Islamic Contributions to the West

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I. Introduction

In this talk I would like to give an idea about the cultural contribution of the Islamic civilization to the West, the Islamic origins of modern science and civilization and the ascendancy of the Islamic science and learning for about 600 years in the world.

Therefore I'll talk about the beginning of the Islamicization of the West, of the Influence of Muslims on Western philosophy, rationalism, experimental method, sciences, commerce, material life and arts of gracious living.

II. Islamicization of the West.

"Islamicization of the West", I will use this word for the diffusion and assimilation of Islamic culture in the West. This is distinct from Islamization which means the conscious acceptance and implementation of the ideal Islamic cultural patterns by non-Muslims and nominal Muslims. Islamicization is sociologically similar to, though not identical with, Westernization subject to the limits and conditions of imitative- innovative social change.

The Islamicization of the Medieval West, occurred, first, during the period ending around the middle of the eleventh century before systematic translations from Arabic into Western languages began; secondly during the age of Arabic translations coinciding with the little Renaissance of the twelfth to the seventeenth centuries; and third, during the Catholic-Protestant Reformation and Renaissance of the fourteenth to the sixteenth centuries.

The very presence of Muslims on Western soils (Spain, Sicily) was creating a complex situation. On the one hand, Islamic civilization on Western land was allowing a different way of living and thinking much superior to that one existing in the rest of Europe. On the other hand, it was giving bad feelings to the Christians towards those Muslims inhabiting Latin neighboring countries.

The transformation of the West during these centuries until the sixteenth, passed through several stages of contact and conflict with Islamic culture. The West resorted to various strategies vis-à-vis "the problem of Islam" (R.W. Southern, ***Western Views of Islam***). Until about the end of the eleventh century, the Western views of ideal Islam and its cultural and military triumphant civilization were fostered by sheer ignorance, fanaticism, hatred toward Islam and the Muslims, Biblical exegesis, and relative intellectual and physical isolation. This led to the expected apogee of Western Zealot type response: the Crusades of the twelfth and thirteenth centuries. The extensive contacts with the superior Islamic culture and Muslims during the Crusades ushered in a new era in Western self-consciousness, and awakened responses to Islamic culture. The highest intellectual achievements of the West during these two centuries, twelfth and thirteenth, comprised the imitation of Islamic science and learning. Universities were found in the West patterned on the Muslim universities to assimilate the new knowledge made available by translations of the works in Arabic and, to a lesser extent, of Greek classics which have been superseded by the Muslims.

III. Islamic achievements in science.

A. Introduction: Unwillingness to recognize Islamic achievements.

Many European scholars who approach the subject of Arab contributions to science and philosophy do it with prejudice against the Arabs. Even some of those who praise them do so grudgingly, Carra de Vaux in his chapter "Astronomy and mathematics', in ***Legacy of Islam*** felt compelled to begin

by disparaging the Arabs. He said: “we must not expect to find among the Arabs the same powerful genius, the same gift of scientific imagination, the same “enthusiasm”, the same originality of thought that we have among the Greeks. The Arabs are before all else the pupils of the Greeks, their science is a continuation of Greek science which it preserves, cultivates, and on a number of points develops and perfects.” This is what Carra de Vaux began by saying on the Arabs but a moment later he elaborated and conceded that: “the Arabs have really achieved great things in science; they taught the use of ciphers (sc. Arabic numerals), although they did not invent them, and thus became the founders of the arithmetic of every day; they made algebra an exact science and developed it considerably and laid the foundations of analytical geometry; they were indisputably the founders of plane and spherical trigonometry which, properly speaking, did not exist among the Greeks. In astronomy they made a number of valuable observations.”

The Arabs, with a great open mind went through a gigantesque translation movement from Greek, Indian, and Syriac. Al Ma’mum, the Abbassid Khalif, had founded at the beginning of the ninth century “the house of Wisdom” (bayt el Hikmah) especially for translations. The Arabs assimilated these works of the ancient and developed them. Philosophy, Mathematics, Astronomy and Medicine were the first subjects to attract the interest of Muslims.

