1001 Inventions: A Timely Reminder of a Shared Modernity

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Islamophobia in the west has cast a shadow over the Muslim world's contribution to scientific knowledge and innovation. Duncan Simpson reviews the 1001 Inventions exhibition at the Science Museum.

One of the British National Party's central claims during their disastrous general election campaign was that Islam was incompatible with so called British or Western values.

Nick Griffin went so far during their manifesto launch as to claim that Islam was the greatest threat currently facing European civilisation.

Perhaps more worrying though is the trend of major news media to consistently give oxygen to this argument through one sided and often over exaggerated reporting.

A cursory search on the websites of the Sun or Daily Mail newspapers will find articles stoking fear of 'Islamification' and British women being forced to wear the Burka.

The unifying theme of these reports is that Islamic culture in all its forms is backward, quasi-medieval and diametrically opposed to western secular and enlightenment values.

Nothing however could be further from the truth, and even the most superficial glance at the history of Europe in the last 800 years will reveal the vital influence of Islamic thought in fields as diverse as engineering, mathematics, education, medicine and philosophy.

One exhibition currently running at the science museum in London is trying to readdress the balance and highlight Europe's Muslim heritage.

1001 Inventions focuses on the period from the 7th century AD onwards and covers many of the innovations that had the most influence in the West as Muslim scholars built upon the works of Greek, Roman and Egyptian thinkers much of which had been lost during Europe's Dark Age.

The development and preservation of these works would later benefit the West through the expansion of the Muslim world particularly into southern Spain and would have great influence on the European renaissance of the 12th century.

The first thing that strikes you as you enter the spacious and well structured exhibition room is that the curators have taken the prescient step of grouping each section of the exhibition around ornate and elaborately decorated minarets and domes. The irony being that for the Muslim architects who pioneered the complex mathematical and engineering techniques required for their construction they represented the height of technical innovation and the power of an emerging civilisation. Twelve hundred years later the Swiss people voted to ban the construction of minarets as an overly conspicuous sign of a "rampant Islamification of Switzerland".

There are seven sections to the exhibition, each centred on an area of Islamic cultural life. There are sections for home and school life where we you can learn about the remarkable clocks developed by Al Jazari (1136 - 1206) which included the world's first water clocks that could record the passage of time in hours utilising a mechanism of weights and pulleys, and his elephant clock (a full size replica of which is included in the exhibition) which uses a combination of water and automated puppets in its theatrical design.

Al Jaziri was also the author of the Kitáb fí ma'rifat al-hiyal al-handasiyya (The Book of Knowledge of Ingenious Mechanical Devices) which included his designs for turning linear motion into rotary motion by way of a crankshaft.

This mechanism formed the precursor to the larger scale crankshaft and piston devices used to power the steam engines and mills of the European industrial revolution. Al Jazari pops up again in the award winning exhibition film being played by Sir Ben Kingsley who leads us on a vaguely Harry Potter like mystical journey through the exhibition introducing us to other scholars and inventors of the Islamic world.

One such scholar is Fatima al-Fihri a woman living in 9th century Morocco who founded what is the world's oldest degree granting university at Fes. The University of Qarawiyyin incorporated religious instruction as well as political discussion, later extending to cover the natural sciences and is still awarding degrees today. That it was a woman who founded such an institution flies in the face of those who view Islam as eternally repressive to women.

The universe section features another female inventor called Merriam'al-Ijliyah who lived in 10th century Syria. She constructed highly complex instruments for navigation called astrolabes. Astrolabes were mostly handheld devices that utilised the most detailed information at the time on star constellations.

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The museum display features an array of child friendly interactive panels and screens that explain the use of the devices and how the observations they were based on went on to influence figures such as Copernicus and Galileo. Increasing the accuracy of such astrological measurements was an ongoing preoccupation for Muslim scientists who built ever more complex instruments to aid their work.

Taqi al-Din in the 16th century constructed a framed sextant and his Observational Clock the most accurate at the time could measure down to five second intervals. You can also learn about Ulugh Beg who in the 15th century built a mural sextant in what is now Uzbekistan with a radius of nearly 40 meters. With this he calculated the length of the year to be 365 days ,6 hours, 10 minutes and 8 seconds, by modern calculations an error of only 58 seconds!

The hospital and town zones are equally informative in the fields of medicine and architecture. The latter making the link between the elaborate decorations on 10th century Muslim palaces and mosques and the development of gothic architecture in Europe, not to mention the influence of domed structures to British buildings like St Paul's cathedral and Brighton Royal Pavilion.

Medical advances like the introduction of catgut for surgery and several leaps in our understanding of blood circulation were also made during this time. Also included is an account of a hospital set up in 9th century Tunisia which had a ward specifically for the treatment of lepers. This at a time when lepers were often viewed as untreatable and evil.

Perhaps one of the most striking features of the exhibition is that the majority of these innovations were being made whilst Europe was in its Dark Age. A time when the light of human knowledge and understanding was kept alive in the Islamic world and without which European modernity simply couldn't have happened.

An exhibit focussing on the work of Abu Rayhan Biruni makes this point rather well when you learn that in the 10th century he developed trigonometric calculations to arrive at a highly accurate figure for the circumference of the earth. 700 years later the Vatican conceded it was not flat!

This disjunction is perhaps played down by the curators of the exhibition who are right to emphasise the spirit of scientific and developmental interconnectedness rather than make it appear like two separate worlds in a race for modernity.

However in a time when Islamophobia is continuing to cast a shadow over our shared history and frame Islamic culture as an alien anti-enlightenment force it is essential that the wealth of knowledge and scientific innovation that the west inherited continues to be celebrated, and the Muslim world recognised as being part of a shared modernity.

The exhibition runs at the London science museum until June 30th and is free to enter.