

Who are the Muslims? (part 2 of 2)

Description: Over a billion people from all races, nationalities and cultures " a continuation of the Muslim contribution to science.

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Geography

Muslim scholars paid great attention to geography. In fact, the Muslims' great concern for geography originated with their religion. The Quran encourages people to travel throughout the earth to see God's signs and patterns everywhere. Islam also requires each Muslim to have at least enough knowledge of geography to know the direction of the Qiblah (the position of the Ka'bah in Makkah) in order to pray five times a day. Muslims were also used to taking long journeys to conduct trade as well as to make the Hajj and spread their religion. The far-flung Islamic empire enabled scholar-explorers to compile large amounts of geographical and climatic information from the Atlantic to the Pacific.

Among the most famous names in the field of geography, even in the West, are Ibn Khaldun and Ibn Batuta, renowned for their written accounts of their extensive explorations.

In 1166, Al-Idrisi, the well-known Muslim scholar who served the Sicilian court, produced very accurate maps, including a world map with all the continents and their mountains, rivers and famous cities. Al-Muqdishī was the first geographer to produce accurate maps in color.

It was, moreover, with the help of Muslim navigators and their inventions that Magellan was able to traverse the Cape of Good Hope, and Da Gama and Columbus had Muslim navigators on board their ships.

Humanity

Seeking knowledge is obligatory in Islam for every Muslim, man and woman. The main sources of Islam, the Quran and the Sunnah (Prophet Muhammad's traditions), encourage Muslims to seek knowledge and be scholars, since this is the best way for people to know Allah (God), to appreciate His wondrous creations and be thankful for them. Muslims were therefore eager to seek knowledge, both religious and secular, and within a few years of Muhammad's mission, a great civilization sprang up and flourished. The outcome is shown in the spread of Islamic universities; Al-Zaytunah in Tunis, and Al-Azhar in Cairo go back more than 1,000 years and are the oldest existing universities in the world. Indeed, they were the models for the first European universities, such as Bologna, Heidelberg, and the Sorbonne. Even the familiar academic cap and gown

originated at Al-Azhar University.

Muslims made great advances in many different fields, such as geography, physics, chemistry, mathematics, medicine, pharmacology, architecture, linguistics and astronomy. Algebra and the Arabic numerals were introduced to the world by Muslim scholars. The astrolabe, the quadrant, and other navigational devices and maps were developed by Muslim scholars and played an important role in world progress, most notably in Europe's age of exploration.

Muslim scholars studied the ancient civilizations from Greece and Rome to China and India. The works of Aristotle, Ptolemy, Euclid and others were translated into Arabic. Muslim scholars and scientists then added their own creative ideas, discoveries and inventions, and finally transmitted this new knowledge to Europe, leading directly to the Renaissance. Many scientific and medical treatises, having been translated into Latin, were standard text and reference books as late as the 17th and 18th centuries.

Mathematics

It is interesting to note that Islam so strongly urges mankind to study and explore the universe. For example, the Holy Quran states:

"We (Allah) will show you (mankind) Our signs/patterns in the horizons/universe and in yourselves until you are convinced that the revelation is the truth." (Quran 41:53)

This invitation to explore and search made Muslims interested in astronomy, mathematics, chemistry, and the other sciences, and they had a very clear and firm understanding of the correspondences among geometry, mathematics, and astronomy.

The Muslims invented the symbol for zero (The word "cipher" comes from Arabic sifr), and they organized the numbers into the decimal system - base 10. Additionally, they invented the symbol to express an unknown quantity, i.e. variables like x .

The first great Muslim mathematician, Al-Khawarizmi, invented the subject of algebra (al-Jabr), which was further developed by others, most notably Umar Khayyam. Al-Khawarizmi's work, in Latin translation, brought the Arabic numerals along with the mathematics to Europe, through Spain. The word "algorithm" is derived from his name.

Muslim mathematicians excelled also in geometry, as can be seen in their graphic arts, and it was the great Al-Biruni (who excelled also in the fields of natural history, even geology and mineralogy) who established trigonometry as a distinct branch of mathematics. Other Muslim mathematicians made significant progress in number theory.

Medicine

In Islam, the human body is a source of appreciation, as it is created by Almighty Allah (God). How it functions, how to keep it clean and safe, how to prevent diseases from attacking it or cure those diseases, have been important issues for Muslims.

Prophet Muhammad, may the mercy and blessings of God be upon him, said:

"God created no illness, but established for it a cure, except for old age. When the antidote is applied, the patient will recover with the permission of God."

This was strong motivation to encourage Muslim scientists to explore, develop, and apply empirical laws. Much attention was given to medicine and public health care. The first hospital was built in Baghdad in 706 AC. The Muslims also used camel caravans as mobile hospitals, which moved from place to place.

Since the religion did not forbid it, Muslim scholars used human cadavers to study anatomy and physiology and to help their students understand how the body functions. This empirical study enabled surgery to develop very quickly.

Al-Razi, known in the West as Rhazes, the famous physician and scientist, (d. 932) was one of the greatest physicians in the world in the Middle Ages. He stressed empirical observation and clinical medicine and was unrivalled as a diagnostician. He also wrote a treatise on hygiene in hospitals. Khalaf Abul-Qasim Al-Zahrawi was a very famous surgeon in the eleventh century, known in Europe for his work, *Concessio* (Kitab al-Tasrif).

Ibn Sina (d. 1037), better known to the West as Avicenna, was perhaps the greatest physician until the modern era. His famous book, *Al-Qanun fi al-Tibb*, remained a standard textbook even in Europe, for over 700 years. Ibn Sina's work is still studied and built upon in the East.

Other significant contributions were made in pharmacology, such as Ibn Sina's *Kitab al-Shifa'* (Book of Healing), and in public health. Every major city in the Islamic world had a number of excellent hospitals, some of them teaching hospitals, and many of them were specialized for particular diseases, including mental and emotional. The Ottomans were particularly noted for their building of hospitals and for the high level of hygiene practiced in them.

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