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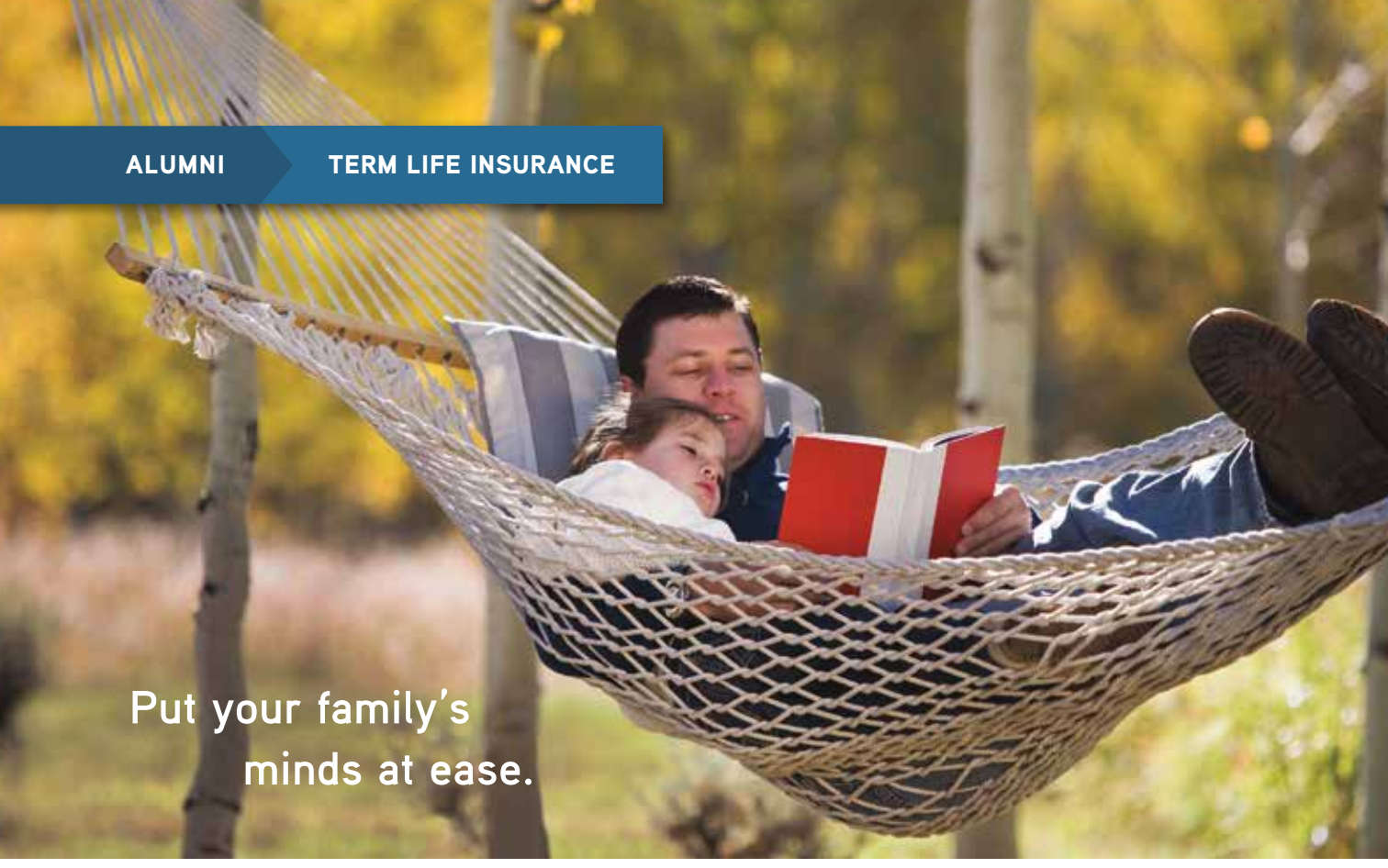
David Rosenberg The sage of Bay Street / **Linda Schuyler** Mother of Degrassi / **Clash of the Britons** The civil war of 1812?

UofT Magazine

AUTUMN 2012

How a common substance and an engineering breakthrough could bring basic sanitation to two billion people around the world



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Autumn 2012

Volume 40, No. 1

40 The Sage of Bay Street

David Rosenberg is one of Canada's most bearish economic analysts. But amid global turmoil, is he softening his growl?

BY JOHN LORINC

COVER PHOTO: CHRIS THOMAIDIS; ABOVE: BRENT LEWIN

UofTMagazine

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UNIVERSITY OF TORONTO

Departments

You're not trying to find a perfect solution; you're trying to find something that works

– Prof. Dilip Soman on the philosophy behind "frugal innovation," p. 37

23 Was the War of 1812 actually a civil war?

50 Author Andrew Blum (MA 2002) follows the wires behind the World Wide Web

9 Prof. David Evans, dinosaur hunter, stares down a Giganotosaurus, part of an exhibit he helped plan at the Royal Ontario Museum

Letters

To paraphrase the Cheshire Cat, if you don't know where you are going, any road will take you there.

R.A. JAMIESON
BASc 1974, AURORA, ONTARIO

Getting People Moving
Having been a lay participant in the early development of rapid transit for York Region, I read "Escaping Gridlock" (Summer 2012) with interest, but found that it neglected to mention several important points.

It's well known that development follows transit and vice versa. I hope Metrolinx's simulations take this into account.

Toronto's computer-controlled traffic signals have not kept up with the times. New wireless technology allows signal-to-signal optimization of traffic flows at reasonable cost. Such systems have already been implemented in San Francisco and elsewhere.

I find it frustrating to hear the debate over transit devolve to subways versus LRT. Sloganeering polarizes the debate by focusing on solutions before the problem has been defined. To paraphrase the Cheshire Cat, if you don't know where you are going, any road will take you there.

In Los Angeles, dedicated toll expressways charge by time of day and provide discounts based on passenger occupancy. In Toronto, I could see charging tolls for the express lanes on the 401 (although the ratio of collector to express lanes might need to be adjusted).

However these or other infrastructure investments are to be funded, it needs to be a GTA-wide endeavour so that companies will locate where it makes the best business sense, and not in the municipality that subsidizes them the most.

R. A. JAMIESON
BASc 1974, AURORA, ONTARIO

Telecommuting Has Benefits
Your article "Escaping Gridlock" overlooked one important point: most people drive to work to sit at their computers and answer the telephone when, in fact, they can do this at home. Companies should be legislated or subsidized heavily to allow employees to work at home on a part-time or full-time basis. Having tried telecommuting, it is now inconceivable to me to drive or take the TTC to work. Working at home also has many benefits besides not generating traffic – primarily, less stress on the employee.

CASSANDRA PHILLIPS
BSc 1978 VICTORIA, TORONTO

New Highway Technology
An engineering alumnus, I am deeply committed to eliminating congestion from the world's expressways. So I was disappointed (but not surprised) by the anti-car, transit-only stance of "Escaping Gridlock."

Since 2002, I have been developing technology to prevent traffic congestion on major highways. This technology uses pavement-embedded lights to guide individual drivers to the optimal speed and spacing to ensure steady, safe, fast and efficient expressway traffic flow.

I estimate that a capital investment of between $360 million and $720 million could completely eliminate expressway congestion in the GTA. That's a fraction of the $50-billion cost of Metrolinx's Big Move transit plan.

What's more, I estimate this technology would yield net toll revenues of $200 million to $600 million a year, based on drivers paying up to $3 per business day to use highways equipped with the technology. In contrast, Metrolinx's Big Move will consume, in perpetuity, a $1-billion annual taxpayer-funded operating subsidy.

The vast majority of Toronto-area commuters travel by car. These too-long-denigrated car-driving voters have the ballot box power to make my vision a reality.

STEVE PETRIE
BASc 1972, OAKVILLE, ONTARIO

Encouraging Sprawl
Contrary to the statement by geography professor André Sorensen in "Escaping Gridlock," it wasn't just free trade, cheap gas and changes in the planning process that drove business out of Toronto. A major factor was – and continues to be – a property tax system that encourages sprawl. New development in the suburbs is subsidized by property taxes from the City of Toronto, particularly downtown, where property values are highest.

Articles such as this perpetuate the idea that a problem 50 years in the making can be fixed by building a few high-cost transit lines that will require

large operating subsidies forever from people who will never use them.

An architect I know in St. Louis, Missouri, told me that a few LRT lines were built there 10 years ago, but that no one uses them because "they don't go where you want to go." Given the sprawl of businesses in the GTA and the low-density housing, we face the same problem. Why do we want to repeat mistakes made elsewhere in North America?

DAVID VALLANCE
BA 1967 NEW, TORONTO

Patriotic Reminder

I agree with David Naylor's well-phrased comments in his recent President's Message (Summer 2012), as I often do.

I have no argument against universities seeking a global presence as part of a growth strategy. But I do have one worry: If to achieve greater prominence we increase diversity amongst faculty, staff and students, do we risk forgetting Canadian values? How well does the current U of T community understand the character, history and culture of Canada? Do newcomers to Canada appreciate that being a Canadian citizen or resident comes with an obligation and responsibility to protect and enhance the country's future?

To some, this may sound overly nationalistic. But when I look at the situations people deal with in many other countries, I feel doubly blessed that I was born and grew up in Canada and now live in the United States. I wonder if recent generations hold similar patriotic beliefs. And does the University of Toronto, as a Canadian institution, have a role in reminding the new generation what Canada is all about?

RICHARD M. CLARKE
BASc 1954, WESTPORT, CONNECTICUT

David Naylor responds:

I appreciate Richard Clarke's thoughtful comments about national identities and values in an era of transnational migration and globalization of higher education.

Many international students come to U of T with values similar to those woven into the fabric of Canada. And where that is not the case, students' varied experiences inside and outside the Canadian classroom should help them see the world in new ways.

As to Canadian history and values specifically, scholars in varied disciplines at U of T have long been at the forefront of articulating what it is to be Canadian. We offer formal bridging programs to some international students, such as the Green Path program for Chinese nationals at UTSC. As well, the School of Continuing Studies offers popular courses that help new Canadians understand our context and workplaces.

There are, however, no easy answers here. Vice-President Deep Saini framed these challenges in a brave speech last April. He observed that diversity is a great strength but we also need Canadian society to be bound together with some sense of "common purpose." Professor Saini added, incisively, that "we are increasingly defining our identity in terms of what we accept rather than what we expect."

Food for thought – as are the questions posed by Richard Clarke.

Demand for Digital

For years, I have been wondering why *U of T Magazine* is still distributed in a paper format. In the summer issue, I saw an ad noting that it's possible to get the magazine electronically. Finally! Not only is this helping the environment, but I am far more likely to look at it electronically.

ROBERT BRITTON
BA 1974 TRINITY, TORONTO

Ed. note: Readers can trade their paper magazine for an electronic one at magazine.utoronto.ca/gopaperless

Write to Us!

Email uoft.magazine@utoronto.ca

Accessible Excellence

U of T's evergreen commitment to student aid

Recently, university students in Quebec have been protesting plans to boost tuitions in that province – currently the lowest in Canada. One student leader has argued that the proposed increases threaten the principle that "education should be something that is available to everyone, regardless of social status."

That argument certainly sounds plausible. However, study after study has shown that reducing or eliminating tuition fees would make education *less* accessible to the very people the students aim to help. Across Canada and in other parts of the world, jurisdictions with low tuition fees tend to enrol fewer university students per capita than those with higher fees. In the European countries with free tuition, for example, participation rates are about two-thirds of Canada's. And Quebec's participation rates are sharply lower than Ontario's.

Why? A low- or no-tuition policy limits the supply of places in universities. Conversely, higher tuitions make more spots available. With enlightened policies that see institutions using new revenues to discount tuitions for lower-income students, more of those spots can be taken by the best and brightest, regardless of socio-economic standing.

U of T has long provided bursaries to students in need, and turned that practice into policy more than a decade ago. In 2011, U of T spent $157 million on scholarships and bursaries – or $2,416 for every full-time equivalent student. That's 36 per cent more than the average Ontario institution (excluding U of T) spends on student aid. Thus, although the "sticker price" of an arts degree at U of T is now about $5,700 a year, the more than 2,000 students in the Faculty of Arts and Science who receive support under the Ontario Student Assistance Program effectively pay zero tuition because of the financial support they receive from the university, while 8,000 students pay $4,000 or less.

I believe the rate of growth in student debt should be moderated. However, attacking that problem with tuition reductions for all will simply benefit those who are relatively well off. In that regard, 54 per cent of students in first-entry programs at U of T already graduate with no government loans.

Today's accessible excellence at U of T is built in meaningful measure on a legacy of student support provided by alumni and friends. To sustain that legacy, our Boundless campaign, launched almost a year ago, aims to raise $300 million for student financial aid. Signaling the priority we place on student support, U of T will match – in perpetuity – the annual income generated by new endowed donations of $25,000 and up, whenever those donations address the financial needs of full-time undergraduates.

Last, while statistics on access and student aid are relevant, sometimes a story is more salient. Wendy Cecil (BA 1971 VIC) is a tireless volunteer and generous benefactor. She is the Chancellor of Victoria and a former chair of the university's governing council. Cecil is also the first person from either side of her family to ever attend university. She entered U of T with a summer of hard-earned savings and a cheque for an Ontario Scholarship that almost covered her first year's tuition fees. The next year, absent the scholarship, she could not afford her second tuition installment. With no expectation of student aid, young Wendy went to advise the Vic bursar, Fred Stokes, about her intent to withdraw. To her astonishment, Stokes simply said, "I think we can find a little something to help you." Cecil was tearful with surprise at his kindness and her good fortune. She remains certain today that the course of her life was changed by that moment.

When Cecil shared this account with me, she added: "My dream is that other students, who receive any form of financial aid while at U of T, will feel the same debt of gratitude that I feel for that assistance, and will come back to serve and to give – so that others will have the opportunity for a University of Toronto education." These words beautifully capture the cycle of generosity and opportunity that I hope our alumni and friends will sustain now and in the years ahead.

Sincerely,
David Naylor

PHOTO: © 2011 GUSTAVO TOLEDO PHOTOGRAPHY

Calendar

MORE EVENTS!
Check out the latest campus happenings at **www.utoronto.ca.**

U of T student Dinosha Ravichandra at Run for the Cure registration in 2011

SEPTEMBER 30

Run for the Cure

Canada's largest single-day breast cancer charity event, the Canadian Breast Cancer Foundation CIBC Run for the Cure, puts best foot forward on September 30 on two U of T campuses. At St. George, meet at King's College Circle at 9:15 a.m. In Mississauga, gather at 3359 Mississauga Road North at 9:10 a.m. Volunteers run or walk one or five kilometres to raise funds for the Canadian Breast Cancer Foundation's work: scientific research, community support programs and preventative health campaigns.

For more info and to register: Toronto: **416-977-CURE (2873), toronto@cbcfrun.org**
Mississauga: **416-815-1313 ext. 316, mzito@cbcfrun.org, www.runforthecure.com**

Alumni

September 20 to 21
London, England
Business panels. The Canada-UK Chamber of Commerce and U of T's Rotman School of Management co-host. Thurs., 5:30–8:15 p.m., "How to Tackle Your Toughest Innovation Challenges Using Design Thinking," £50 (£40 members of Canada-UK Chamber of Commerce). Fri., 8–10 a.m., "Winning by Competing on Innovation," £30 (£25 members). Canada House, 5 Trafalgar Square. Contact: Teo Salgado, 416-978-2368, teo.salgado@utoronto.ca, alumni.utoronto.ca.

October 2
New York City
Alumni Group of NY gathering. Free appetizers. 6–9 p.m. Common Ground, 206 Avenue A, New York City. Contact: Deirdre Gomes, 416-978-1669, deirdre.gomes@utoronto.ca, alumni.utoronto.ca.

October 9 to 10
IBBME
Institute of Biomaterials and Biomedical Engineering 50th Anniversary Symposium. Alumni talks, Tues., noon–3 p.m. Galbraith Bldg. room 202. Alumni Awards and Banquet, Tues., 6 p.m. 89 Chestnut St. Symposium highlighting cutting-edge technological innovations, Wed., 8 a.m.–7 p.m. 89 Chestnut St. For more info: ibbme.utoronto.ca/50th_Anniversary.

October 13
Hong Kong
Dinner gala. Prof. David Naylor and Ms. Daisy Ho host alumni and friends. CAD$195/HK$1,500 (CAD$130/HK$1,000 for recent grads). 6:30 p.m.–midnight, W Hotel Hong Kong, 1 Austin Rd., Kowloon Station, Kowloon. Contact: Teo Salgado, 416-978-2368, teo.salgado@utoronto.ca, alumni.utoronto.ca.

November 7
Vaughan Estate
Dept. of Obstetrics and Gynaecology 125th Year Celebration for Faculty and Alumni. $60 for Professional Development Day, $125 for reception and dinner. Noon–10 p.m. 2075 Bayview Ave. For info: obgyn.ug@utoronto.ca or alumni.utoronto.ca/obgyn125.

November 15
The Eglinton Grand
University College Alumni of Influence. The inaugural awards gala and dinner to fete distinguished grads. $100. 5:30 p.m. 400 Eglinton Ave. West. For info: 416-978-7416 or uc.rsvp@utoronto.ca.

November 16
North Bay, Ontario
Alumni Group of the Near North. Reception and hockey game (Varsity Blues men vs. Nipissing Lakers). $20. 7 p.m. Memorial Gardens Arena, Nipissing University. Contact: Deirdre Gomes, 416-978-1669, deirdre.gomes@utoronto.ca, alumni.utoronto.ca.

Exhibitions

September 29
St. George Campus
Scotiabank Nuit Blanche @ U of T. U of T hosts two installations during the all-night art show, 7 p.m.–7 a.m. Free. At Hart House, view several performances and artworks involving unconventional, iconoclastic uses of the piano. At the U of T Art Centre/University College quad, experience an interactive multi-sensory exhibit including touch-activated mechanical sculptures. For more info: jmbgallery.ca, utac.utoronto.ca, scotiabanknuitblanche.ca.

PHOTO: CAZ ZYVATKAUSKAS

Pinhole camera images show a unique perspective on the War of 1812. At the Royal Ontario Museum until February 2013

October 8 to December 21
Thomas Fisher Rare Book Library
The John H. Meier Jr. Governor General's Literary Award for Fiction Collection. First editions and other items such as authors' letters celebrate the 75th anniversary of the iconic literary prize. Free. Mon. to Fri., 9 a.m.–5 p.m. Thurs. until 8 p.m. 120 St. George St. 416-978-5285 or fisher.library.utoronto.ca/events-exhibits.

To October 6
U of T Art Centre
Robert Wilson: Gould Variations. The artist's *Horned Frog Video Portraits* combine images, trickling water and frog vocalizations with a Glenn Gould soundtrack. Free. Tues.–Fri., noon–5 p.m. Sat., noon–4 p.m. 15 King's College Circle. 416-946-7089, utac.utoronto.ca.

October 23 to December 1
U of T Art Centre
Immersive Landscape: A Canadian Year. Sixty landscapes from U of T art collections include works by Tom Thomson, A.Y. Jackson, Emily Carr and Gordon Rayner. Free. Tues.–Fri., noon–5 p.m. Sat., noon–4 p.m. 15 King's College Circle. 416-946-7089, utac.utoronto.ca.

To February
ROM
Afterimage: Tod Ainslie's Vision of the War of 1812. The Burlington, Ontario photographer designed and built his own pinhole cameras, then created 22 haunting images of historically significant sites from the conflict. $15 (free for members). Mon.–Sat., 10 a.m.–5:30 p.m. For more info: 416-586-8000, info@rom.on.ca, rom.on.ca/exhibitions/special/afterimage.php.

Lectures and Symposia

October 17
Munk School and Faculty of Law
A Conversation between Ken Roth and Michael Ignatieff. The former Liberal party leader talks with the executive director of Human Rights Watch. Free. 5:30–7 p.m. Campbell Conference Facility. RSVP required: Sherry McGratten, sherry.mcgratten@utoronto.ca, munkschool.utoronto.ca/events.

November 1
Woodsworth College
Big Data Meets Big Brother. Political science prof Ron Deibert connects technology, media and politics in the annual Saul Goldstein Memorial Lecture, followed by a reception. Free. 119 St. George St. To register: 416-978-5301, events.woodsworth@utoronto.ca, alumni.utoronto.ca/woodsworth.

Music

September 30
Hart House
"Guh" plays to *Microcosmos*. The genre-bending brass band performs a live musical score to the award-winning 1996 insect documentary, as part of Culture Days. Free. 8 p.m. Hart House Great Hall. harthouse.utoronto.ca/culture/culturedays2012.

October and November
Walter Hall
Monday Evening Concerts. $35 ($25 seniors, $10 students) at 80 Queen's Pk. 416-408-0208 or www.music.utoronto.ca/events. Oct. 1, 7 p.m. The Juno-Award-winning Gryphon Trio performs with alumnus James Campbell. Nov. 5, 7 p.m. Bellows and Company: accordionist Joe Macerollo and clarinetist Peter Stoll. Nov. 26, 7 p.m. The award-winning Cecilia Quartet plays Brahms with piano virtuoso Menahem Pressler.

