Understanding Autism The disorder's genetic causes / **Tom Rachman** On imperfection / **Moore's Law** Is the end nigh?
Justin Rutledge A troubadour's tales / **A Teaching Record?** 48 years at U of T / **Exercise and Dementia** The surprising link

U of T Magazine

SPRING 2011

True North
What does Canada stand for now?

What took our alumni to Kenya this February?

photo © V.Tony Hauser

Manulife Financial donated the building materials. Free the Children organized the project. And this year, 24 friends and alumni of the University of Toronto helped build a school in rural Kenya.

But it doesn't end there. Manulife has made an ongoing commitment to provide both a lunch program and school supplies, while our alumni continue to support organizations like Free the Children through U of T affinity partners like Manulife.

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Spring 2011

Volume 38, No. 3

30 The Debut

How do you write a bestselling first novel? If you're Tom Rachman, you start by majoring in film

BY STACEY GIBSON

COVER ILLUSTRATION: PAUL BLOW, CONTENTS PHOTO: DEREK SHAPTON

U of T Magazine

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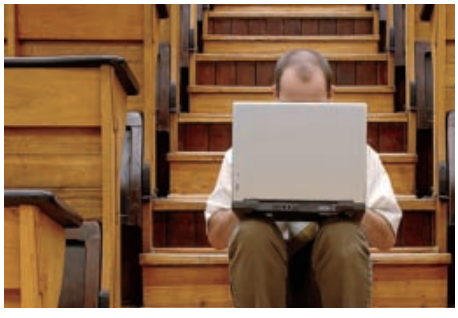
UNIVERSITY OF TORONTO

Departments

I'm a gadfly who's earned the right to be heard

– Tom Rand (MA 2005, PhD 2008), founder of VCi Green Funds, who advises companies on how to reduce their carbon emissions, p. 46

19 Law prof Mariana Mota Prado proposes a remedy for red tape



13 ROSI, the online student service that students love to hate, is finally being replaced

48 Lou Wise, an 89-year-old OISE grad, has dedicated much of his life to his dual loves of flying and photography

Letters

Since when did knowledge alone lead humankind to consistently make the right decisions?

PETER A. LEWIS-WATTS
BScF 1975, BARRIE, ONTARIO

Note to Readers

With this issue, *U of T Magazine* unveils a bolder, more confident look, created by The Office of Gilbert Li. We consider it an evolution from our previous design – version 2.5 rather than 3.0.

Many readers will have noticed changes to the headlines and body text. We have selected two new typefaces to provide a clearer reading experience. The serif typeface, Tiempos, is designed to be highly legible, making it ideal for readers of all ages. Our new sans serif typeface, National, has subtle quirks that give the magazine personality, without being messy or distracting.

The editorial features have remained the same, although articles within each section are now more clearly delineated. Over time, we plan to introduce more information graphics and marginalia for greater variety in how stories are presented.

As usual, we welcome your feedback.

WRITE TO US! Got an opinion about an article? Send email to uoft.magazine@utoronto.ca or mail to *U of T Magazine*, 21 King's College Circle, Toronto, Ontario, M5S 3J3. Letters to the editor may be edited for clarity and length.

Bring Back the Commandments

The politically correct have been working hard and successfully over the last 30 years to eradicate the Ten Commandments from our schools and other public venues. So I was interested to read about Prof. Nina Mazar's discovery that "cheating disappeared" when people wrote down as many of the Ten Commandments as they could remember before completing a task on which they might cheat ("The Next Big Idea," Winter 2011). This suggests to me that removing the Ten Commandments from public view has been a huge mistake. In economic terms alone, the impact of not having the Ten Commandments where we can see them must be enormous.

KEN STOUFFER
BA 1978 UTSC, ALLISTON, ONTARIO

Dig Deeper

As a certified ESL instructor with hundreds of hours in Ontario adult and high school classrooms, I offer my comments on the theories put forward by Prof. Ruben Gaztambide-Fernandez regarding dropout rates for Latin American and Spanish-speaking students in "The Next Big Idea."

The professor argues that these students are aware that getting a good education and mastering the English language are crucial for their future, as if that knowledge should be sufficient to keep them in school. Since when did knowledge alone lead humankind to consistently make the right decisions?

The professor further argues that "the situation that leads them to leave school really has nothing to do with how committed they are to school," and that three external factors play a role. He should be aware that it is not only Latin American and Spanish-speaking students who get placed in ESL classes inappropriate to their skills, who believe the curriculum "ignores" their culture and history, and who work in the evenings to support their family. Experience has shown me that the vast majority of newcomers face identical difficulties. I believe Prof. Gaztambide-Fernandez will have to dig deeper to uncover the real reasons for these elevated dropout rates.

PETER A. LEWIS-WATTS
BScF 1975, BARRIE, ONTARIO

Culture Clash

Kurt Kleiner's article about redressing historical wrongs was interesting, though I disagree with Prof. Douglas Sanderson's argument for how to make up for injustices committed by European settlers against the indigenous peoples of North America ("The Next Big Idea").

By force-feeding indigenous peoples with European institutions, particularly religion, the settlers destroyed the self-esteem of indigenous peoples, discarding their institutions as worthless and pagan. As a descendant of those European settlers, I regret those injustices, but I was not personally responsible for them and I cannot reverse them.

What I have never understood is why North American indigenous

peoples would want to hide away in self-imposed isolation. That is the implication of Prof. Sanderson's proposal. Yet as a member of the Opaskwayak Cree Nation and a law professor at U of T, he is an example of one who has done precisely the opposite of what he has proposed – he has benefited from settlers' institutions to educate himself and thereby gain a better life for himself and his family. In his actions, there is more wisdom than in his words.

What we can do is invite the indigenous peoples to join us in the great adventure that is the 21st century. The evolution of the human race surely is the story of how different cultures and ideas have come together, frequently through conflict, to create something greater from the integration of each. Let us learn from each other and move forward, together. Let that be our guiding principle.

JOHN G. PATTE
BASc 1967, OSHAWA, ONTARIO

Sombre Occasion

Alec Scott's excellent article "The Aviator" (Winter 2011) reminded me that in 2009, Canadian aviation enthusiasts celebrated the 100th anniversary of the first powered flight in Canada. However, February of that year also marked a more negative occasion in Canadian aviation history. Fifty years ago that month, the Canadian government cancelled the Avro Arrow CF-105 program, Canada's leading-edge entry into the supersonic jet age.

The Avro Arrow was first presented at Toronto's Malton Airport (now Pearson Airport) in October 1957. One of the notable attendees at this historic event was Douglas McCurdy, who listened as the Honourable G.R. Pearkes, Canada's Minister of Defence, described the Avro Arrow as "a symbol of a new era for Canada in the air."

Pearkes was the minister who, less than two years later, convinced the Diefenbaker government to cancel the Avro program. There is no record of McCurdy's reaction to this subsequent "historic announcement."

ROD TENNYSON
PROFESSOR EMERITUS, INSTITUTE FOR AEROSPACE STUDIES, UNIVERSITY OF TORONTO

My Dinner with Douglas

During the summers of 1960 and 1961, I worked as a travel guide. My itinerary included 16-day escorted bus trips to the Maritimes and New England. We

always spent two nights at Telegraph House in Baddeck, Nova Scotia – the gateway to the Cabot Trail.

On the second trip, the Dunlops, who managed the inn, invited me and the bus driver to join an elderly couple in the dining room. What a treat that turned out to be! Douglas McCurdy and his wife were fascinating hosts. McCurdy regaled us with tales of Alexander Graham Bell, the Silver Dart and the difficulties he had in getting Canada to establish a national air force.

My favourite story, however, was about the building of the Canso Causeway that links Cape Breton Island to the mainland. The government contractor who built the causeway assumed that the land adjacent to the construction site was government property. Big mistake! When the causeway was completed, without proper authorization from McCurdy, he submitted an invoice to the government for removing millions of tons of granite from his land. Having been lieutenant-governor of Nova Scotia, McCurdy knew which buttons to push and received payment in full. There was a twinkle in his eyes as he disclosed the amount.

Many thanks to Alec Scott for his article, "The Aviator." I learned a lot about a true Canadian pioneer.

CHARLES W.N. CARR
BA 1965, MEd 1972 OISE, TORONTO

An Amazing Mentor

I was pleased to see the article "Defying Gravity" about Wilbur R. Franks and the Franks Flying Suit in the Winter 2011 issue. I had the honour and pleasure of working with Prof. Franks at the Banting and Best Department of Medical Research for many years. However, I was disappointed that his other great invention, the human centrifuge, was not mentioned.

I was also fortunate during my academic career to have associated with George F. Wright of the chemistry department. Prof. Wright made significant contributions to the development of explosives during the Second World War. Both men were honoured by the Canadian, American and British governments for their work.

In the 65 years I have been involved with chemistry, I have never met a scientist who could match the honesty and capability of my two mentors.

ALAN RODGMAN
BA 1949 VICTORIA, WINSTON-SALEM, NORTH CAROLINA

Realizing Our Potential

Growing evidence shows the importance of life's early years

IN THE OLD DEBATE ABOUT NATURE VERSUS NURTURE, educators tend to range from unalloyed optimism to dogged pragmatism. Our work may be done in primary or secondary schools, in colleges or universities. But we believe that education is vital to helping people realize their potential, and that learning is a key to individual fulfilment and societal success.

Much evidence supports this positive view of education. But recent research is breaking down the old nature-nurture divide in surprising ways. In simple terms, the old model saw environmental and developmental influences, including education, layered onto a fixed genetic base. The new model, based on the science of epigenetics, sees those same influences interacting with certain genes to turn them on or off permanently, or modify their expression up and down like a dimmer switch.

Basic science and a growing number of human studies reinforce this new perspective. Recent studies have examined the long-term effects of maternal nutrition during pregnancy, exposure to different stimuli in the womb and after birth, and factors such as nurturing, diet and exercise in early childhood. What they all show, with remarkable consistency, is that these early influences have major impacts on our adult health, emotional well-being and capacity to learn. A child's early social environment literally shapes the architecture of the brain, affecting his or her behaviour and learning abilities for many years into the future.

These startling insights have already percolated into Canadian policy-making, generating increased public investment in early childhood education. Two U of T alumni – the Hon. Margaret Norrie McCain and Dr. Fraser Mustard – led the way with their 1999 report, provocatively titled *The Early Years Study: Reversing the Real Brain Drain*. McCain and Mustard's report underscored the importance of life's first three years and found that children who do not receive proper nutrition and care are more likely to develop learning or emotional problems later on.

ISABEL'S STORY

"Volunteering is the most amazing and humbling experience. It's a wonderful way to finish a career."

– Isabel, Education Manager, Ethiopia.

Today, at the University of Toronto, early human development is a thriving field for research involving outstanding scholars and students on all three campuses and in several of the university's partner hospitals. For example, Stephen Lye, a professor of physiology based at Mount Sinai Hospital, leads a team that has shown how one strain of mice stressed during pregnancy produces obese offspring, while another strain is resistant to this effect. Lye is also part of a study following 2,000 Australians to determine exactly how prenatal and early childhood influences affect lifelong metabolism, increasing or decreasing risks of diabetes, high blood pressure and heart disease.

