

Inspiring Leadership



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Director's Welcome

What would it be like to live in a community where everyone was always aspiring for a better future, always encouraging others to be the best they can be, always aiming to be authentic, always learning, and always working for a greater good?

I would like to live there—in a community of leaders. I would rather live there than in a place where only a few people possessed those qualities and the rest were uninspired, made bitter through their experience, and despairing of the future. Leadership is about behaviour, attitude, and character, not just about having the authority to make decisions.

Ilead's vision of *engineers leading change to build a better world* guides all we do. In this yearly review, we share with you the leadership stories that speak to this.

So what is my leadership story for the past year?

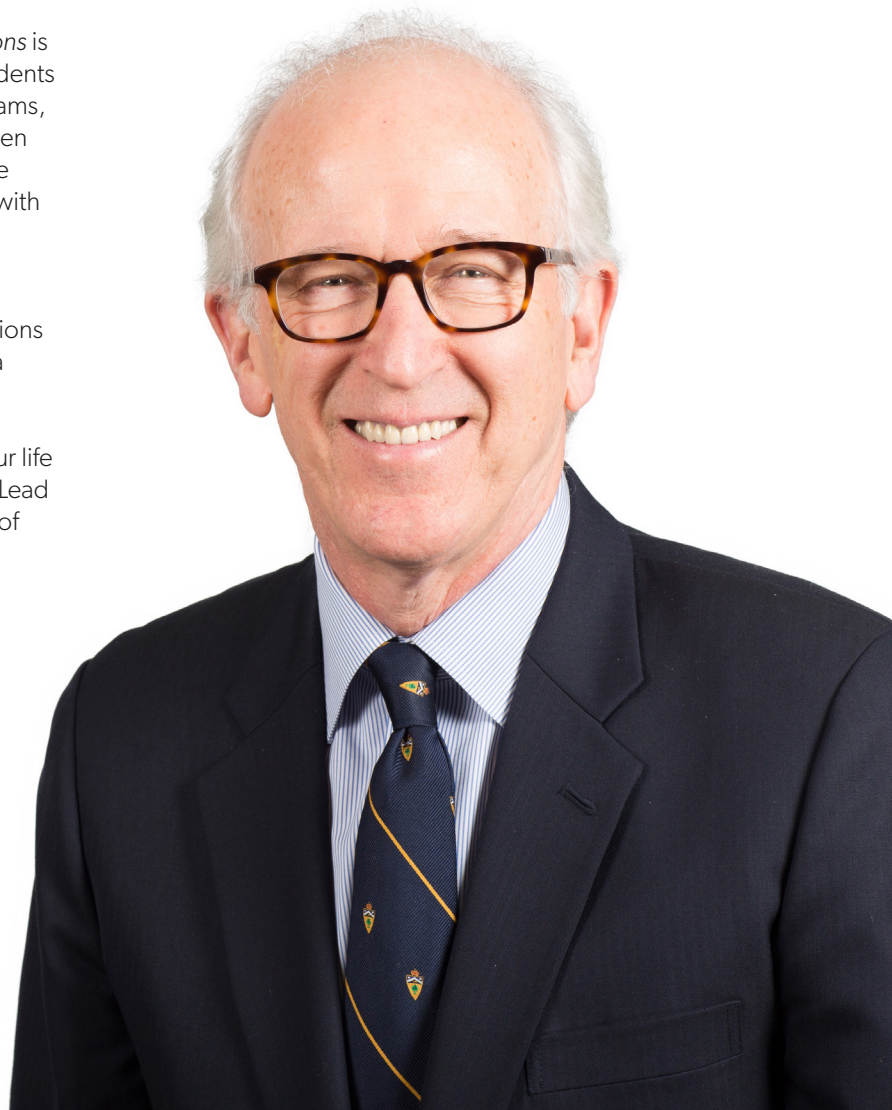
APS443: *Leadership and Leading in Groups and Organizations* is an undergraduate engineering course on leadership; 52 students enrolled in Fall 2012. The course is about self-leadership, teams, and organizations. It was my privilege to lead the class. Sixteen CEOs of engineering companies also joined me to enrich the class by sharing leadership stories of their own in interviews with student teams or as speakers on a panel.