October 4
MacMillan Theatre
U of T Symphony Orchestra. The UTSO performs with clarinet soloist Omar Ho. $20 ($15 seniors, $10 students). 7:30 pm. 80 Queen's Pk. 416-408-0208 or www.music.utoronto.ca/events.

November 20
Walter Hall
10 O'Clock Jazz Orchestra. Saxophonist Mike Murley solos. $20 ($15 seniors, $10 students). 7:30 p.m. 80 Queen's Pk. 416-408-0208 or www.music.utoronto.ca/events.

November 22 to 25
MacMillan Theatre
Donizetti's L'elisir d'amore. Nemorino and Adina tangle with a love potion in this comic opera. $35 ($25 seniors, $10 students). Thurs.–Sat., 7:30 p.m. Sun., 2:30 p.m. 80 Queen's Pk. 416-408-0208 or www.music.utoronto.ca/events.

Nature

October 6
Koffler Scientific Reserve
Mushrooms on the Moraine: Fall Season. Learn how to identify wild fungi with expert Richard Aaron. $75, lunch included. 9:30 a.m.–5 p.m., 17000 Dufferin St., King City, Ontario. Pre-registration required: ksr.utoronto.ca.

Special Events

September and October
St. George Campus
2012 Bibliomania on Campus. College book sales for book lovers! Sept. 20–24, Victoria College, 91 Charles St. W., 416-585-4585, library.vicu.utoronto.ca/booksale. Oct. 12–16, University College, 15 King's College Circle, 416-978-0372, www.uc.utoronto.ca. Oct. 18-22, Trinity College, 6 Hoskin Ave., 416-978-6750, www.trinity.utoronto.ca/booksale. Oct. 23–27, St. Michael's College, 113 St. Joseph St., 416-926-1300 ext. 3475, stmikes.utoronto.ca.

November 9
St. George and Mississauga
Services of Remembrance. Free, on Friday. St. George campus: Soldier's Tower, 10:20 a.m.–11 a.m. 7 Hart House Circle. For more info: 416-978-3485, alumni.utoronto.ca/tower. Mississauga campus: Instructional Centre, 10:45 a.m. For more info: 905-828-5200.

November 20
Hart House
Centre of Criminology 50th Anniversary Celebration. Free. Panel discussion on the criminal justice system, 2 p.m. Lecture on wrongful convictions by the Hon. Justice Ian Binnie, 4:30 p.m. Reception, 6 p.m. RVSP required: 416-978-3722 ext. 226, crim.events@utoronto.ca, criminology.utoronto.ca.

Sports

September and October
Varsity Centre
Games at 299 Bloor St. West. Ticket info at varsityblues.ca.
Men's Soccer. Sept. 30 vs. Carleton, 3:15 p.m. Oct. 14 vs. Ryerson, 3:15 p.m. Oct. 20 vs. Nipissing, 2:15 p.m. Oct. 21 vs. Laurentian, 2:15 p.m.
Women's Field Hockey. Sept. 22 vs. Western, 10:45 a.m. and vs. York, 2:15 p.m. Sept. 23 vs. McGill, 10:45 a.m. Nov. 1–4, CIS championship.
Men's Football. Oct. 6, vs. Ottawa, 1 p.m. Oct. 13, vs. York, 1 p.m.

Theatre

September to November
Hart House Theatre
$25 ($15 students and seniors). Students, $10 every Wed. Alumni, $15 every Thurs. 7 Hart House Circle. For info: 416-978-8849, uofttix.ca or harthousetheatre.ca.
Sept. 21–Oct. 6, **Rosencrantz and Guildenstern are Dead.** The witty riff on *Hamlet*. Wed. to Sat., 8 p.m. Matinee on Sat., 2 p.m.
Oct. 17–22, **My Name is Rachel Corrie.** An army bulldozer crushes an American protester in Gaza. Mature language and subjects. Wed. to Sat., 8 p.m.
Nov. 7–24, **Romeo and Juliet.** O wherefore art thou, U of T? Wed. to Sat., 8 p.m.

PHOTO: TOD AINSLIE

"I was an at-risk student but a teacher helped turn that around. Now, with the support of donors, I have the chance to become a teacher and help other kids like me."

DONG-LING CHEN
Bachelor of Education, 2012
Vari Scholarship Recipient

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THANK YOU

Life on Campus

"The first step is always play"
Jason Harlow, a senior physics lecturer, on making science labs successful
p. 14

Prof. David Evans stares down a Giganotosaurus

Digging Deep

How many new dinosaur species can one person help find? Professor David Evans is up to eight

DAVID EVANS IS ON A HIGH – and there's a contact high you get from talking to him.

The dig he was just on in Alberta uncovered a new species of dinosaur; a blockbuster dinosaur exhibit he helped plan opened at the Royal Ontario Museum; and, as if that weren't enough, he just got married. "We eloped to New Orleans," says the enthusiastic professor in the department of ecology and evolutionary biology, who is also a curator at the ROM.

Each year for the last eight, Evans has gone to Milk River in Alberta, where his team has unearthed eight new species of dino. "One a year is more than we'd ever hoped to find. This year's is an early cousin of Triceratops; it's got long brow horns…and all sorts of spikes growing out of its head."

The ROM exhibit, *Ultimate Dinosaurs: Giants from Gondwana,* shows off the huge beasts that once paced the southern supercontinent of Gondwana 145 to 65 million years ago, and uses novel technologies to do so. There's an interactive wall installation where (somewhat terrifyingly) the dinosaurs react to your presence, and iPads that can clothe the displayed bones with flesh and skin, to show what they might have looked like (again, terrifying). Many of these creatures, dug up in Africa and Madagascar, are relatively new to science, let alone northern audiences: the enormous Futalognkosaurus ("it was too big to fit anywhere but the lobby of the museum; it weighed as much as an entire herd of elephants"); ➤

PHOTO: PETER ANDREW LUSZTYK

31 per cent of first-year students don't seek help when they don't understand course material, according to the National Survey of Student Engagement

Get it? Got it. Good!

A new app lets profs track student comprehension in real time

Liam Kaufman

EDUCATORS NOW HAVE A BETTER WAY to know if they're getting their point across in the classroom, thanks to an invention by software developer Liam Kaufman (BSc 2011).

Understoodit is a web-based application that lets students anonymously express their bafflement in class. When students load the tool on their smartphones or laptops during class and click a red "Confused" button, their input automatically registers on the professor's computer, showing what percentage of the class is lost. The teacher can re-explain things in the hope students will hit the green "Understood" button, which then conveys to the professor what percentage has grasped the material.

Kaufman tested the software in three U of T computer science classes this past February. Students embraced the tool – perhaps because it eliminates the fear of looking stupid in class when asking a question, says Kaufman.

But the application was especially well received by the profs, who said they appreciated getting instant feedback to help tweak their delivery. Word-of-mouth buzz led to inquiries from 2,800 educators worldwide within a few months.

Kaufman invited 200 of them to try his prototype. With the help of another software developer and a user-interface expert, he used insights from the expanded test to improve the service – including adding a feature that lets teachers poll students.

Kaufman originally wanted to be a neuroscientist – after earning a BSc in psychology at Western University, he enrolled in medical science at U of T. But at the same time, he dabbled in web design and became hooked; after completing his MSc in 2008, he started a bachelor of computer science, which he finished last year.

He launched the upgraded tool in August and is keeping it free for students; he's charging teachers a monthly fee of $3, but those who register at understoodit.com before October 3 can use it for free for a year. – **SHARON ASCHAIEK**

EPHEMERA

U of T math professor emeritus Ed Barbeau is able to produce this object using only a pair of scissors and one rectangular piece of paper. If you believe that only one side of the sheet faces up, look again.

This is one of many puzzles that Barbeau used to present to his math class for non-math students – often with great results. "Being good at math doesn't necessarily make you good at puzzles," says Barbeau. "In fact, English students scored very highly on [my puzzles] because they approach math in a non-standard way."

Find more mathematical challenges in Barbeau's book *After Math: Puzzles and Brainteasers* (Wall & Emerson, 1995). – **NADIA VAN**

Cryolophosaurus ("it's got a bizarre pompadour crest"); and the Giganotosaurus ("a meat eater that could have challenged the supremacy of T Rex").

"Yes, they're a pretty cool bunch of dinosaurs," the 32-year-old Evans sighs, with satisfaction. Like many, he was turned on to dinosaurs early, by a childhood visit to the ROM's galleries. But unlike most others, he remained fascinated, turning his passion into a career, pursuing studies at UBC and a doctorate at U of T to deepen his knowledge. He's been on digs all over the world, from the high Arctic ("there's a longer digging season up there now") to Mongolia to South Africa.

It was in the last location that the adventurous academic had what must be the ultimate serendipitous find. The team was letting off steam after several frustrating days, he says. "We were leaning with our backs against a cliff wall, tossing rocks. I happened to look at one before I threw it, and it had a round outline. It was a dinosaur egg, and there were eight more in a nest in the cliff." They'd unearthed a 190-million-year-old dinosaur nursery. The find eventually persuaded scientists that even the earliest dinos were more nurturing than previously suspected. "These dinosaurs weren't born with teeth, so the parents may have fed them, like birds." He enthuses about their brain size (in general larger than long thought) and waxes poetic on their social behaviours, such as herding. "I mean," he says, "they dominated the terrestrial realm for 150 million years. And the last 30 years of research has shown they're not what we once thought – big dumb lizards up to their armpits in swamps." – **ALEC SCOTT**

PHOTO: LEFT, ORBELINA CORTEZ; RIGHT, NADIA VAN

The oldest rare book donated by F. Michael Walsh to U of T is a first edition of the first part of Thomas Aquinas's *Summa Theologica*, printed in 1473

A Bold Prescription

Support for medical students is a key plank of the Faculty of Medicine's campaign

Philanthropist Terrence Donnelly (centre) with graduating medical students

IT'S A CLASSIC CASE of students helping students.

Except that instead of swapping study strategies or sharing lecture notes, graduating medical students at the University of Toronto are helping their fellow undergrads by throwing serious financial muscle into bursaries and scholarships.

Each year, the graduating students volunteer to produce *Toronto Notes* – a study guide sold around the world to help students prepare for medical licensing exams. To date, the group has donated $2 million in proceeds from the successful guide towards financial support for their peers in the MD program.

On September 13, as the Faculty of Medicine launched a historic, $500-million fundraising campaign at the Terrence Donnelly Centre for Cellular and Biomolecular Research, the *Toronto Notes* effort was lauded as a prime example of philanthropy's direct impact on students. "We train health care leaders – people whose passion, dedication and research will literally shape the future of health care," said Dean Catharine Whiteside before the packed launch event, which drew hundreds of supporters. "Gifts such as this enable our bright young scholars to focus on the learning, research and practical knowledge that help them develop as innovators and leaders."

The *Toronto Notes* donation – accumulated over the 29 years the guide has been published – is believed to be among the largest-ever student-led gifts to a Canadian university; it provides financial support for dozens of MD students each year. This support is critical, Whiteside says, since the average debt load for medical students upon graduation is $84,000.

The faculty's fundraising campaign aims to generate $100 million for student support and programs. "In Ontario alone, we train more than half of all practising specialists and one-third of all family physicians," says Whiteside. "Our students are the lifeblood of the country's health-care system, and their impact is international as well, so supporting them is critical."

Ahmed Taher, a third-year MD student who trained as a paramedic while studying and serving as president of the Medical Society, said bursaries enabled him to "have a well-rounded learning experience without worrying about overwhelming debt."

Toronto Notes co-production manager Elsa Clouatre said the group's goal is to continue supporting students such as Taher with proceeds from the text. The guide – which started as a compilation of notes written by and shared among U of T medical students – is now produced with faculty experts.

Alongside student support, Medicine's campaign aims to raise funds to attract and retain world-leading professors and invest in infrastructure to drive research and health innovation in four areas: human development, global health, neuroscience and brain health, and complex diseases. For more information or to support the Faculty of Medicine's campaign, please visit www.medicine.utoronto.ca – **APRIL KEMICK**

Why I Give

F. Michael Walsh

A book collector for more than 40 years, Walsh has acquired several thousand rare and antiquarian volumes of western philosophy. In 1999, he began donating his collection to U of T's Thomas Fisher Rare Book Library.

"I've always had a love of books, not just for reading but as physical objects. I studied philosophy, eventually earning a PhD, and became especially interested in books of philosophy and ideas but couldn't afford the original publications. Later, once I got into the investment industry, I felt financially secure enough to begin buying rare books.

"One summer, over 30 years ago, I received a phone call from Toronto bookseller Don Lake: 'How would I like a first edition of Hume's *Treatise*?' He had access to one locally, but I would have to decide quickly. The book, at $11,500, was priced fairly, but this was 20 times more than I had previously spent on an 'expensive' book – a very big leap! I had received a good bonus that year, and here was one of the greatest and rarest philosophy books of all time. I think I took delivery the next day, handing over my cheque. That was when I knew there was no turning back as a collector – I was hooked!

"I hope my collection, with its first editions and other rare items, will enable the university to continue to attract the world's best philosophy students and researchers. I'd like the collection to continue to grow after I'm gone; that's why this year I began endowing a fund that will allow the Fisher library to purchase items for the Walsh Philosophy Collection long into the future."

As told to Scott Anderson

PHOTO: CAZ ZYVATKAUSKAS; RIGHT: COURTESY OF F. MICHAEL WALSH

Rotman School MBAs earn, on average, $85,000 in the first year after graduation

Open for Business

On St. George Street, north of Hoskin, a shiny glass cube now perches above a red brick heritage house. The glass structure, which is also connected to the modernist-style edifice next door, is the spacious new addition to the Rotman School of Management that opened on September 5 after three years of construction. Melding the buildings was deliberate, says one of the architects, Bruce Kuwabara – intended to reflect visually the business school's catchphrase: Integrative Thinking.

Inside, all that glass also lets in natural light to stairwells, the café, and the 400-seat event room, helping the school save on electricity costs. The architects also designed natural gathering spaces throughout the $90-million building, including several grassy rooftop terraces with spectacular views of the city.

The school's 11 research centres are at last all under one roof. And all that elbow room will let the school expand its program size as well; they'll soon take in 50 per cent more full-time MBA and 30 per cent more PhD candidates. "By reaching a certain scale, we gain competitive advantage in the global business education market," says Roger Martin, dean of the Rotman School. – **JANET ROWE**

SOUND BITES

What's your favourite thing about U of T in the fall?

The view of the trees from the third floor of the H-wing at UTSC. The bursts of colour are always stunning
Karen K. Ho

The red ivy on Hart House. The palpable excitement of a new school year
Kristine Morris

The picture-perfect campus and the brilliant energy that comes with fresh beginnings
Niya B

Halloween parties
Kerlym Mata

Join the conversation at twitter.com/uoftmagazine.

Poll | Do you Google your professors?

It's possible to search – and find – almost anything in the age of Google, yet only 55 per cent of U of T students choose to conduct online background checks of their professors. Those who take advantage of the search engine cite research compatibility and curiosity about other students' feedback as their primary motives. Slightly more than half of these students use the website ratemyprofessor.com and 36 per cent try to find their profs on Facebook.

Alumna Ang Lee from U of T Scarborough is one who encourages other students to conduct research online into their professors' teaching experience and grading style – "especially if you are serious about maximizing your own potential," she says. – **NADIA VAN**

This highly unscientific poll of 100 U of T students was conducted on the St. George campus in July.

55%
Yes

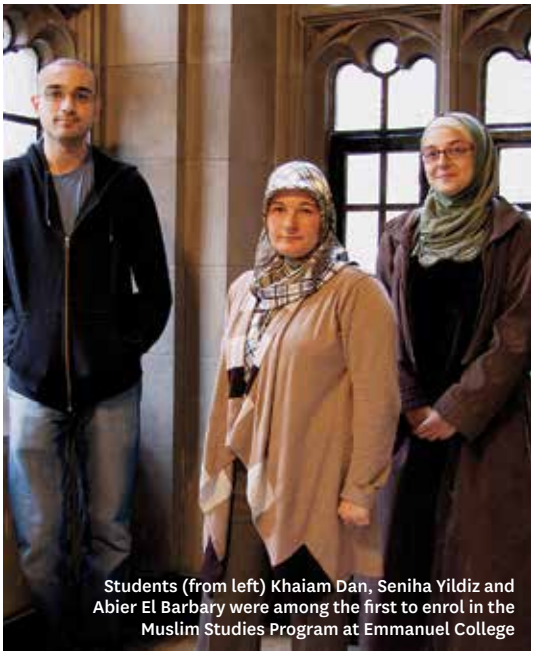
45%
No

PHOTO: TOM ARBAN/KUWABARA PAYNE MCKENNA BLUMBERG ARCHITECTS

About 2.5 million people attended the 2011 hajj in Mecca, with 1.8 million travelling from outside Saudi Arabia

Leap of Faith

New degree program designed to promote understanding between Christians and Muslims



Students (from left) Khaiam Dan, Seniha Yildiz and Abier El Barbary were among the first to enrol in the Muslim Studies Program at Emmanuel College

THIS FALL, EMMANUEL COLLEGE will officially launch a Muslim Studies program that is being called the first of its kind at a Canadian university. The courses, offered as part of a Master of Pastoral Studies degree, are designed to promote interfaith dialogue between Muslims and Christians, and prepare graduates for leadership roles within Canada's fast-growing Islamic community.

The two-year, full-time graduate program will enable students from a variety of religious communities to specialize in pastoral care, serve as chaplains or work with social service agencies and not-for-profit organizations, principally in Toronto, that cater to Muslims.

"Today, anyone who takes religion seriously needs to become fluent in the language of interfaith conversation," says Mark Toulouse, the principal of Emmanuel College and a professor of the history of Christianity. He adds that the new program aims to foster a better public understanding and appreciation of Islam in Canada.

The number of Canadians who identify as Muslim has doubled in the past decade to 940,000. In comparison, the Roman Catholic and Protestant churches have several million adherents, but growth is flat or declining. Polls show that many Christian Canadians both misunderstand and fear Islam, so Emmanuel's new program is an important and timely effort to bridge that divide, says Toulouse.

"The program not only provides educational opportunities at the master's level for the growing Muslim population, but also promotes dialogue, understanding and respect between current and future Christian and Muslim leaders in Canada," he says.

The Muslim Studies program, developed in close consultation with Islamic leaders in Ontario, will offer students a selection of 20 courses in the Qur'an, the history and theological tradition of Islam, Islamic law, biomedical ethics and religious pluralism, among others.

Today, anyone who takes religion seriously needs to become fluent in the language of interfaith conversation

The master's program is the outgrowth of Emmanuel College's groundbreaking and successful Canadian Certificate in Muslim Studies, launched in 2010 to enhance interfaith dialogue. It has been recently broadened to include courses on such topics as Muslims in Canada, spiritual care, and women and gender.

– ANDREW MITROVICA

People

They work with tiny molecules but are giants in their fields, known for innovative research and inspired teaching. Now, Prof. **Lewis Kay** and Prof. **Mark Lautens** also hold the title of University Professor, the highest honour awarded to a U of T faculty member.

Prof. **Keren Rice,** an international leader in the empirical study of aboriginal languages, has received the Molson Prize in the humanities and social sciences. The $50,000 award recognizes lifetime achievement and ongoing contributions to the cultural and intellectual life of Canada.

Prof. **Milica Radisic** and Prof. **Craig Simmons** of bioengineering are recipients of this year's McLean Award, which honours U of T professors for excellence in basic research in the sciences, mathematics and statistics. Recipients must have received their PhD within the past 12 years.

Christian Campbell, a professor of English, travelled to London, England, in June to represent the Bahamas at the 2012 Cultural Olympiad. He joined more than 200 poets from across the world for what was described as the world's largest gathering of poets, rappers and storytellers.

Prof. **Barbara Sherwood Lollar** of geochemistry has received the Eni Award for the Protection of the Environment, in recognition of her research into groundwater contamination. The award, presented in Rome by the president of the Italian Republic, includes a gold medal crafted by the Italian state mint.

Three U of T doctoral students have been awarded Pierre Elliott Trudeau Foundation Scholarships, worth $60,000 over three years. **Sara Angel** (art history) is examining how new communications technologies can help museums stay relevant; **Matthew Gordner** (political science) is studying events such as the Arab Spring to understand how Islamic intellectual and political thought has addressed democracy since 1928; and **Michael Pal** (law) is interested in how election laws in Canada affect political parties and democracy.

PHOTO: AMANDA KEENAN

Jason Harlow (fourth from left) with first-year physics students

Physics That's Practically Fun

Students give high marks to a new kind of science lab

INTRO TO PHYSICS MIGHT NOT be everyone's idea of a good time, but a new style of teaching in U of T's department of physics is giving students a collegial, hands-on way of understanding the basics of the physical universe.

Prompted by student feedback over the years and developed from leading-edge pedagogical research, the Physics Practicals are the interactive component to U of T's introductory courses for non-physics science majors. Based on the timeless truth that you learn more by doing than by listening, the Practicals engage some 800 to 1,200 undergraduates per year in a new kind of lab experience.

"The first step is always play," says senior lecturer Jason Harlow, who has taught the Practicals since their inception in 2008. "That's our model – just mess around and see what you can discover."

As an example, Harlow describes the Practicals' lesson on circuits: "Here's a battery, here are a couple of wires, and here's a light bulb. Now, how do you make the light bulb work?" Together, the students figure it out. "Then, we talk about current and voltage."