Marla Sokolowski, a professor in the biology department at the Mississauga campus, is investigating early nutritional deprivation in an animal model and the impact this has on learning, memory and exploratory behaviour. This field – sometimes called nutrigenomics – has huge promise in the prevention of disease and optimization of human health and development.

Our researchers are also developing interventions that can make an immediate difference. For example, Carl Corter, a professor of education at the Dr. Eric Jackman Institute of Child Study, is looking at how the life chances of the next generation can be improved by better support for young children and families during their preschool and early primary school years.

The importance of this work is so overwhelming that the university is now planning a new Institute for Human Development. It will be dedicated to understanding how early experiences and environments shape our individual potential and ultimately affect the success and well-being of our society. I believe it will rapidly emerge as one of the top initiatives of its type in the world.

In a sense, of course, universities have always been about human potential, and the Institute for Human Development is a logical extension of our mission. In the months ahead, you will hear more about the institute, along with many other exciting plans afoot at the University of Toronto. Meanwhile, as always, best wishes from your alma mater.

Sincerely,
David Naylor

Calendar

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

Gordon Monahan's *Theremin Pendulum*

TO APRIL 13

Gordon Monahan: Seeing Sound

Gordon Monahan: Seeing Sound is an overview of the sound and multimedia artist's career. Monahan's works include avant-garde concert music, multimedia installations, and sound and kinetic sculptures. He employs everything from pop culture to media technology, architecture and live performance in his art. Organized by the Robert McLaughlin Gallery, and co-presented with the Doris McCarthy Gallery, Blackwood Gallery and MacLaren Art Centre. Free. Tues. to Fri., 10 a.m.–4 p.m., Wed., 10 a.m.–8 p.m., Sat. and Sun., 12–5 p.m. 1265 Military Trail.

For more info: **(416) 287-7007, dmg@utsc.utoronto.ca or www.utsc.utoronto.ca/dmg**

Alumni

April 1, Hart House
Engineering Science Alumni Dinner. $50. 6 p.m. Great Hall, 7 Hart House Circle. To register: www.alumni.utoronto.ca/engscidinner.

April 8, Hart House
MIE Alumni Dinner. $80. Comp tickets for classes of 61 and 86. $40 for new grads (06 to 10). 6–9:30 p.m. Great Hall, 7 Hart House Circle. To register: www.alumni.utoronto.ca/miealumnidinner.

April 14, Shamba Foundation
Biz Skule Networking Series. Speaker: Michael Serbinis, U of T alum and CEO of Kobo eReader. $25 (includes one free drink). 6–8 p.m. Shamba Foundation, 48 Yonge St., Ste. 1200. To register and for info: (416) 978-4274, deirdreg@ecf.utoronto.ca or www.alumni.utoronto.ca/bizskulespring2011.

April 27, London, Ontario
Faculty of Medicine Alumni Event. Reconnect with former classmates and hear about the latest news and research. Free. 6–8 p.m. Hilton London. 300 King St., London. RSVP: Morgan Tilley, (416) 978-3588 or www.alumni.utoronto.ca/londonalumni.

April 30, Toronto
Faculty of Dentistry 2011 Awards of Distinction Gala. Honourees are U of T alumni Jack Cottrell and Chris McCulloch, as well as *Oral Health Journal*, which is celebrating its 100th anniversary. Proceeds support the faculty's teaching clinics. $250. Cocktails at 6 p.m. Dinner at 7 p.m. Allstream Centre, Exhibition Place, 105 Princes Blvd. For info: (416) 979-4940, sabrina.martinez@dentistry.utoronto.ca or www.utoronto.ca/dentistry/alumni.

Spring Reunion

May 25–29, Toronto
Spring Reunion 2011 honours alumni who graduated in a year ending in "6" or "1." For info: (416) 978-5881, spring.reunion@utoronto.ca or www.alumni.utoronto.ca/springreunion.

May 25, Toronto
LGBTQ Pride Kick-Off at Integral House. Alumni and friends are invited to enjoy drinks, and get a head start on Pride, on the eve of Spring Reunion. Free. 6–9 p.m. 194 Roxborough Dr. For info: Ennis Blentic, (416) 978-4096 or www.alumni.utoronto.ca/LGBTQ.

May 27, Toronto
Faculty of Applied Science and Engineering Evening Events. **Class of 06.** Reception, drinks and fun. $30 (includes one drink and appetizers). 6 p.m.–midnight. O'Grady's Tap and Grill, upstairs. 171 College St. **Class of 91 reception**. $45 (includes one drink and appetizers). 6 p.m.–midnight. East Common Room, Hart House. 7 Hart House Circle. For info: (416) 978-4941 or meganm@ecf.utoronto.ca.

May 28, Toronto
Faculty of Applied Science and Engineering Lectures with professors Doug Reeve, Brendan Frey and Goldie Nejat. Free. 11 a.m.–12 p.m. Sidney Smith Hall, 100 St. George St. Room TBA.
Faculty of Applied Science and Engineering Departmental Lunches. The following departments will host a free lunch and tour from 12–2 p.m. **Chemical Engineering and Applied Chemistry:** Wallberg Building, 200 College St. Rm 238. liam.mitchell@utoronto.ca **Engineering Science:** Bahen Centre, 40 St. George St., 2nd Floor. engsci@ecf.utoronto.ca

Complete Streets Forum: Share ideas about designing safe streets at Hart House on April 28

Mechanical and Industrial Engineering: 5 King's College Rd. Main entrance. alumni@mie.utoronto.ca **Civil Engineering:** Galbraith Building, 35 St. George St., Mark Huggins Structures Lab, basement, Rm 29. colin@civ.utoronto.ca **Materials Science and Engineering: Reunion Lunch with Prof. Jun Nogami, Chair.** All MMS/MSE alumni '86 and senior are invited. Wallberg Building, 184 College St. Rm 143. lukeyh.ng@utoronto.ca **Electrical and Computer Engineering:** Galbraith Building, 35 St. George St. Energy Systems Lab, Rm 040. susan.grant@utoronto.ca **Skule Kids.** Children and grandchildren of alumni attending Spring Reunion can take part in science and engineering workshops. Register for up to three sessions. Grades 1 through 12. $25 includes lunch, materials and T-shirt. Drop-off: Lobby of Galbraith, 35 St. George St. Sessions: 11 a.m.–12 p.m., 12–2 p.m., 2–4 p.m. Arrive 15 minutes prior. To register: www.outreach.engineering.utoronto.ca. **Alumni Suds.** Skule alumni can enjoy conversation and beverages in the Sanford Fleming Atrium. 2–4 p.m. 10 King's College Rd. **Faculty of Applied Science and Engineering Evening Events: Classes of 96 and 01.** $45 (includes one drink and appetizers). 6 p.m.–midnight. Hart House, Debates Room, 7 Hart House Circle. **Classes of 36, 41, 46, 51, 56, 61, 66, 71, 76, 81, 86.** Reception and dinner. $100, plus cash bar. 6 p.m.–midnight. Hyatt Regency Toronto, 370 King St. W. Individual class receptions: 6–7 p.m. Dinner: 7 p.m.–midnight. For info: (416) 978-4941 or meganm@ecf.utoronto.ca.

Exhibitions

To June 3, Thomas Fisher Rare Book Library
Great and Manifold: A Celebration of the Bible in English. An exhibition of rare books and manuscripts commemorating the 400th anniversary of the first printing of the King James Bible. Free. Mon. to Wed. and Fri., 9 a.m–5 p.m. Thurs., 9 a.m.–8 p.m. For info: (416) 978-5285 or www.library.utoronto.ca/fisher/exhibitions/current.html.

May 3 to June 25, U of T Art Centre
Suzy Lake: Political Poetics. This exhibition will emphasize Lake's most recent work, while drawing on four decades of her art to highlight her career-long exploration of women's experiences. Free. Tues. to Fri., 12–5 p.m. Sat., 12–4 p.m. 15 King's College Circle. For more info: Maureen Smith, (416) 946-7089 or maureen.smith@utoronto.ca, or www.utac.utoronto.ca.

Information Sessions

April 5 and 6, Flavelle House
GPLLM Information Sessions for the new Global Professional Master of Laws Program in Business Law at the Faculty of Law. Meet with faculty and staff. Free. April 5: 8–9:30 a.m. April 6: 5:30–7 p.m. Faculty Lounge, Flavelle House, 78 Queen's Pk. RSVP and info: Natasha Smith at n.smith@utoronto.ca or www.law.utoronto.ca/programs/GPLLM.html.

Lectures and Symposia

April 5, Faculty Club
6th Annual Senior College Symposium. Immigration and Multiculturalism: What should Canada look like in 2025? $30 (lunch included). 9:30 a.m.–3:30 p.m., followed by wine and cheese reception. Faculty Club, 41 Willcocks St., main floor. For info: (416) 978-7553, senior.college@utoronto.ca or www.faculty.utoronto.ca/arc/college/symposium.htm.

April 12, Hart House
Toronto the Good. A celebration of contemporary architecture in Toronto. Co-sponsored by Cities Centre, U of T. Free. 6–11 p.m. Great Hall, Hart House, 7 Hart House Circle. RSVP required. (416) 963-4497, ext. 224, or torontothegood@era.on.ca. Visit www.era.on.ca.

Wednesdays, April 13–May 18 Innis College Town Hall
Academy for Lifelong Learning: Spring Talks. Speakers include Joe Schlesinger, former head of CBC-TV News, and Nathalie Des Rosiers, general counsel of the Civil Liberties Association. $7. Free to U of T community (with ID). Coffee: 9:45 a.m. Speaker: 10:20 a.m.–12 p.m. Innis College Town Hall, 2 Sussex Ave. For info and a list of speakers: www.allto.ca/index.html.

