

## **TRANSMISSION OF SCIENCES FROM INDIAN CIVILIZATION TO WORLD OF ISLAM**

**\*Ahmad Reza Behniafar**

*Department of Law, Islamic thoughts, Islamic Azad university,  
Damghan branch, Damghan, Iran*

*\*Author for Correspondence*

### **ABSTRACT**

The India was the bright centers of science and civilization in the ancient world and with the spread of Islam, Muslims became familiar by various cultures and civilizations including the culture and civilization of India. The land that was advanced in terms of science and knowledge, especially medicine, mathematics, astronomy and art of architecture and not only Muslims but also other nations utilized the hoardings of Indian civilization. The main purpose of this article is to addressing of this issue that what was the impact of Indian civilization on the Islamic world. Research method, is the library relying on primary resources and study the effects and recent studies unsubject desired. Being religious civilization of India, and its priority in some respects overall other civilizations, Iranian important role in the transmission scientific of Indian civilization to the Muslim world and the impact of Indian in science of medicine, mathematics and astronomy to Muslims is from findings of the article and the final results that the revival of Islamic civilization in present is possible with inventing, initiative, innovation and creativity not pure imitation, so that the Muslims through this way achieved significant advances in the past.

**Keywords:** *Islamic Civilization, World of Islam, the Indian Civilization, Transmission of Science*

### **INTRODUCTION**

Human civilization does not have to a nation, strain and specific people, but is the result of the efforts of all men and nations over the centuries with their efforts to create great civilizations and when for a nation provide the conditions of development with using other civilizations moving their direction and at the same time playas major role in the civilizational evolution of human society, with initiative and creativity. Formation and flourishing of Islamic civilization is not out of the norm, as along with Islamic culture, heritage and civilizational experiences of other nation shave significant effects on its growth and development.

The connection between ancient history of India with history of Islam and Iran is considerable, a country with a long history of civilization that from the old days was the center of culture, art and science and with the arrival of Islam in this region especially in the second and third centuries, the Indians with effectiveness in different aspects, including scientific could open a new window to Islamic civilization.

Evaluation of previous studies about the relationship of Indian civilization with the Islam world shows that specific focus of these studies is on science and technology of India in the ancient and Islamic times and however, in other cases dealt with, but not enough. From this point, the main objective of these papers by ‘using library method based on the description and analysis and relying on primary sources and new research’ while addressing the scientific hoardings of India civilization in various aspects and transmission of scientific works to the Islamic World, examine the scientific impression from India civilization.

### **Conditions and Geographic Features of India**

India, which has long been known as Indian subcontinent for its vast area, It is located in south of the continent of ancient Asia and it’s like the triangle that Himalayas in North at the base of the triangle and its headed is promontory Kumarin the Indian Ocean.

The tropic has passed through India and caused that half of that located in the northern temperate zone and the other half located in tropical but in general, India is the most growing areas of the world.

### **Research Article**

According to Rashid al-Din Fazl Allah's opinion, the India ending from the East of China to Machine, from West to Kabul, from south to the sea and from north to Kashmir, land of the Turks and Miro that is extremely tall and excellent (Rashid, 1384).

He believes that Indian country is divided into nine parts which according to the natives of India every part of it is larger than Iran. Contains three climatic zones of septet climates, so that West of it is from third climates, the east is from first climates and Shaneshtari from countries of India is a part of the second climate (Ibid). While Ebn Khaldun knows the India as a part of the sixth to the tenth of a second climate (Ebn, 1336). Indians placed their own homely and in the first climate that is limited from eastside of the river and the side of China to Deybel, from Iraq to Gulfsea, From the soil of India to land of Hejaz (Yaghoubi, 1995).

Masoudi describes the geography of India as: India is vast to sea, land and mountains and the property of India is connected to the property of Zayej, Mehraj realm the King of Islands, and this country, is the gap between India and China and add it to India. India has joined from mountainous region to Khorasan and is connected to Sendarea to Tibet (Massoudi, 1995).

So the main geographic features of the Indian sub continent can be outlined as:

1. Existence the plenty of water around and inside the country, so that it's called peninsula and because of the great rivers in India, it's called India that means the land of rivers.
2. Mountainous region of India especially in the northern regions so that Himalaya mountain as the world's oldest mountains, separated the India from the rest of the old continent. And also existence of Set Pevra Chain Mountains, Mahadeo Mountains and Maykal in south is very important.
3. Existence of geographical environment and dual climate in Indian subcontinent with the passage of tropic is divided into two tropical and northern temperate.
4. Vast forests, which comprise about one fifth of this land, extensive plains in south of the Himalayas that is the center of large activities and the coastal strip that is the operating of relationship with other countries.
5. Despite of these characteristics, the dominant feature from Delhi to Silan is heat that sometimes humid monsoon winds modify it.

### **The Background of History and Civilization of India**

#### **A. Historical Background**

Available documents, brings the begin of India's history more than two thousand years BC, and even some scholar so artifacts and literature, know the Vedas and Upanishads belonging to eight thousand years BC (Yektayi, 1351). In general history of India from the beginning to the early medieval period (7th century AD) can be divided into:

1. Prehistoric Period of the emergence of Adam to three thousand and five hundred years BC, that is consisting period rock and metal.
2. Period of Indus valley civilization that consisting three thousand and five hundred years to two thousand years BC.
3. Aryan migration period and the spread of their civilization in the second millennium to the sixth century BC.
4. Ancient historical period, including the sixth century BC to the seventh century AC and the beginning of the middle ages.

Our knowledge is inoculation from the history and civilization of India with regard to extracted lines of this civilization only by artworks and also the history of this land is supported by Indus artworks findings in Iraq on the layer of debris of civilization of Sumer-Akkad.

India's political history has not been recorded before the last decade of the sixth century BC and the only sign events of life's Buddha that the part of it is legend can be realized the characteristics of this era. On the other hand, unknown artworks had a large contribution in clarification of this period of the ancient history of India.

In the year 516 BC, the Achaemenian could capture a large part of India and declare that, their twentieth satrapies. The India was the high-income of the Achaemenids satrapies and this situation was continued to

### **Research Article**

conquest of India by Alexander. After Alexander respectively, Moriya Empire, Sakas and Kushans were conquered the region.

In the sixth century BC during the reign of King of Magadheh, in northern India two major historic disasters happened. The rise of Mahavira revival of Jin religion and the other rise of the Buddha, founder of Buddhism.

Mahavira and Buddha created and guided two great intellectual movements in order to free the mind from the domination of the Vedas and the fight against the superstitious Brahmans and their extreme is min acts of sacrificial works (Naini, 1996).

