

An Introduction to  
**Muslim Science**

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## INTRODUCTION TO MUSLIM SCIENCE

The Greek, a brilliant civilisation, encompassed subjects such as philosophy, mathematics, geography, astronomy and medicine. Archimedes, Aristotle, Euclid, Socrates, Galen, and Ptolemy are just a few of the great pioneers. When the Romans took over, a large empire extended from the doors of Asia to England, that also included North Africa and much of the Middle East. Christianity appeared in Roman times, the Roman civilisation thus straddling both sides of the Christian calendar: BC and A.D.



The Roman Empire collapsed in the fifth century AD after the invasions of 'barbarian' people, the Vandals, Anglo-Saxons and Franks, who gave the foundations to today's European nations (the Franks to France, the Anglo-Saxons to England etc.) Following the fall of the Roman Empire began what are generally known as the dark ages, which elapsed from roughly the late fifth century to the late fifteen century.

Whilst the period of Antiquity, the time of Greco-Roman civilisation and the Renaissance, receive high praise, the period in between (late fifth to the late fifteenth) is highly obscured. Indeed, the amount of works of all sorts on the Greek civilisation, for instance, is absolutely staggering, with millions of books, articles, web sites, institutes, courses, conferences, seminars, films, documentaries, etc...

The Renaissance, needless to say, is even more publicised. The centuries termed as 'the dark ages,' however, are the missing centuries in history. It is not as one would think that there is nothing about such centuries; as that is far from the truth. There are actually millions of works on the dark ages with many departments and thousands of scholars now dealing with this period. Such a focus, however, is mainly on the successive ruling dynasties, religion, warfare, the feudal system and the crusades.

Science and civilisation, until fairly recently, on the other hand, have received little attention. Somehow, the picture that has dominated scholarship, and opinion, was that Europe went from the brilliance of antiquity straight into ten centuries of darkness, and then suddenly, out of nowhere, into the Revival; that very Revival that gave the West the power and lead it still keeps today. This means, basically, that Western civilisation owes all and everything to Greece. In other words, Greek learning was dormant for ten centuries (during the dark ages), then, one day, it was recovered, for no reason, just like that, and Europe blossomed again. Somehow, the mathematics, the astronomy, the optics, the medicine left by the Greeks being absolutely the same, untouched in ten centuries, just dusted off.

To explain this theory, however devoid of any sense or logic, or scientific or historical truth, thousands upon thousands of 'historians' and opinion makers assembled spurious facts and fiction and concocted history. This 'history' is reproduced in books, classes, films, magazines, on television, daily, all the time; the truth is unchallenged (except by the highly intellectual books, for the initiated). Just recently, thus, on the BBC<sup>1</sup>, was the programme 'The Greeks', narrated by an actor (Liam Neeson), turned historian for the occasion, pursuing on the same theme that all modern civilisation owes to the Greeks.

Western history, as generally presented, contains big distortions. Daily, nowadays, everything about such a history is questioned. No need to go into every single matter here. Just on the subject that matters here, as Wickens puts it:

*'In the broadest sense, the West's borrowings from the Middle East form practically the whole basic fabric of civilisation. Without such fundamental borrowings from the Middle East,' he adds, 'we should lack the following sorts of things among others (unless, of course, we had been quick and inventive enough to devise them all for ourselves): agriculture; the domestication of animals, for food, clothing and transportation; spinning and weaving; building; drainage and irrigation; road-making and the wheel; metal-working, and standard tools and weapons of all kinds; sailing ships; astronomical observation and the calendar; writing and the keeping of records; laws and civic life; coinage; abstract thought and mathematics; most of our religious ideas and symbols'. He concludes that 'there is virtually no evidence for any of these basic things and processes and ideas being actually invented in the West.'*<sup>2</sup>

There is a major fallacy in the concept of the 'Dark Ages.' Haskins,<sup>3</sup> followed by scores of others, demonstrated that Europe experienced its revival in the twelfth century and not in that 'magic' period of the so called Renaissance (late 15<sup>th</sup> - early 17<sup>th</sup>). Sarton<sup>4</sup>, in his voluminous Introduction to the History of Science shows both the continuity in scientific progress, the crucial importance of the middle ages and also the decisive Muslim contribution. Lynn White JR (by no means a fervent admirer of Muslim science) recognises that 'the traditional picture of the Middle Ages (5th to the 15th) has been one of historical decline, particularly in early Middle Ages, the so called dark Ages. Yet such a view of the Middle Ages is false when viewed from the standpoint of the history of technology.'<sup>5</sup>

He further adds that:

*'the very creative new Islamic civilisation incorporated and perpetuated the technical achievements of Greece and Rome... The idea of so called dark Ages was only applicable to the western portion of the Roman Empire.'*<sup>6</sup>

Whilst Whipple states:

*'To many students of medical history and medical science the Middle Ages, or Dark Ages as they have been called, implies a period of regression, of endless controversy, of fruitless arguments of scholasticism and the mention of this period is met with disinterest if not antagonism.'*<sup>7</sup>

