The BBC Series *The Story of Math* by Marcus du Sautoy

In October 2008, Marcus du Sautoy presented a landmark series for the BBC on the history of mathematics. Called *The Story of Math*, the four one-hour programs took viewers from the pyramids of Cairo to the deserts of Arizona, from the backwaters of Kerela to the suburbs of St. Petersburg, in pursuit of where and how mathematics evolved over the last seven millennia.

Program One covers the mathematics of the ancient world: Egypt, Babylon, and Greece, including how the Egyptians used early ideas of the calculus to calculate the volumes of pyramids. Program Two takes viewers on a journey through the mathematics of the east from China through to India where we discover that the Kerelean school of mathematicians already knew Leibniz's infinite series for pi some centuries before its discovery in the West. Program Three presents the mathematics of Europe from Descartes, via Euler through to Riemann. Program Four encompasses the mathematics of the modern era, from Hilbert and Cantor through to Perelman's proof of the Poincaré Conjecture.

The reaction to the programs has been fantastic. Over half a million people viewed the first program. It was the seventh most downloaded program on i-player, beaten by two episodes of Eastenders and Little Britain in the USA. The Program received a four-star review from the Times—despite the reviewer saying he didn't understand a word: "where was du Sautoy when the dumbing-down debate was had."

Marcus du Sautoy is the Simonyi Professor for the Public Understanding of Science and Professor of Mathematics at the University of Oxford and a Fellow of New College. He is author of the best-selling popular mathematics book *The Music of the Primes* published in 2003 and translated into 10 languages. It has won two major prizes in Italy and Germany for the best popular science book of the year. His book *Symmetry* was released in March 2008.

In May of 2008 **Marcus du Sautoy** discussed the mystery of prime numbers, the history behind the Riemann hypothesis and the ongoing quest to solve it in his Clay Public Lecture at MIT. A video recording of his talk may be viewed at www.claymath.org/public_lectures/dusautoy.php.

Marcus du Sautoy outside the modern library in Alexandria talking about Euclid.

The series is partly funded by the Open University and there is an accompanying course for those interested in discovering more (www.openuniversity.co.uk/storyofmaths). The series forms part of Marcus du Sautoy's work as a Senior Media Fellow for the EPSRC. Combining stunning graphics with colorful locations, *The Story of Math* hopes to bring alive the intellectual journey that has taken mathematicians from fractions to fractals, from the circle to the hypersphere.

The Open University and the BBC have been in partnership for more than 30 years, providing educational programming to a mass audience. In recent times this partnership has evolved from late-night programming for delivering courses to peak-time programs with a broad appeal to encourage wider participation in learning.

Du Sautoy describes his experience hosting the series with enthusiasm, "I didn't really know a lot about the history of my subject. I always believed that what matters most is the mathematics. If you know the theorems and the proofs, is it really important who created them or in what circumstances? Certainly the way we are taught mathematics both in school and at university reinforces this a-historical message. So you might think that with such a mentality, I wouldn't be the ideal candidate to present a landmark series on the history of math for the BBC."

"But in some ways I think that it's worked in my favor. The series has become a real journey of discovery for me. Uncovering quite how much the ancient

A DVD of all four episodes is now available at www.ouw.co.uk/products/XM004_DVD01.shtm.

Egyptians and Babylonians knew about mathematics before the ancient Greeks has been a revelation for someone brought up on the myth that it all started with Pythagoras. I was amazed to discover quite how much the Indian mathematicians of the medieval period knew about infinite series and pre-calculus. And visiting the places where Descartes, Fermat, Euler, and Cantor grew up brought these characters alive for me in a way that I hope will come over on the screen."

"The programs pick up on this intellectual journey and mirror it with a real physical journey. The hope was to make something that looked like a cross between Michael Palin meets the *Ascent of Man*. The programs open with the story of the mathematics of ancient Eygpt and Babylon. Cairo and the pyramids provide an exotic location for the former. But unfortunately health and safety at the BBC stopped us from braving war-torn Iraq for the sake of mathematics. So Damascus, an outpost of the Babylonian empire, became our backdrop to talk about the mathematics hidden inside the clay tablets that have survived."

The film crew for program One at the pyramids in Egypt.

Horse riding in the Atlas Mountains of Morocco discussing Omar Khayyam's contributions to mathematics.

"The second program took us to the East and an exploration of Chinese and Indian mathematics. One of the highlights for me was the pilgrimage to Gwalior to see a tiny little temple hanging off the side of a mountain fort. Big enough to fit the presenter and a cameraman inside, we scoured the inscriptions on the walls for the first known example of the number zero, one of the greatest and revolutionary inventions made in India."

"The mathematics of India found its way to Europe via the spice routes through central Asia. Again health and safety denied us a trip to Iran to recreate the adventures of Omar Khayam (the British sailors had not long before been released from captivity). So Morocco became our central Asian backdrop where we found some fantastic horses to ride across the Atlas mountains in my reincarnation of the great Persian poet and mathematician. (My director informed me afterwards that he had decided to leave that reckless afternoon out of the health and safety report.)"

"Programs Three and Four took us to the colder climes of Europe and then on to the US to a town called Descartes; Fermat's home town Beaumont-de-Lomagne for Fermat Day; St Petersburg for the mighty Euler and the elusive Perelman; Göttingen for Gauss, Riemann, and Hilbert; the Nervenklinik in Halle for the unsettled Cantor; the Paris café where Bourbaki began (now a fast food burger joint); and the Arizona desert to look for Julia Robinson's childhood haunts. But if I had to pick out one location that excited me more than any other, it has to be our one day trip from St. Petersburg to the gray city of Kaliningrad. This is the modern name for Königsberg, the home of the seven bridges that some see as the beginning of modern topology. The city was bombed heavily during the second world war and today only three of the original bridges are left standing. Two of the others have been rebuilt—they now take a huge dual carriageway through the center of the town."

"Despite the ugly nature of this modern city, I felt I was in a mathematical Disneyland. To be able to make the journey over the bridges to see if there is a path filled me with a childish excitement that my crew just couldn't understand. Of course with just the five existing bridges it is in fact possible to make the journey today, unlike the seven bridges that the inhabitants of Königsberg were faced with."

"My crew was only too pleased to leave behind the grim skyline of Kaliningrad but for me it was one of the days out of the months of filming that I will always treasure. For me it encapsulated what this whole series is about—bringing alive the stories behind the amazing intellectual journey that mathematicians have made over the last seven millennia."

The Story of Math is an Open University/BBC co-production that aired on BBC FOUR in October, 2008. The series was produced by BBC Executive Producer David Okuefuna, BBC Series Producer Kim Duke, and Open University Executive Producer Catherine McCarthy. Academic Advisors from The Open University were Professors Robin Wilson, Jeremy Gray and Dr. June Barrow-Green.