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Elephant clock trumpets golden age of ancient Islamic science

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The Elephant Clock, 6m (20ft) tall and flanked by Chinese dragons and an Egyptian phoenix, looks more like a mystical creature from *One Thousand and One Nights* than a piece of cutting-edge mechanical gadgetry.

But in its day — 800 years ago — the instrument was unprecedented in its control of flowing water, its use of robotics and its reliability at marking out the passing of time in precise half-hourly intervals.

A replica of the weight-powered water clock went on show yesterday at London's Science Museum as part of an exhibition aimed at bringing Islamic scientists, such as Al-Jazari the clock's Mesopotamian inventor, to greater public recognition.

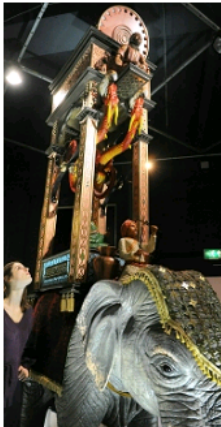
Speaking at the opening of *1001 Inventions*, Chris Rapley, the director of the Science Museum, said that the Islamic Golden Age had led to huge advances in engineering, physics and the foundations of modern mathematics, which continue to make an impact today.

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A replica of the weight-powered water clock has gone on show at London's Science Museum

"The thousand-year period from the 7th century onwards was a time of exceptional scientific and technological advancement in China, India, Persia, Africa and the Arab world," he said.

Professor Rapley said that science had a significant role to play in developing common goals between the Islamic and Western countries in coming years, arguing that the most original scientific ideas emerge from

multi-cultural collaboration.

"There's a lot of focus on the importance of interdisciplinary research, we should be talking more about multi-cultural research. People with different thought processes, different mental models, different ways of seeing things can spark off really new ideas," he said.

The 13th-century clock is described in the exhibition as a physical embodiment of cross-cultural fertilisation. Its timing mechanism based on an internal water weighting and pulley system, was inspired by individual inventions from across the world. Inside the elephant is a large bucket of water in which a deep bowl floated. The bowl has a small hole in the centre and takes half an hour to fill and sink. This sets off a network of seesaws and levers, leading to a cymbal being struck and the bowl being hoisted back out of the water.

Acknowledging his various sources of inspiration, Al-Jazari's clock depicts an Indian Elephant, Chinese Dragons, a Greek water bowl, an Egyptian Phoenix and wooden robots in traditional Arabian attire.

"It embodies cultural and scientific convergence of civilisations and is an appropriate centre-piece for an exhibition about the roots of science and technology," said Professor Salim Al-Hassani, chairman of the Foundation for Science, Technology and Civilisation, which created the exhibition.

Muslim scientists have applauded the exhibition saying that a broader recognition of the role of their religion in science would lead to greater respect for Islamic communities.

Mohamed El-Gomati, a physicist at the University of York, called for the history of Islamic science to be made part of the National Curriculum. "If they learnt that a lot of the technologies we use today came from other cultures I think there would be more respect between children sitting next to each other in the classroom," he said.

He said that he had no difficulty reconciling his faith with his profession as a scientist. "My faith is my moral compass. Everything that I do in my labs is for the good of the community, the aim of my work in nanotechnology is to make people's lives easier," he said.

The exhibition also highlights the role women played in Islamic science, featuring an exhibit about Merriam Al-Jiliya, an astrolabe maker and chief engineer for the Sultan.

Other exhibits featured in this interactive exhibition include a model of an energy efficient and environmentally-friendly Baghdad house, a 3 metre large reproduction Al-Idrisi's 12th-century world map, a model of Zheng He's Chinese junk ship, originally a 15th century wooden super structure over 100 metres long and a model of a 9th-century dark room, later called Camera Obscura, which Ibn al-Haytham used to revolutionise our understanding of optics.

The exhibition was funded by the Abdul Latif Jameela Foundation, a charity set up in Britain by the Saudi Arabian company Abdul Latif Jameel Ltd.