great potential, is important for appreciating its value in today's world. This philosophy has been developed in a religious setting under influence of Holy Quran and Mohammad's (Peace be upon him) prophecy. Therefore, it is possible to say that this is a revelational philosophy regardless of the subject under discussion.

This philosophy had adapted Islamic views and considered sagacity a divine and metaphysical endowment for human being. Consequently, it is based on the same truth which was revealed to Prophet and is highly related to the only God who encompassed all Islam messages. This philosophy is also related to the basic principles which associate sagacity with revelation and other religious issues under influence of monotheism.

This is a metaphysical philosophy discussing divine believes about Holy God. It offers keys for a comprehensive understanding of God. This philosophy discusses religion and morality and is very well endowed in philosophy, mathematic, and arts. Islamic philosophy ranked first in Islamic sciences by the persons who were not only scientist but also were philosophers. Islamic philosophy literature discusses metaphysics and logic together with natural philosophy. It offers researchers keys for understanding physical and psychological nature.

Masha philosophers considered psych as a part of natural philosophy, as was prescribed by Ibn Sinna in his book named Shafa. However, Eshragh philosophers considered it as a metaphysical issue. These two schools have overall view of the subject, similar to Esmailieh and Sadr al-Din Shirazi Schools. Therefore, it is possible to study key knowledge based on metaphysic and psych by observing metaphysic principles and rules relevant to monotheism. It means that we have to come to view the cosmos is oriented toward God.

9. Role of Mathematics in Islam Advancement

Moslems became especially fond of mathematics because it was very well in line with monotheism and abstract nature of Islamic thought. Mathematics played an important role in the advancement of Islamic sciences. Moslems combined Greek and Hindu mathematics and introduced trigonometry, geometry, aeronautics, and numeric theory. The definition of numbers was extended to include irrational numbers.

Moslems adopted Sanskrit numbers at beginning and later developed Arabic numerals. This numbering system revolutionized European calculation system, later. Kharazmi was a mathematician whose writings in geometry introduced Arabic numbering system to the Western world. This numbering system was adopted by Europeans by the name of Algorithm.

Khayyam's writings in algebra together with the writings of other Arab mathematicians created field of algebra. The Arabic name of algebra is still being used in spite of advancements made in this field. Association of trigonometry to Kharazmi indicates the Arabic origin of this field. Consequently, Moslems were founders of "Theory of Computation".

Moslems even invented computing instruments. One of them was invented by Ghias al-Din Jamshid

Kashani who discovered decimal numbers. Islamic mathematicians showed keen interest in solving mathematical problems. Examples of this interest were the study of "Parallel Line Theorem" and other theorems based on Greek geometry.

10. Islamic Astrology

Moslems began working in astrology very early. The reason for this undertaking was Moslems' attempt to identify the direction to Mecca and to determine times of prayer. They also had philosophical and theoretical reasons for their interest in astrology. Moslems studied writings of Hindu and Persian astrologists before they got acquainted with writings of Ptolemy and his book Almagest, which is still well-known in West.

Islamic astrologists combined their acquired knowledge with Islamic astrology and proposed new approaches. The differences between these approaches and the prior ones were noticeable from third to ninth centuries. A century before Birooni wrote Masudic Canon, Moslem astrology was considered the most comprehensive one among then existing astrologic science.

Moslems were interested in observatory and mathematical astrology. They produced many tables named Zaj from their observations. They discovered many planets whose names still remain in their original Arabic. Moslem astrologists were the first group who made observations of cosmos from highlands of Maraghe. They invented different tools for observation of planets including observatory. This tool which is well-known in West was built by applying a mixture of knowledge and arts.

Moslems purified mathematical astrology by using knowledge obtained from their observation of sky and the corrections made to Ptolemaic astrology in Iran and Spain. Corrections made by Spanish astrologists had philosophical foundation. However, corrections made by Iranian astrologists were based on findings in Maraghe Observatory together with the application of theorems proposed by Khaje Nasir al-Din Toosi and Ghotb al-Din Shirazi. The works of Iranians were based on mathematical research in bi-directional movements which helped more discoveries about Mercury and Moon. Those discoveries are now attributed to Copernicus of Poland because he made, perhaps, the most discoveries in the subject.