In the past, students attended both labs and tutorials – mini-lectures in which the teaching assistant would stand at the front and talk, says Harlow, who graduated from U of T with a BSc in physics in 1993. Chairs were often bolted to the ground and they all faced forward. Frequently, lab activities were not aligned with the formal lectures.

The Physics Practicals' three rooms have been designed to include nine work stations, each with four students, who can either sit or stand around a table as they experiment, discuss and learn. Two teaching assistants circulate through the room, and all students work at the same time on the same activity, which is related to a recent lecture.

Harlow notes that the Practicals often resemble a coffee shop full of lively conversations. "Except they're all talking about physics," he says. "It's working fantastically." Student satisfaction has risen 22 per cent over the past three years.

The Ontario Association of Physics Teachers has been following this new pedagogy; some of U of T's course materials are now being used by the province's high schools. And earlier this year, senior lecturer emeritus David Harrison (PhD 1972), one of the originators of the Practicals, was honoured by the Canadian Association of Physicists for his longstanding dedication to transforming physics education.

Funding is now being sought for two more rooms to accommodate advanced Practicals for the physics majors. "We want to improve the experience for these students as well," says Harlow. – **ALLYSON ROWLEY**

Do the Locomotion

A vibrantly decorated GO train car is raising awareness about the environment – and giving students in the Collaborative Program at U of T's Knowledge Media Design Institute a practical lesson in getting a message out.

Using QR codes inside the coach, riders can download a free Android app containing video messages on a range of green issues from experts such as architect Bruce Kuwabara and U of T economics professor David Foot, plus an invitation to post their reactions to an embedded Twitter feed.

The project was a challenge, explains Joseph Ferenbok, assistant director of KMDI, who asked the students to raise awareness of a social issue through multiple media channels. The students helped brainstorm ideas for the multi-pronged project, which was then executed by a local artist group, "No.9."

The Art Train Conductor No.9 coach rotates between trains on the GTA and Hamilton GO network until December 1. Not a GO rider? Join in anyway at arttrain.no9.ca. – **JANET ROWE**

PHOTO: TOP, AMANDA KEENAN; BOTTOM, JAMES DIDONATO COURTESY OF NO.9: CONTEMPORARY ART & THE ENVIRONMENT

f T's longest-serving chancellor, Edward Blake, held office from 1876 to 1900. In his spare time, he served eader of the federal Liberal party

Q&A

Blue and White Pride

New chancellor Michael Wilson is pumped to champion U of T spirit

In July, the Honourable **Michael Wilson**, the chairman of Barclays Capital Canada, became U of T's 33rd chancellor. Wilson, who earned a commerce degree from U of T in 1959, has spent much of his career in financial services. He also held public office – serving as finance minister in Brian Mulroney's government – and has been active in many community organizations. He spoke recently with editor **Scott Anderson** about his new role.

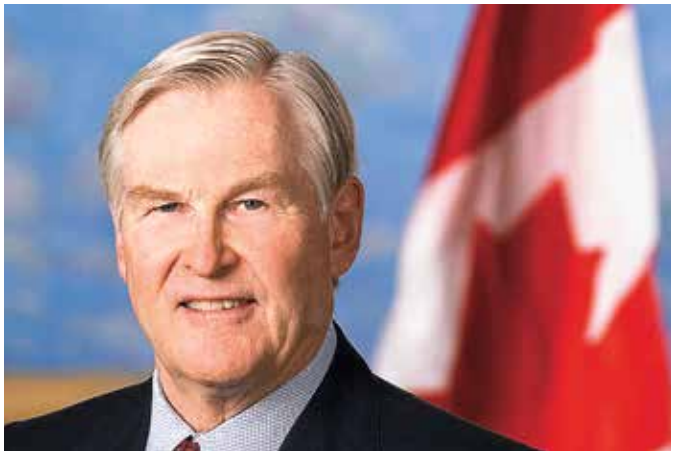
Do you have any standout memories from your time at Trinity College? I played guard on the Trinity football team that won the Mulock Cup in 1957. Our team played well together and I stayed good friends with a bunch of those people to this day. Sports were a big part of my life at Trinity.

Probably bigger than they are to most of today's students… This is something I find a little sad. Sports just don't have the same position in student life as they did in the 1950s. We used to go to every Varsity Blues football game. The stadium seated 25,000 and it was usually pretty full.

Students today seem quite focused on their studies. There's nothing wrong with that. But I think you can combine academics with sports. I'm in business, but I don't spend 100 per cent of my time on business.

How do you view the chancellor's role? To represent U of T in a variety of settings. But I think you also make your own role as chancellor, depending on the circumstances of the time. I had a warm-up as chancellor at Trinity so I have some understanding of what the job is all about – although the activities of the chancellor of U of T are certainly greater than they are at a college.

What made you want to take the job? It's an honour. U of T is my alma mater. I've long admired the university from my life in politics and business – particularly the quality of its graduates and its leading position in research.



What message will you impart over your term as chancellor? The importance of the research that's done at U of T and the importance of U of T within higher education in Canada. We need to let people know what a great institution U of T is. As is pointed out regularly, U of T is a leader in Canada – but also globally in a number of areas.

Canadians are not known for championing their accomplishments to the world. Yes, and it's not easy. Many countries have also achieved a lot. My job as the Canadian ambassador in Washington taught me that there are a lot of things that Canada brings to the world: our role in Afghanistan, our performance during the financial crisis, our achievements and stars in the arts.

An ever-present challenge for universities is funding. What are your thoughts on this issue? A crucial part of that funding challenge is stewardship – making sure that the alumni, corporations and foundations who are the university's chief private financial supporters have a good understanding of what is going on at the university. As chancellor, I can help make sure they understand the important role that U of T plays in Toronto and the country. We have many great supporters of the university. We just have to keep that spirit alive within them – and that comes from making sure that they have exposure to the good work that's done at U of T.

As chancellor, you will preside over many convocation ceremonies. What will you say to new graduates? Enjoy what you do. If you really enjoy what you do you'll never work a day in your life. Departing students should also recognize… that this institution's great 185-year record can continue only if alumni continue to give their support. New grads ought to feel a sense of pride in their achievements and a sense of ownership in their university.

PHOTO: SAM KITTNER/KITTNER.COM

Between 2007 and 2011, U of T engineers worked on the patents for more than 361 inventions

An Incubator for Innovation

A new applied science facility will give engineering students a place to develop entrepreneurial ideas

JUST THIS SUMMER, a U of T team including electrical engineers, engineering physicists and chemists used organic chemistry techniques to build a new kind of solar cell that's almost 40 per cent more efficient than existing ones. The multidisciplinary makeup of the team was key to their breakthrough, but this kind of creative problem-solving isn't just serendipity. It can be nurtured – and the Faculty of Applied Science and Engineering has big plans to do just that. Fundraising has begun to build a new Centre for Engineering Innovation and Entrepreneurship on St. George Street, next to the existing engineering complex.

The high-tech facility will stimulate innovative and entrepreneurial thinking by creating a common space for engineers from different disciplines. Students and professors working on everything from pollution-absorbing concrete to cars that talk to you and to the traffic around them will rub elbows daily, sharing their different insights and approaches to problems. Students won't just get a more rounded education or enjoy an exciting creative atmosphere – they'll graduate well-prepared for a career that increasingly demands an entrepreneurial outlook. "Proximity matters," says David Sinton, director of the faculty's Centre for Sustainable Energy. "I hope the multidisciplinary spirit will permeate the building. Collecting faculty units focused on global innovation, design, energy and sustainability under one roof is an exciting and unique opportunity."

Even the building itself will be designed to spark creative collaboration, with open-concept workspaces adjacent to a facility where students, professors and industry partners can quickly build and test prototypes; a "hatchery" space will be dedicated to nurturing student-led business startups. The proposed shared spaces are part of an intensive focus on cross-disciplinary teaching and research that is a core goal for U of T. "Through its multidisciplinary and collaborative intent and its exceptionally flexible design, the Centre for Engineering Innovation and Entrepreneurship embodies the future of the faculty," says Dean Cristina Amon.

Fundraising for the $88-million project kicked off with $1-million donations from alumni Paul Cadario (BASc 1973) and Peter Allen (BASc 1962), plus a $5-million gift from George Myhal (BASc 1978), a senior partner at Brookfield Asset Management in Toronto and chair of the engineering wing of U of T's Boundless campaign. "Cristina Amon's leadership has helped to propel U of T Engineering onto the global stage," says Myhal. "This is an investment in Dean Amon's vision for Engineering, and the ability of its faculty and students to make a transformational impact in Canada and across the world." The faculty hopes to break ground by mid-2014. – **JANET ROWE**

Lifelong Learner

Jessie Current believed in the value of education, and created scholarships so others could follow their academic dreams

A U of T alumna who taught in the department of household sciences and, after retiring, took courses well into her 80s, has left a bequest to the university so that others might have the opportunity to learn.

A $1-million gift from the estate of Jessie Current has created bursaries for graduate and undergraduate students. A fellowship will be awarded to two graduate students in chemistry on the basis of financial need, and an undergraduate scholarship worth $5,000 a year will support up to four students throughout a four-year science program.

The Roberts Scholarship and Roberts Fellowship are named in honour of Current and her siblings, James and Ina Roberts, who predeceased her. Current died last year at age 108.

Lynne Golding (BA 1984 VIC), who is Current's cousin, says her elder relative loved learning, so when it came time for her to decide what to do with her estate, there was never any question that U of T would be a beneficiary. "She was very attached to academia," says Golding.

Current was also aware that not everyone could afford to attend university. "She was a strong believer in the value of education, and its ability to bring people dignity," says Golding.

Born in 1903 in Brampton, Ontario, Current was the youngest of three siblings. Her brother James graduated from U of T Dental College, receiving his degree in uniform and then serving with the No. 4 General Hospital, U of T. He was killed on active duty in France in 1918. Her sister Ina (BA 1919 VIC) did research in U of T's chemistry department, and later lectured at the University of Manitoba. Current played Varsity women's hockey until a knee injury sidelined her. She graduated from Victoria College in 1925, and went on to a career in academia, eventually becoming the acting dean of U of T's department of household sciences. At 50, she married and retired from the university. – **SCOTT ANDERSON**

PHOTO: JASON KB PHOTO

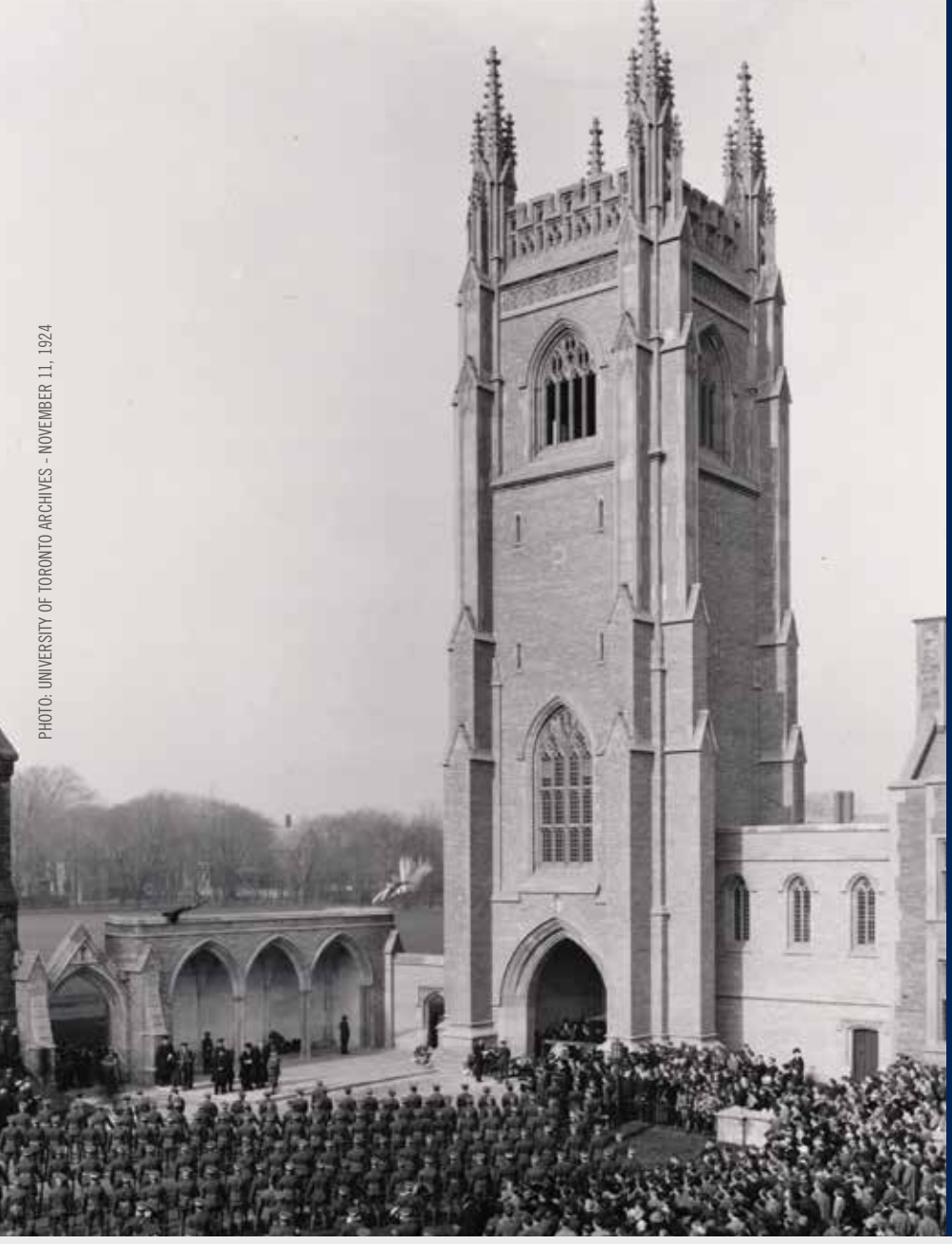


PHOTO: UNIVERSITY OF TORONTO ARCHIVES - NOVEMBER 11, 1924

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Soldiers' Tower was built in 1924, funded by donations from alumni of the University of Toronto. This Remembrance Day, our community will gather under a fully restored Soldiers' Tower, thanks to the generosity of our alumni and friends. Once again, alumni like you have helped raise more than $1M to return the Tower to its original glory. Thank you!

Preserving the Soldiers' Tower and the memory of the 1,185 alumni, students, staff and faculty who gave their lives in the two world wars continues to be a sacred responsibility. With your help, we will ensure this monument to bravery and sacrifice continues to stand strong for many years and many generations to come.

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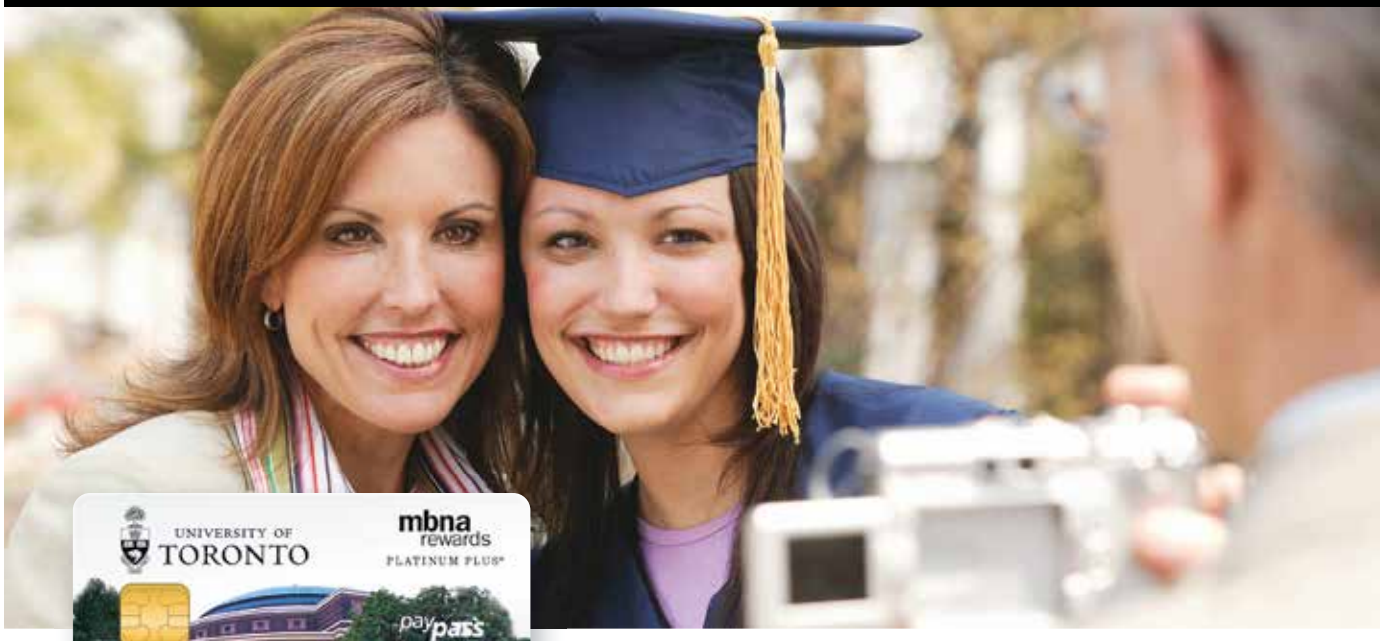

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Leading Edge

"How many times did your parents… encourage you to be by yourself forever?"
Prof. Michael Cobb says being single is underrated
p. 21

Ingenious Medicine

Genetic testing may soon reveal what pharmaceutical drugs work best for you, with fewest side-effects

MORE MEDICATIONS THAN EVER BEFORE ARE AVAILABLE for people who have depression. Yet only about a third of patients find an antidepressant that relieves their symptoms. Another third experience little or no improvement. Side-effects also vary: some people get an upset stomach, others can't sleep or sleep too much and still others experience sexual dysfunction.

If we could only make accurate predictions about how people will respond to particular drugs, many more people would be helped in a timely manner.

This is the goal of the Canadian Depression Biomarker Network. Headed by Sidney Kennedy, a U of T professor of psychiatry, the team of researchers will be looking at genes, blood proteins and brain images to see if they can predict how patients will respond to medication.

Finding objective measures – so-called "biomarkers" – that can predict how a treatment will work has been difficult in psychiatry compared with other branches of medicine, such as cardiology. There are many ways for a brain to malfunction, says Kennedy, but to date, few biomarkers for depression are known. Instead, doctors have relied mostly on a patient's symptoms to prescribe a treatment. ›

ILLUSTRATION: DANIEL STOLLE

The problem is that different mechanisms in the brain might be working together to produce similar symptoms in patients.

In an effort to tease apart these different mechanisms and to find ways to predict how different types of depression will respond to treatments, the researchers are recruiting 300 patients and 100 healthy subjects at six academic centres across Canada. The study will take three years. The researchers will look to see which gene variants the study participants have and which proteins those genes produce, with a particular focus on those known to play a role in depression or in how the body processes antidepressants. The researchers will also assess the patients for anxiety and how clearly they are able to think, take their family medical history and note any traumatic life events. Finally, they will use EEG to map brainwave activity and functional magnetic resonance imaging to track bloodflow to see what's going on in the depressed – or recovering – person's brain.

These data are being collected at three points in the study: before starting on medication, two weeks after starting, and at the eight-week mark. All patients will take the same drug, escitalopram. Kennedy's aim is to find out what distinguishes the people who do well quickly, the people who do well eventually and the people who never do well on a given antidepressant. It may be that people with a certain combination of genes plus certain brain imaging and blood results can be identified in advance as good responders. "We believe if we combine enough of these markers, we will be able to predict the right treatment for individual patients," he says.

Kennedy expects that, once it is easier to predict who benefits from what, drug companies will begin to target their medications more specifically. Rather than claiming only 40 per cent of all depressed patients improved, for instance, they might be able to claim 80 or 90 per cent in particular subpopulations – groups that will be objectively identified through biomarkers.

In the end, says Kennedy, biomarkers will not only help confirm which people do have depression, what type of depression they have and what medication might work best, they may also point the way to the causes – leading to novel treatments. – **ALISON MOTLUK**

Property Value

Toronto's land-use maps are important planning tools but they lack detail and are often out-of-date. Not for much longer

ONE WALL OF THE BOARDROOM at U of T's Cities Centre is covered by an intricate, multi-hued map of Greater Toronto. At first glance, it looks like a large version of a typical land-use planning chart. But for geographers André Sorensen and Paul Hess, the giant map represents a highly detailed answer to an elusive riddle: how is land actually being used in the suburbs? "Our primary goal," says Sorensen, "is to study what we have built over the last 60 years."

Municipal planning diagrams don't provide much detail, and the province doesn't make its land-use data available to researchers. As well, zoning and approved uses for a particular site don't necessarily correspond to what ended up being built there.

To fill the void of accurate data, Sorensen and Hess recruited about three dozen students to meticulously code the actual land uses on each piece of property across the GTA. (They excluded parts of downtown Toronto because large buildings often contain multiple uses, and are difficult to classify). Their research tool: Google Street View, which allows users to zoom in and "see" what's happening at ground level in every nook and cranny of the city. "It's very laborious," admits Sorensen, noting that in three years the team has coded five million parcels of land; the analysis will continue for another two years. The aim is to create a baseline, and then update it every five years in tandem with the census.