April 28, Hart House
Complete Streets Forum 2011 will share ideas and showcase research on designing streets that will protect cyclists and pedestrians while accommodating all road users. $100–$275. 8 a.m.–5 p.m. Great Hall, Music Room and Debates Room, 7 Hart House Circle. Registration required. (416) 392-0260, carmstrong@cleanairpartnership.org or www.torontocat.ca

June 2–4, Robert Gill Theatre
Sports and Globalization: Concepts, Structures, Cases will include speakers from many countries – both newly emerging players, and Europe and North America. 9 a.m.–6 p.m. 214 College St. (416) 946-8464, cdts@utoronto.ca or www.utoronto.ca/cdts

Music

April 2, U of T Scarborough
Spring Awakening. Performances by the UTSC Concert Band and Strings Ensemble. Free. 7–9 p.m. ARC Theatre, 1265 Military Trail. (416) 208-4769, aep@utsc.utoronto.ca or www.aeplive.ca

April 2, MacMillan Theatre
U of T Wind Ensemble. Gillian MacKay, conductor. 7:30 p.m., MacMillan Theatre, 80 Queen's Pk. $15 (seniors and students, $10). (416) 978-3744 or www.music.utoronto.ca/events

April 2 and 3, Walter Hall
Simply Sondheim. A revue based on the musical theatre works of Stephen Sondheim. General admission. $15 (seniors and students, $10). April 2: 7:30 p.m. April 3: 2:30 p.m. Walter Hall, 80 Queen's Pk. (416) 978-3744 or www.music.utoronto.ca/events

April 4, Walter Hall
Faculty Artist Series: Shauna, Lydia and Friends. Cellist Shauna Rolston and pianist Lydia Wong perform cello sonatas by Debussy and Richard Strauss, and Dvorak's piano quartet, with guests Barry Shiffman and Tang Li. $25 (seniors and students, $15). 7:30 p.m., Walter Hall. (416) 978-3744 or www.music.utoronto.ca/events

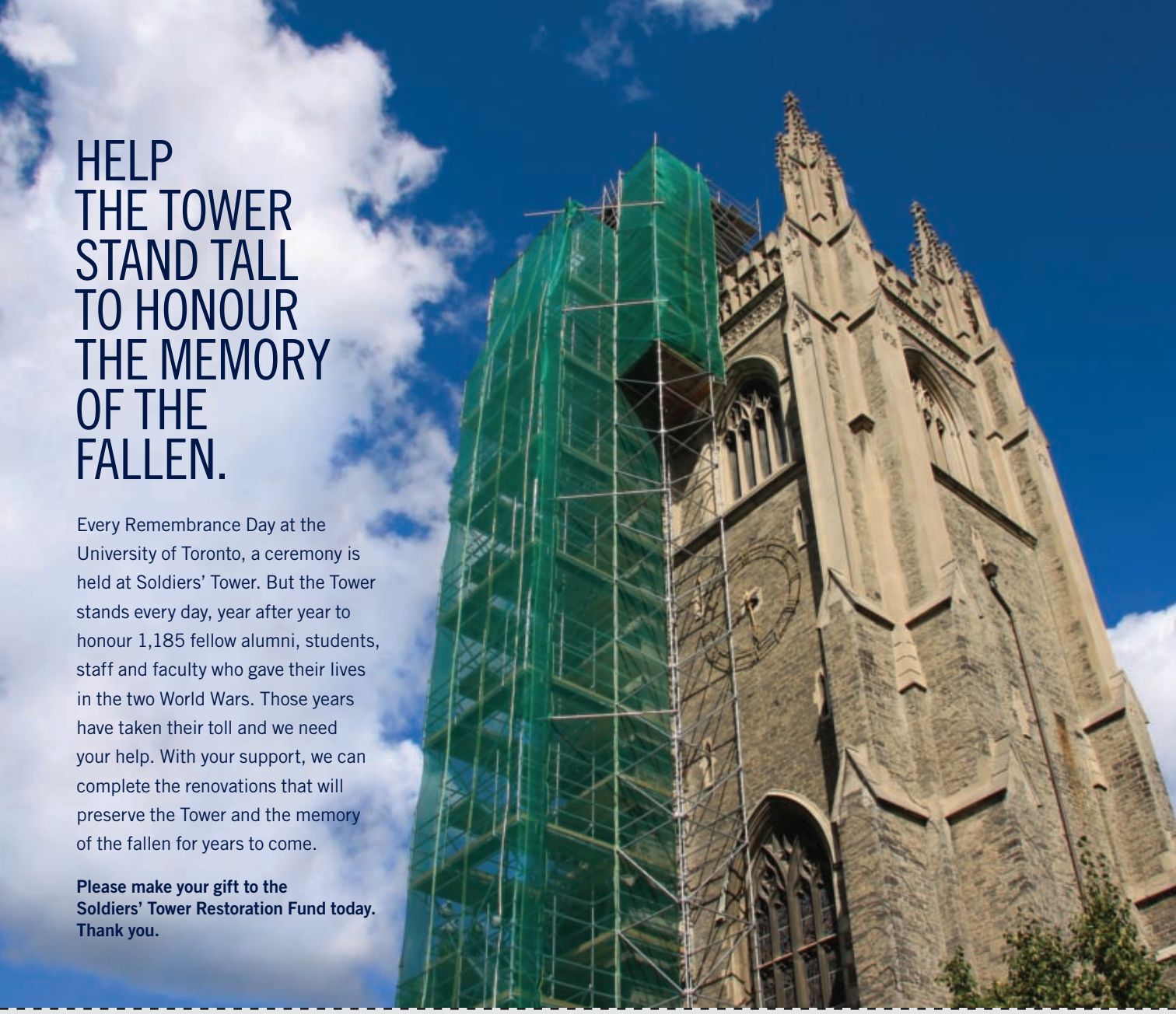
April 6, U of T Scarborough
Flute Recital. UTSC Flute Choir and special guests. Refreshments. 5–7 p.m. Free. Ralph Campbell Lounge, 1265 Military Trail. (416) 208-4769, aep@utsc.utoronto.ca or www.aeplive.ca

Sports

June 2, Hart House
The U of T Sports Hall of Fame Induction Ceremony. Reception: 6 p.m. at Great Hall. Ceremony: 7:30 p.m. at Hart House Theatre. $30 (12 and under, $15). 7 Hart House Circle. For tickets and info: masha.sidorova@utoronto.ca.

Theatre

April 8, Helen Gardiner Phelan Playhouse
UC Drama Showcase includes the most interesting work of UC Drama students in all courses, from performance to directing. Free. 6–10 p.m. 79 St. George St. For info: (416) 978-8099, uc.drama@utoronto.ca or www.uc.utoronto.ca/drama.



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Every Remembrance Day at the University of Toronto, a ceremony is held at Soldiers' Tower. But the Tower stands every day, year after year to honour 1,185 fellow alumni, students, staff and faculty who gave their lives in the two World Wars. Those years have taken their toll and we need your help. With your support, we can complete the renovations that will preserve the Tower and the memory of the fallen for years to come.

Please make your gift to the Soldiers' Tower Restoration Fund today. Thank you.

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Life On Campus

Education is important. Nobody fails at university

Professor Michael Hare, on the transformative impact of a post-secondary education
p. 12

A Capital Achievement

In nearly half a century at U of T, economics prof Michael Hare has touched thousands of students' lives

HISTORIAN THOMAS CARLYLE NICKNAMED ECONOMICS "the dismal science" – but for the past 48 years, Professor Michael Hare has made it his mission to disprove that. With nearly half a century of teaching under his belt, Hare is one of the longest-serving instructors in the history of the university. As befits a meticulous social scientist, he's kept records on how many students he's taught: an astounding 32,638, to be exact, spread out over 269 courses. Despite his experience, he still gets nervous. "If I'm delivering a good lecture I usually get a little excited beforehand. Students probably wouldn't know that, but I still do."

Hare has seen many changes in campus life since he first came to the university, fresh from graduate work at the Massachusetts Institute of Technology. "The students of the early 1960s were very meek and hardly challenged the instructor," he says. As the decade progressed, students became more inquisitive and confrontational, only to change again in the '70s: "Students reverted back to being very meek."

Class sizes in the economics department increased substantially after 1980; Hare says the advent of 400-student ›

PHOTO: FRANCES JURIANSZ

Tomorrow's Doctors

Medical students will doubly benefit from Terrence Donnelly's new gift

PHILANTHROPIST TERRENCE DONNELLY has donated $12 million to U of T Mississauga to support students and help construct a new Health Sciences Complex. The gift is the largest donation ever to the Mississauga campus.

Donnelly's gift will provide bursaries and scholarships to medical students and support the construction of the building that will house the Mississauga Academy of Medicine. The facility has received funding from the provincial government and private donors, including Mississauga businessman Carlo Fidani, who provided $10 million.

The four-storey Terrence Donnelly Health Sciences Complex, scheduled to open this summer, will house the graduate biomedical communications program, research laboratories, classrooms and offices in addition to the Mississauga Academy of Medicine. Researchers and scientists will work side by side in the $37-million facility with faculty members who will teach future medical practitioners.

Fifty-four undergraduate medical students will enter the academy each year. By 2014, it will have a total of 216 students enrolled in the four-year program.

"The true value in this building is not the bricks and mortar, but the work being done within its walls – the teaching, learning and research," said Donnelly (LLD 2003), president and director of the Colonel Harland Sanders Charitable Organization (Canada) and president of the Terrence Donnelly Foundation. Donnelly's previous support resulted in the creation of the Terrence Donnelly Centre for Cellular and Biomolecular Research on the St. George Campus. – **JANE STIRLING**

EPHEMERA

This card is one of a set that two students in Book and Media Studies created recently in the Kelly Library Printing Room. Jenny Gilbert and Renee Jackson, both now alumni, designed five cards. They hand-set and inked the individual characters, and printed them using an antique press called a C.M.C. Jobber.

The use of traditional printing techniques means every card is slightly different – a result that Gilbert (BA 2008 St. Mike's) found appealing. "You can see the impression in the paper," she says. Proceeds from sales of the cards support the Printing Room. "I thought the cards would be a great way to raise awareness of this really great resource," says Jackson (BA 2010 TRIN). – **SUZANNA CHANG**

classes has definitely made teaching more challenging. On the positive side, he has noted increasing interest in economic issues. Fittingly, one of the signature courses he's developed – ECO105 – is geared specifically to non-specialists. It's a rare blend of policy and theory that addresses some of the most important issues of our time: productivity, poverty reduction in the global south, the debt crisis in Latin America, sustainable development and other environmental concerns.

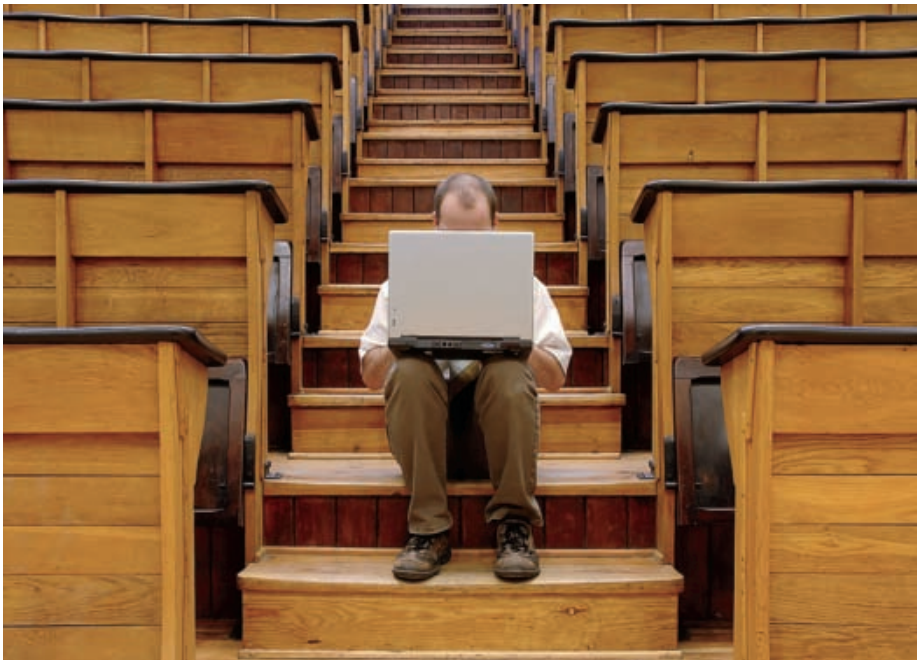
Indeed, Hare's wide range of extracurricular activities has reflected, and even presaged, events of economic importance. Back in the 1970s, before recycling became commonplace, he acted as a waste-management consultant, with specific expertise in beverage containers. More recently, Hare has acted as a tourism consultant to the government of Barbados, a destination he frequently visited with his late wife and treasured helpmate, Marion. "She was my partner and supporter, and a mentor to our three children. Without her I wouldn't have been able to teach for as long as I have."