Alexander's attack to India happened in 327 BC. Although from Indian artifacts, not specified the attack of Alexander to India and only Greek writings tell of his attack to India.

Attack of Alexander to India was performed during the reign of "Fur". Alexander asked him to be under his command, but Furr ejected. Although initially the success was for "Fur", but Alexander made sculptures from copper and filled them with oil and sulfur, and kindled the fire inside them. Then put it on the cows and dressed them clothing war and when the Indian elephants attacked, their proboscises bent over on molten copper and ran out and thus, Alexander's army won and the king of India was killed in pitched battle with Alexander (Yaghoubi, 1/106-107; Masoudi, 1.73).

One of the most brilliant periods of Indian history is during the Gupta reign that culture and civilization reached its peak in India. Gupta Empire remained until about 544 AD in the region of Bengal, but in the north was analyzed for the invasion of the White Huns and their territory was divided among small states. In the late fifth century AD in Indus the "Ray" dynasty was reign. In addition to Indus, the other regions of subcontinent, each one has an Independent government (Mahajan, 1962).

The second half of the eighth century AD, the Rajputera began in the history of India. That ruled in the north of India and some parts of Deccan Plateau. In this period the Muslim forces headed by Mohammad Ebn Qasem Saghafi captured the Send and Multan but indefinitely did not conquer the Rajput forces and in that region, created an Islamic monarchy which has remained part of India during the Ghaznavi and domination.

In history of south India Cholokia Badami dynasties which was established in 550 AD and the reign of Deravidy have a great importance and also the three families of Chola, Pandie and Chalokie until the time of Ashoka ruled in south.

#### **B. Civilizational Background**

India is one of the major centers of old world civilization and the history of Indus valley civilization belong to five thousand years ago.

The obtained of ancient artifacts in explorations of Mohenjo-Daro, Indus and Harpa valley in the northwest of Pinjab and Saurashtra state shows that in about 2500 BC, a relatively advanced civilization existed in this area although the date of this civilization is not clear but the dominant suspicion was remained until about 1500 years BC.

The use of instruments of urbanization, commercial relations with other regions, engage in farming, manufacturing weapons of copper and bronze, the domestication of animals, etc. represent an advance of these people in signs of civilization. So that Ebn Khaldun put the people of India and Indus along with Morocco and Syria, Hijaz, Yemen, Iraq and Andalusia in temperate climates. People in terms of the house, wearing, food and industries located in the middle and build the houses made of beautiful and elegant stones and artistically and take precedence in beauty of the tool and Furnishings on everyone. Use of natural kans, gold and wire, iron, copper and lead, as well as the use of gold in transactions caused that stay away from deviation and deviance (Khaldun, 1336).

Artifacts recovered in India, is related artifacts that delegations of archaeology have found in Iranian plateau and Mesopotamia and indicate that the residents in Iran and India had a close relationship before invaded Aryan tribes. Some people have suspected that the residents of India before the Aryan invaded and inhabitants of Iran before the Medes and the Achaemenids and the Sumerians in Mesopotamia were of a lineage. Although this hypothesis has not been proven, but it could be the beginning of a new chapter in this relationship (Hekmat, 1958).

### **Research Article**

Pre-civilization of Aryan India with the change trajectory of monsoon winds that was led to drought, lack of water and the loss of forests, spread the inhabitants this area of civilization and during the Aryans invaded about two thousand years BC, Dravidians people and other aboriginal did not tolerate and moved to the south of India, and thus the old civilization of this land vanished.

After mastering the north and then south India by Aryans, imposed their culture on the natives but the defeat of Dravidians people is not the reason of superiority Aryan civilization. Because of the both folk are effects on each other and Aryans Influenced by the environment, climate and culture, civilization and tradition of Dravidians. And gradually these two folks established a common civilization in the history of India.

With Alexander's conquest to India, the influence of Greek civilization is seen in some areas of the north of this land. Iranian domination on Punjab and Indus, and occupation the part of the territory of north India was caused the encounter, influence of civilization and culture of Iran. In fact, Indus and Punjab were such a gate of that the large three civilizations of ancient world collide and were influenced with each other.

In general, several factors have contributed to the prosperity of Indian civilization:

1. Internal factors and social systems: Indian social structure gave amazing stability to civilization of this country. Caste system has helped to increase the skills and maturity in work, business, trade and transactions and provides ways to grow evolve and develop. There was significant equality and freedom within each Caste, each Caste had specified work and career that made it compatible with the work. The result was that people of every Caste found great skill and expertise in certain work, Profession, job and occupations which were transmitted from one generation to another.

2. The influence of other cultures, especially Indian engagement with Iran and Greece: The ties of ethnic, linguistic and cultural of Iranians and Indians and mastery of Iran on the regions of India, especially during the Achaemenid and Political and scientific trips on both sides caused interactive effect of Iranian and Indian Civilization on each other. Also, The Greece and India was connected to each other from old days and on subsequent periods between India and West Asia that was under the influence and domination of Greek civilization created more contacts. Even some Indian scientists, met with Socrates and also Pythagoras influenced by Indian philosophy.

Two factors had an effect on weakening and decline the ancient civilization of India:

1. Internal disturbances: the social structure of India while it gave stability to civilization of this land, hinder the development of greater linkages and correlations. If the Caste system would lead to increase of skill and maturity in work and employment, always at inside, would create separate groups, some of occupations and activities were inherited, new tasks and activities were avoided and therefore the spirit of innovation and invention would lost and were replaced by petrification and reaction. Hence, decline was observed in all respects of intellectual, cultural, philosophical, political, and economic.

2. Collisions with foreign invaders: White Huns attack to the north and northwest in India was caused the long conflicts and drive the India to weakness in terms of politically and militarily with deployment of large number of White Huns in all areas of North in India gradually the inner and mental changes was established in people and although these people, like other foreign elements were analyzed in India but its effect is left and weakened the great ideals of ancient India. As a result of the influence of internal and external factors the words of Nehru: 'seems the heart of India is become old and solidified, its beat was slow and this rigidity and decline gradually expanded and took all the members. (Nehru, (1361: 370-371)

### **Science and Technology in Ancient India**

The India is the mine of wisdom and the Yanbou of justice and politics (Judge, 1997; Qafy and Bit, 366) and its people seeking knowledge and ideas, and are superior to all the people gain knowledge (Yaghoubi, 1/115)

The India is in the category of areas that in terms of enjoyment of science, particularly in the fields of medicine, astronomy, mathematics and geometry have great importance and the Persians and the Greeks other nations received some knowledge of the Indians and so the religion was the core of Hindu's life, prime that science developed that helping the religion.