Once complete, the project will yield a far more detailed map of land use in the GTA than has ever been publicly available. What's more, by cataloguing what's actually taken root in post-war subdivisions and combining this information with census data and zoning rules, Sorensen and Hess believe they will develop a much keener understanding of what kinds of planning policies yielded the sorts of compact, mixed-used communities that are still rare in suburban municipalities. "We're still building the dream city of the 1950s," muses Sorensen. "There are places where this pattern was changed, and we're looking at why." – **JOHN LORINC**

PHOTO: JUAN BATET/ISTOCKPHOTO

In the U.S., more than 50 per cent of adults are single, and roughly one out of every seven live alone

THE BIG IDEA

The Single Life

Is 'one' really the loneliest number?

"HOW MANY MOVIES HAVE YOU GONE TO recently where a single person has been featured, happily, strongly, without any kind of lurking sadness or loss?" asks Michael Cobb. "How many times did your parents when you were growing up encourage you to be by yourself forever?"

More than four times as many Canadians live alone today as in 1941 – even though people have many more options now when it comes to relationships, including common-law and gay marriage. But singles are still stigmatized, says Cobb, a professor of English at U of T. Despite a vast change in our approach to relationships, society's zeal for conformity and control pushes people to couple off, Cobb argues, and this pressure distorts the lives of both singles and couples.

In his latest book, *Single: Arguments for the Uncoupled* (NYU Press, 2012), Cobb draws on literary characters such as Herman Melville's Bartleby and Ralph Ellison's Invisible Man to suggest how singles might resist coupledom. But by and large, he says, not many positive representations of single people exist in our culture. Even popular touchstones that purport to celebrate singleness, such as *Sex and the City*, are actually about the desperate need to couple.

The problem, says Cobb, is that our culture's emphasis on coupledom – the belief that it completes us and represents *the* most important emotional relationship we can have – has blinded us to other possibilities. In his book, Cobb suggests that couples displace their own anxieties – particularly a morbid fear of loneliness – onto singles with the result that singles are never seen clearly for who they are.

Singles aren't necessarily lonely, of course, but they're widely thought to be, "and loneliness, as we're frequently reminded, has terrible consequences." Part of the book, says Cobb, stems from his own experience of being happily single, with an interesting career and great friends. "No one in my

world thought I was happy and it was because I wasn't partnered off." At the same time, he concedes single life is not all fun and games: "It's often quite hard, quite painful, especially in a world that doesn't want you to exist." But he maintains it offers something valuable.

Where coupledom shrinks your horizons, forcing you to concentrate on one relationship at the expense of the world at large, singleness allows you grander vistas, bolder visions. Singles might be adventurers rather than lovers, figures like the painters Georgia O'Keeffe and Agnes Martin who toiled in desert-solitude and came to a new view of the world. "The single…can teach us to open ourselves up to the world of isolation and distance, which might give us, not eternity, but something not so outside of time and impossible to achieve," Cobb writes. "The single can teach us how to be alone – 'all one,' as the word *alone* etymologically suggests."

In the long run, this could benefit couples as much as singles, he says. If we stop idealizing couples and start endorsing singles, it could take the pressure off everybody, allowing even people within relationships to have a little more room to be themselves. "It's all about trying to get past a certain institutionalization of the importance of coupledom and marriage and allow us to have more breathing room. I'm not against people who have relationships," says Cobb. But the personal, historical, cultural and economic priority we put on capital-R relationships – "I think that needs to be changed." – **BRENT LEDGER**

LINGO

cash mob

The notion, held dear by some consumers, that one should shop at local mom-and-pop establishments rather than large chain stores has taken on a new twist in the age of social media.

The "cash mob" is a variation of the flash mob. But instead of hundreds of people showing up in a public place at the same time to sing or dance, cash mobs designate a day to visit a local business (selected in an online vote beforehand) and spend some money there – perhaps $10 or $20. The idea is to give the shops a one-day boost in revenue to keep them going in tough economic times.

Craig Boutilier, a professor of computer science, says the idea is an altruistic version of a phenomenon called *tuangou*, which originated in China. There, people would arrive en masse at a store to haggle for a better price on a particular item. Boutilier is now working with PhD student Tyler Lu on an online version of bargain hunting that's consumer-driven – unlike Groupon, in which vendors decide the deal.

ILLUSTRATION: ISABEL FOO

There are no reliable estimates of the number of private security cameras in Canada. In the U.K., estimates range from 1.9 million to 4.2 million – one for every 15 to 33 citizens

PROTOTYPE

Watchful Eyes

Security cameras are everywhere. A new app invites Torontonians to help map them

THE TOTALITARIAN FUTURE that George Orwell imagined in *1984* hasn't come to pass, but video surveillance – especially by corporations – has become increasingly commonplace. Visit the Eaton Centre or any popular shopping area in Toronto, for example, and chances are you'll be caught on camera, and your image stored – at least temporarily – in computer memory. What happens to those images? Who sees them and what do they do with them?

Recently, Andrew Clement, a professor in the Faculty of Information, became curious about these questions. He knew that, under federal privacy guidelines, organizations that operate video cameras in public places are required to post signs indicating who runs the camera and the purpose of the surveillance, as well as contact information for members of the public. But very few of the cameras he noticed were accompanied by such signs. So he decided to investigate.

With a colleague and three graduate students, Clement collected information about 140 video camera installations in the Toronto area operated mostly by well-known retailers, restaurants and banks. Only 30 per cent of the surveillance operations had any signage, and not one fully complied with Ottawa's privacy guidelines. (Clement has offered a $100 reward for anyone who finds a camera with the appropriate signage.)

What's more, when researchers requested images of themselves that had been caught on camera, only a small minority of organizations responded within the 30 days required by the federal guidelines. Many didn't respond at all – or were dismissive of the request. "I felt this called for action," says Clement.

He soon discovered, however, that the Privacy Commissioner doesn't have the power to issue fines. She can order a company to put up a sign or reduce the amount of time images are saved, but even these measures are open to court challenges. "The guidelines lack teeth," says Clement. "Companies ignore them because there really are no consequences."

So rather than file complaints, Clement opted for another approach. He is inviting Torontonians to help create an online map at surveillancerights.ca showing where video cameras are located in public areas, who operates them, and whether the appropriate signage is in place. His team has also created a "ticket" that people can download and hand out to non-compliant organizations and an Android app that allows people to access the map and file reports about cameras they find as they travel around the city.

In future, Clement hopes to create an "alert" for the app that causes your smartphone to buzz when you're near a video camera. While he acknowledges that there are legitimate reasons for video security, Clement says cameras need to be operated within "a transparent regime of accountability and oversight," which, in his view, is currently absent. "There needs to be public pressure and that comes through greater visibility and letting people know what their rights are," he says. – **SCOTT ANDERSON**

To find out more, or contribute to the security camera map of Toronto, visit surveillancerights.ca

Findings

Crab Shell Car Parts

Aaron Guan, a graduate student in mechanical and industrial engineering, has won a national automotive competition – and a $10,000 scholarship – for his work developing a new biodegradable material made from shrimp and crab shells that can replace petroleum-based plastics used in auto components.

Shrimp and crab shell fibres, called chitin nanowhiskers, form the base of this new material, which would allow automotive components to meet strict environmental standards without compromising vehicle safety. The new material has a much higher strength-to-weight ratio than the conventional plastics used in most automotive components, and provides higher mechanical strength without aesthetic flaws or deformation at lower densities. Guan worked with Prof. Hani Naguib in the Smart and Adaptive Polymers Lab.

Rise and Shine

Early birds are happier and healthier than night owls, according to a new study by Renee Biss and Lynne Hasher, of psychology.

Biss and Hasher studied two groups of adults – an older group mostly over 60 and a younger group under 40. Both groups filled out questionnaires about their daily routines, emotional state and feelings of healthiness. The older adults, who were far more likely than the younger adults to consider themselves morning people, reported greater positive emotion. Younger people with a rise and shine disposition also reported feeling more positive.

Why "morningness" is associated with greater positivity in all age groups might be related to the concept of "social jet lag" – the idea that people who stay up later for work or play develop sleep patterns that don't mesh well with the typical 9 to 5 cycle of work or school. The study was published in the journal *Emotion*.

PHOTO: ZMEEL PHOTOGRAPHY/ISTOCKPHOTO

Toronto's Fort York will mark the bicentennial of the Battle of York next April with a sunrise First Nations ceremony, a commemorative service at the fort and a military parade

Q&A

Clash of the Britons

Was the War of 1812 actually a civil war?

On June 18, 1812, the U.S. formally declared war against Great Britain. It was the first and only time our southern neighbour has taken up arms against Canada (or what would become Canada). Two hundred years later, Scott Anderson spoke to **Jan Noel**, a UTM history prof, about the war's impact.

A one-minute refresher, please. What was the War of 1812 about? One of the main causes of the war was the British impressment of American sailors. The British claimed that men who had immigrated to the United States were still British subjects, and they had begun forcibly recruiting these former subjects into the Royal Navy to help fight the Napoleonic wars. There was also a lot of conflict over what the Americans thought was British encouragement of aboriginal attacks on American settlers. When the war ended there was no resounding victor, and no territory changed hands.

Did the war have a lasting impact on the relationship between Canada and the U.S.? Not long after the war ended, there was a boundary settlement along the 49th parallel, but apart from that it's hard to trace lasting effects. U of T historian J.M.S. Careless wrote an article around the time of Canada's centennial celebrations, in which he affirmed that this war was the beginning of the American population in Upper Canada developing a distinct identity. There's nothing like having homesteads burned to give people a sense of solidarity.

Did it help shape who we are as Canadians? Many people see the First World War as a crystallizing moment in our history. Other people look to the creation of national health care in the 1960s. It's easier to make an argument for the importance of these events because they aren't so far in the past. However, if the British had lost the War of 1812, Upper Canada probably would have become an American state.

How has our view of the War of 1812 changed over time? Compared to the two world wars, our records aren't as complete; this fuels more imaginative interpretations. In his book

The Civil War of 1812 (Knopf, 2010), for example, Alan Taylor proposes that Upper Canada was so heavily populated by American settlers that you could hardly describe this as a conflict between two separate peoples. There were Irish immigrants, possibly from the same village in Ireland, fighting on different sides of the war. There was also a great deal of cross-border admiration: American generals respected the discipline of the British generals, while the British foot soldiers envied American liberties and prosperity. British soldiers who were taken prisoner would sometimes prefer to stay in American jails than be sent back across the lines in a prisoner exchange.

Why is Laura Secord one of the best-known names from the war? Waves of feminism in the 1880s and the 1960s fuelled curiosity about women's place in history. Though lost documents led to confusion about dates, historians eventually rediscovered two confirmations that Secord's now-famous warning led to interception of the Americans by aboriginal forces friendly to Canada; those warriors proceeded to win the Battle of Beaver Dams. Cecilia Morgan, a professor at OISE and author of *Heroines and History* (UTP 2002), provides a fascinating account of how Secord's story became widely publicized by late-19th-century amateur historians who were imperialists and feminists.

Are wars overly emphasized in the study of history? I used to think that when I was a graduate student. But teaching has made me realize that a whole variety of pathways into the past are useful. Identifying with past experiences and pondering their significance deepens our experience of what it is to be human. History is a dialogue between the past and the present. We ask questions about the past because of things that we're concerned with now.

Read a longer version of this interview at magazine.utoronto.ca.

PHOTO: EDWARD PERCY MORAN/LIBRARY OF CONGRESS

None of the top 40 songs of 1965 were composed in a minor key, compared to 22 songs in the top 40 of 2009

Rotary Club

They gave the world the first human-powered "ornithopter" – a plane with bird-like wings that flap. Now, a team led by engineering alumni Todd Reichert and Cameron Robertson is seeking to build a human-powered helicopter.

The team has strong motivation: it hopes to win the Sikorsky Prize, established in 1980 by the American Helicopter Society. To win the $250,000 reward – the third largest monetary prize in aviation history – a team must fly a human-powered helicopter for 60 seconds, and reach an altitude of three metres while remaining in a 10 metre square.

About 20 groups have tried, but no one has been able to claim the prize.

The U of T-led team aimed to have their helicopter built and flying by the end of August. The most difficult aspect of the project, Reichert says, is designing helicopter components that are ultra-light and yet won't break. "We test every structure to failure so we're sure of the calculations," he says. "Enormous care must be taken to make sure that nothing is sloppily done." – **LIAM MITCHELL**

Sad Songs (Say So Much)

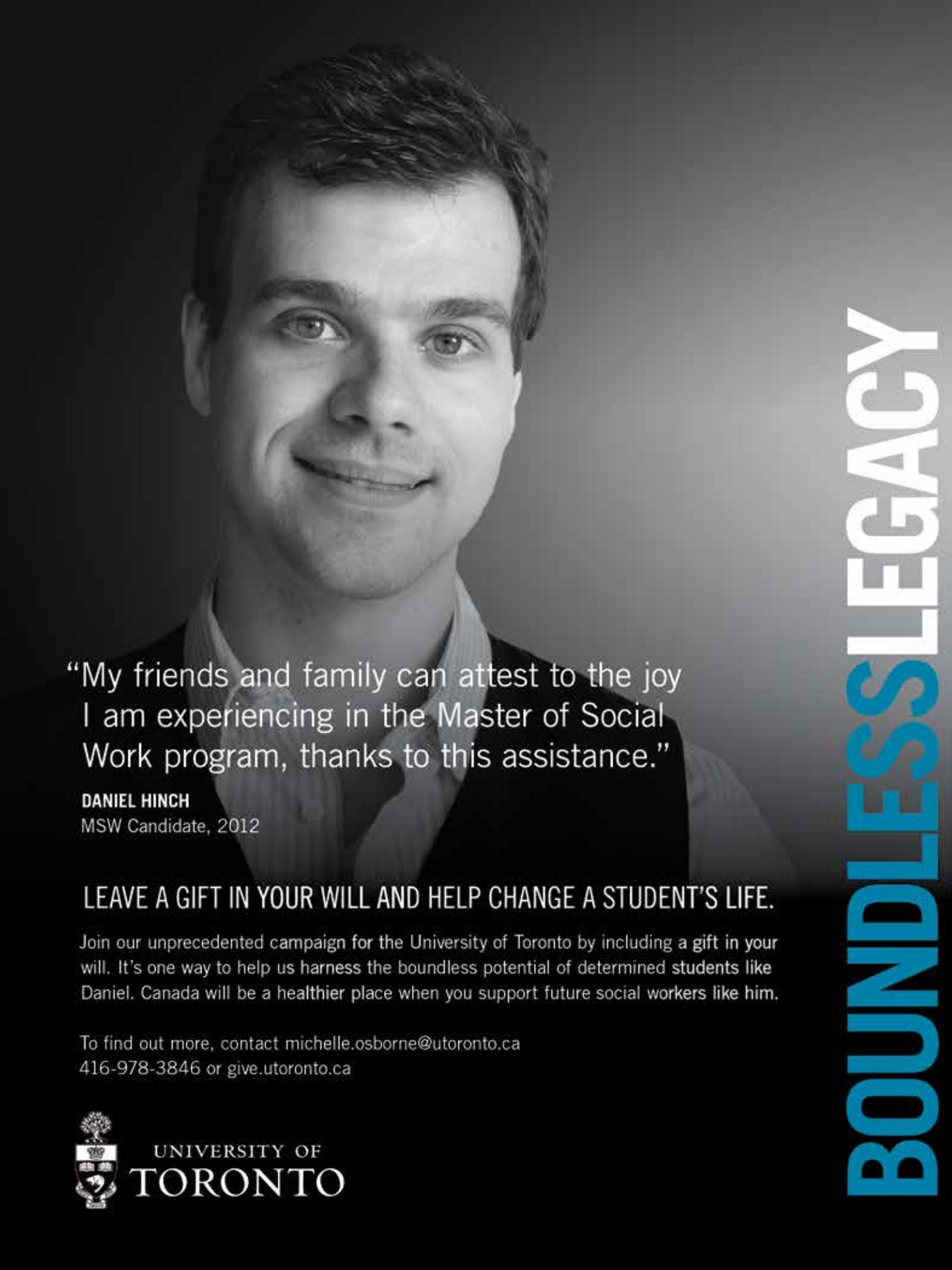
Research finds that pop music is getting more melancholy – a sign, perhaps, of the times?

GROWING UP IN THE 1960S, Glenn Schellenberg spent much of his weekly allowance on Beatles singles – sweet, boppy numbers such as "Help" and "She Loves You." In the '70s and early '80s, the Manitoba native played keyboards with his own rock band in Toronto, and sometimes with Martha and the Muffins when they toured. Now a psychology professor at U of T Mississauga, Schellenberg has applied his academic training to look back at his youthful passion, arguing that pop songs have become sadder over the last half-century.

Schellenberg and colleague Christian von Scheve, of the Freie Universität in Berlin, examined the Billboard Hot 100 List in the last five years of each decade between 1965 and 2009, analyzing each song's tempo and key. The researchers determined that songs have grown dramatically slower over time, and that a radical shift has taken place from major to minor modes. More than 80 per cent of the most popular songs on the radio in the '60s were in the happier major keys, compared with about 40 per cent of the more recent chart-toppers. Psychological research shows that slower songs in minor keys tend to elicit more doleful responses.

"There is an element of taste here," says Schellenberg. "Increasingly, we tend to view music with negative emotions as more genuine, and adult pop that is fast and in a major mode as somewhat childish." (He gives as examples ABBA's "Waterloo" or Aqua's "Barbie Girl.") He also guesses there's a connection between the worsening economic times in the West and the increasing melancholy of our songbook. "In the music, you can see the postwar boom slowly going away." In short, there's this feeling among many coming of age now that they've arrived on the scene, in Neil Young's evocative phrase, after the goldrush. – **ALEC SCOTT**

PHOTO: MIKE CAMPBELL/CKMMPHOTOGRAPHIC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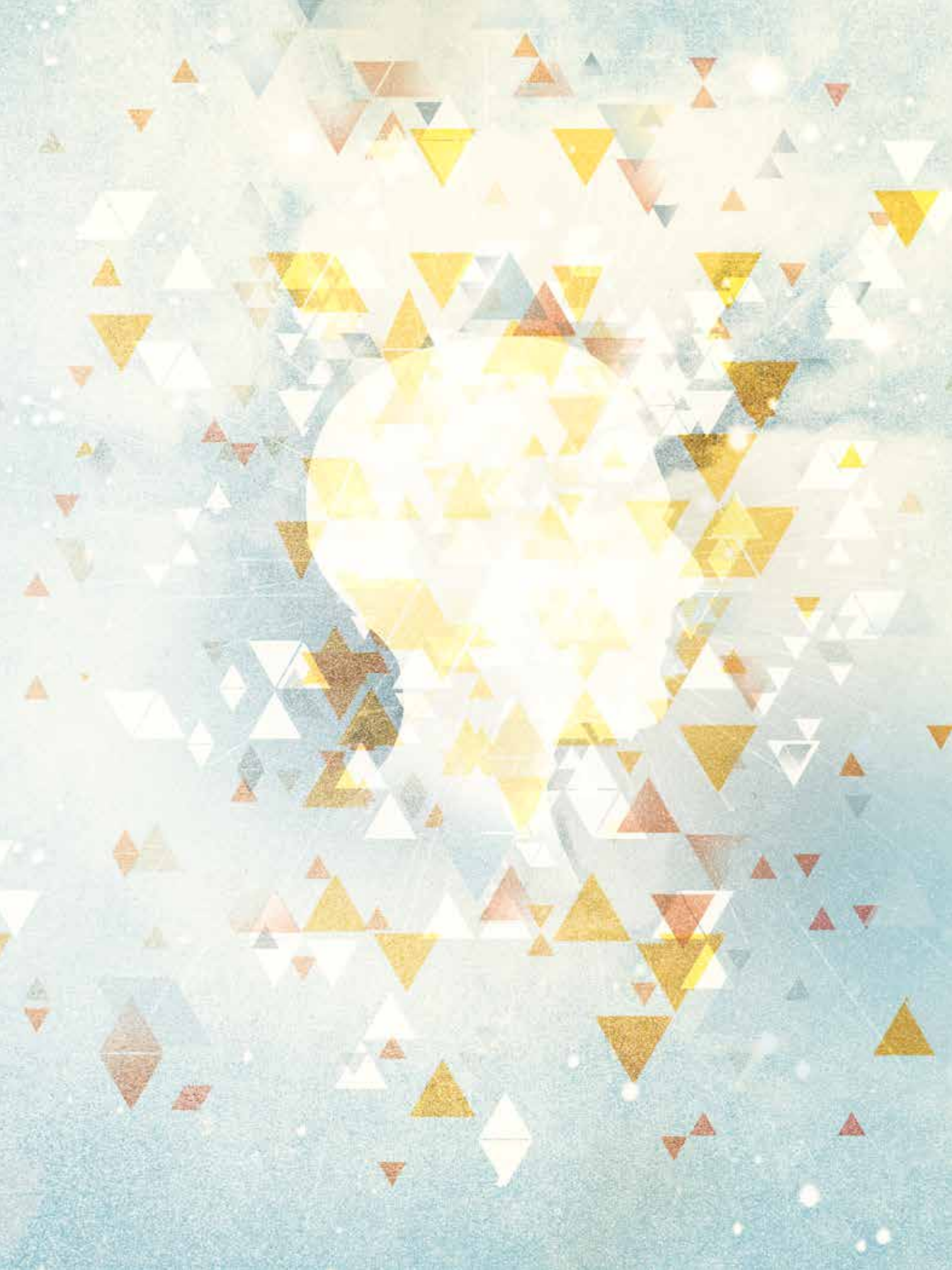

By Cynthia Macdonald
Illustration by Gavin Potenza

A Shift in Perception

Discoveries in brain science are prompting new theories about how our senses work – and how they affect our understanding of the world

WHEN CONSTANTINE CARAVASSILIS LISTENS to stringed instruments, strange things happen. If he hears a chord played in the low range, his eyes might suddenly flood with colour: "a G," he tells me, "is usually orange." At other times, this type of sound can cause him to experience sweet or bitter tastes.