Although he formally retired from the university 12 years ago, Hare plans to keep teaching on a part-time basis, at least until he reaches the 50-year mark. (He also plans to write a book on the future of capitalism.) Hare, 78, takes pride in the applause that often concludes his lectures; the former students who stop him in the street to thank him; the many young people he's taught who've gone on to achieve success (including U of T president David Naylor, who studied under him 37 years ago). "Education is important," he says. "Nobody fails at university. An academic failure may occur, but frontiers have been opened to you. You'll never be the same again." – **CYNTHIA MACDONALD**

ARCHITECTURAL RENDERING: KONGATS ARCHITECTS

43,136

The number of students who logged into ROSI on the first day of classes last September. That's an average of 30 every minute



The Long Goodbye

ROSI, the aging online student service, is being replaced over the next several years with a friendlier, more flexible system

SINCE THE RISE OF THE INTERNET more than a decade ago, U of T students have been able to accomplish a number of school-related tasks online. The Repository of Student Information (known as ROSI) currently allows them to add or drop courses, view their fees balance and order transcripts.

The 12-year-old ROSI, however, is fast approaching the end of its usefulness. "We need to replace it because it doesn't meet current needs," explains Scott Mabury, vice-provost, academic operations. Students have long complained about wait times and crashes on the system, as well as its limited menu of functions.

Fortunately, a new era of information technology, with improved online services, is nigh. The highly anticipated Next Generation Student Information Services will be so broad in scope that its full potential will only be realized over a period of years. "It needs to be streamlined, efficient, user-friendly, clear and welcoming," says Jill Matus, vice-provost, students. Over time, she anticipates that the suite of services will get "more comprehensive, until we've covered the full range of services for students at U of T."

The Next Generation services will work in tandem with ROSI as it gradually retires over the next several years, although many new features are being developed right now. One component will streamline the current residence application process. Right now, first-year students must deal with the admissions office as well as separate colleges, resulting in a great deal of waiting, phoning and duplication. With the new service, the process will ultimately be both efficient and centralized.

Currently, more than 90 projects are under consideration. Those sure to be realized include a rethinking of the university's byzantine fee-payment system, as well as an application that will help students navigate the campus easily. An improvement on Google Maps at the local level, the project "will enable students not only to learn what buildings are called and where they are – but to find a good study space and figure out where to get, say, a vegan lunch," says Matus.

Perhaps most importantly, students will have a significant say in how the new services are developed. Many have already indicated their need for a change "through the divisions, the academic units and through complaints to registrars about the inadequacies of ROSI," says Matus.

The new services will not come cheaply; over time, it may cost up to $30 million for goals to be fully realized. But Mabury says half of the money will come from reallocating internal resources, adding that the changes will reduce costs (and increase productivity) by eliminating a great deal of unnecessary and tedious work. "This is a very heterogeneous university," he says. "But if we can deliver a central service that functions well, we can eliminate some of the redundancy."

And, as Matus points out, it will make the student experience infinitely more pleasant. "I think the overall guiding message is that we don't want students to feel like they're on their own," she says. "We need to help them be successful academically. These other things should not be what's taking their time."

Students will have a significant say in how the new online services are developed

– CYNTHIA MACDONALD

PHOTO: TROUT55/ISTOCKPHOTO

Sidewalk Surfin'

Since the first skateboards appeared in the 1950s, they have evolved from crude wooden planks with metal rollers to sleek, symmetrical boards with polyurethane wheels. Now Professor Mark Kortschot has put his own stamp on the iconic "sidewalk surfer," creating a version so small it can be stuffed into a backpack.

Kortschot, 49, says he has always been interested in transportation devices, and wanted a quick way to get around the St. George Campus, where he has taught engineering for 22 years. He researched the market and found a need for a portable, smooth-riding board. "There was clearly a niche there," he says.

Kortschot's creation, dubbed the Sole Skate, is, at 43 centimetres long, about half the length of a typical board, has three wheels instead of four and weighs only one kilogram. After applying for a patent, he presented the idea to Razor, a California company best known for its aluminum scooters, who decided to make and sell the board. Time.com named the Sole Skate one of the best toys of 2010, dubbing it a "small and agile skateboard replacement." Oh, and most important? His sons, aged 19 and 22, have pronounced the board "cool." – **MAGGIE GILMOUR**

SOUND BITES

What exam advice would you give new students?

Study regularly and avoid cramming, break down topics into smaller pieces that are easy to remember, and study with devoted and serious classmates.
ADOLPH NG, MMS 1996

Study each subject twice on different days, alternating with another subject: study A, study B, study A (write A), study B, study C, study B (write B), etc.
MAREK KLEMES, BASc 1981, MASc 1983

Do all last-minute review *before* the night before your exam. On the night before get a good sleep.
YI WEN (ALEX) LI, BASc 2010

Read the entire exam before you start answering. Do the questions you know most about first. Your mind will be processing later questions as you proceed.
BOB CLARK, BA 1966 VIC, BEd 1972 OISE

Make your own suggestion at twitter.com using **#examadvice**

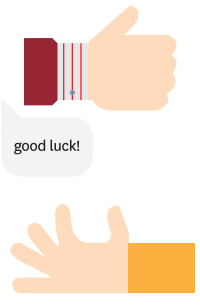
Poll | Do your parents give you any financial help?

Thousands of U of T students receive financial support from the university in the form of bursaries and scholarships. Many also tap into the Ontario Student Assistance Program for loans. However, there is another crucial, but often unsung, source of cash for financially strapped students: their parents. Almost two-thirds of the students polled receive some money from their parents to help with groceries, accommodation or tuition.

Not surprisingly, students who received financial help from home were more likely than those who didn't to speak with their parents frequently. Eighty-one per cent of those who received support spoke to their parents on a daily basis (many lived at home). Only 58 per cent of students who didn't receive funds spoke to their parents that often.

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

64%
did receive parental assistance



36%
did not receive parental assistance

PHOTO: COURTESY OF RAZOR INC.

Donald Ainslie is named after his grandfather, who graduated from U of T a century ago and taught physics at U of T

Thinking Small

Philosophy prof Donald Ainslie will champion interactive group learning as principal of U of T's largest college

AFTER 15 YEARS AT U OF T AS A PROFESSOR, and more recently as a department chair, Donald Ainslie is embarking on a new role this July as principal of University College. For the 44-year-old philosophy prof, this means a whole new set of challenges – and potential rewards. UC is the oldest and one of the largest colleges in the Faculty of Arts and Science, with 4,000 students and four academic programs. "University College is really the heart of arts and science and thus the heart of the university," he says. "The principal's role is to set a strategic direction and ensure that we have the resources necessary to fulfil that direction."

Ainslie is currently chair of the philosophy department, a position he has held for eight years. As UC principal, he plans to champion small-group learning at the college, and will oversee the September launch of the UC One program, which will offer a special series of seminar courses to first-year students on the theme of "Toronto as urban laboratory."

As philosophy chair, Ainslie created the Socrates Project, which gives senior undergrads the opportunity to learn philosophy by teaching it to other students. "One of the most rewarding parts of my job has been finding ways to energize students so that they can learn how to think through philosophical problems together," he says, noting that almost all philosophy classes are now small enough to permit discussions or have tutorials that allow for dialogue, a mode of philosophical learning that dates back to Socrates and Plato.

Ainslie grew up in Toronto, and earned a bachelor of science at Queen's University in Kingston, Ontario. His major was math – a subject in which "you think about a very narrowly constrained domain with incredible intensity," he says.

He attended graduate school at the University of Pittsburgh, earning a PhD in philosophy; his dissertation was on David Hume, the 18th-century Scottish empiricist. Before finishing his PhD, however, he took a year off to work in Toronto at McEwan House, a housing program for people with HIV/AIDS and special needs. "Being with the residents as they were struggling with life-and-death issues taught me about the significance of mortality as a moral issue," he says.

While working at McEwan House, Ainslie became interested in what philosophers were saying about the AIDS epidemic, and in the ethical questions surrounding health care and our common susceptibility to disease and illness. He ultimately pursued a secondary master's degree in bioethics, and now teaches a course on it. He says bioethicists tend to focus on questions of what the health professional or the state should do in certain situations, as opposed to "taking seriously what I believe to be the complementary questions of what each of us should do."

This area of scholarship ties Ainslie to both UC's Health Studies and Sexual Diversity Studies programs.

– ELIZABETH KAGEDAN, WITH FILES FROM ELAINE SMITH

People

Professors **Mayo Moran** of law and **Catharine Whiteside** of medicine have been reappointed deans of their respective faculties. Their second terms begin July 1; Dean Moran's runs till June 2016, Dean Whiteside's until December 2014.

Geoffrey Hinton, a professor of computer science, has been awarded the 2010 Gerhard Herzberg Canada Gold Medal for Science and Engineering.

Aaron Hertzmann, a professor of computer science, has received the 2010 Steacie Prize for Natural Sciences.

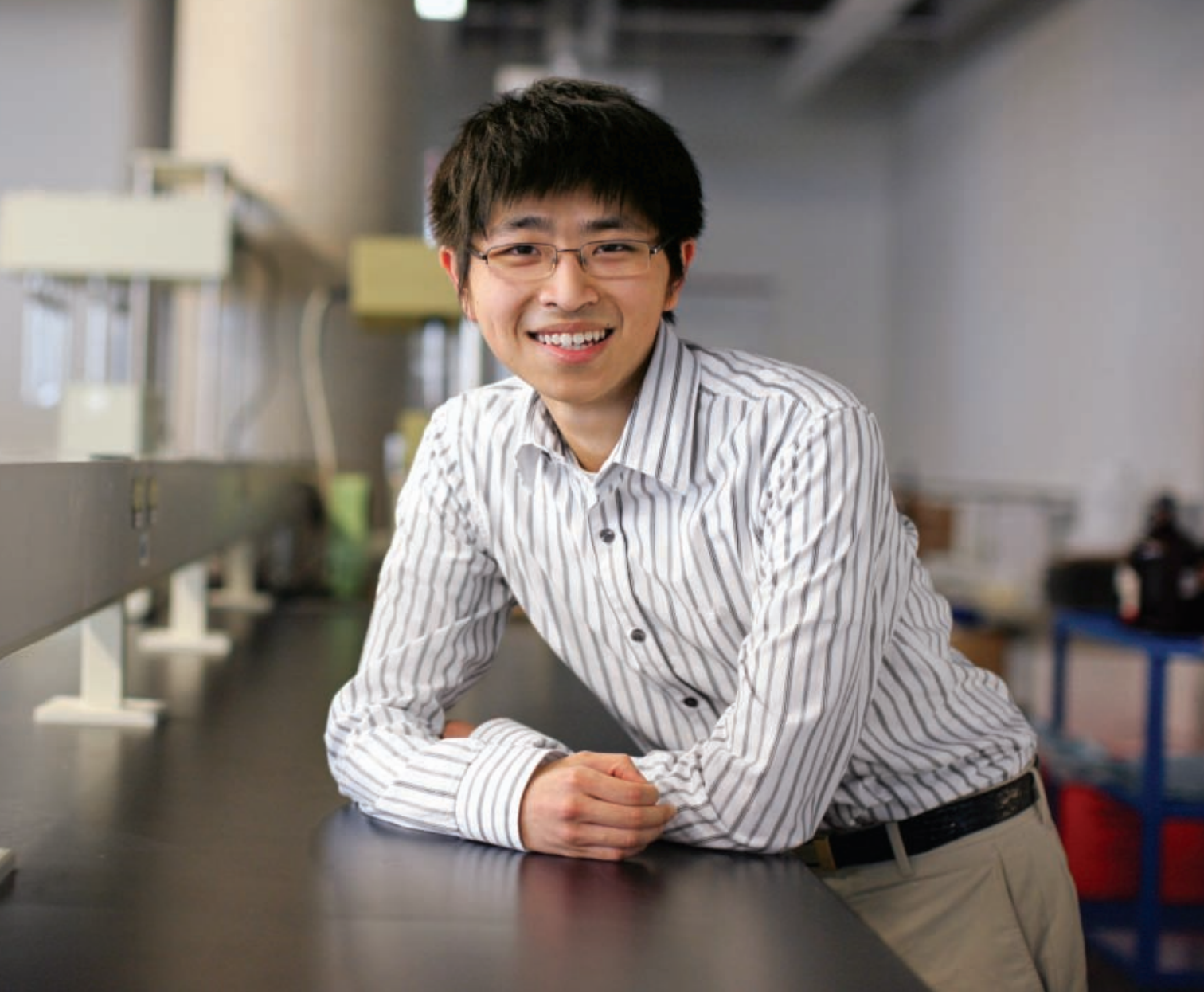
Linda Hutcheon, University Professor Emeritus of English and the Centre for Comparative Literature, and **Anthony Lang**, a professor of medicine with the Tanz Centre for Research in Neurodegenerative Diseases, have been named officers of the Order of Canada.