11. Contribution of Moslems in Advancement of Physics

Contribution of Moslems in advancement of physics is important from three points of views: 1) study of material essence, 2) design of movement, and 3) sight. Moslem scholars, philosophers, Motekallemin, and also theosophists (Orafa) had studied and discussed material essence, time, place and movement more than one thousand years ago. They introduced many theorems including Atomism Theorem by Motekallemin and Mohammad Ibn Zakaria Razi, Light Theorems by Surawardi, Nature Theorems by Eshragh School.

Scholars like Ibn Sinna, Birooni, Abu al-Barakat Baghdadi, and Ibn Baje challenged principles of Aristotelian philosophy in their studies of movement and introduced new thoughts about mechanics and dynamics. Their thoughts played a major role in the history of physics. Their influence can be observed in Latin scholastics and in early works of Galileo.

Ibn Haisam, who is the greatest Islamic physicist, based his "Principle of Sight" on photology. He used then available experimental approaches to study sight and light reflection and refraction. He made new discoveries in his study of lights. Two centuries later, Ghotb al-Din Shirazi and Kamal al-Din Farsi offered a precise explanation about formation of rainbow - a subject which had occupied minds of many scholars from the beginning of the time.

Moslems showed interest in mechanical tools as a branch of applied mathematics. Scholars who presented any works in this area were mathematicians in profession including Bano Mosa and Ibn Hytham. Writings by Al Jezri about "automat", which contained detailed descriptions about many instruments including complicated ones, are considered to most precise in this area.

Moslems introduced many technologies which were in harmony and in tune with nature. Among them are handmade and artificial artifacts made by Moslems which resembles contemporary technologies - some of them were made for games and entertainments and not for economic production.

12. Moslems Contributions to Medicine and Pharmacy

The importance of Moslems contributions to medicine and pharmacy, including their related fields, were no less than their progress in fields of mathematics and astrology. Moslems used Greek and Persian resources, combined them with Galenic and Hippocratic traditions together with selections from Iranian and Hindu traditions and established various medical schools in some Asian countries that still remain active.

Scholars such as Razi are known in Europe and India as much as they are famous in Islamic world. Ibn Sinna, author of Ghanoon in medicine, is known

as "Physician Prince" in Western countries. In some Islamic countries, he is known by "Abu Ali" as he is referred to in Farsi language.

Islamic medicine is a mixture of philosophical views based on Cosmology principles governing human body - known as minor world - and a combination of clinical and observational views. Moslem physicians emphasized more on preventive medicine especially diet. They conducted extensive studies on interaction of mental and physical health.

Moslem physicians made advancements in surgery according to writings of Spanish professor, Ibn Zahar, who finalized many surgical tools. Moslem physicians discovered causes of illnesses such as measles, meningitis and cold and discovered ways to distinguish them. They also worked on physiology and autopsy.

Ibn Nafis had discovered blood circulation many years before Michael Servents and William Harvey did. However, it is not possible to determine how medicine was formed from pharmacy, in which these scholars specialized.

Moslems wrote the book of Pharmacopoeias based on Dioscorides's research and the vast knowledge they acquired from Persian and Hindu pharmacist. This book represents the extent of knowledge Moslems had in chemical and herbal medication. Moslems studied herbs from botanic points of view.

Herbal research was extensive in Islamic world especially in Spain where Al-Ghafiqi's activities were focused in this type of research. Herbal research and the application of herbs in medicine made a good part of Islamic science. Research works in this area had continued in Iran and India even after research in other Islamic sciences gradually diminished.

Herbal research was conducted in conjunction with studies into natural history and geography. This type of research had been encouraged by Quran as study into miracles of creation, Divine verses, and signs of God's wisdom.