Caravassilis, an accomplished composer and doctoral student at the University of Toronto's Faculty of Music, has an unusually strong case of synesthesia – a condition in which the stimulation of one sensory pathway leads automatically to the arousal of another.

Synesthesia isn't unique to musicians, although they may be disproportionately affected by it. It wasn't until his second year at university that Caravassilis learned that several other composers (such as Claude Debussy and Alexander Scriabin) shared what he thinks of as "an ability, not a malfunction. But you wouldn't describe it as a negative or positive experience," he says. "It just *is*."

Up until recently, it would have been easy to dismiss Caravassilis as delusional: after all, creative people are known for having active imaginations. Now, however, what synesthetes say they experience is backed up by science. Using functional magnetic resonance imaging (fMRI), neuroscientists have discovered that there is much more crosstalk among the senses than we ever imagined before. It just so happens that Caravassilis's is much louder than most.

But if neuroscience is telling us that the most profound synesthetes truly "see" a colour invisible to most of us, then what exactly do we mean when we talk about vision? Or for that matter, about taste, hearing, smell and touch?

Professor Mohan Matthen is trying his best to answer this question. He is currently the principal investigator at the Network for Sensory Research, an international team of philosophers headquartered at U of T who believe it is high time we developed a new conceptual framework for the senses.

It seems natural that philosophers should be leading this investigation; after all, it was Aristotle who originally conceived of the five-sense model to which we rigorously cling. And until the scientific method was developed in the 17th century, investigation of the senses belonged to the philosophers alone. Today, they share the stage with neuroscientists, psychologists, medical doctors and biologists. And findings within these fields are reframing philosophical thinking in fascinating ways.

Matthen himself came to philosophy via the sciences: his first degree was in physics, and he has also taught the philosophy of biology. His first exposure to the domain that would shape his life came when a teacher in his native India recommended that he read *Appearance and Reality* by the British metaphysician F.H. Bradley. On his chatty blog, Matthen jokes that the book (and his teacher) actually caused him "much misery"; nonetheless, it spurred him to study human perception.

Other philosophers around the world have been probing the mystery of the senses for some time. Barry Smith, co-director of the University of London's Centre for the Study of the Senses, is best known as a specialist in flavour and smell. Fiona Macpherson, who is the director of the University of Glasgow's Centre for the Study of Perceptual Experience, is an expert in the nature of visual experience, including optical illusions. Matthen has brought these researchers together – in person, when possible – with like-minded thinkers from Harvard, M.I.T. and elsewhere. "We want people to communicate, share each others' work and get access to faculty members in other disciplines," he says. "We're particularly interested in multi-sensory integration and how the senses contribute to knowledge."

A key question the network wants to address is whether Aristotle's model is still relevant. "The traditional five senses are external, but we're also interested in the internal senses – those that have to do with a sense of what your own body is doing," Matthen says. These include proprioception (knowing where your body is in space); nociception (the feeling of pain); and thermoception (temperature sense), among others.

Matthen's colleague Fiona Macpherson points out that animals have certain senses that we lack. "There are fish who are sensitive to electric fields. And there's quite good evidence that some animals are sensitive to magnetic north, which we aren't." We humans might possess a vomeronasal organ – which animals famously use to sniff each others' pheromones – but the jury is still out on whether a human sense functions this way. So if we no longer have five senses, then how many do we have?

Like a practiced synesthete, I can see Matthen's head shaking over the phone. "There's not much point in counting them," he says. "What we're more interested in is how they come together." Barry Smith expands on this. "You could have more than one sense of smell, because you've got the smelling from the outside in when you take a breath. But you're also smelling aromas that enter the sinus cavity from inside the mouth."

An explanation: when I attend one of Smith's talks, he offers everyone in attendance a jelly bean, and tells us to hold our nose while chewing. My jelly bean is coconut-flavoured; with my nose held, I can only perceive that it's "sweet" (in that respect, no different in any way from raspberry or chocolate). The coconut flavour only becomes apparent when I unplug my nose. Smith's point is clear: what we call "flavour" is a blend of tongue-taste and smell. "None of the parts operate separately anyway," he says. "So how can we think of them as parts?"

None of the parts operate separately. It's an idea that completely upends what we all learned as schoolchildren: there are five individuated senses, some more cherished than others. And yet we know from experience how integrated they all must be. When we have a cold, for example, taste and smell are equally diminished. And instinctively, we know that beautifully presented food somehow tastes better.

Sensory fusion is also illustrated by the McGurk effect, where you watch a mouth forming the sound "ga" while the sound "ba" is being played. What you will then hear is wrong: it's the sound "da," the midpoint between the two. (There are several video demonstrations of this effect on YouTube.)

"So the question is, do we partly hear with our eyes?" asks Smith. "And the thought seems to be, yes. You're fusing hearing and vision to make some new product. The way we're talking about hearing and vision no longer depends on input from just one sense, and as a result we've had to tear up our old ideas."

And yet, it's not as if Aristotle was completely wrong: there are dividing lines, but where are they? On a sunny day in May, Matthen gathers members of the network at a wine-tasting in the Niagara region of Ontario. Smith is, among other things, an oenophile – wine-tasting being a discipline that naturally combines all the senses at once. "Smell this!" he demands, proffering a glass of Riesling. "It has notes of diesel and lime." This doesn't sound inviting, and Smith is right: what I inhale seems nothing less than mildly citric gasoline.

But tasting is a different matter altogether. On drinking the wine, I perceive it as sweet and floral, its flavour only a distant cousin to its scent. Smith says this disconnection is common in the flavour business. He points out the example of Époisses cheese, which tastes delightful but smells like a "teenager's training shoe." It's clear that there are separate perceptual systems operating here. But the war may not be between smell and taste – instead, it could be one of my smell-senses rejecting the information from another.

It appears that we may have multiple sight senses, too. Take the remarkable example of Daniel Kish, a Californian who had his eyes removed as a toddler due to cancer. To navigate the world, Kish echolocates: he uses vocal clicks to activate a kind of sonar system more commonly associated with animals such as bats. A recent study showed that Kish's method can help him tell a car from a lamppost, or a flat object from one that is convex. He can also stand near your car and tell you how far it is from the curb.

Amazingly, brain scans show that Kish's visual cortex lights up when he is "looking" at something, even though he is echolocating the object instead of seeing it in a traditional manner. So in one very key sense, Kish has not lost the ability to see things – just the usual way of doing so.

And yet, as Fiona Macpherson points out, the very words "visual cortex" might be erroneous; after all, it's a given that a person with no eyes cannot see. "This area of the brain is clearly doing a lot of visual processing – but is it exclusively visual?" she asks. "It might be better to call it a spatial-processing cortex."

In any case, "when somebody loses a sense," says Matthen, "they often manage to get the same information in a different way. That's of vital interest to us."

Matthen points out that whether disabled or not, all human beings use their senses in concert all the time, though they may not be conscious of it. When one sense fails or feels untrustworthy, we automatically let another take over. "If you don't trust the colour of something, you might turn it over, use motion to manipulate the object and learn more about it," he says. "Vision can make mistakes, but generally by interacting with an object in a multi-sensory way we can check those mistakes".

So are we all synesthetic? Fiona Macpherson believes that a case such as that of Caravassilis – true synesthesia – is relatively rare. But she thinks we all experience cross-modal phenomena. Take the "Bouba-Kiki" experiment of 2001, in which people were shown two pictorial figures – one rounded, the other angular. Ninety-five per cent of participants assigned the name "kiki" to the angular figure and "bouba" to the rounded one, proving a link between visual and auditory faculties in the brain. Macpherson says we frequently make other synesthesia-like associations, too. "Suppose I gave you a blank piece of paper and a pen, and I asked you to draw how the days of the week were related to each other," she says. "How would you do it?"

I tell her that it's nonsense to think the days of the week are spatially related. But in her mind, they are. "I would draw a circle that goes anticlockwise, with Saturday and Sunday at the top," she says. I tell her that strikes me as frankly weird – but she returns the favour when I tell her the appearance of sloppily printed letters can sometimes make the skin on my thumbs feel itchy.

"One of the nice things about these studies," she says, "is that we're realizing the way human beings think about things is really idiosyncratic. What goes on in our heads is so unique, because of the rich, complex people that we are."

WHAT IS A "SENSE," ANYWAY? As a verb, it means to grasp, or feel, or understand. As a noun, it has traditionally referred to a bodily faculty that enables us to do these things.

And yet, even those simple definitions are currently up for review. It might even be possible to sense something without being aware of it. "There is emotional communication through chemical signalling," says Smith, noting that researchers at the Weizmann Institute in Israel last year found evidence that chemical signals from a woman's tears lower men's sexual interest, even though tears give off no discernible odour.

Selling to the Senses

Companies appeal to hearing, taste *and* sight to affect consumer perception

Charles Spence, a scientific advisor to the Network for Sensory Research, is an experimental psychologist at the University of Oxford. He's also an expert on how consumers sensorily experience new products. At first glance, Spence seems something of an academic *enfant terrible*, both for his status as a marketing maven and for the sometimes bizarre nature of his research. One of his sense experiments even won him the Ig Nobel Prize (a parody of the Nobel): he managed to prove that Pringle's potato chips taste fresher to people when you amplify the sound of their crunching.

Companies have long employed the research of people such as Spence. But until recently, much received wisdom in this area has been visual. Using Carl Jung's dictum that "colours are the mother tongue of the subconscious," marketers well know that a green logo (Starbucks) promotes products that are earthy and homelike; a yellow one (McDonald's) playful and fun; and a blue one (American Express) reassuring and solid.

Now, we may be transitioning from an age of uni-sensory to multi-sensory – or "cross-modal" – marketing. One example is "Sounds of the Sea," an experimental restaurant dish Spence recently helped develop in collaboration with Heston Blumenthal, the iconoclastic chef of Britain's Fat Duck restaurant. The dish includes edible "sand" made of tapioca, breadcrumbs and miso oil, along with sashimi and foam made from seaweed stock. Diners are served an iPod along with their meal, which plays ocean sounds such as cawing gulls and crashing waves. This carnival of oceanic sensory inputs is said to have a striking effect: Blumenthal claims he's had "diners in tears, overcome with emotion."

Spence also takes his cross-modal message on the road, and has done so with Barry Smith. "We were at a big marketing event in Colombia about six months ago, and we had about 300 of their leading companies there," Smith says. "Marketing people now have to look at the whole mosaic of results in the neurosciences, and figure out how to apply them properly."

Some of these results show that the senses are connected in strange ways indeed. "There are now smells in shampoo that actually make your hair feel softer," Smith says. "And if you want to reduce the fat content in yogurt, you can add an aroma that will leave it tasting just as creamy." – **CYNTHIA MACDONALD**

"We've given up the idea that the world is composed of four elements. Why do we hold on to Aristotle's view that there are just five senses?"

Advances in science are not only doing away with how we view the senses, but how we view philosophy itself. Since the invention of the scientific method, a chasm has opened between the two disciplines. And unless philosophy works to keep up, a good deal of what we've traditionally thought risks invalidation.

"When philosophers start telling you how it is, I start to get worried," says Smith. "Especially if they're talking about the mind, or language or emotions, and they don't look at the relevant recent science on these topics." He points out that many outmoded philosophical views are vital links in a chain that is still snaking through history towards the truth. But if these views are no longer tenable, we should no longer teach them as gospel.

"We've given up the idea that the world is composed of four elements. Why do we hold on to Artistotle's view that there are just five senses?" Smith asks. "Somehow this is a bit of folk ideology that still remains."

Neuroscience has revolutionized philosophy. Technology such as fMRI offers a picture of the self that seems to contradict the fragile and unreliable accounts of it we like to give each other.

It may seem a broad statement, but Macpherson reminds me how fundamental these questions are to philosophers. "One of the big philosophical questions that everybody knows is, how do I know that the world around me really exists, and is as I take it to be? That question arose because people thought: well, maybe I'm just hallucinating it all. Maybe I'm in the Matrix, and sentient machines are tampering with my brain."

So if science is discrediting much of what philosophers used to think about the nature of perception, why should philosophers participate in this debate at all? Matthen says that the examination of subjective experience – how it *feels* to be human, regardless of what any lab test might tell us – is still very much the province of philosophers, and has always been a significant area of study. Our preference for viewing the world unscientifically may be annoying and frustrating. But it's also key to understanding who we are.

Smith agrees. "We all know the sun isn't really moving, but we still talk about it 'setting.' How do we connect the lived experience, the way things seem to us, with what's really going on? It's the job of the philosopher to do that."

"IF THE DOORS OF PERCEPTION *were cleansed, everything would appear to man as it is, infinite.*" Since William Blake wrote that over 200 years ago, many (most famously, the writer Aldous Huxley) have tried to alter their perceptual experience with drugs. But instead of stumbling through a drugged haze, some modern-day Huxleys are now tweaking their senses with different kinds of substances.

One of these is miraculin, a derivative of a west African berry that strips lemons of their acidity and makes them taste as sweet as peaches. Miraculin has more serious uses too. People undergoing chemotherapy – who often find that food tastes unpleasantly metallic – can use it to positively alter the flavour of what they eat.

Flavourless jelly beans, sweet lemons and wine that smells like gasoline: it's not hard to believe Smith when he says that sensory research is "a lot of fun." Those attracted to it are quirky sorts, preoccupied with questions that wouldn't trouble most of us. "One of the things that's really nice about this work," says Matthen, "is that everything you do, even if it's terribly mundane, suddenly takes on more meaning. You might notice that when you're driving, you don't have to see the corners of your car to know where they are. The car responds to your own movements and when it does that, it becomes integrated into your own bodily sense."

Being most concerned with questions of taste, scent and flavour, Smith admits to having acquired an overdeveloped sense of smell. "I can't turn it off!" he laughs. "I walk into rooms and I smell people, or the rooms themselves; when people walk by I'm noticing their different sensory fingerprints."

Isn't that unpleasant? Not at all, he says. "You think: all of this was going on, and I've been missing it. To put yourself back in touch with your animal nature, your senses, your contact with the environment is wonderful. You feel healthier, more complete."

Back in Toronto, Constantine Caravassilis is working on something very special to him: a huge, colour-coded musical project, which he plans to finish in two or three years. "Instead of preludes and fugues in D major or C minor, we'll have preludes and fugues in green or orange," he says.

He uses software that converts his piano's sounds to string sounds, and shifts them into a lower range. When that happens, his synesthesia kicks in and his mind erupts in colour, tastes and emotions. "With the part I'm working on now, I'm trying to stick with beige," he says. "But it's very difficult. I'll spend days on just three bars, and then all of a sudden my fugue subject wants to turn red! So that's the challenge. I have to find a way to keep it going . . . in the same colour."

Cynthia Macdonald (BA 1986 St. Michael's) is a writer in Toronto.

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By Patchen Barss
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Frugal Thinking

How do you bring basic sanitation to two billion people in low-income countries? Inventing a toilet that works for pennies a day is a start

THE AVERAGE NORTH AMERICAN HOME could barely function as a residence if it lost its connections to the outside world. Wires, cables and electromagnetic radiation pierce the walls to convey electricity, television, telephone, radio and the Internet. Out-of-sight pipes bring in gas and running water. Even that most humble household fixture, the toilet, is part of a network of water mains, grinder pumps and lift stations that stretches from a reservoir at one end to a sewage treatment plant at the other.

To most of us, a home is less like a castle and more like an organ pulsing in a vast circulatory system of utilities and information. This connectedness to "the grid" is so integral to the comforts of the developed world that it would seem impossible for low-income nations to ever attain a western standard of living without first making huge investments in costly infrastructure.

However, a new movement is challenging this assumption. At U of T and elsewhere, an informal alliance of engineers, designers, marketers and political scientists have become champions of a concept known as "frugal innovation." This cross-disciplinary community of researchers seeks to develop simple, affordable technologies that use environmentally sustainable power sources and materials. Principles such as reducing, reusing and recycling that are often treated as remedial add-ons to North American lifestyles are built into frugal innovation from the beginning. The aim is to deliver western-style products and services in developing nations without western-style expense and resource usage.

As unassuming – or unappealing – as it might seem, the toilet has become a major focus of this new form of innovation. In North America, toilets account for nearly 40 per cent of a home's water use, and even low-flow models use more

than six litres per flush. This excessive use of water – let alone the construction of a massive sewage system to service such home fixtures – is unimaginable in many parts of the world.

So while many philanthropic efforts in low-income countries aim to provide sanitary toilets to prevent disease and improve the health of billions of people, using developed-world technology to do so would be economically and environmentally unsound. That's why the Bill & Melinda Gates Foundation, in July 2011, issued a challenge to engineers to "reinvent the toilet." Through its Centre for Global Engineering, U of T is fielding one of the eight teams from around the world who were invited to take up the Gates' call.

Yu-Ling Cheng, the centre's director, prefers the term "appropriate" to "frugal" when talking about innovation. She is concerned about the reinvented toilet's affordability, but also believes that a successful design must draw on locally available materials and expertise for operation, maintenance and repairs. In addition, she says the design process must include consultations with the intended users to ensure the solution is one they want and will actually adopt. This process demands collaboration from start to finish, fresh thinking and a lot of work. If it's successful, though, the impact could be extraordinary.

"I was attracted to this project because it's a chance to help improve the lives of billions of people in need of better sanitation," says Zachary Fishman, a research associate at the Centre for Global Engineering who is working on the science, engineering and design of U of T's entry in the Gates challenge. He acknowledges that redesigning the toilet is not a particularly glamorous task, but he sees beyond the fixture itself to the impact it could have on the world.

A standard toilet, for instance, uses nearly 19 litres of water per flush. To put that in perspective, a single flush requires more water than a person living in poverty in a developing nation such as Rwanda or Cambodia typically uses in an entire day – for bathing, drinking, cooking and everything else. The average Canadian uses close to 350 litres in a day.

Toronto's sewage system, with nearly 6,000 kilometres of water mains, is inarguably a triumph of engineering. But it is simply impossible to reproduce it for the 2.6 billion South Asians, sub-Saharan Africans and others who currently lack access to basic sanitation. Yet by making reliable, sanitary toilets available throughout the world, billions of lives could be vastly improved – and sometimes saved. About 1.5 million children die each year from diarrheal diseases that could be avoided through better sanitation and hygiene. Millions more become too sick to attend school.

The Gates Foundation challenge to Reinvent the Toilet awarded third prize and US$40,000 to U of T's team from the Centre for Global Engineering, from left: Prof. Elizabeth Edwards, team leader Prof. Yu-Ling Cheng, Samuel Melamed, Prof. Mark Kortschot, Tiffany Jung, Meagan Webb and Zachary Fishman

The criteria for the Gates Foundation challenge focused on both affordability and appropriateness. Teams had to design a safe, hygienic toilet that would work for five cents per person per day and operate off the grid and without connection to a sewer. The U of T group wanted its design to be just as suitable for densely populated regions as for rural areas. And they knew their toilet had to be able to filter, separate, dry and disinfect human waste in a wide variety of climates, cultures and circumstances. All eight teams that were invited to participate – along with some 30 others – presented prototypes at the Gates Foundation's campus in Seattle in August. U of T's entry placed third, earning the team a US$40,000 prize. It is expected that the U of T team will receive additional funding for a second phase to refine and test their invention, but in mid-August the details for how this will proceed had yet to be confirmed.

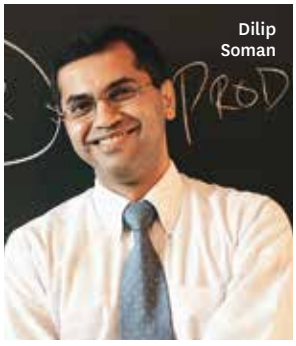
In devising their winning approach, members of U of T's team knew they would not be able to rely on access to water or specialized component parts. And they considered all existing off-the-grid toilet concepts inappropriate for the challenge. Composting is too slow to deal with high usage. Existing incineration systems demand too much power. And high-tech tools for dealing with organic waste, such as membrane filters and chemical composting accelerants, are too expensive and too complicated.

The team looked instead to sand. With their approach, when someone uses the toilet, liquids and solids are separated and dealt with individually. The solids are partially dried and then sanitized through a steady, low-energy smouldering process rather than energy-intensive incineration. Once the smouldering is started, it is self-sustaining as long as the toilet is in regular use.