Molly Shoichet, a professor of chemical engineering with the Institute for Biomaterials and Biomedical Engineering, has been named to the Order of Ontario.

English professor **Christian Campbell** has won the best first collection prize at Britain's Aldeburgh poetry festival for his book, *Running the Dusk*. The prize recognizes poets early in their career.

Richard Greene, a professor in the departments of English and drama, has won the 2010 Governor General's Literary Award for Poetry, for his book *Boxing the Compass*.

PHOTO: COURTESY OF DONALD AINSLIE



"It's more than financial support I'm getting. It's a reminder that I need to keep doing my best."

Kason Chan
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UNIVERSITY OF TORONTO

Leading Edge

We are nearing the limit to how small features on a chip can get

Computer science professor Eugene Fiume on the end of Moore's Law
p. 21

Don't Overdo It!

Women who exercise strenuously may be at greater risk of developing dementia later in life, study finds

IF YOU WANT TO STAY MENTALLY ALERT well into old age, you should exercise, exercise, exercise. At least, that's what the popular press would have us believe. For women, however, that may be exactly the wrong advice: new evidence suggests that, on the contrary, strenuous exercise hastens cognitive decline and increases risk of dementia.

Many studies have found that exercise protects the brain, but until now no study has compared different intensities of exercise. Mary Tierney, a professor of family and community medicine at U of T, became especially interested in that link after reading about a study where intense physical activity reduced women's risk of breast cancer – by depleting their estrogen levels.

Estrogen, Tierney knew, protects the brain against cognitive decline. Could highly active women be depressing their estrogen levels enough to have a detectable impact on their cognitive well-being?

Tierney, who is also a senior scientist at Sunnybrook Research Institute, recruited 90 healthy post-menopausal women and asked about the amount and intensity of their physical activity throughout their adult life, in 10-year ›

PHOTO: SHANEKATO/ISTOCKPHOTO

periods up to menopause. Strenuous activities included swimming laps, aerobic exercise, playing racquetball and running. Moderate activities included brisk walking, golfing, cycling on street level and playing softball. Tierney and her colleagues calculated the number of hours a week that each woman engaged in both strenuous and moderate activity, in exactly the way the breast cancer study had done.

Then the researchers tested the women on six neuropsychological tests. One, the Rey Auditory Verbal Learning Test, requires a subject to listen to a list of 15 simple words five times. Then, after reading a list of 15 other words just once, the subject is asked to recall the words from the first list. The test is highly predictive of Alzheimer's disease up to 10 years in advance. "Women with the highest levels of strenuous exercise did the most poorly," says Tierney.

Many active women refuse to believe the results. They feel at their peak when running marathons and tearing up the squash court. "But these results raise the concern that a lot of strenuous exercise may not be good for women," says Tierney.

As in the breast cancer study, low estrogen is thought to be the cause. It takes a lot of energy to maintain the female reproductive system. Women exercising hard for many hours a week may not be ovulating normally – though they may not know it. This results in lower-than-optimal levels of estrogen being produced. "Women who engaged in more exercise probably had lower estrogen over their life," says Tierney.

About a quarter of all people over the age of 65 have significant cognitive impairment, says Tierney, and eight per cent of those have full-out dementia. Women are at greater risk for Alzheimer's disease than men. Part of the reason is that, after menopause, a woman's estrogen levels plummet, and she relies on estrogen from other sources. (Older men, surprisingly, have more estrogen than older women.)

Her advice to women? "Engage in moderate activity as much as you can," she says. But drop the iron-woman workout. – **ALISON MOTLUK**

Islam and the Bible

What do Arabic translations of Christianity's holy book reveal about three of the world's great religions?

FOLLOWING DECADES OF BITTER RELIGIOUS CONFLICT in the Middle East among Muslims, Jews and Christians, few would imagine that the Judeo-Christian scriptures could have anything to do with Islamic thought. But the interconnections run deep, and can be traced back to medieval Arabic translations of the Bible, according to Walid Saleh, a professor of religious studies.

When Saleh was researching commentaries about the Qur'an some years ago, he stumbled across the writings of a 15th-century Islamic scholar who had become fascinated by a translation of the Bible into Arabic. The medieval scholar had befriended a rabbi who helped him understand the original Hebrew text. The scholar, in turn, wrote impassioned and controversial treatises on how the Bible could be used to interpret the Qur'an. "He considered it permissible for Muslims to draw on the Bible for religious purposes," says Saleh, who published *In Defense of the Bible*, a translation of the scholar's work, two years ago.

Since then, Saleh has embarked on a comprehensive study of the history of Arabic Bibles, the least well known among the broad range of translations of the sacred Judeo-Christian text. They were used by Arab-speaking Jews and Christians who lived in the Middle East in the medieval period.

Raised in Lebanon, Saleh, 44, studied at the American University in Beirut during the civil war and obtained his PhD from Yale. His fascination with Arabic-language Bibles actually dates all the way back to his doctoral work, but he couldn't find a thesis supervisor because there were so few scholars who knew the field. "It's an old interest that was sidelined," he says.

To further advance his historical sleuthing, deciphering and commentary, Saleh has gone back to school to learn ancient and modern Hebrew, thanks to a Mellon Foundation fellowship.

One area of his research that Saleh finds especially intriguing: many 19th-century Arab novelists and poets were strongly influenced by these Biblical texts. As he explores the literary and liturgical interplay between the Bible and Arabic thought, Saleh has unearthed hitherto unknown intellectual and spiritual connections between these great cultures. As he observes, "This is a long and complicated story that's not represented by our current political environment." – **JOHN LORINC**

The term red tape dates back to the 16th century, and relates to the English custom of binding documents and official papers with red tape

THE BIG IDEA

A Cure for Red Tape

Instead of fighting bureaucratic inefficiency, why not go around it?

IN BRAZIL, ENTRENCHED BUREAUCRACIES were delivering services badly and resisting efforts at reform. So in 1997, the Brazilian state of São Paulo created something called Poupatempo – "saving time." The Poupatempo centres were one-stop shops that delivered federal, state and local services such as drivers' licenses and national ID cards. Citizens could go through the old bureaucracies if they wanted to, but Poupatempo was so much more efficient that they flocked there instead.

The Poupatempo initiative is an example of something U of T law professor Mariana Mota Prado calls "institutional bypass." She thinks it's a method that could help developing countries make difficult changes when established institutions such as government bureaucracies, court systems or police are standing in the way.

Prado is originally from Brazil, and often returns for visits. During one stay, she heard about an elite police unit that was set up to bypass the corrupt Rio de Janeiro police force. Prado was reminded of Poupatempo and realized that bypassing dysfunctional institutions might be a strategy that could be applied elsewhere.

The idea that institutions matter in development came to the fore in the 1990s. Douglass C. North, a renowned economist, argued that dysfunctional institutions are both the cause of economic problems in a country and an obstacle to aid efforts. If aid was simply going to be stolen or wasted it would never do anyone any good.

International aid organizations began reforming problem institutions. But Prado says reforms often don't work. A dysfunctional organization will have a constituency that benefits from the status quo and doesn't want to see it change – corrupt officials who gain income from bribes, for instance, or civil servants worried that their jobs are at risk.

This is where institutional bypass comes in. Reformers may lack the power to change an existing institution wholesale. But they might be able to bypass it, since the bypass is often seen as less of a direct threat to the institution. "Right now, when we try to reform existing institutions, we need to deal with this internal battle," Prado says. "Bypass creates an alternative venue. Groups who want reform can support it. It also creates an alternative within the government."

In India, for instance, the government established a parallel legal system called the Debt Recovery Tribunals, designed to make it easier for banks to recover bad loans. Litigants can choose to use the existing civil courts if they want. But the tribunal's streamlined procedures make them more attractive to users.

Ideally, the new institutions will either replace the old ones or force the dysfunctional institutions to improve, Prado says. Even if they don't, at least the services are being provided. For instance, in 2007 the Poupatempo served an average of 50,000 people a day in the state of São Paulo.

How do you bring improvements to developing countries when ineffective institutions stand in the way?

Prado will publish a journal article on institutional bypass next year and is working on a book about the concept, which she hopes will include case studies from Brazil, India, China and elsewhere. – **KURT KLEINER**

LINGO

funemployment

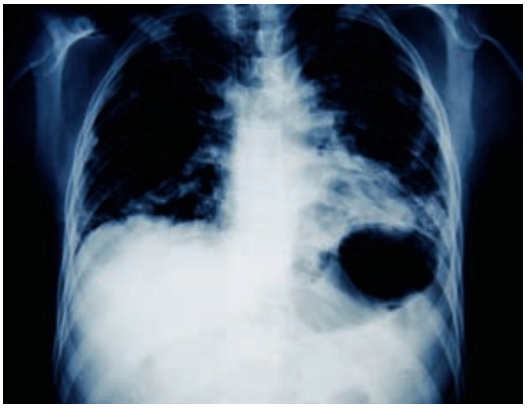
For most people, unemployment causes a great deal of stress. But for a fortunate few, it's a chance to kick back and try something fun. How are these folks able to put a positive spin on something that causes anxiety or depression in so many others? The difference comes down to the resources available to you, and how you perceive your chances for future employment, says Scott Schieman, a U of T sociology professor. "If you are able to exercise some control over the amount of time you are unemployed and have a sense of optimism about getting a new job, then it might not be as stressful to be unemployed," he says. Having some extra cash socked away also helps. "Someone who's already in a state of economic hardship would find it harder to have 'funemployment.'"
– **SCOTT ANDERSON**

ILLUSTRATION: YAREK WASZUL

PROTOTYPE

Detecting Cancer

A new technique using light and metal nanoparticles could help save lives



LUNG CANCER IS one of the nation's deadliest diseases, killing more than 20,000 Canadians each year. Early detection is crucial, but current diagnostic methods, such as PET scans, reveal only tumours that have grown to a few millimetres across – at which point the prognosis is poor. Now, researchers at U of T are developing a technique known as "bioplasmonics" that could detect some cancers much earlier, potentially saving thousands of lives.