Sciences that, are common in Indian civilization:

## Research Article

### Medicine

Accuracy in Indian religious artifacts clearly shows that medicine in this country than many other civilization centers, were older. In works such as Veda disease, wrath of God introduced and Brahmans were regarded as divine doctors and in role of savers mediators with spells and prayers seek the healing for the people and themselves (Najmabadi, 1992).

The Hindu reports about the medicine science begins with “Ashrooh-Veda” that the list of diseases and their symptoms along with the mass of the spells and items has been reported. In “Ayoroda”, as one of the oldest systems of medicine in India, the disease have attributed to irregularity none of four expectorant "air, water, mucus and blood" and would recommended the treatment with medical plants and spells.

In Rig Veda mentions the names of more than a thousand species of medicinal plant sand knows the best treatment of most diseases is the water (Durant, 1991).

So from old days, the Indians mixed the medical science with types of superstition and divine matters. They refer to God for forgiveness at the time of the prevalence of fatal diseases like cholera and plague. And therefore Indian Medicine has been associated with prayers and incantations and species of spells.

Gradually In beside the use of spells and prayers and ancient texts, the using of plant institutionalized in Indian medicine and was accompanied by using of medicine, surgery, bandage and new experiments. In this regard, India has long been considered as a source of medicine and reported the travel and communication of Asqalbious, Founder the science of medicine, and his teacher Hermes to India and Persian (Ebn, 1419).

In works of the philosophers of India such as Soostooore (Soosherta), Bahle and Char that have been shown Indian theories about quality and excellence of air in all nature and living things and also Sanskrit is the root of many medical words (George, 1357)

In terms of plant medicine archeological excavations in the Valley of the Indus shows that some plants such as pepper, cinnamon, turmeric, cardamom known and were used in a few thousand years ago in the Indian subcontinent.

From old days the hospitals, was established in India, Therefore, some historians of medicine knows its antiquity to the sixth century BC. According to Indian literature, at this time the Buddha choose a doctor for every ten villages and for the poor, helplessness and paralysis people establishing hospitals. Buddha' child, build hospitals for pregnant patient women and respect for cleanliness, feed the patients and attention to health affairs and hygiene was the principles governing of these hospitals.

The most famous physicians in Indian civilization consist of:

1. *Manke (Kanke)*: The author's book of Chart of the Ages, The mysteries of births, Great and Minor Quran and Constructing the Universe (Ebn, 2002).
2. *Sanghal (Sanjhal)*: He besides of medicine also adept in astronomy and his works have been translated into Persian and Arabic.
3. *Shanagh*: Who has authored five articles about the toxins and poisons?
4. *Ebn Dohn*: Is the translator of Stanker medicine books and Staq document to Arabic and was in charge on the responsibility for large Beramke hospital in Baghdad.
5. *Bahle*: He was an expert and famous doctor and formidable author that along with other Indian physicians were invited to Baghdad.
6. *Saleh, Bahle's Son*: Is the expert doctor from Haroon Abbasi's period and Ebrahim Ebn Saleh Haroon's cousin that was dead by the witness of Gabriel Ebn Bakhtshio, saved him from death by a needle and the same applies proved the ability and superiority of Indian medicine to Greek medicine in terms of the Caliph, and others. (Ebn, 1992)
7. *Cherak*: Special doctor of the court of Emperor Kanishka and was author the book of Samhita or Encyclopedia of Medicine that focused on the surgery, obstetrics, properties of baths, infant nutrition and medical education. Hetaugh this students an oath that is more or less close to the Hippocratic Oath (Will Durant, 1/602).
8. *Soshrota*: He was the teacher of Banares University and had writings in the field of surgery. He described the 121types of surgical appliances and tools and including in case of mutilation, splitting

### **Research Article**

abdomen, cesarean section, hernia, pulling out kidney stones, internal cuts and cataract surgery has a useful description. He enumerated 1120 diseases and for the discovery of them recommends diagnosis through observation, touch by hand and listen to the sounds of patient's body.

Urine analysis as the optimal method of diagnosis existed in Indian medical. Indian doctors had skills especially in produce of different types of antidote and before drug administration rely on to avoid all types of baths and enemas, types of inhaling steam and injections vagina and bled with leeches or by cupping.

As a result, the overall picture of Indian medical is clear that the medicine science of India had a rapid progress and then through the centuries its movement was slow and as away has progressed.

#### **1. Mathematics**

Indians had obvious talent in affairs of subjective and singular notions and hence, developed in mathematics and did actions that create big changes.

History of geometry, arithmetic and algebra in India returns to the ancient periods. And it's probable that at first, they discovered a form of geometric algebra which used for build altars and farewell altars. Today the use of geometric figures is common in the Indian religious ceremonies.

The old Sanskrit books about mathematics is very clear that existence of needs and demands caused that these books be full of various issues about trade and social relations that naturally were required of difficult and complicated calculations. There was various issues about taxes, loans, profit and joint stock companies, trade and commerce, and calculate the content of gold. In fact, considering the growth and development of Indian society at that time and employment large numbers of people to public works, commerce and trade that doing this was impossible without knowing easy methods to compute and hence, mathematics knowledge in among of Indians create, development and spread. Professor Hougini knows the innovations conducted in mathematics knowledge in India not born of intelligence but result of specific social situation and respond to the needs of time (Nehru, 1360).

In Gooptas' period that is the golden age of Renaissance Sanskrit (Howard, 1369) famous mathematicians and astronomers came, including "Vera Hemi hire" the author of five books of Sadhantike that was written based on book of unknown author called "Syria Sadhante". This book contains a summary of the usefulness of initial trigonometry and asinu stable.

The Great Aribahte wrote a book in his name in the sixth century and however, this book is astronomical but the third chapter is devoted to mathematics.

"Berahma Goopta" is the most prominent Indian mathematician in seventh century. He wrote the book of "Berahma sphoote Sadhante" that is astronomical consists of 21 chapters that Chapters 12 and 18, it is about math.

"Bahaskare" is a turning point in mathematics of India because of his, Indian mathematics tended to decline. His book is "Sadhante Shiromani" that had less progress than "Berahma Goopta". Leylavati "Beautiful" and Yajganite "seed account" are the important parts of mathematics the handiwork of him which respectively devoted to algebra and arithmetic. According to sources can be said that innovation and creativity of nine major numbers mathematics has been recorded to Indian. Yaghoubi towards this case to Berahman the first king of India (Yaghoubi, 1103). These numbers has been drawn as vertical lines, but gradually in Sanskrit became easy writing that have no much differences on modern style writing numbers of Arabic, Persian (Birouni, 118, 119).

