

## *Oration for Professor Robert Boyd,*

Chancellor, by the authority of Senate, I present to you this person on whom the Senate desires you to confer the honorary degree of Doctor of Science

### **Professor Robert Boyd.**

Robert Boyd was born in Buffalo, New York. He received his first degree in physics from MIT and his Ph.D. from the University of California at Berkeley. His thesis was supervised by Nobel Prize winner Charles Townes on non-linear optical techniques in infrared astronomy.

Professor Boyd literally wrote the book on a subject we call “non-linear optics”, a field that is nearly as old as the laser itself. His book, unsurprisingly called “non-linear optics” adorns the shelf of every optical laboratory in the world, including my own. Since its publication in 1992 the book has received over 8,000 citations.

Issac Newton would have considered non-linear optics to be a modern-day alchemy, where focusing a laser into a man-made crystal transforms the colour of the light from an invisible infrared to a very visible green. But non-linear optics does other things too. Some of Robert’s own work passes green light from a laser through a ruby crystal, slowing the speed of light to walking pace – slow enough for Usain Bolt to give it a thrashing at this year’s commonwealth games. In more of his work he forms images from light that has never seen the object – a topic we call “Quantum Ghost Imaging”. Other strange quantum effects include the instantaneous copying of a light beam from one place to another – what we call “Quantum teleportation” – but more about that later.

After over 30 years at the University of Rochester, in 2010 Robert was co-appointed as a Canadian Excellence Research Chair in Quantum Optics at the University of Ottawa. Given a research budget of \$25M he is tasked to place Canada at the head of his field – a task with which he is making great progress.

Robert is a frequent visitor to Glasgow, where he is a Visiting Professor and has a close collaboration with my own Optics Group. The collaboration has led to numerous high profile papers including those in Science, the world’s leading Scientific Journal. The collaboration between the two groups, includes regular exchange between our research teams and is a platform upon which we are building closer links between the Universities of Ottawa and Glasgow.

During one of his first visits to Glasgow Robert announced that he had seen all of Leonardo Da Vinci's painting bar one. Excitingly the remaining painting was displayed in Drumlanrig castle, 50 miles south of Glasgow – obviously we should go and see it. This we did, but – bad news -we arrived to find it had been stolen, but good news was it had been found again, but further bad news was it was now hanging on the wall of the procurator fiscal who, as part of the trial, had decided to look after the evidence personally!

Robert tells me that although the painting is credited to Leonardo – it is actually probably the work of his students – so it seems that our own PhD students should be assured that it was always thus.

Beyond art, Robert is keen and, on the basis that he can stay upright, I would say, an accomplished surfer. His son-in-law has appeared in Star Trek, you know the one in which Scotty beams people up. Given that Robert is the only person I know who has a five-hour commute to work, I can only assume that his son-in-law is busy turning Bob's Quantum Teleporter into a real one – watch this space.

**Chancellor, I invite you to confer the honorary degree of Doctor of Science, honoris causa, upon Professor Robert Boyd.**



Miles Padgett

15<sup>th</sup> June 2014