"Plasmonics" refers to the interaction between light and metal. Shine a light on a metal surface, and electrons are set free, creating an electric field above the surface. In bioplasmonics, these electric fields are controlled and manipulated in an attempt to detect specific molecules on the surfaces of cells. Cancer cells, for example, have particular proteins, known as markers, on their surfaces that are absent on healthy cells. The more accurately one can "read" the markers, the better one can determine the identity of the cell.

"We believe we'll be able to identify things that are much, much smaller than you can with a PET scan," says U of T chemist Gilbert Walker. "And so we hope that we can catch the disease when it's in an earlier stage."

Walker is part of the BiopSys network of researchers, which involves some 20 scientists from U of T and five other Canadian universities, as well as corporate partners. Although Walker is a chemist, the team relies on expertise from engineers, physicists and pathologists to hone the technology. In particular, they're learning how to shape tiny bits of metal to guide and control the electric fields, down to a scale of just a few dozen nanometres (billionths of a metre). The method is sensitive enough to detect even a few protein molecules on a cell's surface, Walker says.

The team is also studying leukemia, which kills fewer people than lung cancer but shares a number of properties that make it a good "test platform" for the bioplasmonics technology, Walker says.

The BiopSys team has already developed the technique to the point where it produces "a higher-fidelity, more sensitive measurement than in any existing commercial technology," Walker says. "That's a good first step. But that's in a lab setting." He hopes that companies will soon seek to license the technology, for which his team has made several patent applications. "The hope and expectation is that, as this technology develops, it gets translated onto end users – companies that will manufacture the devices, and doctors that will use them." That could take another five to 10 years, he says.

Lung cancer kills more than 20,000 Canadians each year

In the meantime, Walker is thrilled "to actually have a chance at improving the quality of the diagnosis of somebody that has a deadly disease." – **DAN FALK**

Findings

A Strong Chin Goes Far

Psychologists at U of T and Tufts University have shown that law firms are more profitable when led by managing partners with powerful-looking faces. Further, an individual's career success can be predicted 30 to 40 years earlier simply by looking at his or her face.

Nicholas Rule of U of T and Nalini Ambady of Tufts had people judge photos of 73 managing partners from the top 100 American law firms in 2007. They used a scale of one to seven to measure qualities such as dominance, facial maturity, likability and trustworthiness. Half of the judges rated current photos downloaded from law firm websites, while the other half rated college yearbook photos of the same individuals taken an average of 33 years prior.

The researchers found that the managing partners whose faces were ranked the highest for dominance and facial maturity tended to lead firms with higher profits. This also held true with the partners' yearbook photos.

Treating Depression

Neuroscientists at the University of Toronto and the Centre for Addiction and Mental Health (CAMH) have developed a protein peptide that may give depressed patients a new treatment option with few side-effects.

Researchers tested the peptide in animal models to compare the effects with existing antidepressant medications. Fang Liu, a professor of psychiatry at U of T and a CAMH neuroscientist, said that the improvement in depression-related behaviours after the peptide was administered was equivalent to the improvement one would see from traditional antidepressant medication.

Previous approaches to treating depression have relied on medications that block primarily serotonin or norepinephrine transporters. But these medications don't work for all patients.

PHOTO: MURAT SEYIT/ISTOCKPHOTO

Today's smartphones are 15,000 times more powerful than the first desktop computers produced in the early 1980s

Q&A

Eugene Fiume on Moore's Law

For almost half a century, computer chips have doubled in power every 18 months. But this may not hold true for much longer

What is Moore's Law?
In a paper published in 1965, Gordon Moore, the co-founder of Intel, predicted that the number of transistors that could be placed inexpensively on an integrated circuit – equivalent to raw computing power – would double roughly every 18 months. Remarkably, he's been right so far.

How important is Moore's Law to the computing industry?
Moore's Law has resulted in exponential growth in computer memory and computation speeds. But this doesn't mean the consumer's "experience" of computing has been improving at the same rate. If you buy a computer that's three generations newer than your previous model, it will have about eight times the computing speed. But your applications won't run at eight times the speed. Optimum performance depends less on how fast the central processing unit (CPU) operates and more on how well the CPU is interconnected with the memory and other components, how efficient the software is and how fast information travels through your network.

Do you think the end of Moore's Law is near?
It's coming up. We're going to get a few more generations out of current technology – perhaps another six to 10 years – but we are nearing the limit to how small features on a chip can get. These features are now being fabricated at the scale of 30 to 40 nanometres – or about 1/200th the size of a red blood cell. New technologies may be able to shrink this even further, but there is a limit. Below a certain size, you start to get unpredictable effects. That's one reason people are thinking of new ways to lay out computers. There's talk about moving away from flat distribution of transistors toward layered configurations. That's also why we're seeing multi-core systems. For a while, they will allow us to achieve a doubling of performance without an actual doubling of transistor density.

How will the increasing popularity of "cloud computing" affect computing performance?
"Cloud computing" makes the computation go away – it travels from your computer over the Internet to somewhere else, such as one of those huge computation farms that Amazon and Google have built for their own purposes. In principle, you can use these companies' vast computation resources to do the work you need and have the results sent back to you. The bottleneck is the network. Your computation time will be determined by the responsiveness of your network. And that has nothing to do with Moore's Law.

The computing industry has used Moore's Law to sell us a new computer every few years. What will happen when those raw power improvements can no longer be achieved?
In the future, I think we are going to see a proliferation of inexpensive devices. I tend to use my laptop for everything, but you can get better purpose-built devices – e-readers with reflective displays, for example, that are easier on the eyes and can be read outdoors. As the market for tablet and hand-held devices grows, the laptop market will shrink. The netbook will evolve and likely merge with hand-helds. Many people currently use a laptop for just email. A good hand-held does that.

Computers are still poor at "seeing" and interpreting spoken language. Won't these developments require massive increases in raw computing power?
Absolutely. We will require massive increases in computer power – and huge advances in algorithms to deal both with vast amounts of data and, more importantly, with many different modes of interacting with computers. But almost all of the problems that are truly interesting to people are incredibly complex to solve, and raw computing power alone won't solve them.

PHOTO: MBBIRDY/ISTOCKPHOTO

The Urban Forest

You can find practically anything using Google, so why not the whereabouts – and health – of trees in your neighbourhood?

It's now possible, thanks to a program designed to protect and sustain urban forests. Although local governments take care of trees in parks or on streets, the vast majority are found in people's yards. Homeowners are responsible for sustaining the trees on their property, but all residents suffer when urban trees decline.

That's why Andrew Kenney, a U of T forestry professor, created Neighbourwoods. The program enlists volunteers to measure and classify all the trees in their community and then develop a strategy for caring for and, eventually, replacing them.

Volunteers collect information about the size, type, health and location of trees, which Kenney's team enters into a database, analyzes and now shares on Google Earth (with the community's permission). Toronto's Trinity Bellwoods Park is shown at right.

Neighbourwoods groups have formed in downtown Toronto and across Ontario. Kenney says the next step is to develop strategies for urban forest renewal, and to estimate the benefits in terms of air quality, storm water management and lower carbon emissions. These calculations "make it clear why we're doing this in the first place," he says. – **SCOTT ANDERSON**

Healthy
Healthier trees are dark green

Unhealthy
Circle indicates canopy size

DID YOU KNOW?
Trinity Bellwoods Park is home to over 800 trees

Body Double

A U of T team finally settles the question of where Tom Thomson was buried

ONE OF THE MOST ENDURING MYSTERIES in Canadian art is closer to a solution, after some archaeological detective work by a team associated with U of T. Tom Thomson died and was buried in Algonquin Park in 1917, shortly after completing two of his greatest canvases, but until recently nobody had been sure of his last resting place.

His remains were supposedly exhumed and reburied at Leith, Ontario, shortly after his death, but new evidence suggests that they remain where they were first buried – at Canoe Lake. The mystery hangs on a skeleton found at the lake in 1956. Government experts of the day said it was an aboriginal person's, but a local doctor who examined the skeleton thought it was Thomson's.

Journalist Roy MacGregor, author of a new book about the Group of Seven artist, sought an additional opinion about the skeleton's origins. He sent photos of the skull to Ron Williamson, an anthropology professor and managing partner of Archaeological Services Inc. Based on the skull's morphology and the number of cranial features, Williamson concluded that it was probably Caucasian. An expert on his staff confirmed his view, adding middle-aged and male.

For further confirmation, Williamson sent the photos to Susan Pfeiffer, a professor of anthropology and an expert in human remains. Pfeiffer identified the skull as belonging to a middle-aged male, roughly 50, of northern European background, "let's say Scottish," who died within the past century.

Andrew Riddle, a U of T grad who now works with Williamson, compared the photos of the skull to those of Thomson. Using photogrammetric analysis, he concluded that there was nothing to suggest the skull belonged to anyone but Thomson. A forensic artist then drew an impression of the missing man, based on the skull, and Williamson almost fell out of his chair. "What she sent me could easily have been taken as a twin of Thomson."