I found the most exciting part of teaching APS443 was the conversations I had with the class. One of my favourite questions from an engineering student: "So if there are 100 people in a community, how many are leaders?" My answer: "100."

This year we invite you to reflect on your leadership story, your life lessons, your moments of uncertainty, and your aspirations. Ilead is a learning organization that seeks to grow in a community of practice for engineering leadership.

Please join us.

Professor Doug Reeve, PhD, PEng
Director
Institute for Leadership Education in Engineering



Inspiring Graduates

With eyes set on changing the world, recent engineering graduate Jason Sukhram (MSE 1T2) embodies the global engineer of the future. He wants to inspire engineering students after him to dream big.

Jason Sukhram's trajectory while an engineering student at the University of Toronto changed forever after taking ILead's Leading from the Inside Out certificate program in 2008. Assistant Director Annie Simpson, who facilitated the program, challenged him to envision all the possibilities open to him as an engineer and to develop his leadership capability. He accepted her challenge.

After that pivotal moment, Jason founded the student leadership chapter in MSE, thereby building a community of leader-engineers in his department. He has also been part of the ILead Cross-Faculty group, a community of student leaders from across the disciplines. During his undergraduate career Jason has had many enriching leadership experiences. One highlight: the opportunity to interview then Toronto Mayor David Miller at a special talk organized for engineering students in 2009. A picture of him with the former mayor hangs proudly in the ILead office to this day.

What kind of impact has all this training had?

"ILead taught me that to really think about the bigger picture, you have to ask bigger questions. As a leader-engineer, and more importantly as a citizen of the world, I feel that ILead has empowered me to think about why these problems are important and why it is important that engineers lead the change to address them. The greatest challenges our world faces will require the unique set of skills that engineers possess. Our ability to analyze and think critically about complex problems is a tremendous asset for addressing challenges that are no longer defined and solvable within one discipline. Leading change in new and unfamiliar territories requires that we consider the context of the environment and, most importantly, people."

Having always been fascinated by the implications of globalization and the challenges to international development, Jason completed the certificate in Global Engineering to gain exposure to some of the toughest

problems facing the world today. In the past year, Jason travelled to Latin America to learn about how businesses are fueling economic growth. He is currently doing research with the Li Ka Shing Knowledge Institute at St. Michael's Hospital to study the effectiveness of public-private partnerships in low- and middle-income countries. Next year, he finishes his MBA in Hong Kong.

"I'm confident that my engineering background has given me the ability to break down important problems into the elements that define them, but my ILead background has given me the ability to lead building the processes, structures, organizations and ideas that solve them."

What does Jason hope for his peers in engineering?

"My only hope is that my contributions inspire engineering students to continue to push the limits of the impact that engineers are capable of making in the world."

ILead continues to inspire U of T Engineering alumni to engage with the world around them. Jason Sukhram's story is one of many alumni who graduate from the Faculty of Applied Science & Engineering with a greater vision and increased confidence to pursue a life of their own making.

A vibrant community: ILead Department & Division Groups

ILead supports leadership development activities across the Faculty. The Department & Division programs foster community at the program-level. In 2012–2013, ILead supported seven groups with approximately 150 participants across ChemE, CivE, ECE, MIE, MSE, as well as a chapter for graduate students and the Cross-Faculty group, led by our office. The continued work of this community reflects our ongoing commitment to empowering students to gain practical, hands-on leadership experience with their peers in a self-organized, extra-curricular environment.

"My hope is that my contributions inspire engineering students to continue to push the limits of the impact that engineers are capable of making in the world."



"Every time I raise the bar and challenge my students, they surprise me with their insight and results. It pushes me to be more and more creative so I can push the next group of students even farther."



Inspiring Teachers

What does an engineering course titled “Cognitive and Psychological Foundations of Effective Leadership” look like? What’s it like to teach it? This is a story about a teacher who inspires her students to not just excel in class, but find meaning and happiness along the way.

Dr. Robin Sacks wears two hats at ILead. She serves as Director of Research for the Engineering Leadership Project and instructs two leadership courses at the undergraduate (APS442) and graduate level (APS1010) within the Faculty.