Although not well clear that decimal number system by who invented in India and long before that decimal in Arab books have seen, Aryabahata and Berahmagoopta knew it (Will, 1600). Aryabahata calculated the value of Pi( $\pi$ ) to four decimal places and provided tables of hypotenuse and arches of circles with intersecting radii and different angles.

Detecting number and mark of zero by Indians "Shonia=Zero" Created a great evolution in mathematics. (Masoudi, 1103)

In mathematics of India, addition operation was performed from left to right and had different ways for multiplications. They did great services in arithmetic and algebra and many issues on account were resolved by the method of examination and correction. Indians found sum of arithmetic and geometric

### Research Article

progression and were purified algebra, accepted negative and irrational numbers and recognized that a square have two exterior roots, were unified the algebraic solution of quadratic equations by using of familiarity completing the square. The Indians had no skills in geometry and their geometry is mainly experimental and was in conjunction with survey.

In addition to the aforementioned, the main innovation of Indian mathematics can be outlined:

- ✓ The discovery of prescript of three perpendicular and its evolution
- ✓ Using the square root operation and use of its mark
- ✓ Calculation of Pi ( $\pi$ ) to 1416/3
- ✓ Using the minus sign and tables of sinus
- ✓ The use of letters in algebra to denote the imaginary and unknown numbers
- ✓ action to simple and quadratic equations
- ✓ Describing zero to infinity  $a - a = 0$ ,  $a + 0 = a$ ,  $a - 0 = a$ ,  $a 0 = 0$ ,  $a 0 =$
- ✓ Applying the concept of negative values  $\sqrt{4} = \pm 2$

Indian mathematical properties, is:

1. Unlike Greece Indian mathematics was mainly as a tool for astronomy.
2. Because of the caste system, Indian mathematics growth was almost completely by clergy.
3. Indians were excellent arithmetic but medium geometrician.
4. Indians often brought their mathematical works in the vague and mysterious language.
5. Indian mathematics was mainly empirical that arguments and methods of extraction were rarely offered.
6. Indian mathematics is not regular from quality so that, rich and poor math often appear together.

### 2. Astronomy

Astronomy's science in India. They were the claimants in knowledge of the movements of the stars and the Ferris secrets in ancient world (Ghazi, 153) and their speech is the exact speech of astronomy (Yaghoubi, 1115).

As mentioned, in life of Indian, religion was the main core, As a result, developing the sciences that, was helpful for religion. Also the science of astronomy was developed by question of celestial bodies and monitor their movements and order to determine and establish the exact day of the feast and sacrifice.

Astronomy in India was accompanied with astrology and astronomical prophecies. There was accurate calculation for counting years which is still common. In these calendars years were calculated with solar calculator and months with moon calculator. As a result, calculated of year and month should regularly adjusted.

In ancient India, like all the others, the clergies were (Brahmans) that has the calculating of the calendar and year counting and they were determined the celebrations and seasonal feasts and also taking the exact time of sun and moon.

Brahmans from their knowledge used for draw and subject the masses of people which were naturally superstitious and from this way augmented their power and prestige (Nehru, 357).

Famous Indian astronomers and mathematicians is "Aribhet" that explained and described the Solar and lunar eclipses, solstices and equinoxes. Explained the sphericity of the earth and the circulation of circadian and with his valiant prediction surpassed on knowledge of Renaissance and wrote: "Ferris of stars is constant and the earth with his ordinal moving, create daily rising and setting of planets and stars." (Will, 1599)

Berahmagopta is the most famous in Indian astrological scientists that set this science but with rejection of Aribhet's theory about earth ordinal moving, hinder the development of this science.

Best book of India astronomical is Berahmaspahat Sadhant that in Sanskrit language it means the knowledge and science and the scientific method and then located this word for each book dedicated to the board and calculate the movements of stars. Masoudi and Yaghoubi know the meaning of this word "Dahr Al Dohoor" [meaning Forever and ever] (Massoudi, 1986; Yaghoubi, 1/102-103). Nellino Believe that this theory is wrong and considers it false and superstitious. He even assume incorrect of Birouni's theory about Sadhante that is meaning direct and not find any tilting and shifting (Nellino, 1349).

### **Research Article**

“Arkband”, “Arjbahr” and “Ahargana” are another Indian astronomy books. The recent book had a particular method that to calculate the last total duration of the first “Kelp” or other date to presumed time and was used for conversion of astronomical years and lunar months to the solar day.

Indians had two ways for determine the modes of moon that in their language is called “Nekshter” it means the star:

1. Older ways selected 28 stars or constellations in north and South of Ferris Zodiac that with this Ferris have different seasons. These unequal modes, at the beginning, was the only signs of movement of the moon but later have been used for determine the location of sun and planets.

2. The other method, was the time that some geometrical and astronomical science of Greece reached in India and Indians learned the using of circles theoretical celestial and they were divided the Ferris Zodiac to twenty-eight equal parts and from this path measured the during of fixed and mobile stars.

In general, the Indian astronomers applied Babylonian heavens divided into the constellations of Zodiac with the Indian way and made a calendar consisting of twelve months and each month thirty days and thirty hours each day and every five years added a leap month.

With considerable accuracy calculate the diameter of moon, eclipse of the moon and sun, Situation of movement the large stars and Arctic and Antarctic and also in Sadhante expressed his opinion about gravity as: “Earth due to its gravity power take everything”.

As a result, Indian astronomers using religious beliefs and the use of mathematics created great evolution in astronomy.

It should be noted that due to the close relationship between sciences such as mathematics, astronomy and geography, especially in the civilizations of the past, from many theories of astronomy, was also uses the science of geography and including Indian astronomers in addition to his astronomical beliefs were given attention to geographical issues such as earth's rotation around its axis, describe the lands of earth to turtle and put half the proportion of the water and the soil of surface of earth, residential land of earth is part of the northern hemisphere, measuring longitude of Silan and believed that this meridian passes through from Ojin.

### **3. Chemistry, Physics and Mechanics**

Probably chemistry in India was the ahead in the first centuries of Christian from other countries. At this time, this science had a close relationship with alchemy and metal industries. The most famous chemist in ancient India is “Negarjona” and the important book that has been written in this context is “Sar.P.Si.Ri” that is one of the greatest chemists of India (Nehru, 356).

In the Gupta's era the industrial development was performed especially in the science of chemistry. In this period, even the Roman Empire knew the Indians as most expert people in the chemical industry, such as glass blowing, saponification, tanning, dyeing and cement-making.