New evidence suggests that Tom Thomson's remains are where they were first buried – at Canoe Lake

Nothing short of DNA analysis can confirm the identity of the remains, but, as Williamson says, the evidence is pretty convincing. – **BRENT LEDGER**

PHOTO: GOOGLE EARTH

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True North

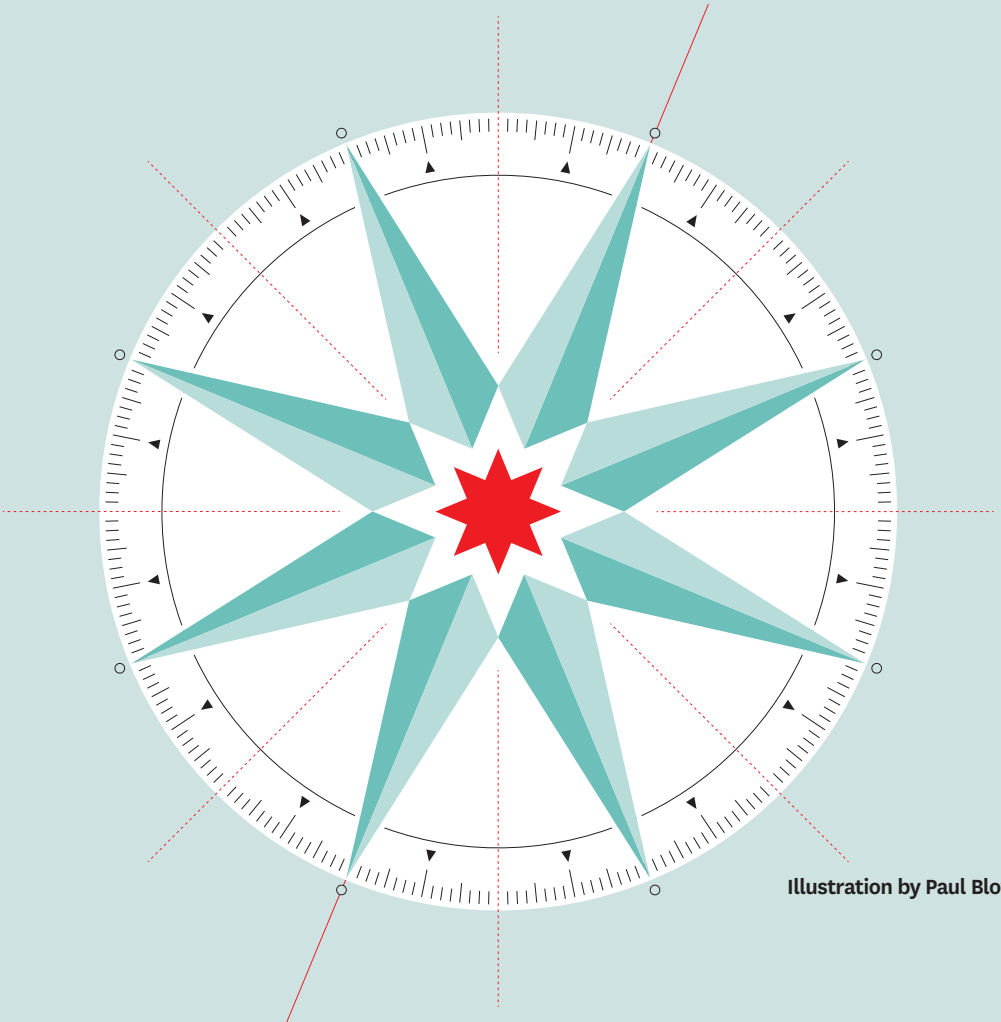


Illustration by Paul Blow

What Does Canada Stand for Now?

By Andrew Mitrovica

Lawrence Cannon's face said it all. Canada's Minister of Foreign Affairs looked glum, his eyes fixed on the dark green marble dais at the front of the United Nations General Assembly hall. The second-round votes for a coveted seat on the UN Security Council had been tallied and the news wasn't good. Tiny, sun-kissed Portugal had secured 113 votes to Canada's 78. With defeat inevitable, Cannon pulled Canada out of the running, sparing the nation further embarrassment and the UN another round of voting. A bespectacled diplomat was given the chore of officially announcing Canada's withdrawal. With that, Cannon left the hall, trailed by a few equally forlorn-looking aides.

CANNON COULD ESCAPE THE UN, but not the pointed questions and recriminations that quickly followed. Why had Canada badly lost a campaign for a temporary seat on the Security Council for the first time in more than 50 years? Did the loss represent a repudiation of Canada's foreign policy? What did the defeat mean for Canada and its international reputation?

At first, Cannon downplayed the lopsided loss, insisting that while disappointing, the rout wasn't so much a rebuke of Canada's foreign policy as it was simply a result of the quixotic nature of secret ballots. Later, the federal government blamed others for the failure, namely Liberal leader Michael Ignatieff (after he publicly questioned whether Canada deserved the seat). Finally, Prime Minister Stephen Harper's spokesperson effectively dismissed the diplomatic drubbing as inconsequential since Canada wasn't going to barter away its foreign policy for a seat in a body that no longer carried much weight anyway. All this belied the fact that the prime minister and several cabinet ministers had waged a long and determined campaign to secure the seat.

Whatever the reasons for it, Canada's defeat raised important questions: What does Canada stand for in the world today? Is the country's international reputation changing? A poll conducted shortly after the loss revealed that Canadians were not only "underwhelmed with Canada's actions on the world stage," but 45 per cent of those surveyed said the Conservative government's foreign policy had hurt Canada's reputation (only 22 per cent said it had helped the country's image).

The poll also reflected, in broad strokes, the sharp divide in thinking among U of T academics, whose job is, in part, to analyze and make sense of how Canada navigates its way in the ever-shifting world of international politics.

The dramatic protests roiling Tunisia, Egypt and Libya demonstrate why it's important for Canada to be engaged with the world. When unrest flares in oil-rich Libya, the price of gas spikes in Toronto. When civil war rages in Sri Lanka, refugees inevitably turn to Canada for help and safe haven. When China keeps secret that it's battling a virulent infectious disease such as SARS, Canadians pay the price in lost lives and lost business. Yet, as a relatively small country in terms of population, military power and economic clout, Canada must work harder than some other nations to be heard. A middling international reputation makes this task even more challenging.

For some observers, the UN vote was further proof that, under Harper, Canada has alienated much of the world by fashioning a more strident, hard-power foreign policy at the expense of our longstanding reputation as a so-called honest broker of peace and security. Canada's global role is being defined, these critics say, not by a statesman, but by an ideologue who prefers to listen to the foreign-policy advice of like-minded acolytes over career diplomats, who favours tough talk over bridge-building, fighting over peacekeeping, secret trade deals over foreign aid, and the oil sands ahead of curbing greenhouse-gas emissions.

But there is strong praise too for what some perceive to be a bold and "principled" foreign policy that is transforming Canada's place in the world. The prime minister, the thinking goes, has instead: unabashedly promoted freedom and free trade; beefed up the military; adopted a rightfully unapologetic pro-Israel stance; asserted Canada's sovereignty over more territory in the Arctic; and recognized that our rich store of uranium, fresh water and oil makes Canada an emerging energy superpower. If feathers are ruffled in the pursuit of these core ideals at home and abroad, then so be it. The traditional Canadian way of doing things under

the auspices of old and irrelevant institutions such as the UN is over.

Stephen Clarkson, a professor of political science, does not subscribe to this redesigned vision of what Canada stands for. Indeed, the political economist is deeply critical of the current government's record on the world stage. "[Stephen Harper] has turned foreign policy into a partisan gutter fight," Clarkson says. As evidence of this, Clarkson points to the prime minister's habit of vilifying opponents of the government's foreign-policy agenda. Clarkson notes, for example, that Harper has slammed opponents who have questioned his government's unqualified support of Israel as anti-Israel or even anti-Semitic. The prime minister's penchant for "American-style," no-holds-barred rhetoric, Clarkson says, is a new and disagreeable phenomenon in the pursuit of this nation's foreign policy.

"It's a mindset that's very compatible with the Calgary school of thinking," Clarkson says. "There is a group of political scientists there who are very much rooted in the conservative side of the Republican Party. They are much more on the hard-power side of foreign policy than soft, which means they are much more interested in playing with soldiers than they are in promoting human rights." He says the cost to our reputation is clear: "Canada is not a peacemaker anymore, it's a war-maker."

Canada played a significant role in both world wars and the Korean War, and only established a reputation as a peacekeeper in the late 1950s. Partly to avoid a possible war between the two nuclear-armed superpowers, the Canadian government had set out to strengthen multilateral institutions such as the UN to give small and middle powers a stronger voice in international affairs. On the assumption that global stability would benefit all nations, Canada also advocated creating a legal framework that would trump national interests when universal rights and freedoms were at stake. Although these ideas took hold during the Liberal governments of Louis St. Laurent and Lester B. Pearson, former Progressive Conservative prime minister Brian Mulroney also shared this vision of how Canada could try to shape the world. His government applied economic sanctions against apartheid-era South Africa – something that Pierre Trudeau didn't do while he was in power – and against Iraq after it invaded Kuwait. During the 1990s, Canada pursued a foreign policy based on "human security," in which the defence of universal values could be an impetus to global action.

Harper has, in large measure, rejected this postwar diplomatic tradition and instead focused on rebuilding the military while devoting fewer resources to multilateral institutions. His critics say he has also made domestic politics an overarching calculus of Canada's foreign policy, pursued a "one-sided" Middle East policy, championed foreign investment over foreign aid and repeatedly rebuffed international protocols regulating carbon emissions. (Clarkson points out, however, that the shift from diplomacy to trade promotion began with Trudeau and the failure to act on carbon emissions began with Jean Chrétien. But both trends, he says, have become more pronounced under Harper.)

Much of the world has come to hold a negative view of Canada… "More and more, Canada is seen as an environmental dinosaur," says Prof. Emily Gilbert

As a result, Clarkson says, many parts of the world have come to hold a negative view of Canada. A recent poll of citizens across the globe offers a slightly more nuanced picture. The survey found that while people living in emerging economic powers such as Brazil, Russia and China view Canada as having influence in world affairs, this nation is seen as a lightweight by its traditional allies, including Britain and the United States. The same poll showed that despite their favourable ratings of Canada, many people living in these budding industrial giants believe that Canada does whatever the United States wants it to do overseas. Another striking finding was the consistently negative view of Canada expressed by respondents in Europe and Japan. This somewhat schizophrenic snapshot of world opinion about Canada may be a reflection of the current government's position on the marquee issue of our times: climate change.

"More and more, Canada is seen as an environmental dinosaur," says Emily Gilbert, a professor of geography and the director of the Canadian Studies program at University College. (This sentiment is particularly true in Europe, where there is strong support for international regimes on carbon emissions.) Gilbert notes that the Conservative-controlled Senate recently killed, without debate, a climate-change bill passed by a majority of MPs that called for the reduction of greenhouse gases to 25 per cent below 1990 levels by 2020. "That's typical of some of our domestic policies that I think is getting Canada maligned on the international stage," Gilbert says. "The defeat of the bill will only encourage the perception of Canada as the colossal fossil."

At a UN conference in Cancún, Mexico, late last year, Canada joined other nations in adopting a modest package

of measures to tackle climate change. But the agreement did little to mask the Conservative government's recalcitrant position vis-à-vis carbon emissions, and its combative style on the world stage. Taken together, Canada's performance at Cancún seemed to confirm the view that this nation was indeed a "colossal fossil." (A survey of 190 climate experts, which was released during the summit, found that Canada ranked 54th out of 57 nations in taking steps to address climate change.)

At Cancún, Canada was one of only three signatories to the Kyoto agreement (Japan and Russia are the others) that remained unwilling to commit to new obligations on carbon emissions under the treaty unless developing countries make legally binding commitments to do the same. Environment Minister John Baird loudly and publicly rejected China's position that poorer countries must be permitted more time for emissions to grow so they can ease poverty at home through economic growth.

While Baird's pointed comments may have earned the government bric-a-bracs from reporters and diplomats, this vision of Canada playing a refreshingly robust and forceful role in world affairs may have no bigger proponent at U of T than John Kirton, a professor of international relations.

Kirton heaps praise on Harper's global blueprint for Canada. "I think what we've seen is a rather ambitious conception and execution of a principled foreign policy, which includes promoting freedom, democracy and the rule of law."

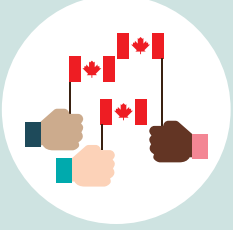
Gilbert takes issue with Kirton on this score, pointing out that the government's principles appear to be malleable, particularly when it comes to Ottawa's trade dealings with China, a nation with a woeful human-rights record. "It seems that there are exceptions when it suits us," Gilbert says. "Well, that's not very principled if that's the way you go about it." Critics have also questioned what they see as a hesitant response from Ottawa to the seismic events reshaping North Africa and the Middle East. Why hasn't Canada been doing more to support the protesters' demands for greater freedom and democracy?