The liquid side of the operation is more complicated. Because gastrointestinal bugs are so common, liquid waste often contains bits of fecal matter that must be further separated. The engineers found that sand makes a serviceable filter. Once urine and diarrhea pass through the sand, the liquid can be neutralized via solar-powered ultraviolet lights.

Of course, the sand itself becomes clogged and contaminated, and must be cleaned. This led to an elegant solution: sand also happens to provide ideal airflow for the smouldering process. Sand dirtied through filtering is cleansed through smouldering, meaning the same sand can be used repeatedly, moving back and forth from one function to the other. Not only is sand inexpensive, but it's also widely available around the world, allowing for easy local maintenance. Once the solid waste has been smouldered, the ash can be discarded safely.

Not all parts of the team's toilet can be found in nature. The separation system requires a moving belt that separates solids from liquid, and spreads the wet solids so they dry more quickly. The team has analyzed every component, seeking inexpensive, common technologies that are familiar to people in low-income countries. As Cheng emphasizes,



"Jugaad is one of those untranslatable Hindi words, but it essentially refers to using the things you have at hand to come up with solutions."

the toilet must rely not only on locally available materials, but also on local knowledge for installation and repair. "At the moment, we're using hardware-store sprockets, but we're planning to adapt it to use bicycle sprockets," says Fishman. "We're currently using commercially available belt material. But we're planning for that to be lower-cost plastic or something that could be produced locally."

Cheng is aware that even the best design is useless if people don't adopt it; reinventing the toilet isn't merely a matter of, "If we build it, they will go." Early in the project, the team conducted field research in Bangladesh. Even simple information such as the preference for squat toilets over western sit-down models, or the need for women to have a private place to change their clothes before and after using the facilities, prompted the team to refine their prototype.

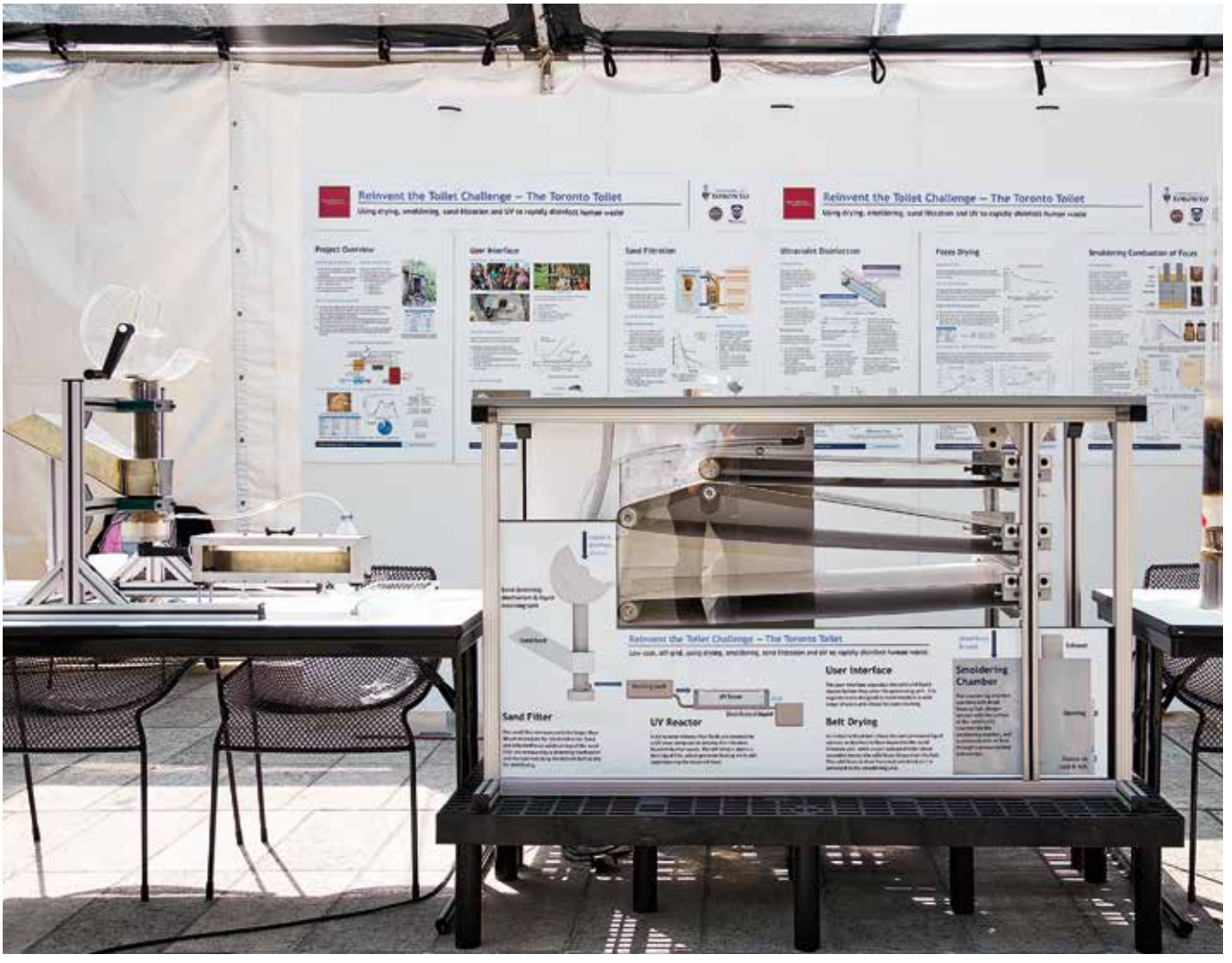
The consultations yielded a spin-off benefit as well: a second, simpler, design project. "I came across a group of women talking about parents getting old or sick and being unable to use squat toilets – they would sometimes relieve themselves anywhere and these women would have to clean it up," says Cheng. So she assigned students in one of her courses to develop 'squatting assistance technology.'

In a matter of weeks, the students came up with a free-standing frame that's light enough to be positioned over a squat loo when needed, and easily moved aside when not. It is sturdy enough to allow users to support themselves on it with their arms. "It's a really neat design," says Cheng. The product is aimed at elderly, middle-class Bangladeshis, but also pregnant women and people with illnesses and disabilities.

Such a project hints at the much wider range of issues around the world that might be addressed through frugal innovation.

Dilip Soman, a professor with the Rotman School of Management and the director of the India Innovation Institute, is one of Cheng's collaborators in a broader effort to study low-cost innovation and the conditions that enable it to succeed. India has become a centre of innovation for everything from biotech to manufacturing, and Soman's institute supports research on those success stories, situating them in a global context. He concurs that making a product inexpensive is often necessary but rarely sufficient to gain purchase in

PHOTO: JOHN HRYNIUK



In U of T's toilet prototype, liquids and solids are separated and dealt with individually. The solids are partially dried and then sanitized through a low-energy smouldering process rather than energy-intensive incineration. Once the smouldering is started, it is self-sustaining as long as the toilet is in regular use.

Frugal Fortification

A U of T nutritional scientist has developed a low-cost product to fight vitamin and mineral deficiency in developing countries

Vitamin and mineral deficiencies cause widespread illness and early death in many developing nations. Anemia, for instance, usually caused by iron deficiency, is the world's second-leading cause of disability, affecting just under half of preschool children and more than half of pregnant women in low-income countries.

In Canada, staple foods and children's cereals are commercially fortified with iron and other essential vitamins and minerals. It's an effective remedy – North American malnutrition prevalence is a fraction of that of developing nations. But it's both expensive and unsuitable for areas where food comes straight from the field rather than through a factory.

Stanley Zlotkin, a professor of nutritional sciences and pediatrics, has spent more than a decade championing an innovative – and frugal – alternative: home fortification.

His product, called "Sprinkles," is a sachet of powder containing enough micronutrients for one child for one day. The powder costs two to three cents per packet to produce, and when mixed in with a meal, helps prevent anemia, rickets, and other conditions brought on through malnutrition.

Affordability was just one of several factors Zlotkin considered when developing the product. "The other important components are convenience, no requirement for users to be literate, and ability to use traditional local infant food," he says. "Sprinkles can be added to any semi-solid food, without changing the taste, texture, colour or smell."

To arrive at this seemingly simple solution, Zlotkin spent years researching, experimenting and then promoting his product. His work has involved everything from learning how to encase nutrients in soy to keep them from affecting the food to finding partners who could produce and distribute Sprinkles all over the world.

Zlotkin's innovative sachets have reached about 15 million children, and the Sprinkles Global Health Initiative has active collaborations in more than a dozen countries, from Ghana to Guyana.

– **PATCHEN BARSS**

PHOTO: BILL & MELINDA GATES FOUNDATION/MICHAEL HANSON

markets around the world. "One of the things we study is design deployment – getting people to use the thing," he says. "Lots of great ideas fall by the wayside if you don't think about how to get people to use them."

Generally, frugal innovation focuses on re-engineering existing products rather than developing new ones. U of T–related examples range from tablet computers that cost less than $100, to transforming how hospitals provide medical oxygen to patients, to low-cost artificial limbs. Soman echoes many of his colleagues when he talks about the potential for industrialized countries to learn from low-cost products, services and business practices devised in developing nations. And India, in particular, he says, offers models that might find traction here in Canada. "As a behavioural psychologist, I'm aware that there's a different mindset in India, something called jugaad," he says. "Jugaad is one of those untranslatable Hindi words, but it essentially refers to using the things you have at hand to come up with solutions."

He cites the example of the Nano, the least expensive factory-produced car in the world. Tata, the Indian manufacturer that created it, stripped away standard features such as power steering, airbags and one of the windshield wipers. "You start to look at things you don't really need," says Soman. "Traffic moves so slowly, the airbags would never deploy, and the car is so small you wouldn't want them to." The Nano's merit is not just its low price tag (about $3,000), but its contextual suitability. "It's all about thinking about the project being embedded in a larger environment. It is a psychological process more than a process of engineering. With the right mindset, you're optimizing a different problem. You're not trying to find a perfect solution; you're trying to find something that works."

Soman sees parallels between India and Canada that could facilitate frugal innovations moving from there to here. "One of the big health-care challenges in India is that population is distributed sparsely in some places and densely in others," he says. Like Canadians, Indians contend with limited medical resources in rural areas, and the question of when to transport patients to urban centres for tests and treatments. India has become a leader in using mobile technology to supplement health care.

"Patients might see a doctor just once a year, so people have developed mobile-phone-based reminder systems, and use these devices to store medical records," says Soman. "There are smartphone apps that ask patients a bunch of questions and then advise them whether to take a trip to the doctor. Those are all things we could use here. That would be fantastic."

Even an off-the-grid toilet may find a place in North American society. Campsites and isolated northern communities would likely be the first beneficiaries, but such toilets may one day also find their way into even the most deeply grid-dependent household. "There's no reason for the developed world not to adopt the technologies as well," Cheng says. "They don't require expensive infrastructure. But our 'infrastructure inertia' and 'mindset inertia' sometimes allow countries such as India to leapfrog ahead of us."

Of course, local context will always require adjustment – a frugal solution that works in one region of India might not work elsewhere in the country, let alone in Tanzania, rural China or Canada. That is why a multidisciplinary, flexible approach to such challenges is the most promising avenue to finding solutions that can be adapted to many cultures and climates, and can change the lives of a diversity of people.

All those pipes and wires – the mesh that holds together our cities and our societies – are deeply ingrained in our sense of how life is supposed to work. We're comfortable being on the grid, and we're used to the complexity and expense of standard engineering solutions. Western society might only really embrace frugal innovation should the cost – economic or environmental – become so great that there is little other choice.

Patchen Barss is a Toronto-based journalist and author specializing in science, technology, research and culture.

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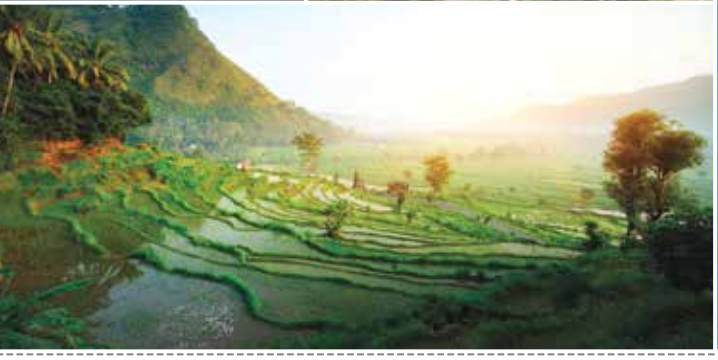

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By John Lorinc
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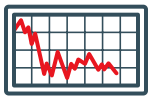

The Sage of Bay Street

David Rosenberg warned of a financial crisis few others saw coming. So why, amid ongoing global turmoil, is Bay Street's most noted pessimist ready to change his tune?

WHEN DAVID ROSENBERG, Bay Street's best known pessimist, talks about the events leading up to the 2008 financial crisis, which he does frequently, he likes to cite a famous aphorism by Herbert Stein, one of the great pragmatists of 20th century economics. "If something cannot go on forever," said Stein, a former presidential adviser, "it will stop."

This line certainly has more gravitas than "I told you so." But for Rosenberg – the chief economist and strategist at the boutique wealth management firm Gluskin Sheff and Associates – they amount to the same thing. In early 2005, as chief economist for Merrill Lynch on Wall Street, Rosenberg was one of a few lonely voices who warned that a housing bubble in the U.S. fueled by an abundance of easy credit was going to pop. Scanning the precipitous rise in home values, Rosenberg reasoned that a reversal was coming due.

As he told *Barron's* in March of that year, the seemingly unstoppable surge in residential real estate prices had "not been due to income generation, per se, but rather due to loose financial-market conditions and an increasing level of exuberance." The fact that the bubble hasn't yet burst doesn't mean it doesn't exist, he said, channelling Stein. "Bubbles and baths usually go together."

The U.S. economy was roaring, though, so few listened.

For Rosenberg, who was working in a prominent position at an investment bank that was earning billions of dollars by selling securities based on dodgy mortgages, it was an especially courageous call. (In the wake of the collapse of those securities, Merrill Lynch's CEO left in disgrace and the firm paid hundreds of millions to settle shareholder lawsuits over its role in the financial crisis.) "As long as you had a pulse,

you were deemed creditworthy," Rosenberg recalls. "I lived this whole crazy bubble. I was a Canadian and Canadians don't live this way for the most part. But in America, if I went around talking to clients circa 2005 and 2006 and mentioned the words 'housing bubble,' I might as well have looked them in the face and called their kid ugly, because that's the response that I got. It was all about the democratization of housing and the democratization of *credit*. I used to take around this chart [showing the ratio] of debt to disposable income. It looked absolutely crazy, like an Internet stock [in the late 1990s]."

FOR ALL ITS ANALYTICAL RIGOUR, economic forecasting is still about trying to predict the future. Those who make the right call at the right moment attain a sage-like status, and subsequently command a great deal of attention. In the wake of 2008, Rosenberg, who has a master's degree in economics from U of T, has become one of North America's most sought-after forecasters. His "Breakfast with Dave" economic briefing notes – emailed daily to Gluskin Sheff's clients – and ubiquitous media commentaries are now a staple of the raging economic debates about the continuing fallout from a financial collapse that may yet rival the Great Depression in depth and tenacity.

"I don't think there is any [Canadian] economist who is followed as much as David," observes *Financial Post* economics reporter David Pett. "The name resonates outside CEO circles and the investing world. I couldn't say that about any other economist in Canada." Bill Robson, the president of the C.D. Howe Institute, agrees: "His opinions are news in their own right. That's how influential he is."

Indeed, Rosenberg belongs to a new generation of globally prominent economic seers – Nouriel Roubini, a New York University economist renowned for his pessimism, foremost among them, but also such figures as Jeff Rubin, CIBC World Markets' former chief economist; Niall Ferguson, the Harvard economic historian; and Joseph Stiglitz, winner of the Nobel Memorial Prize in Economic Sciences. This group has turned its attention to epic problems that eclipse the day-to-day fluctuations of the business cycle: sustainability, income inequality and the long-term implications of globalization. Most of these tea-leaf readers argue that the cup is half-empty.

For Rosenberg, the big theme is the staggering and unprecedented amount of "deleveraging" that is required of many Western governments in the wake of a Gilded Age-like period that will long be remembered for its addiction to cheap credit. As Robson says, "He's concerned about the right things and the important things."

Although he may lack Roubini's brooding mien, which at times borders on shtick, Rosenberg understands a thing or two about showmanship. In a Gluskin Sheff meeting room with a stunning view of Toronto, Rosenberg offers a telescoped version of his CV – raised in Ottawa, economics at U of T, two short public sector stints – that culminates in a punch line with, well, punch. "My career really started on October 19, 1987," he says, noting that his first day in Scotiabank's economics shop coincided with Black Monday. "People ask me why I have this dark cloud wherever I go. Well, you start your career on Bay Street on the day of a 25 per cent collapse in the stock market and see how that affects the rest of your life."

Truth is, he didn't take quickly to "the dismal science." In high school, he enrolled in a Grade 11 economics course. "I dropped it very quickly when I came home one day and told my dad, 'Today, we assumed no government.' I don't think he stopped laughing for a week. I questioned the entire relevance of taking economics."

Starting at U of T in 1979, he planned to do a commerce degree, but balancing the books didn't come naturally. Rosenberg picked up a macroeconomics night course taught by a former public sector economist. Instead of the usual complement of undergrads, the classroom was filled with entrepreneurs and business people, and he found those grounded discussions intensely stimulating because they encompassed history, sociology and human behaviour. Rosenberg fell in love with the discipline "even though we were still assuming no government," as he jokes.

James Pesando, a U of T economics professor who taught Rosenberg, recalls him as a lively, engaged student always eager to parry ideas about economics. "What I do remember about David was that he had a very extroverted personality," says Pesando. "You had the impression that he wanted to learn. His success is driven by an extraordinary work ethic."

Rosenberg spent 13 years at Scotiabank and BMO Nesbitt Burns, finally landing at Merrill Lynch Canada as chief economist and strategist in 2000. Two years later, the New York head office of the legendary investment bank came calling, and so Rosenberg began a seven-year stint on Wall Street that would catapult him into the public eye.

Rosenberg came back to Canada in 2009, having been lured to join Gluskin Sheff, whose principals cannily realized they could put their celebrity economist out in the store window as a way of attracting clients. "Many economists take themselves very seriously and speak in a very eloquent language," says Ira Gluskin. "David is able to speak to all of our clients regardless of their ability to understand high-tone economic comments. He is definitely not a snob." Neither is Gluskin. When Rosenberg arrived, the firm gleefully promoted their new economist's "crystal balls."

Rosenberg says the switch – from the "sell side" to the "buy side" – has been a revelation. At Merrill, he dealt mainly with internal sales people flogging the investment bank's securities. At Gluskin, he has a desk right out on the trading floor with the portfolio managers, who, Rosenberg notes, spend their days assessing the probable risks and rewards of the investment choices they make on behalf of investors. "This is something a lot of economists on the sell side don't see."

Rosenberg believes he has spotted something new on the economic horizon – a meta cycle that was trending up for decades and is now tumbling messily downwards.

In practical terms, Rosenberg's forecasts have produced a tidy windfall for the firm's clients: "Many people think that David is very negative all of the time," says Gluskin. "He would argue, and I would agree with him, that this is not true. He has been very positive on bonds from the day that he came here and this has proven to be a brilliant decision." Still, Rosenberg's hard-headed philosophy can be a tough sell, even internally. "David is controversial because some of our marketing people would argue that it is difficult to get people to be enthusiastic when he sounds so negative," Gluskin continues. "I would argue that they should listen more closely to his message."

At a higher analytical level, Rosenberg has pushed Gluskin's portfolio managers to start thinking about global markets in a somewhat radical way. In his view, what's happening now bears little resemblance to the standard sine-wave business cycle – inflation, rising interest rates, flagging demand, excess inventories, falling prices, and so on – that all economics students learn about in first year.

"We've had about 10 of these in the post-World War Two period and that's what we got taught in school," he says. "What's different is that this recession was not driven by any of those things." Rosenberg believes he has spotted something new on the economic horizon – a kind of meta cycle that was trending up for decades and is now tumbling messily downwards.

"What we're living through is a contraction cycle and deleveraging period of historical proportions because the movie is running backwards," he says. "And along with that, is an unprecedented destruction of wealth in the world's largest economy. The impacts this will have on savings, on spending growth and on inflation are going to linger for a long period of time. We've papered over a lot of these problems with fiscal policy and now we've reached the end of the road." With huge deficits and central bank rates set almost to zero, governments have run out of ways to stimulate their economies.

While Canada, with its relatively clean balance sheet and a heavily regulated banking sector, ducked the mayhem that continues to afflict U.S. and European lenders, Rosenberg warns that the country's economy is still exposed to what he calls "the cross-currents of global investor sentiment."

"Canada, in some respects, is the prettiest girl in the ugly contest. But that doesn't mean we're not vulnerable to these external events, as [Bank of Canada governor] Mark Carney has made abundantly clear."

EARLY THIS SUMMER, Rosenberg made a somewhat daring prediction about his own predictions, hinting (to the surprise of his many fans) that he may soon feel upbeat about our neighbour to the south.