From old days there was steel watering in India and Indian iron and steel was valuable in other countries specially, for making weapons. Preparations of metal compounds was common for medical purposes and knew very well filtration, distillation, sublimation, steaming and other chemical works.

Physical theories in Indian thoughts, was similar to the Greeks. Proponents of Jin religion believes that used Atoms in the world are from one type and made different materials with various aspects of combining, that has a close relationship with school of Zimeghratis. In essays of India music were analyzed the notes and intervals of music which is close to the concept of the Law of Pythagoras and therefore, the number of vibration and the height of sound have inversely proportional with chord length between the connection point and contact. In terms of mechanical works, ship-making had a great prosperity.

In the ancient Indian scriptures and texts have been many references to different machines, especially for military purposes.

### **The Art and Architecture of India**

Our knowledge about India returns to three thousand years BC to the time of Indus Valley Civilization. In conducted excavations have been discovered the large cities with well-made houses and developed and carefully sewage systems and obtained of inscribed seals, Beautiful statues, delicate Jewelry, silver and



### **Research Article**

bronze plates, and painted artifacts which represents the highest degree of artistic ability (Coomaraswamy, 1382).

If the temples of India were similar in size and grandeur of the Christian churches, tradition of digging temples in the heart of the solid rocks is almost the unique characteristics of Indian culture which in them carefully observed of composition and structure of building. In these temples can easily recognize the imaging traditions of India. Pictorial traditions that later create the golden era of Indian carpets with mixed of Iran's painting findings.

Gopta's period, the golden era of India, is considered age of maturity and growth of India. Political power and abundance in wealth, provides suitable physical contexts for achieving to advanced Biology and exceptional method that is recorded as the peak the India civilization. In this period, Buddha's statue become essential part of India architecture and in this period, the art of India only appears as private matter in beside of the priests art and professional art as a business.

Before the Goptas' period, Indian art was a product of nature to result of skill and innovation, so naturalism and simplicity was considered the characteristic of this art, but the Goptas' art was a flowers bloom of a strong tradition and was considered polished and perfection instrumentality for expressing ideas and emotions.

With the formation the dynasty of Mooriani in India, art history of this land became formally documented and during the reign of Ashoka, the capable king of this dynasty, was recorded and became important, the most important golden period of Indian history.

From the most important artistic manifestations of this era is, plant and animal motifs, Historical inscriptions, commemorating columns with high reliefs and tombs decorated with reliefs of Buddhist Art belonging to about 2000BC and caves of Ajanta village Northwest of Hyderabad in India (Marzban, 1986).

Hindus approaching architecture rose rhythmic and within the rules and customs of contractual and class and the principle is floor to floor in architecture of India and Indian architectures considered the architecture essentially ornamental buildings from stones that cut and carved.

In ancient India, because of existence of temple architecture, the buildings were pyramid-shape that after the arrival of Muslims income oval shape (Aziz, 1367).

In general, most important features of the Art and Architecture of India can be outlined:

1. The art of India was religious and ritual art and full of impact of nature.
2. Indian architecture is a product of nature and the skill and innovation that its peak returns to Gopta's dynasty that is the age of maturity and growth of Indian culture.
3. Combination of rationality (innovation) and the clergy are the main features of Indian traditional in the field of art and architecture.
4. Indians mastery in mathematics and geometry and algebra in their accuracy and skills had an important role in art and architecture.
5. Properties of the Indian Subcontinent' architecture is abundance and multiplicity of wealth and riches.
6. Extensive the size of using statue in Indian's buildings, sculptures that were carved from hard rocks with metal tools.
7. Indian Art in the face of major changes, especially in the southern regions remained unchanged.
8. Minimalistic, disposition to design the floor building, simplicity and use of natural materials and tools, in the arrangement within, using constituent elements of nature, the symmetry in the exterior spaces, the skills of Indian constructors in the masonry and requirements of quasi-tropical climate is the central features of Indian architecture.
9. The use of myths and symbols In the Indian art and civilization.
10. Among of architecture ways that developed in India and left a significant influence in the architectural styles is horseshoe arches and horizontal arches.

Transmission routes of Indian science to the Muslim world

In general, Hoardings science collection of Indian civilization was entered to Muslim world in several ways, these ways are:

## **Research Article**

### **1. Iran**

Among the centers that, was considered as the center of science and knowledge before advent of Islam, was Iran. Sassanid kings such as Ardeshir, Shapur, and Anoshirvan attached great significant value for science and philosophy, so that Ardeshir sent people to India and China to copying their books. At the time of Shapur all the delivered books to Iran translate to Pahlavi language and it seems that this is the first translation movement in Iranian history.

The effects of Indian science in Islamic civilization especially was performed by JUNDISHAPUR and gradually Indian medicinal effects was felt in JUNDISHAPUR and especially this effect, increasingly evident in the sixth century AD that Khosro Anoshirvan, sent his secretary, Borzouyeh, for learning Indian sciences to that land. Borzouyeh not only brought the book of Kelile and Demne with himself but also information of Indian medical and several doctors of that land. A book called Indian wisdom that in theyear462AH translated from Arabic to Greek by Shamoon Attaki, attributed to him (Nasr, 1350).

In the importance of Borzouyeh's travel and bring scientific works from India just was enough that Anoshirvan celebrated to honor of Borzouyeh and happiness of, bring the Kelile and Demne and invited the poets and doctors of country for participation in the celebration. On the other hand, Anoshirvan interesting Indian science such as medicine caused that invited the Indians doctors for teaching medicine.

So Iran as a neighbor of India in addition of has good relations with this country since ancient times, in term of scientific relations especially uptake the Indian medical and astronomical elements had an important role and after the spread of Islam in Iran, this science was transmitted to the Islamic world.

As a result in Iran, especially JUNDISHAPUR scientific center was mixed the knowledge and education of Greece, Iran and India and was mediated the transfer of different sciences including Indian medicine, mathematics, astronomy and philosophy.

In the relation with effects of Iran in transfer of Indian science to Islamic civilization should not be simply passed from lineage such as Barmakians.

They were familiar with India's Science and Technology. So that Ebn Nadim reports that: In the days of the Arabruling someone who showed serious attempt on India was Yahya Barmaki and Barmakian that had major interest on Indian affairs and seeking their medical scholars and philosophers (Ebn, 618). Yahya hired someone Indian named Manke "Manka" for translating Indian medicine books to Arabic. Also Ebn Nadim, nominate the books that by order of Yahya Barmaki has been interpretation or translation. Such as the books of Sasard, Sirk [Circus], Alsekar Lelhend [Sugar to India], Asma Aghaghir Alhend [The names of the drugs of India] and etc (ibid, 487).