That period of the 'Dark ages' coincides exactly with the Muslim apogee. This alone explains very much the hostility to it.<sup>8</sup> Indeed, in the midst of Europe's darkness, almost immediately after the fall of the Roman Empire, the Muslim civilisation came into being. It was in the year 622 that the Hijra took place and in the year 630, that the Prophet (pbuh) entered Makkah. Following the death of the Prophet (pbuh), Islam spread to the neighbouring lands, embraced rapidly by the various local populations. And by the year 750, the Muslim lands stretched from Spain to the borders of China. Rising with the spread of Islam was a grandiose civilisation. Unlike Europe gripped by darkness, the Muslim scientific revolution took place exactly during the apogee of Islam, from roughly the late 8th century (2 Hijra) to the thirteenth (7th H). Islam, according to Draper, 'had all along been the patron of physical

science; paganising Christianity not only repudiated it, but exhibited towards it sentiments of contemptuous disdain and hatred.<sup>19</sup> It was, indeed, between the 8th-13th centuries that most decisive scientific inventions were made, and the foundations of modern civilisation were laid. Scientists and scientific discoveries in their thousands, artistic creativity, great architecture, huge libraries, hospitals, universities, mapping of the world, the discovery of the sky and its secrets and much more. It was the time when Al-Biruni, Al-Khwarizmi, Al-Idrissi, Al-Kindi, Ibn Sina, Al-Razi, Ibn Khaldun, Al-Khazin, Ibn al-Haytham, Al-Farabi, Al-Ghazali, Al-Jazari and hundreds more scientists shaped the modern sciences in such a way that in the mind of Briffault, science `owes a great deal more to the Arab culture, it owes its existence.<sup>10</sup> And had not it been for such Muslim upsurge, modern European civilisation, he pursues, would never have arisen at all; and `would not have assumed that character which has enabled it to transcend all previous phases of evolution.<sup>11</sup> George Sarton speaks of `The Miracle of Arabic science, using the word miracle as a symbol of our inability to explain achievements which were almost incredible... unparalleled in the history of the world.<sup>12</sup>

Martin Levey points out to the crucial timing of the Muslim scientific upsurge (during the times of darkness elsewhere), and also how it was conveyed to Europe.

*In a time when the movement of ideas was at a relative standstill, 'he holds, `the Muslims came along with a new outlook, with a sense of enquiry into the old, and finally to a point where Western Europe could take over this thoroughly examined knowledge and endow its ripeness with a completely fresh approach of its own.<sup>13</sup>*

With the Spanish re-conquest of former Muslim towns and cities, most particularly Toledo, (in 1085), the Christians came across the vast Muslim learning. Adelard of Bath, Robert of Chester, Plato of Tivoli, Herman of Carinthia, Gerard of Cremonna, and many others and, of course, the many Jewish intermediaries, translated vast amounts of scientific works from Arabic into Latin, Hebrew and local dialects. These hundreds of works were to serve as the foundations of Western learning. The courts of Sicily and Muslim Spain also communicated more knowledge and civilisation. And so did the Crusades, two centuries of warfare and mayhem, and also of cultural intercourse, during which the Europeans acquired skills of various nature, in architecture, and others. Just as stated by Lowe;

*'The so called Dark Ages were lighter than we used to believe, and there was a constant interchange of knowledge and ideas between the supposedly hostile worlds of the Cross and the Crescent.<sup>14</sup>*

It is impossible for historians to explain the role of the Middle Ages in the advance of civilisation without referring to the Islamic role. Some (Lynn White Jr, Duhem; Clagett...) did try to rehabilitate the Middle Ages, whilst still lessening the role of the Muslim. Their works ended up with gaps and contradictions of horrendous dimensions that any person, however limited in skills could raise. Besides, amongst the Westerners are scholars in the many who keep unearthing what others try hard to blot out. Sarton, Haskins, E.Kennedy, D. King, Wiedemann, Ribera, Hill, Mieli, Myers, Suter, Leclerc, Millas Vallicrosa, Sedillot, just to cite a few amongst the many, have put at the disposal of scholarship and audiences so much that is impossible to hide. So the true place of Islamic science can be reclaimed.

Unlike their successors and some of today's `historians', the Muslims never denied the contribution of other races and peoples to the rise and spread of science. Science and learning have been recognised in earnest by the Muslims that they were not the God given gifts to one race or entity, and that instead all nations and creeds and colours shared in genius and creativity. The prophet (PBUH) himself stated the crucial role of China when commanding Muslims to seek knowledge. Muslim scientific intercourse with other people, the Chinese, above all, but also the Indians, the Africans, the local Europeans people, the Jews and all others dwelling on their lands never ceased.

