Find out how Muslim Civilisation helped us Understand the Universe

The wonder and glory of the starry skies impressed the scholars of Muslim civilisation – but they also looked for order and logic in what they saw. They developed new instruments to study the stars, and mathematical models to understand the movement of the Moon and planets, influencing considerably the development of astronomy.

Over 160 stars are still known by their Arabic names – from Leo’s Denebola, from the Arabic ḍhnab for ‘the lion’s tail’, to Orion’s Rigel, meaning ‘the foot’. The Arabic names for many of the stars were recorded in the works of scholars from Muslim civilisation.

Maryam al-Astrulabiya

Maryam, daughter of Al-Ijli al-Astrulabiya, was born in 944 in Aleppo, Syria. Unlike most other women of the 10th century, she took up the trade of instrument-making, including astrolabes, for which she is remembered today.

Astrolabe

The astrolabe is a two-dimensional model of the universe that you hold in your hands. Its heavenly features, marked out on the back, include a star map and a protractor to track the Sun’s path across the sky. Its earthly features are engraved on various plates that correspond to particular latitudes or localities. Some astrolabes were small, palm-size, and portable; others were huge.

Astronomical instruments

Astronomy flourished in Muslim civilisation. Key astronomical tools were quadrant and sextant, which were used to measure the altitude of heavenly bodies. Astrolabes were devices which showed the Earth at the centre, surrounded by concentric pivoting rings representing the Aquator, Tropics, and the apparent path of the Sun around the Earth.

Star coordinates could be mapped on celestial globes such as those made by Al-Battani. In a 10th-century work he described an instrument called al-baydha (the egg). It combined elements of a solid celestial sphere with others derived from the tradition of the armillary sphere.

Observatories

Caliph Al-Ma’mun had begun the tradition of building observatories in Muslim civilisation when he founded facilities in Baghdad and on Mount Qasiyun in Damascus.

15th-century astronomer and mathematician Ulugh Beg was also a lover of the Timurid Empire, which included the central and Southwest Asia. This led him to build a huge observatory, the Samarkand Observatory, to study the stars and develop mathematical models to improve accuracy of measurements. The instrument helped to keep astronomers at the observatory, including Al-Kashi and Qadi Zada Rumi.

Astronomer Taqi al-Din built a magnificent observatory in Istanbul in the 16th century. It contained an impressive array of instruments, including huge versions of some tools to increase accuracy of measurements.

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The lunar calendar was twelve unequal months of which the ninth month is Ramadan, the year 622, the year is 354 or 355 days long. It is divided into two parts. The lunar calendar, follows the lunar cycle. Named in reference to the first day of the holy month of fasting.

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Lunar formations

In the 7th century, many rocky lunar plains and craters were named after famous medieval astronomers – some by scholars from Muslim civilisation. The tradition has continued in modern times, with many lunar features sport Latin versions of the names of distinguished Arabic and Muslim astronomers.

‘Abategnes’ is a lunar impact crater named after the Syrian astronomer Abu ‘Abd Allah Muhammad ibn al-Zarraj. He was born in 858. He determined many astronomical measurements with great accuracy.

The circular lunar plain ‘Thabit’ is named after the mathematician Thabit ibn Qurra who died in Baghdad in 901.