



N E R E N B E R G L E C T U R E

## It IS Rocket Science!

### Dr. Steve MacLean Gives the 2010 Nerenberg Lecture

By Christopher Essex

Probably everyone connected with mathematics knows that revealing your connection leads to reactions like: “Eew, mathematics; I was never any good at that in school.” It’s like announcing that you have some communicable disease. Complementary to this is the expression, “well, it’s not rocket science,” meaning that you, dummy, should be able to understand it, because it is not beyond you like, um, mathematics is.

Ironically the basic concept behind rockets isn’t “rocket science” either: stuff is blown out the back pushing the rocket forward. Ah but then there are the details, which mess up good quips like this. Rockets carrying humans are actually among the most complex of machines, not to mention among the most frightening when you recognize that stuff blowing out the back means you are riding on top of a controlled explosion.

The mysterious fading in and out of the high tech lighting system at the 2010 Nerenberg Lecture caused Dr. Steve MacLean to muse on just how complex rockets actually are and how sometimes we stake our lives on technologies that are difficult to understand, especially when they go wrong like the lights. MacLean is someone who understands that all too well, given that he is a two time astronaut who sat on top of controlled explosions in order to achieve this.



Steve MacLean giving autographs to fans after his Lecture

Dr. MacLean, President of the Canadian Space Agency, is one of a handful of Canadians to have walked in space. He is a well-published physicist, who studied with Nobel Laureate A.L. Schawlow at Stanford University after getting his Ph.D. at York University. He was also a member of the Canadian National Gymnastics Team, and was even a glider pilot. One of the first six Canadian astronauts he later

became the chief scientific advisor for the International Space Station, the Director General of the Canadian Astronaut Program, and Chief Astronaut of the Canadian Space Agency. He has received numerous international honours, including the Canadian Meritorious Service Cross.

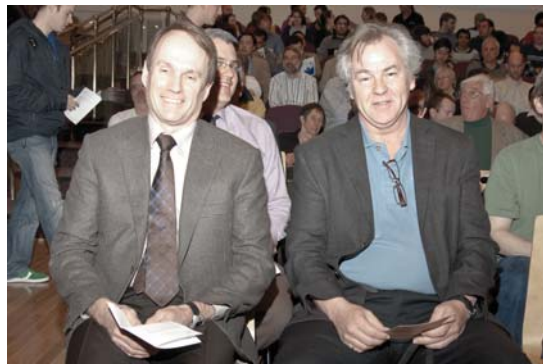
While space travel and astronauts no longer have the cold war era buzz about them, they retain a perennial fascination because space travelers are rare, and space is a dangerous, hard-to-get-to place that continues to capture our imagination. Indeed, actual space travel has strong resonances with science fiction. For example, the first complete prototype of the space shuttle was named “Enterprise”, inspired by the television series Star Trek. The ashes of its late creator, Gene Rodenberry, were actually carried into space in one of the missions that Dr. MacLean was on. He recalls the container holding Rodenberry’s remains in the cabin at launch as if it were one of the crew. (This makes the second Nerenberg Lecturer in a row with connections to Rodenberry.)



Steve MacLean and Albert Nerenberg

While it still has an exotic appeal, space has snuck up on us and become a daily part of our lives: we have satellite television, satellite radio, satellite telephones, and GPS built right into our cars. And that is just to name a few obvious things that can affect us directly. And that is not even considering the numerous indirect spinoffs from velcro and medicine, to weather forecasting, which are not so obviously connected but no less important to us. And we don’t even have to be rocket scientists to use these things.

The Canadian record in space has been quite impressive for our size. After the Russians and Americans, Canadians were the third to put an object into space with the Alouette satellite in 1962. Our efforts in space have brought remote Canadian settlements into the modern world with Internet and telephone, where none were previously possible. But as valuable as these accomplishments are, are they our sole purpose in space to generate exotic technologies as spinoffs?



Two Canadian Astronauts: Steve MacLean and Bjarni Tryggvason

Of course not. As wonderful as it is, who comes to lectures to get autographs

of the people who made Velcro, or the designers of GPS? The autograph seekers came for Dr. MacLean who captured their imagination and who rode into space with Gene Rodenberry. You don't need to know the rocket equation to appreciate an astronaut. We all know that we have only dipped our toes into the potential of the great ocean of space, and today everything we do sets a foundation for future generations to build on. Big visions may not be rocket science, but they surely fuel it.

Organized by Western's Department of Applied Mathematics, the Nerenberg Lecture is named after the late professor Paddy Nerenberg and is intended to honour his appreciation for the democracy of ideas.