Barmakian sent writers to India to learning medicine and pharmacology and in the other hand encouraged the Indian writings and scholars to travel and migration to Baghdad to taken supervision of doctors and hospitals and translate the books of India to Arabic. These scholars from Baghdad translated the books from Sanskrit to Arabic about medicine, pharmacology, toxicology, philosophy, astronomy, and other subjects (Lari, 1994)

### **2. Muslim Conquest in Indus and Pinjab**

Muslim troops were sent to India by sea and land. Directions of arrival of Muslims in India are:

1. From Kufe, Baghdad, Basra, Hormuz and the Persian Gulf and the Arabian Sea to port of Cholon the west coast of India.
2. From the southern cities of Iran and from Hormuz and the Persian Gulf to port of Dibl in Indus.
3. Through the Iranian ground roads and mountain passes of Kheybar and Pelan in today Afghanistan.
4. From Iraq's southern ports to ports in southern and southeastern of Iran and then through the Makrancoastor deserts to Indus and India (Shaker, Bita: 6).

For the first time in the year92AHthe Muslim armies led by Muhammad Ebn Qasim Saghafi reached to the Indus Valley and advanced to Moolatan In the words of Gustav Lobon upon entering to ancient Indian civilization found better that land from their young civilization, so they have combined their civilization with that civilization (Gustav, 1358). Mastering of Mohammad Ebn Qasim was makes monitoring and mastering Islamic state on the conquered states. He granted religious freedom to the people of Indus gradually with good behavior to people destroyed the roots of idolatry from among them.

### **Research Article**

Muslim rule based on justice, fairness and equality caused that a large number of indigenous people gravitate to Islam provided the way for Muslim to conquest the rest of India.

Sanskrit and Arabic language influenced by each other. Muslims because of trade cultural could receive and translate the Indian valuable resources such as medicine, astronomy and mathematics and this case established an important scientific evolution among the Muslims, and may combine features of Indian civilization and Islamic civilization before the translation movement.

Arrival of Muslims in India and promoting policy for Muslim men to marry Indian women was causing the creating a new generation in making culture and civilization of Islamic and Indians and Muslim transferred Indian civilization and culture to other Islamic lands and this case was the result of Muslim tolerance and moderation with people of India.

### **3. Translation Movement**

In general, the translation movement can be seen as conversation among previous civilizations to the Islamic civilization and thereby the role and influence of civilizations such as India can receive in the appearance and flourishing of Islamic civilization. Considering that Muslims collected and translated documents and resources from foreign centers including Indian civilization, translation movement had possess from highest importance in the development of quantity and quality of Islamic civilization and the influence from scientific resources of other civilizations.

In translation movement, Indian scientists translated their scientific works into Arabic. Among them are:

1. Sasard, Alsomoom, Alteriaq and Asma Aqaqir Alhend that is translated to Arabic by Manke.
2. Sanad Staq, Stanker Al Jame and Safvat Alnajh that is translated to Arabic by Ebn Dohn.
3. Alajat Alhabali Lelhend (Treatment of pregnant women), unknown translator.
4. Mokhtasar Alhend Fe Aqabir, unknown translator.
5. Alsekar Alhend, unknown translator.
6. Ray Alhend Fi Ajnas Alhayat Va Somoomha, unknown translator.
7. Sirk Alhendi, that is translated from Persian to Arabic by Abdollah Ebn Ali.
8. Ma Ekhtelaf Fih Alrom Va Alhend Fi Alhar Va Albar Va Qavi Aladvie (Ebn, 536).

In mathematics and astronomy the most important book that translated to Arabic and considered as important sources of Islamic astronomy and mathematics is Sadhante compiling by Berahma Goopta. However, before translating, Mansour Abbasi ordered to dictate the summary of this book and then ordered to translate that to Arabic. (Birooni, 208 and 211) This book was the template and sample for Muslims in astronomical matters, so that Ebrahim Fazari set a horoscope from that to Mamoon's period performed only to that horoscope. Even in Mamoon's period, Mohammad Ebn Moosa Kharazmi write another horoscopes that was based on the book of Indian Indus and nominated that Indian minor Indus (Qafty, 307; QaziSaed, 155-156). In the West of the Islamic world also Moslem Ebn Ahmad Mojriti and Abolqasem Asbaq on the basis of Indian astronomical sources adjusted horoscope. So during the translation movement, Indian books either translating directly from Sanskrit to Arabic or through available Persian translation of them to Arabic and reached to the Muslim world.

### **4. Trade and Commerce**

In the beginning, Muslims were acquainted through trade with India and Iran was the intermediary of this relationship that traveled to India from dry way or from Red sea and Oman and Persian Gulf.

Arabs performed their winter trips to Iran and India and were acquainted with this land through the offering dry goods, fruits, perfumes and especially famous Indians words. So that in the poem of Kab Ebn Zahir Ebn Abi Salmi, the Prophetic likened to Indians word (Nadvi, Bit: 71).

In the first centuries of Islam (seventh AD) also Arab traders had commuting to west and southwest coast of Malabar – Kamyabe, Gujarat and Andhra (Deccan) and some of them inhabited in the coastal areas of the region and married with native woman of that region and create a new generation. The presence and arrival of Muslims in Malabar beach had no military aspects and their treatments with these people of these beaches was so friendly and very close that some Hindu Rajays selected their some officers and agents from among the Muslims (Jalali, 10). So another way of transmission the Indian works into Islam world is through trade and commerce. So that "spread of Indian wisdom among the Arabs, in the days of

### **Research Article**

peace, know through the commerce that most, Iran encompassed in roadway and median of India and the west.

#### **5. Entry of Sultan Mahmoud to India and his Association with Abu Rayhan Biruni**

Conquest of India and extensive influence of Islam on that began from Ghaznavian's period. Sultan Mahmoud Ghaznavi conquered India in the year 312AH, under the banner of Islam. He had many wars, including sixteen or seventeen times attacked to India. Ghaznavian's successive victories caused morale weakness in Indians.

When Sultan Mahmoud Ghaznavi faced with Jipal that he had a strong army, he wavered in favor of the Ghaznavian and the result was the capture of Jipal and obtain high Trophies. In the sixteenth attack that is the largest and most important his attack on India, the city of Somnat conquered and their famous, rich and sacred house of idols fell to Muslims. This conquest was considered as victory of Islam over disbelief and hence Islam spread to most parts of India.

