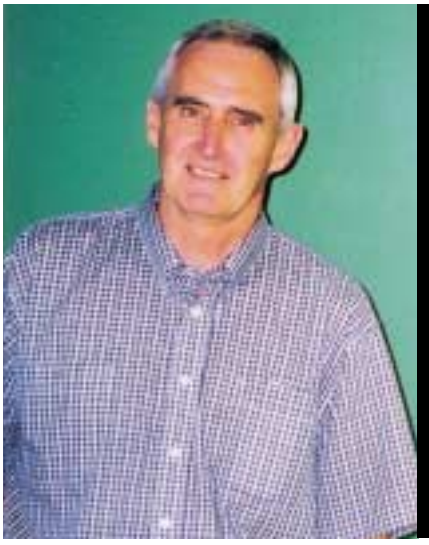
Robert Prince, P. Eng.: Stargazing and trailblazing

by Charles Finley



"Our hope is [engineering students will graduate with] a strong appreciation of engineering design, a strong appreciation of the sciences, and an appreciation of professional practice, with a strong sense of practice ethics and entrepreneurialism."

Robert Prince, PhD, P.Eng., looked to the future when he began planning a new engineering school at Toronto's York University.

Slipping out of the atmosphere's envelope in 1957, Sputnik became the first artificial satellite the Earth had ever seen. The moment signalled hope for the future for many. Sitting in his high school class the day it was launched, Robert Prince thought Sputnik was a confirmation of the path upon which he'd set out when he started designing his own airplanes and built them out of balsa wood as a child, studying how they achieved flight.

As dean of the Faculty of Pure and Applied Science at Toronto's York University, from 1994 until this year, Prince, 59, has helped to launch many young scientists into the orbit of Canada's research community, and recently he has had a pivotal role in designing Canada's newest engineering school to train its future engineers. The new school accepted its first students this fall, and offers specialty streams in Engineering Physics, Computer Engineering, Space Engineering and Geomatics Engineering.

The fledgling engineering school actually grew both from deep roots in the university and from Prince's own career path. Around the time Prince was watching Sputnik soar into space, plans were in the works to raise the university on farmlands north of Toronto. Those plans included an engineering school, but a study done by the Committee of Presidents of Universities of Ontario (later the Council of Ontario Universities), convinced the province that Ontario had enough accredited engineering programs.

Despite the setback for the university, "it was an exciting time" for engineering, particularly aerospace engineering in Canada. Canada launched its own satellite program in 1962 with Alouette, the first satellite launched into space that was built entirely by a country other than the United States or the then Soviet Union.

Prince was looking forward to working in the sector. Graduating with a PhD in aerospace engineering from the University of Toronto in 1968, he worked on a number of space-related projects. Through the U of T's Institute for Aerospace Study, he got to work on the first Mars lander and NASA's Viking project, which landed on Mars in 1976. More space work followed with the Canadian government on communication satellites.

After working on the satellites in the '70s, Prince moved to academe and up its ladder at both the University of Toronto and York University, with stints at Cambridge in England and Pennsylvania State University.

Higher learning

By the late '80s, York had developed a well-respected science program. Already home to the internationally recognized Centre for Research in Earth and Space Science (CRESS), the university decided to extend its expertise by funding new programs in biotechnology, atmospheric chemistry and space science.

Then Chair of the Department of Physics and Astronomy from 1989-1994, Prince was a key player in the development of its new Space Science program. "We took our first students in the fall of 1989. In many respects [the program] was a precursor to engineering if you think about it as a spectrum from pure science to applied science to engineering. So it was a natural evolution to move into applied science programs." Prince was appointed dean of the Faculty of Pure and Applied Science at York in 1994.

As dean he set up York's Centre for Research in Mass Spectrometry, which proved to be an excellent dry run for developing the new engineering school.

Planning a new engineering school, starting in 1997, he said "was something I personally wanted to do very much because I was an engineer by training as well as a scientist. I felt it was time to move ahead a little step on that spectrum from applied science to engineering in ways that would not make engineering a rival but would build on the existing strengths."