Dr. Sacks’ courses are a madhouse for exploratory thinking that get results. Students leave knowing more about themselves as individuals and as engineers, empowered to be more effective in their personal and professional lives. Former student Rebecca Vaddadi writes, “I feel I have become a more confident person. The most important lesson I have learnt from APS1010 is to change my perspective and realise that most of the things that I believed to have been facts were actually negative beliefs.”

When asked about her own leadership journey as an educator, Dr. Sacks writes:

“I never teach the same course twice—main concepts have stayed constant over the years, like mental modelling, communication, and self-exploration—but I’m always trying out new ways of getting students to learn these things, to become students of themselves.

“Every time I raise the bar and challenge my students, they surprise me with their insight and results. It pushes me to be more and more creative so I can push the next group of students even farther.”

Can You Engineer Happiness?

Sutha Sathananthan, Masters candidate in the Department of Electrical & Computer Engineering, believes you can. She was inspired to launch U of T Engineering Happiness (or affectionately “eHappy”) with her peers after taking APS1010 taught by Dr. Sacks. The recognized campus group is the first of its kind. Dr. Sacks’ approach to teaching inspires students to discover and tap into their full potential, grounded in positive psychology.

Engineering Happiness grew from a simple kernel—a student’s desire to live a more fulfilled, enriching life full of awareness and joy. Sutha and the students of APS1010 reflect all that is unique about ILead’s leadership courses. In our courses, students are encouraged to think in ways that challenge engineering orthodoxy, to seek solutions to engineering problems by rethinking engineering thinking.

Engineering Happiness was featured in Life @ U of T Blog in May and mentioned by Chancellor Michael Wilson during his address to the U of T Alumni Association in June. To learn more about eHappy, visit ehappy.sa.utoronto.ca.

About our Academic Courses

Over the past year, ILead delivered more leadership courses than ever—two at the undergraduate level and four at the graduate level. This meant that more engineering students were able to engage with our programming for credit; this year’s enrolment totaled 181 students. Strong demand for our courses and enthusiastic reviews our students provided through formal evaluations were important success indicators for 2012–2013.

Inspiring Engineers

Hatch consulting engineer. Rugby coach. Musician. Math and physics tutor. Registered student in the school of life. Sonia Sennik believes that engineering leadership development, starting with the individual, is key to progress.

Sonia Sennik beams with excitement as she shares her ideas about engineering leadership to a full house of industry professionals in Alton, Ontario. She is one of 30 delegates at ILead's inaugural Community of Practice Conference, held over two days in January. Sonia's organization, Hatch, is one of four partners of the Engineering Leadership Project (ELP), ILead's large-scale research project launched in 2012. The conference offered Sonia a platform to connect with other engineering professionals on the topic of how to best move the profession forward.

Sonia's biggest leadership challenge, one that she finds common with other engineers, is saying "I don't know!" The complexity of engineering requires us to rely on each other's knowledge and experience to produce the best-engineered work possible. Yet, in a profession that so values expertise, analysis, and precision, Sonia believes that it takes a change in mindset to understand that no one engineer can answer every question or solve every problem. Asking questions and overcoming the strange feeling of "not knowing every answer" has been crucial to her success.

"When everyone on a project team is empowered to understand their individual role and its importance to our success, fantastic things happen. I never anticipated that the lessons on the rugby pitch would translate to my engineering career, but they truly do. Rugby takes 15 people with different body types, skill sets, and roles. A rugby match could never be won by one player, no matter how much of a star!"

Reflecting on how her involvement with ILead has inspired her as a leader-engineer, Sonia writes:

"Everyone's leadership style is different. There is no right or wrong way to lead as an engineer, and the best leaders seem to understand this. They do not reference checklists—they identify what needs to be done, then bring their knowledge,

experience and most importantly, their individual personality to the situation. In starting with themselves, they promote an environment where other engineers better understand their individual roles and strengths."