If Sultan Mahmoud was unable to completely conquer the vast expanse of India but Abu Rayhan Biruni, who accepted the invitation of Sultan and came from Kharazm to Ghazne and he has been accompanied with Mahmoud Ghaznavi in some of the expeditions to India, acquired the key of India's knowledge and science, literature, religion and customs and the book of Tahghigh Malalhend as an instrument of culture, civilization and science of India, is the unique gift from journey to this land. So that Aldomie Li know profound the influence of Indian science in Islamic civilization and in this regard, adduce the detailed writing of Abu Rayhan Biruni about India (Aldomie, 1355).

Also, Dr. Zarrinkoob knows the Malalhend research as a sample and masterpiece from Muslims alloy research in the field of human geography and Indian folk (Zarrinkoob, 2002).

Abu Rayhan authored his book *Asar Albaghie* and *Alghoroon Alkhlie* after traveling on the Indian countries that discuss from calendar and different nation celebrations.

Another action of Abu Rayhan Biruni is translate the book of "Indian Batankal or Batanjaj" that in the Masoudi's *The Law* book which philosophers of India were brought in that book, he brought in translation of Batankal on like (Rashid al-Din Fazl Aallah, *ibid*,5).

So in conquer territories From India not only Sultan Mahmoud unconsidered as enemy and opposing non-Islamic culture and civilization but also during his military action, Abu Rayhan Biruni transferred the Indian science in the form of authoring books such as Malalhand research, Masoudi's *Law*, *Asar Albaghie* va *Altafhim Leavayel Sanaat Altanjim* and other writings and translations to Islam World and had a huge impact in flourishing Islamic civilization.

#### **6. Role and Direct Influence of Indian Scientists**

Some Indian works was transferred to Islam World as directly and by scientists of that country such as Manke and Ebn Dohn. So that in the year 154 a group of scientists from Indus came to the Mansour Abbasi. Mansour asked from them, specially Manke astronomer and physician from India that teaching overview of astronomy science and mathematics to his court scientists and they did.

Scientific impact of Indian civilization on the Islamic civilization

In the definition of Islamic civilization can be said that collection of achievements and cultural heritages that on the one hand based on Islamic culture and on the other hand was resulting from the combination of achievements and experiences of different civilizations in its scope of history and geography and Muslims had an important role in its Innovation, creativity and growth. So in the creation, formation and flourishing of Islamic civilization in addition to Islamic culture and other cultures including Indian civilization had a great impact and although the India and Indus Valley civilization were not completely under Muslim rule such as conquered areas in Iran and Greek-inhabited areas but Indian scientists and science always had active presence and decisive in the history of Islamic civilization.

Indian expertise and familiarity was in medicine, geometry, mathematics and astronomy. In astronomy and the Board, eclipse and horoscope (Astronomical tables) Muslims used from Indian contents books. Divided months into twenty-seven residence in the early third century AD adapted from Indian astronomical sources and in general from second to fourth centuries AD Islamic scholars in the science of astronomy followed the most of Indian theories and written works such as the book *Alzij* by Ebrahim Ebn

### **Research Article**

Habib Fazari, *Alsend Minor India* by Mohammad Ebn Moosa Kharazmi and *Alsend India* by Habash Ebn Abdollah Marvazi Baghdadi was based on Indian astrology and in the result Indian astrological methods in particular, based on the teachings of Manke were common to Mamoon's period.

In science of geography Indian geographical concepts and methods well known but had less influence in comparison to Indian astrological influence on Islamic thought. The acceptance of Silan as the pinnacle of the world by Muslims was in resulting from geographical ideas in Indian civilization, other geographical concepts that Muslim scholars were familiar with include:

1. Theory of Ariabahata about the bulk of daily skies circulation that due to the Earth's rotation around itself so it seemed.
  2. Simile lands to turtles that engulfed it around with water and is like dome that its highest is Marv peak.
  3. Residents the northern hemisphere of the earth with four levels of Jamkoot, Rome, Silan and Sidpoor.
- In Mathematical Sciences with translation the book of *Sadhante* by Mohammad Ebn Ebrahim Fazari Muslims were familiar with Indian numbers specially Zero, solving arithmetic problems, ordinary and decimal and solving the equations on its way.

Result of influence of Indian mathematics thoughts was evolution and discipline of algebra science and confronting the Muslim world and despite the familiarity of Muslims with Diofantos book there is no doubt that science of algebra had Indian root, Where the Muslims nurtured and developed and Muslim scholars created algebra science and counter from combination of this Indian root with Greek methods. So Algebra associated with the use of Indian numbers is the most important science that Muslims added to a collection of ancient mathematics.

Dr. Nasr's interpretation in the *Islamic World* "Greek and Indian mathematical traditions were crossed together and were unite Dina single structure which in that algebra, geometry, arithmetic found Intellectual and moral and scape and practical and reasoning and scape (Nasr, 147).

In literature, history, philosophy and mythology Muslims accepted the impact of Indian civilization. Translations the books of *Great Sinbad* and *Minor Sinbad*, *Adab Alhend va Alsin*, *Habel* book in wisdom and the book of *Alhend* about Fall of Adam from Sanskrit to Arabic had an important impact on Islamic culture. Log invaluable book *Kelile and Demne* with Indian titled "Panjatantra" is literary masterpiece that not only literature of Islam and Iran but also world literature was affected. This book authored in language of "Debshlam" by "Bidpa" one of Indian scientists and added on it proverb and wisdom that intellects understand it and learn and accepting urbanity (Yaghoubi, 1107). After entering of *Kelile and Demne* to Iran and then Islam world authored many books in the Indian style in story and wisdom among Muslims.

In the field of invention games and entertainments such as backgammon and chess, Iran and the Islamic world were influenced by Indian civilization.

Also in spiritual philosophy some Indian thoughts penetrated to community of Abbasi's period and causing the emergence some beliefs about ghosts, transmigration and its accessories of reward and punishment, and heaven and hell (Maki, (1382:314). Islamic medicine is a combination medicine that in this composition, Indian medicine has an important part.

The most important text of Islamic medicine that there are numerous references to the Indian medical is the book of *Ferdos Alhakame* by Ali Ebn Rebn Tabari that the final chapter is specifically Introduction of Indian medical and remembering their physicians (Gotas, 2002).

Mohammad Ebn Zakaria Razi adduced to the medical book of "Sosrot" and Muslims in recognition the large number of vegetable, mineral and animal drugs were assisted from *Qarabazin* books and some Indian words such as ginger, pepper, bamboo and camphor were into Arabic language.

Ibn Sinain his masterpiece "Law" does not talk exclusively of Greek medicine, because Sheikh Alraeis mentioned frequently Indian doctors' opinion and criticized or praised. For example, will discussing Indian variety leeches and their shapes and properties in "Law" or remarks that according to Indian physicians' opinion, eating milk, sour and fish together causing infection to leprosy, In addition, he cites the many plants in India.