Many of the scientists under Islam have nothing Muslim about them. Thus, some of Islam's earliest and most prominent scientists at the Abbasid court, Ishaq Ibn Hunayn and Hunayn Ibn Ishaq were Nestorian Christians. Thabit Ibn Qurrah, the astronomer, was a Sabean. The Bakhishtu family who held most prominent positions in the court in the ninth century were Christians, too. So were the historian-physician Abu'l Faraj; Ali Ibn Ridwan, the Egyptian, who was the al-Hakem's Doctor; Ibn Djazla of Baghdad and Isa Ibn Ali, another famed physicist; and so on. Yaqut al-Hamawi, one of Islam's greatest geographer-historian, was of Greek antecedents, and so was Al-Khazin (the champion author of the Balance of Wisdom). The Jews had the most glorious pages of their civilisation under Islam, too. To name just a couple, Maimonides (philosopher-physicist) was Salah Eddin Al-Ayyubi's doctor, and Hasdai Ibn Shaprut, followed by his sons, held some of the most prominent positions in terms of learning and power in Muslim Spain. The Ben-Tibbon family were the ones who played a most prominent role in scattering Islamic learning in all provinces other than Spain (such as the South of France). Nearly all Muslim envoys to Christian powers were Jews; and about all Muslim trade was in the hands of the Jews, too. Moreover, amongst the Muslims, only a number of such scientists were Arabs; most were instead Turks, Iranians, Spanish Muslims, Berbers, Kurds... thus a myriad of people and origins brought under the mantle of Islam, a religion open to all who sought to, and excelled in learning. That was the first and by far the most multi-ethnic culture and civilisation that had ever existed, not equalled in many respects, even today; not even in countries and institutions which keep advertising their equal opportunity status. One is equally amazed by the general attitude of Muslim scholars in acknowledging who ever preceded them and whatever theory they utilised; or refuted. Not one single Muslim scholar, as can be found by any reader consulting the works of the likes of Al-Zahrawi, Al-Biruni, Al-Bitruji, or any other, denied the paternity or authorship of any of their predecessors whether it be Ptolemy, Galen, or Aristotle; or their Indian-Chinese counterparts. Absolutely not a single instance exists of any of their successors (from Chaucer, to Bacon, to Aquinas, to Harvey, or Copernicus, or any of such 'giants' of science acknowledging the real (Islamic) source of their science. It has to be unearthed by those amongst the most able, inquisitive, fairest historians of our day (Sarton, Meyers, Mieli, Briffault, Saliba, Hill; etc). Besides, whilst under Islam, Jews and Christians occupied the highest chairs in learning and high ministerial positions in Muslim governments, not a single Muslim occupies today any high learning position (such as Vice chancellor, or chancellor.) In fact, most university departments in the social sciences (history, in particular,) are completely Muslim free.

The fitting conclusion is that, in the crucial centuries of the Middle Ages, Europe acquired much knowledge from the Muslims, and could begin its revival. This revival stretched from present day Italy to Germany, to Holland, an outburst of creativity in all forms, from science to arts. It was the time of Da Vinci, Copernicus, Gallileo, Kepler, and many more... Muslim navigators had also passed on their skills and knowledge that opened the doors of ocean navigation. Christopher Columbus, via his Jewish links, relied on Muslim charts, and possibly navigators. Magellan's success in the Indian Ocean owes nearly all to Ibn Majid's guidance and nautical legacy. Europe then built most of its power on its new colonies.

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- 1 BBC2, Saturdays, January 2001, 8pm.
- 2 G.M Wickens: 'What the West borrowed from the Middle East,' in Introduction to Islamic Civilisation, edited by R.M. Savory, Cambridge University Press, Cambridge, 1976. pp 120-5. At p.120.
- 3 C.H. Haskins: The Renaissance of the Twelfth century, Cambridge, Mass, 1927.
- 4 G.Sarton: Introduction to the history of science, 3 Vols, Baltimore: The Williams and Wilkins Co., 1927-

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1948. Published for the Carnegie Institute of Washington, D.C

5 Lynn White Jr: `Technology in the Middle Ages,' in Technology in Western civilisation, Vol 1, edited by M. Kranzberg and C.W. Pursell Jr, Oxford University Press, 1967, pp 66-79; p. 66.

6 Ibid.

7 A.Whipple: The Role of the Nestorians and Muslims in the History of Medicine. Microfilm-xerography by University Microfilms International Ann Arbor, Michigan, U.S.A. 1977, p.1.

8 The origin of this hostile attitude to that period of history (not the object of this work) goes back to Petrarch, who, so much disgusted by the Muslim imprint on civilisation, decided to brush it off, do away with the whole period altogether, and link straight Renaissance and Antiquity.

9 J.W. Draper: A History of the Intellectual Development of Europe. Two vols; revised edition, George Bell and Sons, London, 1875. vol 2: p. 121.

10 R. Briffault: The Making of Humanity, George Unwin and Allen, London, 1928, at p. 191.

11 Ibid p. 190.

12 G. Sarton, Introduction, op cit.

13 M. Levey: Early Arabic Pharmacology, Leiden, E.J. Brill,, 1973, p. 71.

14 A. Lowe: The Barrier and the Bridge, Published by G. Bles, London, 1972. p. 81.

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