Don't be surprised, he told *The Financial Post*, if his signature bearishness turns into something a bit more optimistic by "Thanksgiving," by which he meant the culmination of the American presidential race and the possibility of a Mitt Romney victory. "The future is brighter than you think," opined Rosenberg. "I'm so excited I just can't hide it. But for now I'm keeping the powder dry."

Just weeks later, however, Rosenberg's unexpectedly sunny disposition had given way to a more familiar sense of foreboding. In one of his well-read "Breakfast with Dave" notes, he itemized no fewer than 11 reasons for Americans (and therefore everyone else) to feel queasy about the U.S. labour market. Dismissing the "alleged" post-2009 recovery, Rosenberg parsed the June jobs numbers and concluded pointedly that food stamp use had risen by a third *since the recession ended*.

Nouriel Roubini, meanwhile, has declared that the looming tempest of 2013 – featuring a catastrophic implosion of the euro zone and a double-dip recession – will make the financial crisis seem like a light rain shower. When I asked Rosenberg whether he was still feeling moderately bullish about the prospects for the U.S., he replied that he doesn't let "blips" – Roubini's "perfect storm" forecasts among them – influence his long-term views. And, he added, "I never said I was bullish. I said there are certainly events that could push me in that direction. That's more than a subtle difference."

While Rosenberg insists that, as an economist, he isn't in the business of forecasting politics, the subject is never far from his mind, and never more so than with this fall's U.S. election. Like many observers, he believes the United States, with its uncontrolled deficits and increasingly stagnant economy, has arrived at a day of reckoning, not unlike 1980, when Ronald Reagan was elected president.

For the U.S., Rosenberg believes strongly that only Republican "one-party rule" would produce the political consensus necessary for sweeping reforms

He doesn't have to reach too far back into history to find examples of other countries or regions that have reversed their fortunes when confronted by the ugly prospect of economic chaos. Not surprisingly, Canada in the early 1990s is at the top of his list. Recalling the early years of Jean Chrétien's three-term Liberal majority, Rosenberg says the Grits and finance minister Paul Martin ignored the party's pricey 1993 election promises and eradicated a federal deficit that was running, by that point, at well over $40 billion a year. Chrétien and Martin repeated their trick a few years later with drastic pension reforms that boosted payroll deductions but put the country's retirement savings pool on a far more financially stable foundation.

His other example: Southeast Asia in the wake of the calamitous currency devaluations of the late 1990s. Unable to borrow their way out of the crisis, countries such as Thailand and South Korea radically restructured their political and economic systems, allowed major banks to fail, and endured a wrenching contraction. "The phoenix rose from the ashes," he says. "In 2001, no one would have believed that the next decade would belong to Asia."

For the U.S., Rosenberg believes strongly that only Republican "one party rule" – a Mitt Romney victory, combined with majorities in both the House and the Senate – would produce the political consensus necessary for sweeping reforms to both the country's costly entitlement programs (such as Social Security) as well as a tax code that produces an over-supply of housing but not nearly enough business investment in manufacturing and research and development. "I think this is actually a tremendous opportunity," he says, brightly. "In a period where you have a crisis, you need effective leadership and it's tough to do when you're constantly compromising."

He declares himself encouraged by the contentious, though successful, campaigns by some U.S. state governors and mayors to wrestle down costly public sector wage and benefits settlements. Rosenberg also points out that the housing sector is showing signs of a pulse, while the country's unexpectedly productive oil and gas sectors suggest the U.S. could actually become an energy exporter.

"Maybe austerity is a dirty word in Europe," he muses. "But maybe it just means, 'live within your means.' It doesn't mean stop spending." It means stop excessive borrowing beyond what you can reasonably afford. This is advice he was selling on Wall Street in the heady days of the housing bubble, and the principles still apply.

In the (not entirely negative) world according to David Rosenberg, America won't become a fiscal basket case. After all, even bad times cannot go on forever.

Journalist and author John Lorinc (BSc 1987) writes about politics and business for the *Globe and Mail* and *Spacing* magazine.

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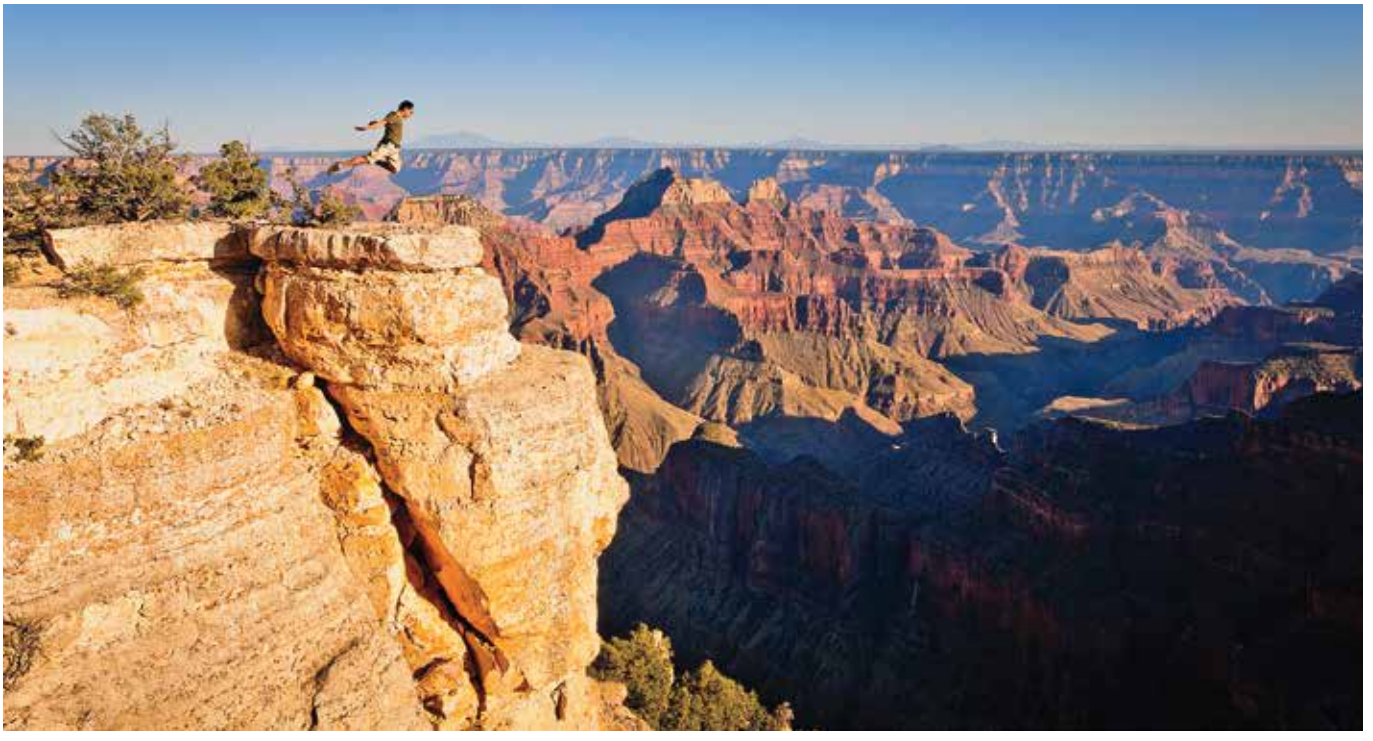
The Great U of T Magazine Photo Contest

We asked for your best shot and that's what we got – 450 of them, from around the globe. Our judges whittled these down to 16 finalists, and, after intense debate, selected the three winners you see here, who each received $500. Thanks to all who entered!

SEE MORE ONLINE!
View all the winners, runners-up and finalists at **magazine.utoronto.ca/2012-photo-contest-winners**



↑ Boundless

Winner: "Boundless!" by Nigel Tan (MD 2011), Toronto

In June, Tan visited the Grand Canyon with friend Steven Wong (MD 2011) for a two-day hike. At the canyon's north rim, Tan set up a tripod and captured Wong performing what looks like a death-defying leap. In reality, Wong was a few feet from the edge of the cliff – and a several-thousand-foot drop to the canyon floor. Tan took several shots of himself jumping from the same cliff, but liked this one best because, he says, Wong truly looks "boundless."

Runner-up: "Drummer," by Grace Willan (donor), Toronto

↑ People

Winner: "Idiosyncrasies" by Barbara Konecny (BA 2008 Trinity, MA 2011), Toronto

In March, Konecny travelled to Havana, Cuba. She was exploring the old town when she saw this graffiti, which to her captured something essential about Cubans – the ability to smile, despite a cloud of adversity. She says it was sheer luck that a young boy walked into the frame – and tossed a ball – just as she pointed her camera.

Runner-up: "Clowns Face Riot Police at the G20" by Sarah Gould (MA 2001, PhD 2012), Toronto

← Places/Things

Winner: Untitled, by Stephen Sloan (BA 1977 UTM), Fredericton, New Brunswick

While driving to Florida in March 2010, Sloan and his wife stopped at Wormsloe Historic Site in Georgia. Inside the park, an avenue framed by old magnolia trees caught Sloan's eye, and "just begged to be photographed." He took the picture in colour but later converted it to black and white.

Runner-up: "Ngorngoro Wildebeest," by Lisa V. Robles (BA 2000), Toronto

The Judges

Cindy Blazevic (BA 1999 TRIN) is a photo-based visual artist in Toronto. Her photography documents private narratives within the shifting landscapes of social and political spaces. Her work will be on view at the Art Gallery of Mississauga from Nov. 15, 2012 to Jan. 4, 2013.

Lorne Bridgman is a Toronto-based photographer and contributor to *Monocle*, *T: The New York Times Style Magazine*, *Dwell*, *enRoute*, *Maisonneuve* and other publications. He lives in Parkdale with his wife Yasmin and dogs Neko and D'arcy.

Katherine Carney (BA 2008 NEW) is a graphic designer at U of T's Division of University Advancement. She specializes in print, data visualization & ampersand appreciation

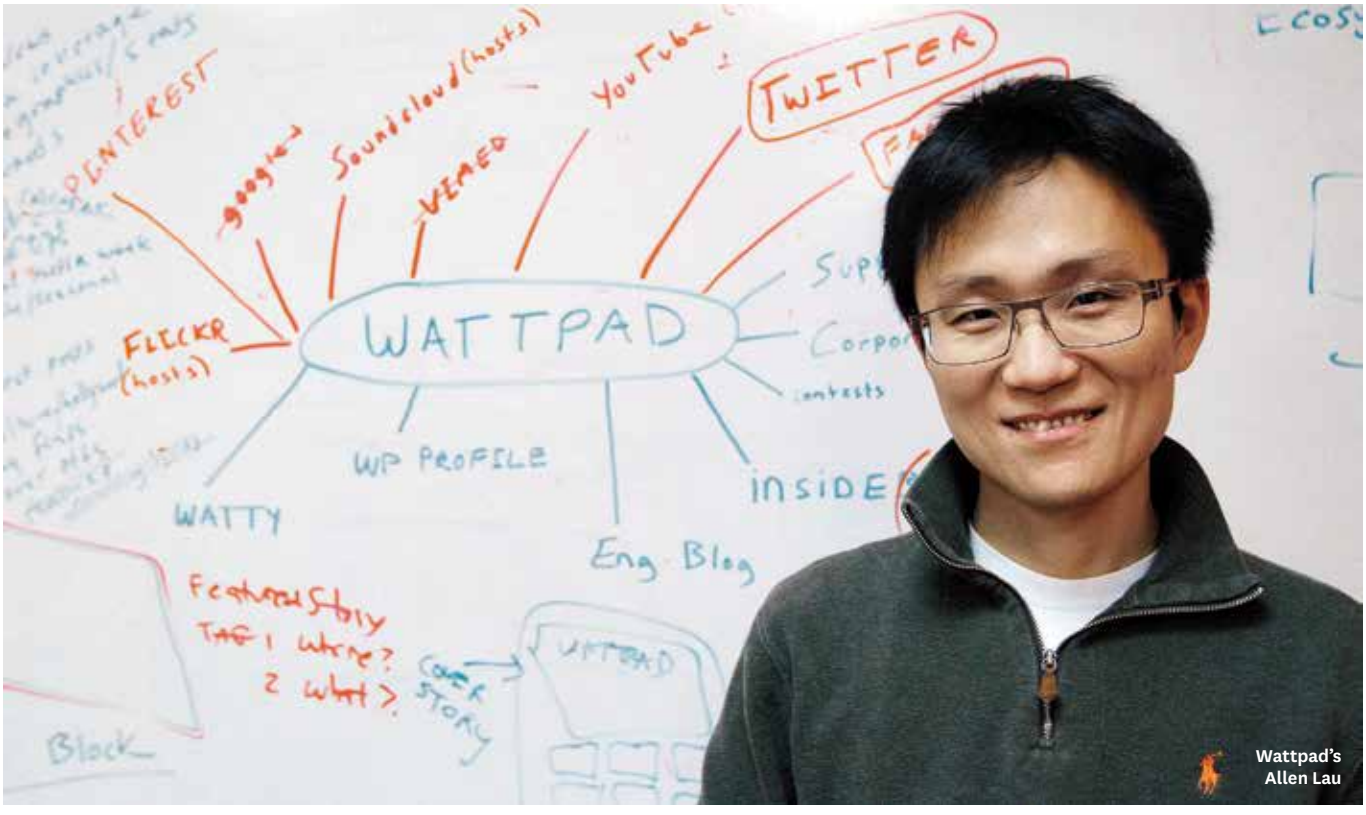
Gilbert Li is principal of the graphic design studio The Office of Gilbert Li, which he founded in 2004. The studio's much-lauded work covers all forms of print and editorial projects for a clientele of leading public institutions, cultural groups and non-profit organizations. He is *U of T Magazine*'s art director.

Viewers' Choice Winners

Congratulations to the winners of the "Viewers' Choice" portion of the contest (as determined by 2,700 online votes). **Farrah Hussain** (BSc 2010) earned top spot in the Boundless category; **Eve Davies-Greenwald** (BEd 2011) ranked highest in Places/Things; and **Dr. Michael Blankstein** (MD 2006) won the People category with his image "Masai" (at right), taken in Tanzania in 2009.

All About Alumni

In the next 10 years, the whole notion of the book is going to change
Allen Lau has a vision for the publishing industry
p. 50



Wattpad's Allen Lau

Digital Prophet

Wattpad co-founder Allen Lau predicts a book publishing revolution

IF ALLEN LAU'S CAREER as a software entrepreneur ever falters, he'll have a brilliant future as an oracle. His CV reads like a digital prophecy. When Lau was just 12 years old, he designed his first computer program, a puzzle game, a few years before Tetris captured the public's imagination. As an electrical engineering student at U of T (BEng 1991, MEng 1992), he wrote his thesis on maximizing the capacity of cellular networks – back then, cell phones were as large (and as heavy) as pound cakes, and much less common. In 2002, five years before Amazon unveiled its Kindle e-reader, he created an application that would allow people to read text on their mobile devices.

And, in 2006, Lau co-founded Wattpad, a company that promises to do for online publishing what Facebook did for social networking. Simply put, Wattpad allows anyone to publish online, for free, their own writing – anything from pop-band fan fiction to the next teen vampire blockbuster – for others to read, comment, and even contribute to that writing. While such technology's been around for a while, Wattpad's friendly, intuitive interface has proven extraordinarily popular: the site currently has nine million monthly visitors who each spend an average of three-and-a-half hours on it every month. More than six million stories have been uploaded, with 700,000 new ones added each month. The company's been quick to capitalize on the consumer shift from desktops to handheld devices – 70 per cent of users access Wattpad's content through their mobiles.

Lau, who's 44, was born and raised in Hong Kong, and immigrated to Canada with his family just as he was about to attend university. At the time, U of T didn't offer computer engineering so he studied the next best thing, electrical ›

PHOTO: FERNANDO MORALES/THE GLOBE AND MAIL

Antarctica is the only continent not hardwired to the Internet. Cold water and moving ice make undersea cables a no-go proposition

Internet Explorer

Author Andrew Blum follows the wires behind the Web

"IT MIGHT EVEN HAVE BEEN THAT SQUIRREL," Andrew Blum (MA 2002) jokes. The first-time author is having lunch on a restaurant patio in Brooklyn, New York, right near his house, and a grey squirrel is running along the fence, making indignant noises. A squirrel in this neighbourhood chewed through the casing on the wires outside Blum's apartment and severed, for a day or so, the busy tech and design journalist's connection to the Web. "Here was the most powerful information network ever conceived… stymied by the buckteeth of a Brooklyn squirrel," he writes.

Thus was born the idea which became *Tubes: A Journey to the Center of the Internet* (HarperCollins, 2012), in which Blum follows one tube-encased wire to the next, seeking to come to grips with the Internet's physical existence. "We're so used to thinking of it as a non-thing, as this cloud," he says. "It seems silly, but I said to my editor at *Wired* we should do something about the wires."

For the book, Blum interviewed some of the farflung people who make the Internet go – übergeeks attending a tech conference in Austin, Texas; businessmen in Amsterdam and Frankfurt jousting for bragging rights as owners of the most frequented (physical) Internet hubs in the world. He traveled from the place where the main transatlantic cable surfaces off the coast of Cornwall to the massive data-storage facilities run by Google and Facebook in mountainous hamlets in the Pacific Northwest. Always the former geography student, Blum found a reason why things were located where they were: already well-wired Western Europe had the right tech-meets-business culture to foster the explosive growth of hubs; busy servers generate copious heat, so why not put the Google storage centres where the outside air is cool, and can be pumped through the facility? "I learned that geography was destiny, even on the Internet. Where you are matters." – **ALEC SCOTT**

OVERHEARD

> Listen to the clarion call of students: 'Engage me or enrage me!' Help them build upon the strong sense of fairness and social justice that so many of them are demonstrating… through their focus on causes outside themselves.

Avis Glaze (MEd 1975, EdD 1980, OISE), educator and student advocate, as she received an honorary degree in June at Convocation Hall.

engineering. "I really wanted to build something," he says, "and computers were the easiest way to build something. Give me a computer and I can go crazy all day."

He built Wattpad's software with programmer Ivan Yuen. They recognized that smartphone technology and social network sites, then still in their relative infancy, were about to explode. And they also saw that user-generated content was potentially extremely lucrative – 2006 was the year Google bought YouTube for US$1.65 billion. Marrying these three concepts while providing a service – allowing readers to directly connect with writers they love, and vice versa – has been the key to the company's success. The bulk of its revenue currently comes from advertising on the site, though Lau says Wattpad's only reached a fraction of its full potential. In June, the company raised more than US$17 million in venture capital financing, with some of that money coming from Yahoo co-founder Jerry Yang.

Wattpad has been so successful that even Margaret Atwood is now a member. In June, she released a new collection of poems, *Thriller Suite*, on the site to instant buzz, and in August, she allowed Wattpad to name a $1,000 poetry prize – the Attys – after her.

"In the next 10 years," Lau says, "the whole notion of the book is going to change. We're moving towards a world without gatekeepers, where there are hundreds of millions of readers *and* writers. And the line between reader and writer will blur." – **JASON McBRIDE**

PHOTO: LEFT, HARPERCOLLINS PUBLISHERS; RIGHT, SUSAN BENOIT, DIFFUSION PHOTOGRAPHICS

Saad Siddiqui's role in *Inescapable* put him only two degrees from Kevin Bacon, according to website The Oracle of Bacon

Breaking in to the Big Time

How Saad Siddiqui used martial arts to kick-start an acting career

SAAD SIDDIQUI (BA UTM 2007) COULD HAVE been intimidated on the South African set of *Inescapable:* a young actor in a big part in a high-profile Canadian movie opposite Marisa Tomei and Joshua Jackson. But the 29-year-old calmly stared down his big break. Maybe it was because the Pakistan-born and Toronto-based actor knows he could have mopped the floor with any of his better-known co-stars – he's a fourth-degree black belt in taekwondo.

He took up martial arts after the death of his father in 1995, when he was 11 years old

Siddiqui credits watching kung fu stars Jackie Chan and Bruce Lee with getting him interested in acting. He took up martial arts after the death of his father in 1995, when he was 11 years old. "I think I was trying to fill in something missing, to have an instructor who could teach me in the way that my father did. I [still] need coaches and structure. I thrive under that."

Siddiqui's martial arts talent took him around the world (he won a silver medal at the Junior Olympics), but the globetrotting wasn't a big adjustment. Because his father worked as a civil engineer, his family moved a lot, and by the time he was eight he'd already lived on three continents. He eventually settled in Maryland, where he started acting. But another passion spurred by his father led him to enroll in political science at U of T. "My dad did a lot of humanitarian work," he says, "so it was always something I wanted to do." Juggling term papers and auditions proved extremely gruelling, but "I think that's where doing martial arts and sports helped," he says. "They taught me balance and discipline." Toronto wasn't a bad place for an aspiring actor, either.

Cut to a few years later and Siddiqui's popped up on television series such as *The Listener* and *The Border* and had a bit part in David Cronenberg's *Cosmopolis*. Though *Inescapable's* star power and timely storyline set in Syria may provide Siddiqui with that "big break," the actor doesn't mind the settled feeling that's creeping into his life; this inveterate wanderer has just purchased a condo in Toronto with his fiancée.