B. Scientific method and rationalism.

The scientific or inductive method of inquiry was the greatest boon the Islamic culture had bestowed upon the West. Muslim thinkers were using the inductive method in their scientific investigation in different fields. AlRazi and Ibn al Haitham expounded particularly this method. Ibn Hazm, in his studies of logic emphasized sense-perception as a source of knowledge. Later Ibn Taymiyah, refuting the Aristotelian logic showed that induction was the only form of reliable inference.

It was the method of observation and experiment which led Al-Biruni to the discovery of reaction time, al-Kindi to the formula that sensation is a response of the organism proportionate to the stimulus, and Ibn Al Haitham to his findings in optics.

Briffault, in *The Making of Humanity,* (London, 1928, pp. 200-201) wrote: “the debt of our science to that of the Arabs does not consist in startling discoveries of revolutionary theories; science owes a great deal more to Arab culture, it owes its existence.”

The ancient world was pre-scientific. The astronomy and mathematics of the Greeks were a foreign importation never thoroughly acclimatized in Greek culture. The Greeks systematized, generalized, and theorized, but the patient ways of investigation, the accumulation of positive knowledge, the minute methods of science, detailed and prolonged observation and experimental inquiry were altogether alien to the Greek temperament. Only in Hellenistic Alexandria was any approach to scientific work conducted in the ancient classical world. What we call science arose in Europe as a result of a new spirit of inquiry, of new methods of investigation, of the methods of experiment, observation, and measurement, of the development of

mathematics in a form unknown to the Greeks. That spirit and those methods were introduced into the European world by the Arabs.

C. Humanism, philosophy, scholasticism.

Muslim philosophy influenced Western thought in several ways. It mainly initiated in the West the humanistic movement and helped the Western scholastics in harmonizing philosophy with faith.

Muslims gave a humanist bend to the Western mind. They revealed to the West that outside the prevailing catholic church it was not all darkness and barbarism but immense wealth of knowledge. Before any direct contact between the Greek intellect and the Western mind was established, Arabs had captured and further developed all the intellectual achievements of Greece. It was also due to their influence that men outside the Christian West began to be considered as human and even possessors of higher civilizations.

Long before the Crusades, an Islamic rationalism, had existed in Muslim Spain and Muslim Sicily on Western soil and had been radiating from there to banish the Christian –Western " Dark Age". The Muslim idealistic rationalists precede the Jewish and Christian scholastics. Latin Christendom was borrowing and assimilating Islamic ideological culture, directly from original Arabic sources and the Latin translations of the works of Al-Ghazali, Al kindi, Al Farabi, Ibn Sina, Ibn Rushd and others. Indirectly also through the translated works of Jewish scholastics (Maimonides) who had come even under deeper Islamic influences (G. Sarton, *An Introduction to History of Science*, 1:626, 694, 701).

It is now an established fact of the history of science that the Christian scholastics did borrow from the Islamic philosophy (E.Gilson, *History of Christian philosophy in the Middle Ages*; – sheriff, M.M. (Ed) A *History of Muslim Philosophy*.; G.Sarton, *An Introduction to History of science*. St. Albert and St. Thomas were among the great imitative- innovative assimilators of Islamic ideological culture. Sorokin cited the theory of knowledge of St. Thomas as an example of "a European variety of Platonic-Aristotelian idealistic rationalism" (*Social and Cultural Dynamics*, 2:99, 97ff). Reverend Hammond proved by placing in parallel columns passages from their works that St. Thomas plagiarized the ideas as well as the phraseology of Al Farabi concerning the theory of knowledge, and other ideas. (R. Hammond, *The philosophy of al Farabi and its influence on Medieval thought*). Sarton said St. Thomas "was deeply influenced by Muslim philosophy… chiefly by Al- Ghazali and Ibn Rushd, but his own point of view was fundamentally opposed to Averroism… The aim of his life was to reconcile Aristotelian and Muslim knowledge with Christian theology". *(Introduction*, 2: 914f).

Philosophy and science were considered, in the West, up to the fifteenth century, as antagonistic to religion. Hence the teachings of Aristotelianism and Averroism were banned, Bruno was burnt, Kepler was persecuted and Galileo forced to retract. By harmonizing faith with reason Muslim thinkers made possible for themselves and for Europe, an unhampered development.