The time was ripe for a new school. The province's universities are about to face the much-talked-about double cohort of students entering the system starting in 2003 due to changes in the Ontario's secondary school curriculum. The system will see an expected 20 per cent jump in enrolment, with Toronto-area universities absorbing a disproportionate number of students because of its size and its exploding growth.

The profession is changing as well, providing an opportune time to introduce different programs through a new school. Traditional programs like civil and mechanical engineering are outside the university's expertise, have expensive infrastructure requirements and are seeing declining enrolments. Prince was looking to the future. "I was looking at where we thought demand was coming from, seeking out areas like computer engineering where there is an almost insatiable demand for programs."

After gaining ministerial approval, the new school accepted 75 students this past September. There is a common first year for all students, combined with a first year engineering design course that introduces new students to all of the specializations. "Some people say you are wasting your time teaching engineering design to first-year students but you can get them thinking about the process."

Engineering design courses run throughout the four years of the program and allow students to engage in professional practice techniques, work in small groups, research and present their ideas, and plan out project schedules.

Prince also hoped that the design courses would work towards rectifying the traditional gender imbalance in engineering. "We thought a smaller class size and group work would help attract more women. I feel social interaction is important." York's first year class is 22.3 per cent female, says Prince, better than the 16 per cent provincial average in engineering programs.

The program also features courses in ethics, economics and entrepreneurship. Students can then specialize in one of the four streams, which reflect York's focus on the applied and computer sciences. When asked what the students would take away from York besides a Bachelor of Applied Science, Prince replies "Our hope is a strong appreciation of engineering design, a strong appreciation of the sciences, and an appreciation of professional practice, with a strong sense of practice ethics and entrepreneurialism."

The program still faces the hurdle of accreditation but the university is working closely with the Canadian Engineering Accreditation Board (CEAB) to ensure it passes in four years time. A program must graduate its first class of students before it can be accredited by the CEAB.

What is next for Robert Prince? First, the dean is no longer dean as of July this year. "It is time for a change," he said. "Seven years of administration is enough. Teaching and research is why I came to the academy." He is currently on sabbatical, though still active in engineering affairs, attending Council of Ontario Deans of Engineering meetings and serving as the vice-chair of the Canadian Engineering Accreditation Boards' review team at Carleton University. This fall he is doing materials research at Penn State. In the fall of 2002, in addition to teaching in the Faculty of Pure and Applied Science, he will assume the newly created role of Director of Engineering at York.

Prince, scientist and engineer, shares his knowledge in the lab.

Robert Prince, the high school student who looked up at the sky to imagine Sputnik orbiting the earth, isn't so different from Robert Prince, the distinguished scholar and educator. He is still excited by satellites.

"The Canadian Space Agency has a program of microsatellites. A York student could have a satellite in space that is just a York satellite. We see an opportunity for fourth-year students to do research projects in this area," he says. With his energy and enthusiasm, Robert Prince will doubtless put his sabbatical to good use. ◆

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accustomed to the format and the benefits that it brings (the only possible exception is in the graphic arts, where tradition and aesthetics still dictate other rules). Technologically, the transition would also likely be very smooth. In today's global economy, most office equipment is ready to accept either size of paper. For example nearly all the printers and copiers currently on the market can, with minimum intervention, switch from one size to the other.

Finally, another advantage of using A4 is that since its height falls somewhere between 11" and 14", it might well be capable of replacing *both* letter and legal. Why keep two sizes of paper when one can do?

Of course, the negative side of all of this would be that documents coming from our major trading partner, the U.S., would still be printed on *letter*. But if we had followed that same argument in the past, would we have been able to adopt the metric system and enjoy its benefits today?

Should we adopt A4? I think so. Its benefits far outweigh its drawbacks (if any) and transitional pains would be short-lived. Are we going to? I would hope so, but for some reason I still doubt it. I know what people will say: the A4 format is too logical; too European; too clever; too practical.

And definitely too metric. ◆

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