"I've now been in Toronto longer than anywhere I've lived, and I feel like it's home." – **ADAM NAYMAN**

The Apocalypse Will Be Tweeted

Immersive Theatre

David Fono

One of the most popular shows at this year's Toronto Fringe Festival was an interactive performance called *ZED.TO ByoLogyc*, staged as a launch party for a drug made by the fictional BioLogyc Corporation. Audience members cast as interns mingled with actors playing company officers and staff. By asking the actors questions and posting their findings on social media throughout the event, the audience collectively both discovered and contributed to the storyline: ByoLogyc's actions precipitating the end of the world.

The people behind ZED.TO are a group of five former high school friends that includes University of Toronto grad David Fono (MSc 2005). They call themselves interactive producers, game creators and artists, and their goal is to create a theatrical event where the audience doesn't merely watch, but, through awareness of each other's reactions to the story in real time, has a truly collective experience.

The ZED.TO story isn't over. You can follow updates online – via forums, Twitter feeds and even a graphic novel – as Fono and friends prep for two more story installments: one at Nuit Blanche, Toronto's all-night art event on September 29, and a grand finale in November at a location to be determined.

"It's going to be very immersive, very interactive," says Fono. "And, I'm sure, unlike anything that's happened in Toronto before." – **STAFF**

Follow the Zed.TO story online at zed.to and on Twitter at ZEDToronto.

PHOTO: TOP, MEGAN VINCENT; BOTTOM, TREVOR HALDENBY

Rowing is the newest sport at the Paralympic Games – it debuted in 2008. In 2012 in London, 96 athletes competed

THE TWO OF US

George and Barbara Rooke

For George (BASc 1949) and Barbara (Chrysler) Rooke (BA VIC 1945, BScN 1949), it was a match made in music. And almost 65 years later, they're still in tune.

GEORGE: Having been connected with one choir or another most of my life, I joined U of T's All-Varsity Mixed Chorus in 1947. There, the secretary, a good- (and sensible-) looking brunette, caught my eye and never left it. It turned out that Barbara was in Nursing, a faculty bereft of males, and I in Engineering with a scarcity of females. Fortunately, she tolerated my taking her to a free concert, and even invited me to her Nursing formal dance. We continue to share a love of music, and have been in the Fonthill United Church choir for 59 years. Four years ago, we moved to Lookout Ridge Retirement Residence, still in Fonthill, Ontario, where we sing in the Silver Sound choir, and relax to all the classical music we can find on radio and TV. We have had no spats yet and probably won't start now.

BARBARA: My first memory of George is of a good-looking guy handing out Mozart's *Requiem* at my first Chorus practice. After we graduated, he headed for work in Welland, Ontario, and I went to a Red Cross Outpost Hospital on St. Joseph's Island near Sault Ste. Marie, Ontario, to fulfill my obligation for a bursary. During that year, we got better acquainted by Royal Mail: six days a week, four cents a stamp! We began our our married life in 1950 in a makeshift apartment in an older house in Welland before moving into our family home in Fonthill in 1953. I worked for the Welland County Health Unit, quit that job to raise our family, and used my nursing skills on our children and my parents. None of our three children attended U of T, but two met their future partners at university, as did my parents. Also, there is a three-generation tradition of the girl taking the lead!

Hunting for Gold

The Canadian Paralympic Committee dubbed Victoria Nolan "The Metronome" for her ability to row perfectly in synch with her teammates. As a world-class athlete, grade-school teacher, wife and mother of two, Nolan (BSc 1996 UTSC; MA 1999 OISE) may just as well be called "The Juggler."

Nolan started adaptive rowing (rowing for people with disabilities) six years ago at the age of 31 – a decision, she says, she made as her vision deteriorated due to a degenerative eye disease that has left her with just three per cent of her sight. She was competing at the national level within a year. She has won bronze, silver and gold medals at the World Rowing Championships and was keen to "hunt down gold" at the Paralympic Games in London earlier this month. Nolan, like all visually impaired rowers, wears opaque black goggles to ensure the playing field is level for athletes with varying degrees of vision.

– JULIEN RUSSELL BRUNET

PHOTO: TOP, COURTESY OF GEORGE AND BARBARA ROOKE; BOTTOM, COURTESY OF ROWING CANADA

FIRST PERSON

Can Radiohead Be Jazz?

Toronto Jazz Festival's Josh Grossman wants audiences to open their ears to something new

MY WIFE CALLS ME A MUSIC SNOB. She's probably right.

Music is my life: it's what I studied, it's what I do, it's one of my great loves. I think there is such a thing as "good" music and "bad" music. And, in my role as artistic director for Toronto Downtown Jazz (which produces the annual TD Toronto Jazz Festival), it's my job to weed out the "good" from the "bad," and decide what will work best in the festival context. This sometimes gets me into trouble. At times I've booked acts, thinking they sound great, without paying attention to how the music might resonate with the audience. I often feel that musicians who push artistic boundaries – and who challenge their audience – are more exciting than those whose chief goal is to entertain. If artists don't push, art cannot progress. So how do we keep audience members interested if their comfort levels are being stretched?

In my mind, *entertaining* an audience means ensuring that they enjoy themselves. ("You'll laugh, you'll cry" – that sort of thing.) *Engaging* an audience, on the other hand, means drawing them in – guaranteeing that they'll like the experience itself, if not *what* they experience. As part of my job, I sometimes book, present and produce concerts featuring music that may not entertain me – I may not choose to listen to it at home, for example. But the music I book always engages me in some way: it's expertly performed, the musicians take a minute to explain what's going on, or they simply seem to be enjoying themselves.

Challenging an audience is one thing, but I don't expect a musician to reinvent the form. At last year's jazz festival, I figured I had hit a home run with a show featuring a soloist playing interesting original compositions in front of a standing-room-only crowd. I was therefore a bit deflated when a colleague suggested he hadn't liked the show because some other musician has been doing the same thing for many years and, in my colleague's opinion, did it better.

Can you imagine if Vincent van Gogh had been told, "Vince, your work is nice, but people have been painting for years…" In music, all of the notes have already been composed, played and heard – there are, after all, only so many notes to go around. So if a musician is playing interesting music and drawing in a new audience, why should it matter if someone else has mastered that particular style? If we musicians can't have open minds – and open ears – how can we expect our current and potential audiences to be open to new musical experiences?

If I'm moved by art, I don't care if "it's not really jazz"

In the jazz world, there is an ongoing debate about what is or isn't jazz. As a music insider, I get some sick stimulation from it all. But, I'm pretty sure outsiders are turned off by all the navel-gazing.

Last December, my big band – the Toronto Jazz Orchestra – presented an evening of Radiohead music arranged for big band. If I had tried to sell the evening to a big band purist, I might have had a hard time. But the arrangements were top notch, the soloists were on fire, the band sounded great, and the club was packed (a lineup out the door!) with people who would have been unlikely to attend an evening of Glenn Miller or Benny Goodman. Would Ken Burns call it jazz? Who cares! It met all of the criteria for a great night of music.

If I'm moved by art, I don't care if "it's not really jazz," or "it's not really post-modernism" or "it's not really eroticism." (Wait, what?) The point is, I've been moved. For the love of art, let's get away from the nitpicking and concentrate on engaging the people who come to see what we do, and who *may* want to see what we do.

Alfred Hitchcock once said, "Always make the audience suffer as much as possible." I'm *fairly* certain he was kidding. To me, art performed alone is just notes on a page (or paint on a canvas). It takes an engaged audience to bring it to life.

PHOTO: DIANE AUBIE

60 SECONDS WITH

Linda Schuyler

Degrassi Auteur

LINDA SCHUYLER has been in high school for more than 30 years. The teacher-turned-producer is the co-creator of the internationally acclaimed television franchise that includes *Degrassi Junior High* and *Degrassi: The Next Generation* (still going strong as *Degrassi*). In the fictional Toronto Degrassi schools, students feeling "shy and lonely" tackle everything from overly strict parents to drugs and alcohol, sex and sexuality. Schuyler studied film and media studies at Innis College, where she says she developed her passion for TV. A slew of industry honours and an Order of Canada and Ontario later, Schuyler opens up to **Lisa Bryn Rundle** about the tumultuous world of high school TV dramas and her new show, *The L.A. Complex*.

You started off as a teacher, how did that turn into creating the *Degrassi* empire? I was so frustrated by not being able to find any audiovisual materials for my students. There was nothing for adolescents. Finally I just realized: Maybe I should make it.

***Degrassi Junior High* broke ground when it came to representing teens' real struggles. Is there one moment you look back on and think "I can't believe we did that?"** I think it happened in the first season when we had our pregnant teenager, Spike. [We realized] there hadn't been an authentic portrayal of a pregnant teenager on television before.

With *Degrassi* (formerly *Degrassi: The Next Generation*) you've broken more ground. Is it easier now to tackle some issues? I definitely find it easier to tell stories [now] about sexuality. And two years ago we introduced our first transgender character.

Is it significant that you've been based out of Canada this whole time? This show could only have been made in Canada. There's more pushback from the [U.S.] audience [on controversial issues] than there is here.

Why is having a reflection of teen life on television so important? Because it gives young people assurance. We just had Chaz Bono up here doing a guest role. He runs a support group for transgender kids. He had one kid say to him: *"Degrassi* saved my life. I wanted to commit suicide and I saw the transgender character portrayed on television and I realized I was not alone." That's why I do what I do.

Your newest production is *The L.A. Complex*. It's been praised by critics, but *Slate* ran a headline about it that read "Surprise! The Lowest-Rated Show in Broadcast History Is Actually Great." Is it a sign fans don't want smart shows? I try not to read too much into it. We know we're connecting in the digital world – even though we have that wonderful headline.

How do you make sense of that disparity? Oh, you can't make sense of it. It's the turbulent world of television that we live in.

Milestones


Ian Binnie

Several U of T alumni have been appointed to the Order of Canada, one of the country's highest civilian honours. The Honourable **William Ian Corneil Binnie** (JD 1965) was named a companion, the order's highest level, for his contributions to the legal profession, including more than 13 years as a justice of the Supreme Court of Canada. Named members were: **Allan Gotlib** (BSc 1971 UTSC), for advancing chiropractic research; social worker **Alia Hogben** (BSW 1964), for her work as an advocate for women's rights and interfaith dialogue; and **Marian Packham** (BA VIC 1949, PhD 1954), for her pioneering research on arterial health.

The first ever Goodbye with Love Humanitas Prize was awarded to **David Shore** (LLB 1982) in September. Shore, creator of the just-ended medical drama *House*, was honoured for consistently high-quality writing in a long-running television series.

Judy Feld Carr (BMus 1960, MMus 1968) has won one of Israeli president Shimon Peres's inaugural President's Awards. Between 1972 and 2001, Carr organized the rescue of more than 3,200 Jews at risk of political imprisonment in Syria.

Commodore **Hans Jung** (MD 1984), has been named one of the Top 25 Canadian Immigrants of 2012 by *Canadian Immigrant* magazine. Jung, who was born in South Korea, retired in July from his post as Canadian Forces Surgeon General after 31 years of service.

The American Society for Microbiology has awarded **Akiko Iwasaki** (BSc 1993 STM, PhD, 1998) the 2012 Eli Lilly and Company Research Award.

PHOTO: LEFT, MATTHEW PLEXMAN, COURTESY OF THE ONTARIO COLLEGE OF TEACHERS; RIGHT:COURTESY OF IAN BINNIE

Helen Vari at her Toronto home, with a photograph of her late husband, George

Rendezvous in Paris

Alumni feel the *joie* at the Vari home

Ernest Hemingway once said that there are only two places in the world where one can live happy: at home and in Paris.

For a few million people in this world, including Helen Vari, these two places coincide. And in June, Helen opened her Paris home, with its breathtaking views of the Eiffel Tower, to U of T alumni from eight countries across Europe for a buffet of quintessential French dishes – and a good helping of *joie de vivre*. Among the 127 guests was David Peterson, attending his last public event as chancellor. Helen, who received an honorary doctorate in humane letters from Victoria University last year, observed that "people were very enthusiastic, stayed late and enjoyed the champagne and all the good news about their alma mater."

The next afternoon, she arranged a reception for alumni with Marc Lortie, the Canadian ambassador to France, at the Official Residence of Canada in France and a tour of La Musée National de la Légion d'Honneur – "in one of the most beautiful palaces in Paris." Both Helen Vari and Chancellor Peterson are Chevaliers of the Légion.

Helen's late husband, George W. Vari, believed strongly in the value of education, and together the couple created the Vari Scholarships at U of T for students who intend to pursue careers in teaching. "I've always been happy to help U of T in any way I can," she says. "And I was very happy to host these events. Maybe in another couple of years we'll do it again." – **SCOTT ANDERSON**

Insider Report

Governing Council's alumni members discuss the big issues ahead for U of T

John Switzer (left), Andrew Szende (right)

FINDING A NEW PRESIDENT and developing a sustainable long-term funding model are just some of the challenges facing the University of Toronto's Governing Council in the year ahead – and its two newly elected alumni members say they are up for the job.

John Switzer (BA 1970), who begins his second three-year term as an alumni governor, spent part of his first term observing student engagement and encouraging the administration to find ways to ensure students are consulted on major decisions affecting campus life.

The now-retired banker and management consultant also contributed his financial expertise as chair of the council's pension committee to help address the university's approximately $1-billion pension shortfall. "We have a plan to get the deficit under management, but the problem will probably be with us for a while," says Switzer, who is also a member of the Principal's Advisory Council at U of T Mississauga.

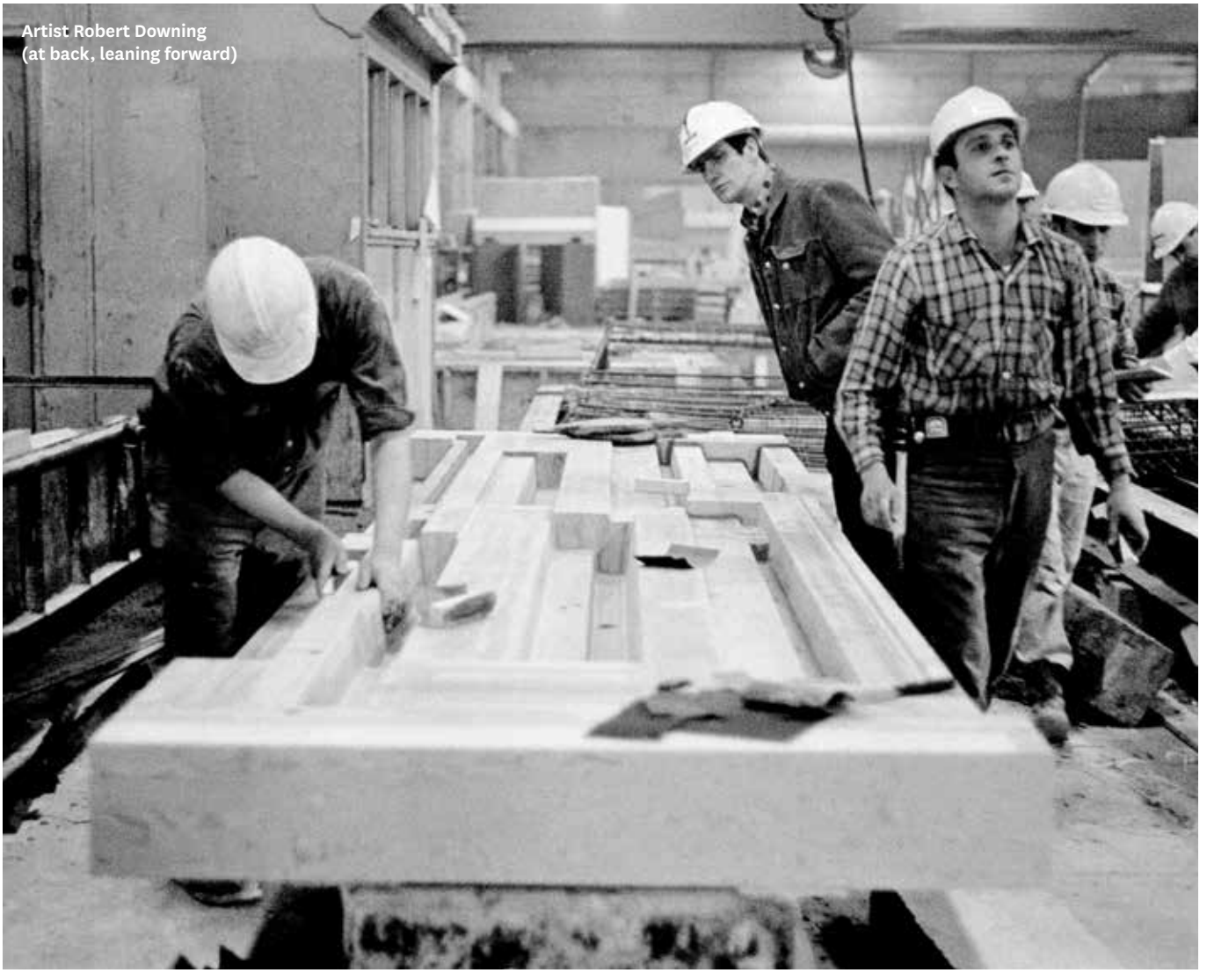
The shortfall is an issue he'll continue to deal with as he serves as vice-chair of the pension committee; he'll also chair the Business Board, which oversees capital projects, real estate holdings and endowments, as well as external relations and alumni affairs. He says a key goal will be exploring new sources of income for university operations. "We need a sustainable revenue model to minimize our dependence on annual tuition increases," he says.

Switzer is one of eight alumni among Governing Council's 50 members, who include faculty, administrators, students and Ontario government appointees. Together, they oversee all of U of T's academic, business and student affairs.

New elect Andrew Szende (BA 1967) is still learning about the work of the council. But the health sector executive and guest lecturer in the Faculty of Medicine is keen to help U of T continue to lead globally as a research institution. More specifically, Szende hopes to address what he sees as a particularly pressing priority – finding a replacement for current president David Naylor, whose term ends Dec. 31, 2013.

"I can't think of anything more important – it's critical that we get the right person," he says. – **SHARON ASCHAIEK**

PHOTO: TOP, COURTESY OF VICTORIA UNIVERSITY; BOTTOM, COURTESY OF JOHN SWITZER, COURTESY OF ANDREW SZENDE



Artist Robert Downing (at back, leaning forward)

CONCRETE JUNGLE

1960s

How the Medical Sciences Building got its stripes

The Medical Sciences Building owes its unusual sculpted concrete exterior to two Ontario artists: Ted Bieler, who taught in U of T's department of art and archaeology from 1962 to 1967, and Robert Downing (pictured above). The original building, plain and boxy, looked dramatically different from the front campus's cut stone structures, so the artists were asked to design a textured exterior.

But that was only half of Bieler's brief from architect Peter Goering. The panels had to be thick enough to contain reinforcing steel bars.

"I guess one of the engineers had looked at the original design of the panels, and realized it was not only boring, but weak – structurally," says Bieler, who, although retired from teaching, still continues to sculpt. "So Peter approached me and said: 'Do you want to come up with some ideas for this?'"

After accepting Goering's challenge, Bieler brought friend and fellow artist Robert Downing on board. According to Bieler, the two of them simply "mucked about" in his U of T-based studio until they'd created a prototype – using wood and a table saw to build a scale model of the design. The thick concrete stripes on each panel, randomly arranged, cover the steel supports.

In return for their savvy solution, Bieler and Downing were also commissioned to create a few free-standing sculptures for the building and its environs. Downing's stacked cubes greet students inside the lobby, and Bieler's *Helix of Life* still stands at the front of the building – U of T landmarks just as iconic as the artists' concrete panels.

– KAREN AAGAARD

In memory of Robert Downing (1935–2003)

PHOTO: COURTESY OF UNIVERSITY OF TORONTO ARCHIVES

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Stay in Touch for a Chance to Win!

Cruise to the stunningly beautiful Galapagos Islands, a UNESCO World Heritage Centre, courtesy of U of T's Alumni Travel Program! To be automatically entered for a chance to win, visit the "Stay in Touch Contest" website at **www.alumni.utoronto.ca/stayintouch** and fill out the short questionnaire by December 12, 2012 at 4:30 p.m. EST.*

Or send a letter to Stay in Touch Contest, c/o Alumni Relations, 21 King's College Circle, University of Toronto, Toronto, Ontario M5S 3J3.

- Include your full name (and your full name when you attended U of T if different from now)
- Your year(s) of graduation and degree information
- Your College and Faculty of affiliation
- Your current mailing address and phone number
- Your preferred e-mail address for receiving communications from the University of Toronto

Grand Prize
A six-day, five-night cruise for two to the Galapagos Islands aboard the MV Santa Cruz in an upper-deck twin standard cabin. See the exotic birds and unique plants and animals that inspired Charles Darwin! The cruise must be taken between Jan. 7, 2013 and March 31, 2014, and is worth approximately $6,000, including airfare.

First Prize
A $500 voucher towards a course at the School of Continuing Studies *and* a six month membership at the U of T Faculty Club

Second Prize
A new iPad 32 GB with 4G wireless capability

*Some restrictions apply. For full contest rules, eligibility requirements, and prize descriptions visit www.alumni.utoronto.ca/stayintouch or visit the Alumni Relations Office in the J. Robert S. Prichard Alumni House at 21 King's College Circle, U of T, Toronto, Ontario M5S 3J3