The Renaissance finally could install Aristotle on the throne of philosophy. Montgomery Walt expresses an interesting idea about the origin

of the extreme love and admiration Europe had for Aristotle and the Classical thought in general. This phenomenon can be considered as another Islamic contribution to the Western culture. It is because Europe wanted to assert itself distinctly from the Islamic civilization that it assigned to Aristotle a central position in philosophy and science.

The main philosophical influence on the Christian thought at this period was Avicenna and Averroes, the two Muslim philosophers commenting Aristotle and building their philosophical systems on or against the Greek philosopher. Aristotle presented to the Christian scholars the opportunity to escape from the Muslim thought as such. Aristotle belonging to the classical past (Greek and Roman) of Europe was a positive complement to the Muslim sciences towards which the Christian scholars had turned to acquire their knowledge. Montgomery Watt says: "the purely negative activity of turning from Islam, especially when so much was being learnt from Arab sciences and philosophy would have been difficult, if not impossible, without a positive complement, the positive complement was the appeal to Europe's classical past" (The *Influence of Islam on Medieval Europe*, p.79). Because Europe was reacting against Islam it exaggerated its dependence on its Roman and Greek heritage and belittled the influence of the Muslim one.

John Wycliffe (d. 1384), "the Morning star" of the Reformation called for a reform of the church, by imitation of the Muslims, but certainly without expressing his idea explicitly. (Sarton, *Introduction*, 3: 1346-50). He began a new era by pointing inwards at Christians and their own deficiencies as an explanation for their lack of success compared to the Muslims' one. He believed the cause of Muslims' success was their religion which sanctioned worldly pursuits, self-will and secular dominion. The success of Christendom depended on its development like the Muslims', for Wycliffe said "Opposites are dissolved by their opposites". (Southern, pp. 77-83; Sarton, 3: 1346-50).

The fifteenth century experienced continued Islamicisation of the West and a variety of responses to the challenge of Islamic culture. John of Segovia, a Spanish cardinal (d. 1458), advocated peaceful communication with the Muslims. At the other end was Jean Germain (d. 1461), a French bishop, interested in rallying Christendom to a sense of its own identity, preached a return to crusader militarism; above all, he hated those Christians- merchants and others, in increasing numbers- who traveled in Islam and came back with scruples and criticisms of the Christian faith. Unlike John of Segovia, he feared the contamination of discussion. (Southern, p.97). By that time the Islamised Turks had seized power in the Muslim world under the Ottoman dynasty. They had taken over the Balkans, Constantinople and were reaching the outposts of Western Europe.

Then came Martin Luther (d. 1546) after Wycliffe and others and claimed that there can be no solution to the problem of Islam until Christian reformation was completed. He strove to eliminate asceticism, monasticism, celibacy, mendicants, the domination of the church, the cult of saints and holy days, the indissolubility and sacredness of marriage. He even admitted polygamy as lawful. He taught the sanctity of all work and rejected the

notion of some works as holy. He emphasized the ethic of worldly success. (Southern, p. 104-7). Like Wycliffe, Luther rebelled against ecclesiastical authoritarianism and stressed the importance of individual reasoning and conscience as necessary to conduct independent study either to see God or to develop science and philosophy as was so well demonstrated by the success of the Islamic culture. Luther's opponents were not wrong when they accused him of imitating Islamic tenets.

The works of St. Albert, St. Thomas and Roger Bacon represent basically a tremendous will to conquer learning primarily by borrowing from the Muslims. The Western myth of Roger Bacon as the founder of the experimental method has been exploded (Sarton, ***An Introduction***, 2:952-67; Briffault, ***The Making of Humanity***) though it remains to this day esoteric knowledge. Bacon was a student and agent of diffusion in Europe of the well established scientific method of the Muslims. Bacon abandoned the *Bible* as an instrument for understanding the role of Islam in the World; he opposed the militant and zealot responses of the Crusades and Western obscurantism. He was convinced of the importance of learning Arabic and the Muslim sciences and philosophy as the only way to true knowledge for Christian Europe. (Southern, ***Western Views***, pp 52-64). Even if Roger Bacon, like other medieval Western scholars, did not acknowledge his Islamic borrowings, part V of his ***Opus Majus*** is almost a copy of ***The Optics*** of Ibn al Haitham (d. 1039) (Southern, pp56-7). Bacon was one of the most outspoken agents of diffusion of Islamic culture in the West; for this he was imprisoned during the last fifteen years of his life.

