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MEASURING THE MONUMENT

Late last year, the Lord Mayor of the City of London, Michael Mainelli, held a set of scientific trials as part of his mayoral theme, 'Connect to Prosper'.

The Experiment Series brought together academic researchers and industry experts to underscore the City's strength as a knowledge hub where academia and business unite to solve complex challenges. Over 40 learned societies, 70 higher education institutions, and 130 research institutes exist in and around the City of London, making it the world's most successful concentration of interconnected knowledge networks. A place where science and finance meet to find and to fund the solutions to global challenges.

To end the series, City St George's, University of London helped to settle a 350-year-old question about the Monument to the Great Fire of London – could the Monument really be used to show that the Earth revolves around the Sun? The great polymath, Robert Hooke (1635 – 1703) originally put forward the idea that the Monument, erected to celebrate London's recovery from the Great Fire of 1666, could also act as a giant telescope for viewing the stars and measuring their movements.

Specifically, Hooke wanted to try and prove what was then the controversial theory that the Earth revolves around the Sun and not the other way around.

The 'Measuring the Monument' initiative was led overall by Past Master of the Worshipful Society of Scientific Instrument Makers and InstMC Honorary Fellow, Professor Philip Thomas, with contribution from the InstMC's Professor Ken Grattan (through City Optotech Ltd) measuring the pillar's movement directly using a contact fibre optic method, and also Imetrum, a sensor company who used their own novel non-contact technology, employing very sensitive cameras to observe the movement of structures over time.

All those involved, then presented their findings at an evening event hosted at the Guildhall Art Gallery. Together, the 'Measuring the Monument' experiments showed that the Monument pillar, was indeed, unsuitable for measuring the stars' movements. This is because, although the tower was built to be as rigid as possible, its tall structure would always make it prone to vibrations, and those vibrations are big enough to stop the positions of the stars being measured accurately.

Up to now, the limiting factor has been thought to be road traffic – with this theory dating back to the 1670s – but the advanced measurement methods show that wind gusts, even moderate breezes, pose an even greater problem. Robert Hooke was up against the forces of nature as well as human-made vibrations. The Monument could not, in the end, double up as the telescope Hooke had designed it to be.