About the Engineering Leadership Project

The Engineering Leadership Project sets out to change the way engineers view themselves, their role in their organizations, and ultimately their potential for contribution to solving the world's great challenges. Four industry partners have jumped on board to date, providing both financial and organizational support: Google Canada, Vale, Hatch, and ERCO Worldwide. Over the last year we have conducted nine focus groups and numerous interviews. We presented our results to industry partners at the First Community of Practice Conference on Engineering Leadership in January 2013.

Our research reveals that engineering leadership is unique. It is different from leadership practices enacted by management, medical, or teaching professionals. The ELP discovered three paradigms of engineering leadership: (1) Technical Mastery, (2) Collaborative Optimization, and (3) Organizational Innovation.

We have begun to scratch the surface of what this may mean for U of T Engineering and the profession at large. The next exciting phase for the ELP is the launch of a large-scale survey of engineers across the country to capture quantitative data to calibrate our initial discoveries. The data will aid us in bringing transformative ideas to engineering education and practice.

Learn more about the Engineering Leadership Project at ilead.engineering.utoronto.ca.

"Working with the ILead team continues to be inspiring. They are a group of imaginative people with passion for helping engineers unleash their full potential as leaders."



"Working with ILead
has been the greatest
character building
experience I have had at
the University of Toronto."



Inspiring Students

How do we inspire our students to reach their full potential? Give them opportunities in supportive environments to explore who they are? One extraordinary international student, Yee Wei Foong (MSE 1T5), seized numerous chances this year to develop his leadership capability.

Second Year is supposed to be the most grueling. Given the heightened expectations, the demanding course load, and the intense curriculum, it is a challenge that few students reflect on with undiluted pleasure. But for Malaysian student Yee Wei Foong, his second year was as much about immersing himself in leadership opportunities as excelling academically.

His passion for learning and applying leadership practices stemmed from his experience in the First Year design course. Stumbling over team dynamics and unable to foster open lines of communication, Yee Wei found his Engineering Strategies and Practice was team falling apart. From this experience he was inspired to take APS443: Leadership and Leading in Groups and Organizations, taught by Prof. Doug Reeve, in Fall 2012. There he learned about managing team relationships and leveraging different personality styles. Prof. Reeve inspired him to participate in ILead's certificate programs.

Yee Wei completed two certificate programs over the year that honed his skills and broadened his perspectives: the Team Skills program in the Fall and the Organizational Leadership program in the Winter. In order to gain more hands-on experience with his peers, Yee Wei joined ILead: MSE, his department's student leadership group where he helped to organize various events, such as the Technology Feasibility Case Competition, MSE Research Showcase, and MSE Charity Week.

He doesn't take these experiences for granted, however:

"Throughout our leadership journey, we might stumble, we might fall; but these unique and challenging experiences were the pivotal moments that I can reflect upon that enhanced my leadership character."

Yee Wei's extensive engagement with ILead opened his eyes to opportunities he never knew existed for engineering students. His story of personal growth in 2012–2013 inspires us to continue offering quality programming so that students like him can have the opportunity to develop as whole engineers.

Leadership Boot Camp: Certificate Programs

Our co-curricular certificate programs enable students to engage with leadership concepts in structured learning environments outside of the classroom. This year we offered a record four certificate programs, and awarded 139 certificates of achievements to engineering students across the Faculty.

Spreading the message: Infusion Lectures

In order to expose all engineering students to fundamental leadership concepts and to encourage further engagement with us, we deliver leadership infusion lectures in regularly scheduled engineering courses throughout the year. In 2012-2013 we delivered 13 lectures to over 1300 students across ChemE, CivE, ECE, MIE, MSE, and First Year students via APS111/112.

According to Maclean's: "A Standout Program"

ILead's Engineering Leaders of Tomorrow program, now offered directly by the Institute as a unified brand, was highlighted in Maclean's 2013 Canadian Universities Guidebook as one of only three "standout programs" featured at the University of Toronto. We are delighted that Maclean's has recognized our innovative programs.

Inspiring Researchers

Patricia Sheridan (MIE BASc OT9, MASc IT1) is mapping uncharted territory for graduate education in the Faculty as ILead's first PhD student in engineering leadership. Her research examines how engineering students can enhance their effectiveness while working in teams through new feedback systems.