The career of Frederic II, the semi-Muslim Hohenstaufen Emperor of Rome (1215-1250) exemplifies the Western Christian pre- Reformation ideological and institutional obstacles to Islamicization. He patronized translations of Arabic books and popularized them, established the first medieval Western university at Naples, and others at Messina and Padua. He introduced advanced Muslim medicine in the school of Salerno. Pope Gregory IX called him an anti- Christ and stirred revolts against him. Repeatedly excommunicated, vanquished, baffled, betrayed, harassed, disheartened, embittered by long years of strife and daily peril, Frederic II capitulated to the Pope and departed from Italy on a Crusade. In Jerusalem, this strangest of Crusaders, was received by Sultan Al Malik Al Kamil, as an honored friend. Discussing with the knowledgeable Sultan, mathematics and sciences, as well as the folly of men who like darkness rather than light, Frederic II exclaimed: "Happy Sultan who knows no pope" (Briffault, p.214). These were prophetic words pointing at the Christian institutional obstructions to Islamicisation. The concept of an anti- Christ was shifting from the Prophet Muhammad to Western Islamicisers and, at the hands of the Protestant reformers, to the Popes.

D. Mathematics

The first important name in mathematics is that of AL-khwarismi, known to the Latin scholars as Algorismus; from his name is derived the technical term "algorism" and he is the founder of the science of "Algebra". Alkhawarismi was followed by many famous mathematicians, like AlKindi,

AlSarakhsi, the three sons of Shakir Ibn Musa, the “Banu Musa”, Alhazen, the Brethren of Purity, etc…

The achievements of Islamic mathematics can be summarized as follow: the Muslims developed number theory in both its mathematical and metaphysical aspects. They generalized the concept of number beyond what was known to the Greeks. They devised new methods of numerical computation reaching their height with Alkashani in the eighth/fifteenth centuries. They also dealt with numerical series, decimal fractions, and similar branches of mathematics connected with numbers.

They systematized and developed the science of algebra, preserving always its links with geometry. They continued the work of the Greeks in solid and plane geometry and developed trigonometry, both plane and solid, working up accurate tables for the functions and discovering many trigonometric relations. This science, cultivated previously in conjunction with astronomy, was perfected and made into an independent science for the first time by Nasir al Din al Tusi in his famous *Figure of the Sector*, which represents major achievements in medieval mathematics. Muslims, above all, developed the "Arabic numbers" and thus made easier all the dealings done previously with the roman numbers encouraged to go beyond the mathematical operations and opened the mathematical horizons with the invention of the zero.

E. Astronomy

In Astronomy Muslims continued the Greek tradition while making extensive use of the knowledge of the Persians and Indians and integrated this new astronomical system into the Islamic world view. The several new features of Islamic astronomy include, besides all the refinements made in the Ptolemaic system, the star catalogue of Ulugh Beg, which was the first new catalogue since the time of Ptolemy, and the replacement of the calculus of chords by the calculus of sires and trigonometry. The Muslim astronomers also modified the general system of the Alexandrians in two important aspects. The first modification was to abolish the eight spheres which Ptolemy had hypothesized to communicate the diurnal movement to each of the heaven; the Muslims substituted a single starless heaven at the confines of the universe, above the heavens of fixed stars, which in undergoing diurnal motion carried all the heavens with it. The other modification, which had a greater significance for the philosophy of sciences, involved a change in the nature of the heavens. The abstract heavens of the Greeks were transformed into a solid body.

The Islamic astronomy continued to correct the mathematical shortcomings of the Ptolemaic model, but it did not break the bounds of the closed Ptolemaic system, which was so intimately tied to the medieval world view.

Later Muslim astronomers criticized various aspects of Ptolemaic astronomy, and Al Biruni knew of the possibility of the motion of the earth around the sun and an elliptic rather than circular motion of the planets. But none of them did, nor could they, take the step to break with the traditional worldview, as was to happen during the Renaissance in the West, because

that would have meant not only a revolution in astronomy, but also an upheaval in the religious, philosophical and social domains.