Moslems could exchange information and knowledge during their traveling opportunities including annual trip to Mecca. Natural history and geography scholars could exchange information about plants and animals. This exchange of information covered a wide area of Islamic world including Western Europe.

Masoodi, who was called Arabs' Pliny, collected information about natural history of Greece. He also collected more extensive and comprehensive information about Islamic global view. Edrisi was an Islamic scientist who drew map of Middle Ages for the first time. As a result, Moslems obtained detailed geographic information about faraway lands such as India.

Islamic geographers and sailors were the ones who led Europeans to Cape of Good Hope in India. This, later, led to the invasion of India by Portuguese. European merchants crossed the same ways that Moslems chose for their trading activities prior to sixteenth century. These commercial activities opened the way for further colonialism of Islamic countries.

13. Enigmatic Science

Enigmatic science or *Oloom-eh Gharibe* was another branch of science which included alchemy, astrolabe, physiognomy, and the like. Enigmatic science was later reduced to fabricated science because of the use of prototypical language. This branch of science was based on cosmos order which is also a forgotten trade.

Alchemy was established by Jaber Ibn Hayyan in Islamic world. It survived from second to eighth centuries as a lasting tradition. It was expanded to include spiritual psychology, cosmology, medicine, and symbolic knowledge about material.

A new branch of science was created from spiritual alchemy and material essences. This branch is now known as "chemistry". The word *Kimia* indicates the influence of Islamic alchemy on Western world and the field of chemistry as exists today.

The tools being used in chemical labs today prove that roots of chemistry lay in alchemy of Middle Ages. The difference is that new chemistry has lost its role of driving soul toward divine gold and, rather, concentrates more on producing extraneous golden material.

14. Reasons for decline of Islamic Science

Islamic sciences continued their growth for seven centuries. They showed the highest growth rate compared to scientific advancements made in any other civilization. Islamic sciences influenced Hinduism in India and China and sciences in Western world. Only Renaissance and Scientific Revolution in the west could surpass the progress made by Islam science. Although these movements in the west were influenced by Islamic science, their global views seriously opposed Islam.

The important question is not why Islam was unable to continue its growth and dedicate its power of wisdom - excluding divine wisdom - to drive a natural dynamic growth similar to what was experienced in west after seventh century.

Islam has proved its ability to create a traditional educational system capable of offering excellent knowledge in respect to the natural world and mathematical science together with a global view powered by divine thoughts and filled with God's presence similar to revelations prescribed by Quran.

A world filled with types of knowledge which are alien to divine wisdom and blind to monotheism is domed as predicted by Holy Quran through many examples it provides. Islamic science has a message beyond historical events in a world where all natural materials and all that exist return to its source, the only God. Islamic sciences are lasting inheritance for contemporary human beings in spite of their religious beliefs

Islamic science wants to discover realities as its modern counterparts do - of course, modern sciences are only valid if they do not go beyond their limits. Islamic science benefits from different aspects and dimensions of nature and human to reveal what has remained hidden - those hidden aspects that many individuals had strived to uncover regardless of where and when they lived.

Islamic traditional philosophy can prove this reality that human essence is perpetual and does not change over time. This ability stems from the fact that Islam philosophy relies on two sources, revelation and wisdom. In other words, it is connected to God from one side and to human community from other side. Islamic philosophy is very well endowed with wisdom and has managed to continue its existence. Islamic philosophy stands in the center of the battle field where traditional Islam plays vanguard.

The educational system which has managed to train many philosophers, scientists, jurists, personalities and specialists in many scientific fields throughout many centuries should remain as a platform for supporting all endeavors that take place in educational fields and should adopt self to conditions imposed by those who oppose Islam's principles.

Traditional educational institutions such as traditional Islamic philosophy and Islamic science are sacred to traditional Islam civilization and have important positions in helping Islam confront those opposing forces arising from modern world.

Lasting values and principle realities which prevade Islamic sciences can single handedly help contemporary Moslems to safeguard their religion against challenges introduced by modern world, the world that its global view is oriented toward cutting off connection with the world beyond material and leaving out God from philosophy and science.

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