Patricia is a trailblazing young scholar with an ambitious research agenda. During 2012-2013 she led the development of web-based applications to teach team effectiveness in large classrooms. Her quest to improve the way engineers are taught is no surprise when you consider her own leadership story of making the educational experience better for students of all levels.

Among her many contributions to the Faculty, she co-developed and delivered a course titled "Leadership and Management of Innovation in Engineering" at the DEEP Summer Academy organized by the Engineering Student Outreach Office using curriculum from ILead workshops, academic courses, and her own research. Patricia also developed and delivered the team-teaching curriculum in the First Year Engineering Science design courses (ESC101 and ESC102). Over the year she co-developed a new component for those courses on identity formation and values-centred design. A testament to her commitment, Patricia organized the American Society of Mechanical Engineers Student Leadership Seminar in Toronto in March 2013 where she delivered workshops to students from across Ontario and the Northeastern United States.

Amid the flurry of activity demanded of ILead's inaugural PhD candidate, Patricia finds meaning and significance not in her formidable list of accomplishments, but in the process of self-discovery that comes with those achievements.

"My journey over the past year focuses on authenticity. I have the privilege to work in an environment at ILead where authenticity is welcomed and encouraged. I therefore have been able to inspire others to engage in leadership and engineering education in a way that I could not previously.

"My involvement with ILead has inspired me to encourage all other engineers to become leader-engineers. But, to be able to demonstrate to others that leadership education is necessary, I first need to be a role model for the benefits of incorporating leadership education in engineering.

"It is only through the demonstration of my leadership skills and how they have improved my engineering abilities that I will be able to convince people to pay attention to my arguments for why leadership education is needed. If I cannot act with such integrity, and demonstrate what I advocate, I will never be able to create the world I envision."

COMPLETE

ILead is a founding member of the COMPLETE group (Community of Practice for Leadership Education for the Twenty-first-century Engineer). COMPLETE was established in 2010 with nine U.S. universities and the University of Toronto.

In September 2012 we hosted the group's fourth meeting in Toronto, inviting an additional five universities to participate. In April 2013 we participated in the fifth meeting in Dallas, Texas. COMPLETE is a strong advocate for engineering leadership education. The group recently welcomed new participants from Cornell, Georgia Tech, and Northwestern University, evidence of a surge of activity in engineering leadership education in the United States.

"As an engineer, I believe that leadership skills are a core component of an engineer's ability to translate their technical skills into application-specific practice that benefits society."



Inspiring Future

An entrepreneur's vision for engineers leading change to build a better world. Bill Troost (ChemE 6T7) shares his leadership journey in engineering enterprise and the life lessons he hopes current and future students will learn.

What does the future look like for engineering leadership education? Bill Troost (ChemE 6T7), a member of ILead's Board of Advisors, sees a bright future for young engineers who acquire the tools and the knowledge that will empower them to make a difference.

He is committed to ensuring engineering students have the opportunities he didn't as a student.

"In the mid 60's when I studied engineering, we received very little leadership or professional development training other than our regular courses. We certainly did not have anything like ILead to guide us on the way, and few of us realized how important the things ILead provides students are for success in our profession."

As President and CEO of Peel Plastic Products, he has led the organization as it has grown from three employees in 1978 to over 300 in 2013. He reflects on the life lessons over this time.

"The style of leadership required in the startup phase of a company is very different from that needed in a more mature company, but the requirement of knowing your own strength and weaknesses, and how you fit into a group that needs to accomplish a task are universal.