As long as the hierarchy of knowledge remained intact in Islam, and sciences (scientia) continued to be cultivated in the bosom of wisdom (Sapientia), a certain "limitation" in the physical domain was accepted in order to preserve the freedom of expansion and realization in the spiritual domain. The wall of cosmos was preserved in order to guard the symbolic meaning which such a walled-in-vision of the cosmos presented to most of mankind. For The great majority of men, it was difficult to conceive of the sky as some incandescent matter whirling in space and at the same time as the throne of God. And so, despite all the technical possibility, the step toward breaking the traditional world view was not taken, and the Muslims remained content with developing and perfecting the astronomical system that had been inherited from the Greeks, Indians and Persians, and which became fully integrated into the Islamic world view.

F. Medicine

Islamic medicine is one of the most famous and best known facets of Islamic civilization, being one of the branches of science in which the Muslims most excelled. The Muslim physicians were studied in the West until the 19th century. In the East, despite the rapid spread of Western medical education, Islamic medicine continues to be studied and practiced on a minor scale.

Islamic school of medicine which came into being early in the history of Islam is of great significance first for its intrinsic value, secondly because it has always been closely allied with the other sciences, and especially philosophy.

The wise man or Hakim, who has been throughout Islamic history the central figure in the propagation and transmission of sciences, has usually been a physician. The fact that both the sage and the physician are called Hakim shows the relationship between the two. Many of the best known philosophers and scientists in Islam, such as Avicenna and Averroes, were also physicians. The same thing holds true for the Jewish philosophers in the world of Islam. Maimonides besides being a great thinker was also the physician to Saladin.

The first generations of Muslims were having a simple medicine based on what became to be known as the Medicine of the Prophet (Tibb an-Nabi). Islam, as a guide for all aspects of human life, was concerned with the general principles of medicine and hygiene. Several verses of the ***Quran*** deal with medical questions of a very general order. There are also many sayings of the Prophet dealing with health, sickness, hygiene, and many questions related to the field of medicine. Their guidance has determined many of the Muslims dietary and hygienic habits.

To this typically Islamic medicine were integrated the Hippocratic and Galenic traditions of Greek medicine with the theories and practices of the Persians and Indians, within the general world view of Islam. It is therefore synthetic in nature, combining the observational and concrete approach of the Hippocratic school with the theoretical and philosophical method of Galen and adding to the already rich Greek tradition the theories and

experiences of the Persian and Indian physicians. The Islamic medicine was seeking the concrete causes for individual phenomena rather than the general causes sought by the Peripatetic “natural philosophy.”

With medical texts of Greek, Pahlavi and Sanskrit origin translated into Arabic, and a sound technical vocabulary firmly established, the ground was prepared for the appearance of those giants whose work have dominated Islamic medicine ever since: Al Tabari, Rhazes, Ali ibn al Abbas, Avicenna, Averroes, Mesue Senior (yuhanna ibn Masawaih), Mesue Junior (Masawaih al Marindi) and many others.

The Muslim physicians taught their science in schools, mosques and hospitals. There were the theoretical teaching and the practical one. The hospitals were very cared for and all the sick persons were admitted and were receiving all the care needed, plus clean and new clothes and enough money to live with until they were able to resume working.

It would be too long to speak about all the sciences the Muslims developed: History, Geography, Cosmography and Cosmology, the sciences of man, the city planning, Engineer architecture, Arts, etc…

Arts and sciences in Islam are based on the idea of Devine Unity, which is the heart of Islamic Revelation. Just as all genuine Islamic arts provide the plastic forms through which one can contemplate the Divine Unity manifesting itself in multiplicity, so do all Islamic sciences reveal the unity of Nature, which is an image of the unity of the Divine Principle. `

G. Material Culture

1. Commerce and Seafaring

Arab presence in Sicily and Spain from the eighth century onward and the European presence in the Levant during the two centuries of the Crusades had led to a certain adoption by Western Europeans of many features of Islamic culture. We should add to these relations those resulting from the trade and commerce Arabs had been carrying out throughout the lands under Islamic domination and far beyond these frontiers.

The Arabs in the West wanted the material luxuries to which they had been accustomed in Damascus, and the local inhabitants, admiring the Arabs, wanted to share as far as possible the external aspects of their life. Traders were coming from the East with manufactured goods, incense, spices and all the niceties giving a flavor for daily life. They were bringing back from Europe raw materials, slaves, iron and timber.