### Research Article

Architectural character of the Indian subcontinent is being religious, abundance, diversity, richness, accuracy, combin0ingrationality and spirituality which is product natural an discussed by skills and innovation, which affected to Islamic architecture art, and when in later periods was mixed together the Islamic and Indian architectural specially the period of Indian Goorkanain this impression showed himself completely. In support of this writing Dr. Zarrinkoob: “The first old Islamic architecture in order to realize the image that had from beauty had no other device except that using of their art method of the folk and country such as Iran, India and etc. But of course these elements are taken from ancient architecture gradually adjusted along with the goals of the new religion and impact on the evolution of Islamic architecture.

### CONCLUSION

1. The basic columns of Indian civilization are religion, climate and science.
2. The Indian civilization had supersede in other nations in some sciences and techniques specially mathematics and medicine.
3. However, many factors played a role in the transmission of Indian sciences to Islam world but the Iranians, particularly with mixing and indulgence their civilization and India played an important role in this transition.
4. Indisputable fact is that largest Indian science works in medicine, mathematics and astronomy had a significant impact on the advancement of science in the Islamic world and causes the flourish and development of sciences in the Islamic civilization.
5. According to the feature of circular world, being civilizations in today world for revival of Islamic civilization the use of modern science in the West is inevitable. But Muslims such the past must trying in interactions with other civilizations that only not be emulator but put the innovation, creativity, innovation and creativity in their main goal.

### REFERENCES

- Ahmad Aziz (1988).** *The History of Islamic Thought in India*, Translate by Naqi Lotfi and Mohammad JafarYahaghi (Universe Publishing) Tehran.
- Dabor TJ (1362).** *History of Philosophy In Islam*, Translate by Abbas Shoqi (Ataei Publishing House) Tehran.
- Dorant William James (1991).** *History of Civilization (The East: the Cradle of Civilization)*, Translated by Ahmad Aram and the Others (Publications and Islamic Education) Teharn.
- Ebn Abi Osaybe and Ahmad Ebn Qasem (1229).** *Oyoun Al Anba Fi Tabaghat Alatba*, Cairo, Maktabatol AlvahbieAH.
- Ebn Ebri and Qariqorios Ebn Ahron Malti(1985),** *Mokhtasa Aldol History*, Translate by Dr. Mohammad Ali Tajpoor, Dr. Heshmatollah Riazi (Information Publication) Tehran.
- Ebn Khaldoun and Abdolrahman Ebn Mohammad (1990).** *Introduction*, Translate by Mohammad Parvin Gonabadi (Cultural and scientific publication) Tehran.
- Ebn Nadim and Mohammad Ebn Eshaq (2002).** *Alfehrest*, Translate by Mohammad Reza Tajaddod (Amir Kabir) Tehran.
- Faz Allah (2005).** *Rashid Addin, Jameato Tavarikh (History of India, Indus and Kashmir)*, edited and Annotated by Mohammad Roshan (Documentary Heritage) Tehran.
- Gootas (2002).** *Dimitri, Greek’s Thought, Aribic Culture*, Translated by Mohammad Saeed Hanaei Kashani (Central University Publisher) Tehran.
- Haverdo Ieoz (1990).** *Familiarity with History of Mathematics*, Translated by Mohammad Qasem Vahidi Asl (Central University Publication) Tehran.
- Hekmat Ali Asqar (1958).** *The Land of India*, Tehran, Tehran University.
- Jalali Naeini (1996).** *India at a Glance*, translated by Seyed Mohammad Reza (Shiraze Publish) Tehran.
- Koomara Sooami (2003).** *Ananda, Introduction of Indian Art*, Research and Translated by Amir Hosein Zekr Goo (Rozane Publication) Tehran.

**Research Article**

**Lari Suhail Zaheer (1994).** *A history of Sind*, Oxford.

**Lobon Gostav (1979).** *Islam and Arab Civilization*, Translated by Seyed Hashem Hoseini (Slamie Bookshop) Tehran.

**Mahajan VD (1962).** *The Muslim Rule in India*, Delhi.

**Maki Mohammad Kazem (2004).** *Islamic Civilization in Abbasian's Period*, Translated by Dr. Mohammad Sepehri (Samt) Tehran.

**Marzban Parviz (1986).** *Summary of Art History* (Publishing and Islamic Revolution Training) Tehran.

**Masoodi Abolhasan Ali Ebn Alhosein (1986).** *Altanbih va Alashraf*, Translated by Abolqasem Payande (Cultural and scientific publications).

**Masoodi Abolhasan Ali Ebn Alhosein (1995).** *Moravaj Alzahab va Maaden Oljavaheer*, translated by Abolqasem Payande (Cultural and scientific publications).

**Mie Li Aldo (1992).** *Islamic Science and Affect That on Transformation Scientific World*, translated by Mohammad Reza Qods Razavi, Tehran.

**Nadavi Abi Hasan Ali Hasani, Almoslemoon Fi Alhend, Damascus, Dar Ebn Kasir, Bita Nasr and Seyed Hosein (1971).** *Science and Civilization in Islam*, Translated by Ahmad Aram (Andishe Publication) Tehran.

**Nahro Javaheer Lal (1982).** *Discovery of India*, Translated by Mahmood Tafazoli (Amir Kabir Publication) Tehran.

**Najm Abadi Mahmood (1992).** *Medicine Science in Iran*, Tehran University, Tehran.

**Nellino Kerlo Alfonso (1970).** *History of Islamic Astronomy*, Translated by Ahmad Aram (Bahman Publication) Tehran.

**Qafti Ali Ebn Yousef Shibani (1948).** *Tarikh Alhokama*, With Attempt of Bahin Darayi, Tehran, Tehran University.

**Qazi Saed Andolosi (1997).** *Altarif Betabaghat Alamam*, Introduction, edited and Research by Qolam Reza Jamshid Nejad Aval (Hejrat Institute Publications) Tehran.

**Tashnar Maqbool Ahmad (1989).** *Geography History in Islamic Civilization*, Translate by Dr. Mohammad Hasan Ganji, Tehran, Foundation of Islamic Encyclopedia.

**Yaghoubi Ahmad Ebn Abi Yaghoub (1995).** *Yaghoubi's History*, Translated by Mohammad Ebrahim Ayati (Science and Cultural Publication) Tehran.

**Yektayi Majid (1974).** *Influence of Culture and Civilization of Iran and Islam in India and Pakistan* (Eqbal Publication) Tehran.

**Zarinkoob Abdolhoseyn (2002).** *Islam Work Book* (Amir Kabir Publication) Tehran.