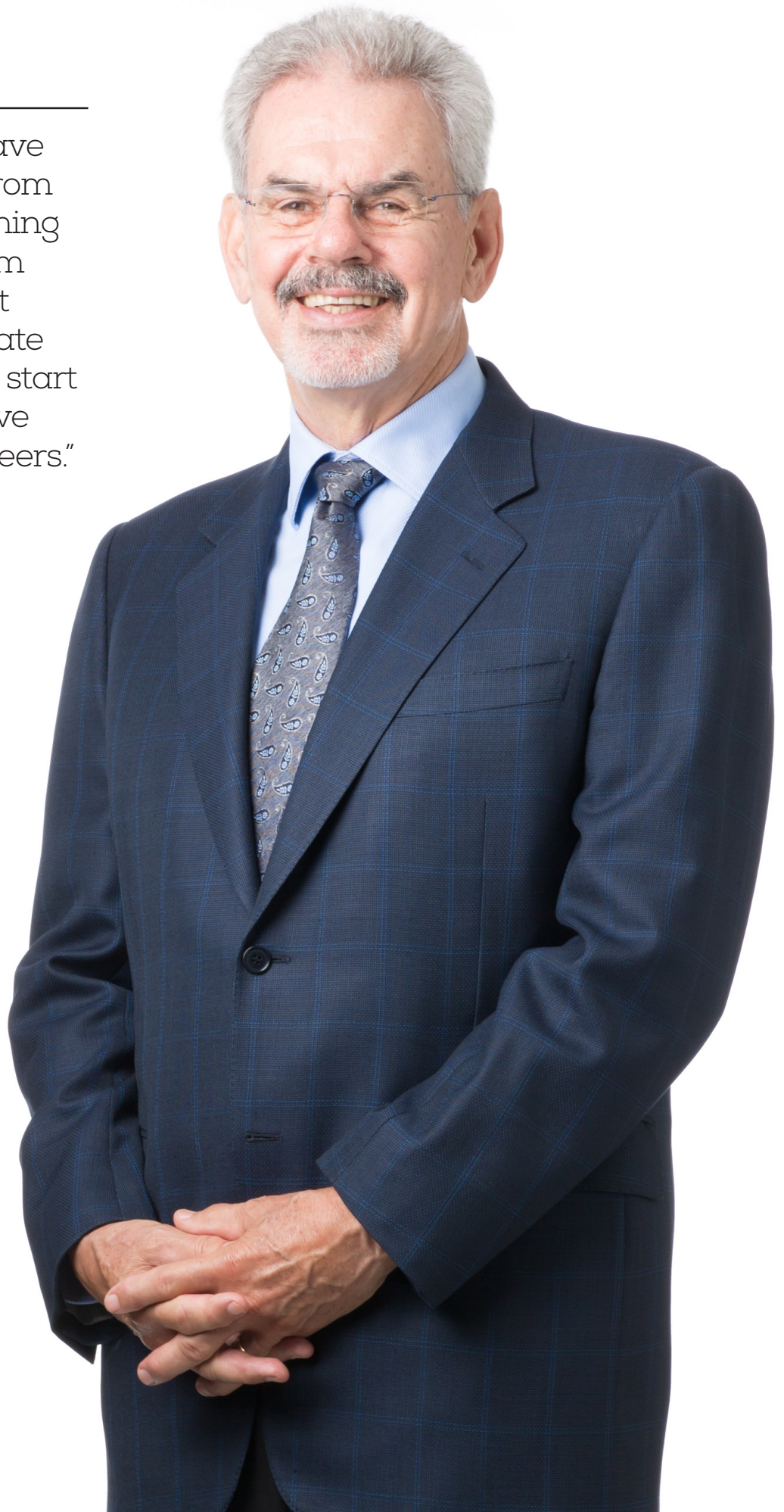
"The biggest challenge for growing companies is building a complementary leadership team. Just hiring the best and the brightest does not work, unless they are capable of working as a team.

"I see professional development and leadership education as an integral part of innovation, entrepreneurship and engineering education. Engineering students who go through the leadership program clearly have an advantage over those who do not at the start of their careers, and are therefore in better positions to contribute. It is therefore

a competitive advantage for the Faculty to provide professional development and leadership education as part of the curriculum for all engineering students."

Bill and Kathleen Troost have been generous supporters of ILead for many years and recently committed \$2 million to ensure ILead's future within the Centre for Engineering Innovation and Entrepreneurship opening in 2016. This is their commitment to developing the next generation of leader-engineers.

"I, for one, would have benefited greatly from the leadership training ILead provides. I am also convinced that those who participate in the program will start out as more effective and efficient engineers."



Thank you!

People have made our year remarkable. The leadership stories in this annual review share the experiences of inspiring individuals. However, many more stories have yet to be told—your stories. As we look forward to next year's leadership journey, we invite you to share our vision: *"Engineers leading change to build a better world."*

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