The sharing of material culture is observed also in techniques connected with shipbuilding and seafaring. The Arabs invented the lateen sail, despite its Western name, in the lateen caravel. The principle of the lateen sail was adopted by European shipbuilders and once developed made possible the construction of larger ships capable of crossing the Atlantic for the voyages of discovery. They also discovered the mariner’s compass, the portolans or nautical charts, etc… It was from the Arabs that Europeans gained a wider and more precise geographical knowledge. The Arab scholar Al Idrissi (1100-66) under the patronage of Roger II of Sicily, produced a complete description of the world as then known to the Muslims. He set out the fruits of his travels from Asia to England in a series of seventy maps accompanied

by written description comprising what is known as “the book of Roger”. Up to the twelfth century, men still thought that the whole world, apart from Europe, belonged to the Muslims, to judge from the writing of William of Malmesbury.

2. Agriculture and Minerals

Arabs were having a prosperous agriculture in the lands where agriculture was possible. They certainly raised the level of agriculture in a country like Spain where they introduced ways of conserving and distributing water. Evidence for this is the large number of Spanish words pertaining to irrigation techniques which have been derived from Arabic, ex: acequia, irrigation ditch; alberca, articial pool; aljibe, cistern; noria, irrigating wheel or draw well; arcaduz, water conduit or bucket; azuda, Persian wheel; almatriche, canal; alcantarilla, bridge, sewer; atarjea, small drain; atanor, water pipe; alcorque, hollow round the base of a tree to hold water, etc… besides this evidence from language, the actual forms of wheels still used in Spain were invented in the Middle East where they are found today.

The Arabs introduced into Spain their crops: among others were the sugar-cane, rice, oranges, lemons, aubergines, artichokes, apricots and cotton. For all these even the English words came originally from Arabic.

The mineral wealth of Spain was fully exploited: Iron, Copper, cinnabar from which mercury was extracted, gold, precious and semi-precious stones were sought and collected.

3. The Arts of “Gracious Living”

3.1. Industry

This wide variety of materials from agriculture and mining was used by the Arabs of Spain to enhance the pleasure of life. There were various industries producing luxury goods. Among the products were gorgeous textiles in wool, linen and silk. The ceramic industry, the manufacturing of Crystal, the handicraft of fine metal, of jewellery, of carving ivory and wood, of leather work, book-biding, etc… were highly developed.

3.2. Architecture

The glorious buildings called “Moorish” constituted the framework of this life of luxury. The evidence of the Spanish language shows that the Arabs were responsible for many improvements and refinements in building techniques. The words for “architect” and “mason” are from Arabic, “alarife” and “albanil”. So also are the following; alcazar, castle; alcoba, bedroom; azulejo, tile; azotea , roof terrace; baldosa, fine paving tile; aldaba, door-knocker, etc…

3.3. Music

The Arabs invented or improved many types of instrument. The Arabic names of the lute, guitar, rebec and naker show their Arabic origin. The actual Arabic singing and playing was spread by the troubadours. The Morris dancers of England (or Moorish dancers) perform with a hobby-horse and bells and are reminiscent of the Arab minstrels:

3.4. Books

Familiarity with books was one part of “gracious living”. The use of paper made easier the possession of books. The Arabs developed the manufacturing of paper invented by the Chinese. Its use spread into Western Europe through Spain and Sicily.

3.5. Urban organization

The “gracious living” of the Arabs of Spain was essentially urban living and presupposes the existence of cities where law and order is preserved and people living together in peace. It is not surprising therefore to find in Spanish number of words of Arabic origin dealing with municipal administration and the control of commercial activity like, alcalde (mayor), alcaid (governor of a fortress), the zalmedina (magistrate), zoco or azoguejo (market) etc…

IV. The spread of Islamic culture into Europe.

The Islamicisation of intellectual culture in Spain as early as the ninth century was described by Alvaro, a contemporary Cordovian bishop: “the Christians love to read the poems and romances of the Arabs: theologians and philosophers. Alas! All talented young Christians read and study with enthusiasm the Arab books; they gather immense libraries at great expense; they despise the Christian literature as unworthy of attention. They have forgotten their language. For everyone who can write a letter in Latin to a friend, there are a thousand who can express themselves in Arabic with elegance, and write better poems in this language than the Arabs themselves”. (R.W. Southern, p.21).

