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*****PRESS RELEASE*****

Sherlock Holmes and the case of the Oxford Mathematician

Professor Moriarty, a mathematical genius, is a tough opponent. He is smart, evil, and relentless – a perfect match for Robert Downey Junior and Jude Law in the new Sherlock Holmes movie ("A Game of Shadows"), released on 16 December by Warner Bros. Moriarty's formulae for world domination, as seen in the film, aren't the stuff of fantasy. They are the stuff of Professor Alain Goriely and Dr Derek Moulton from the Mathematics Institute in Oxford who helped Warner Bros. give mathematical credibility to the movie. "Conan Doyle probably felt that equations didn't fit easily into his story" says Prof. Goriely. "However, on the screen they are perfect - powerful, beautiful, and mysterious. They tell us everything we need to know about the Professor. This guy is smart. Sherlock is in trouble and the clues are all on the board."

The Oxford pair's brief was to design the blackboard in Moriarty's office, a gigantic board filled with intricate, beautiful, yet mathematically exact equations and formulas. "Unfortunately, Conan Doyle told us very little about Prof. Moriarty and we had to do some sleuthing of our own" says Prof. Goriely. The challenges were multiple and complex. The first task they faced was to give Moriarty some intellectual and mathematical depth consistent with the period from the hints and clues lightly sprinkled among the Sherlock Holmes stories. Then, they designed the code and cypher that Moriarty uses to carry his evil plots. "The code is based on Moriarty's fascination with the binomial theorem, the Pascal triangle, and the Fibonacci p-codes. It is elaborate and reliable as only Moriarty could have come up with" says Dr Moulton.

Dr Moulton and Professor Goriely also wrote an entire mathematical lecture that Moriarty gives around Europe. The lecture entitled "Singularity, Collisions and Blow-ups in the N-Body Problem" is based on Moriarty's second book 'The Dynamics of An Asteroid' and was road-tested by Prof. Goriely at the Oxford Centre for Collaborative Applied Mathematics a year ago behind closed doors: "Celestial mechanics was a hot topic by the end of the nineteenth-century and Moriarty could see the benefit of computing ballistic trajectories and collision events for his own machiavellian plans. Do not be surprised if there are a lot of big guns in the movie. Mathematics has done so much good for mankind, but this was a reminder of what happens when it falls into the wrong hands" says Prof. Goriely, "But, without revealing too much, by the end it is mathematics itself that defeats Moriarty."

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