There have been many discussions of the relationship of Arabic and European elements in the sphere of poetry (Sir Hamilton Gibb, ***The Legacy of Islam***), notably in respect of Provençal poetry and the troubadours (from the Arabic word mutrebeen). The popular poetry formed the connecting link between Spain and Provence, since singers moved between Muslim and Christian territories.

This refinement of life gradually spread northwards from Spain and Sicily. The experiences of the Crusaders in Islamic lands doubtless contributed something to the spread of Arab culture in Western Europe.

V. Conclusion

The notion of “the miracle of Arabic science” circulated most unfortunately by Sarton, the Historian of medieval science, is false. The explanation of the “phenomenon” of the sudden birth of Islamic science lays down in the living Islamic ethos of those times; its dogmas and its gamut of culture; the all- pervading Islamic law which forged strong bonds of social co-operation among the Muslims, and between the Muslims and non-Muslims, citizens and resident aliens of the vast Islamic society of bewildering religious, ideological, national, racial and linguistic diversity. This Islamic ethos in action rekindled the dying embers of the pre-Quranic ancient sciences and world-wide civilization. The Muslims absorbed the best in the existing sciences and civilizations consistent with Islam and developed them, thanks to the intensely developed Islamic consciousness and conditioning, based on a remarkable Islamic system of education. There was great flexibility in horizontal and vertical mobility of people as nationalistic and hedonistic evils were held in check. Prerequisites for science and civilization were there: invention and innovation based on original thought; social mindedness and utilitarianism of individual efforts as well as in the organization of state and its educational and other programs; political stability, the rule of law and constitutionalism. All these mechanisms and conditions are necessary for the genesis, development, diffusion and application of science and technology. These mechanisms operate only in a cultural and political milieu of propitious dogmas, laws, values, cosmological doctrines, attitudes and efforts, all of which existed in the progressive period of medieval Islamic civilization.

I would like to emphasize the Islamic origins of modern science and civilization, and the ascendancy of Islamic science and learning in the world for more than 600 years (eighth to thirteenth centuries AD/second to seventh AH at least).

The West has generally maintained a conspiracy of silence regarding its medieval rejuvenation through Islamicization (the imitative-innovative assimilation of Islamic culture by non-Muslims - Islamization being the adoption of ideal Islamic culture and religion in the behavioral culture).

In more recent times a large number of Western scholars, together with Muslim scholars writing in Western languages, have been bringing out the diffusion of Islamic science, philosophy, and other aspects of Islamic culture in medieval West.

However, such researches have not been incorporated in the Western education system and culture, in the manner and to the extent necessary for fostering the proper appreciation of the ideal and historical patterns of Islamic culture. Therefore the West portends and strives for Westernization of the Muslim world because of what is considered to be the backwardness of contemporary Muslim behavioral culture pattern and the denyial of the existence and validity of ideal Islamic culture pattern. Therefore we can see the reactionary Muslim responses through polemics, xenophobia, historical romanticism, zealotism, fanaticism, extremism, even terrorism. Which are in fact a far cry from the creative adaptation indispensable for contemporary rejuvenation.

The consequences of the denial, falsification and neglect of this historical fact have been extremely serious: the denigration of Islam in the eyes of Muslims and non-Muslims; the identification of Islam and its culture with ignorance and backwardness and of “modernity” and progress with Western civilization; the creation of xenophobia and arrogance in Western mind, and the perpetration of ideological and politico- economic Western imperialism against Muslim people; the imposition of an inferiority complex among Western educated “modern” Muslims, and the bitter social and political cleavages between the “modern” and the “traditional” Muslim elites.

This fact of medieval Islamicization of the West needs to be fully researched, accepted and incorporated in specialized works and in the teaching materials of schools and colleges around the world. The consequences of this will be far reaching in understanding the socio-cultural rejuvenation and modernization of the developing nations, in building up a genuine and universally acceptable theory of social action, and in ridding sociology of ethnocentrism; in removing the burdens of historical romanticism and apologetics imposed upon the underdeveloped nations and suppressed minorities as a reaction to the cultural arrogance of nations and ethnic groups which are highly developed today but had their own dark ages at some other time and in promoting international understanding and co-operation for development and world peace.

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