Nonetheless, Kirton believes that Canada's ability to marry principle and the projection of power is no more evident than in Afghanistan, where it has fought a resurgent Taliban for nearly five years. Canada's commitment to Afghanistan, now extended to 2014 in a non-combat role with the support of the Liberal opposition, has also given us significant influence in Washington and NATO, says Kirton. He concedes, though, that Canada has paid a steep price in casualties and money for a still-uncertain outcome. "Whether or not we can nation-build Afghanistan into the country we want is still an open question and a hard slog," he says.

Kirton, a self-described foreign-policy realist, is certain, however, that Harper's critics are wrong to hold up the lost Security Council seat as a testament to how much of the world has turned against Canada. Kirton brushes aside Canada's failure to win the "second-class seat" as an unimportant issue since, he says, the body exerts little, if any, power over international security.

The prime minister's critics are perturbed by the loss, Kirton says, because they cling to an outdated view of Canada as a relatively minor player in world affairs that once sought out other so-called middle powers at the UN to shape events or influence the great powers.

100 Million Canadians



Irvin Studin is convinced that he's come up with a viable plan to make Canada a real and permanent world power. A professor at the School of Public Policy and Governance, Studin caused a stir last year when he suggested that Canada needs more people if it wants to play a bigger role in world affairs. With a population of 100 million or more, Studin ventured, Canada would become "a serious force to be reckoned with."

Studin reasons that Canada could achieve true superpower status within a few generations if it tapped into a much larger talent pool of skilled immigrants that would strengthen and transform this nation's traditionally weak strategic institutions, such as the military and the diplomatic and civil services. Eventually, the new arrivals would form a bulwark of change to help shape a new and ambitious foreign policy that matches our size and wealth of natural resources. Studin argues that this powerful combination of people, resources and territory would translate into greater prestige and influence overseas. "We need to imagine ourselves as a society that is growing in demographic weight and that begins to, over time, perceive our potential influence in international affairs."

Studin acknowledges that there needs to be the political leadership and will to take his novel vision from paper into practice. He also concedes that a prolonged spike in immigration would create tension in Canada, particularly in parts of the country that lack a history of welcoming newcomers. As well, Studin says that the influx of so many new immigrants would be a burden on the public purse in the early days. But he is confident that these hurdles could be overcome and once that happens Canada will emerge as a consequential country of which the "world will take good note." – **ANDREW MITROVICA**

Read Irvin Studin's full proposal at http://globalbrief.ca/blog/2010/06/14.

The prime minister's critics cling to an outdated view of Canada as a relatively minor player in world affairs that once sought out other middle powers at the UN to shape events or influence the great powers, says Prof. John Kirton

Their hero, Kirton says, is the sober, soft-spoken Pearson, who won the Nobel Peace Prize in 1957 for creating the UN's first designated peacekeeping mission and helping to avert war over the then-disputed Suez Canal.

Clearly, Kirton doesn't pine for Pearson – and thankfully, he says, neither does Harper. According to Kirton, Harper is an ambitious prime minister who has not only led this nation admirably, but, in another refreshing break with Pearsonian tradition, has rightly anointed Canada as an energy superpower. "Never before have we had a prime minister who has declared that Canada is a superpower of any sort."

And rather than waste any more diplomatic capital at the UN, the prime minister has chosen to wield Canada's newfound superpower status at forums such as the G8 and G20, where real power lies, Kirton says. "The big thing in Canada's leadership in 2010 was hosting the G8 and G20 summits. They are far more important for international trade, and peace and security issues."

Despite his enthusiasm for Harper's foreign-policy agenda, Kirton doesn't completely spare the prime minister the rod. He chastises the Conservatives for reducing Canada's diplomatic footprint by closing consulate generals in Russia, Japan and in several African countries. And, like Gilbert, he scolds Ottawa on climate change. "Harper's policy on global environmental protection has been a deep disappointment," he says.

But Harper isn't the first prime minister to have chosen fossil fuels over public opinion, Kirton insists, noting that it was principally for domestic political reasons – particularly in parts of Western Canada. Nevertheless, Kirton credits the Conservatives for taking useful steps on phasing out fossil-fuel subsidies and continuing to support biodiversity at recent G20 meetings in Pittsburgh and Toronto. "There is more to Harper's climate change record than meets the critic's eye," he says.

As for the Middle East, Kirton acknowledges that there has been an unquestionable tilt in Canada's policy towards Israel. But he says this shift is not only understandable but flows directly from the prime minister's principled approach to foreign affairs: "Israel is Canada's democratic soulmate in the region." These same principles, Kirton says, motivated the prime minister to launch a humanitarian mission in earthquake-ravaged Haiti and to mount the largest rescue operation in Canadian history in 2006 when nearly 15,000 Lebanese-Canadians were evacuated during a month-long war between Lebanon and Israel. "It was an extraordinary accomplishment and it was the right thing to do," he says.

Robert Bothwell, a professor of international relations, disagrees with Kirton's suggestion that Harper has engineered an extraordinary foreign policy as the leader of a newly minted energy superpower. "There are a whole bunch of people who think that what diplomacy requires is to be tough and muscular, but diplomacy is actually about talking a lot and trying to find common ground."

Bothwell, who is also an historian, believes the prime minister wasn't interested in talking when he assumed office, but in pursuing an ideologically driven, top-down approach to carving out a role for Canada internationally. "Harper's not a diplomat," Bothwell says. "Pearson was a diplomat and a damn good one. He paid attention to what other people had to say and that served Canada's national interest well."

Harper was also eager, Bothwell says, to play the part of "loyal, junior follower" to the Bush Administration on the world stage. As a result, Canada was in sync with the United States on a range of issues until Barack Obama took office in 2009. "I don't think Obama would turn to Harper first for advice on any foreign-policy issue whatsoever." And, Bothwell adds, neither does the rest of world.

"Clearly, the UN Security Council vote shows that," he says. "If you're a superpower, people pay attention to you, they ask your point of view, but that is obviously not true. Superpowers don't get defeated on the UN Security Council."

Andrew Mitrovica (BA 1983 VIC) is a former *Globe and Mail* investigative reporter. He teaches journalism at Sheridan College and is working on his second book.

DEBUT

• *Text by* STACEY GIBSON •

Most young writers can only dream of the success Tom Rachman has enjoyed with his first novel. But, as with most things, literary achievement didn't come easily

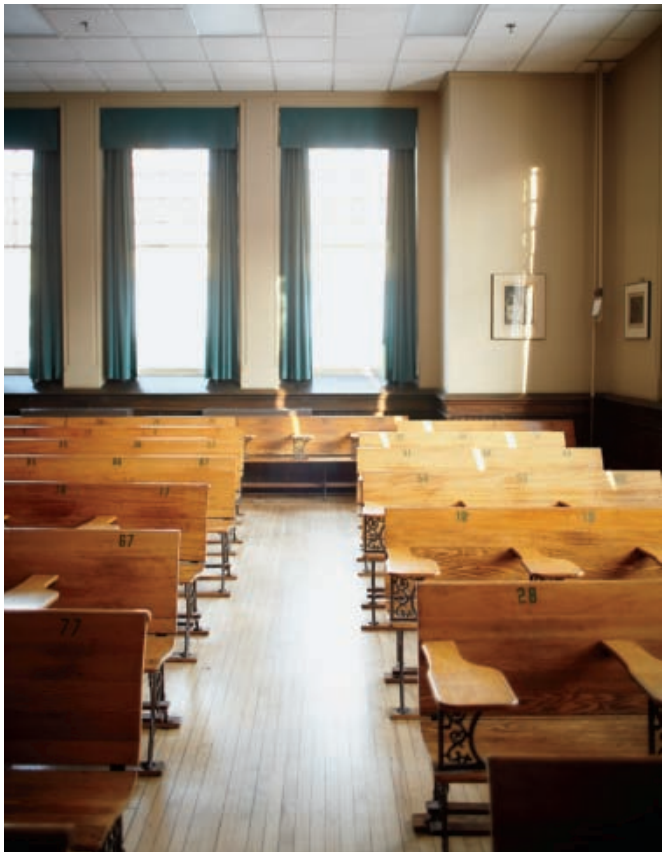
• *Photography by* DEREK SHAPTON •

A novelist Tom Rachman is walking down Fulham Road in west London, talking Sex Pistols. We're in the heart of Chelsea, and he notes that it was here, in the '70s, that the Punk Movement first reared its anarchical head. ("The Sex Pistols' manager Malcolm McLaren and Vivienne Westwood even owned a clothing store nearby," he says.) But in a familiar tale of gentrification, the rich waltzed in and the once-gritty Chelsea became posh and proper. As if to underscore his story, we pass a swanky art gallery displaying a photo of Sid and Nancy: both paying homage to, and exploiting, the doomed couple and the neighbourhood's legendary past.

Rachman's flat is about 15 minutes away, where the storied Chelsea collides with two other distinctive neighbourhoods: Earl's Court, which teems with young tourists and hostels, and South Kensington, with its swath of museums and colleges. This mix of cultural geographies is a fitting backdrop for the U of T grad, who has been careering between diverse landscapes his entire life. Rachman lived in London until the age of seven, when his family moved to Vancouver. Later, he studied at U of T, and worked as a journalist everywhere from New York, to New Delhi, to Colombo, Sri Lanka. It's impossible to pinpoint a place he calls home – or, at least, not in the singular, conventional sense. "I've always felt

exhilarated at discovering new cities," he says, with a trace of a London accent. "I didn't quite get the obligations that kept you in one place, and the sense of home and belonging had become mixed up in me. I loved Toronto and Vancouver and London, but I didn't feel like there was one city where I belonged – and I still don't."

Rachman, 36, moved back to London almost a year ago, after the release of his first novel, *The Imperfectionists*. The book's setting is an international English-language newspaper in Rome – a city where Rachman worked for three years as an Associated Press reporter. He traces the newspaper's lifespan from its early halcyon days in the 1950s to 2007, when the broadsheet exhaled its last rattling breath, felled in part by the Internet. It's against this backdrop that Rachman (BA 1997 Victoria) reveals the lives of the newspaper's employees, devoting one chapter to each personal story. The characters are, at first glance, stock office types: the ruthlessly strategic editor-in-chief who manipulates people for her own selfish ends; the office lifer who has completely stagnated and bitterly rides the same dull carousel of routine; the hard-working staffer who seems soldered to his chair. But Rachman takes them out of their cubicles, and exposes their complicated inner lives.



Rachman is so very good at conveying complicated interiors and eliciting pathos, accomplishing both in one or two searing sentences. He deftly exposes the vulnerabilities and strengths of his characters. To wit: Lloyd Burko – a 70-year-old stringer in Paris – has spent his life's energy on his work (and libido), letting his children fall by the wayside. He finds out his Parisian son, Jérôme, lost out on a job because he isn't fluent in English – because his English-speaking father hadn't been around enough to teach him. Lloyd now offers to help. Rachman brings fatherly failure, a son's denial and an infirm relationship to the surface in one small moment: "Jérôme flushes. 'What do you mean? My English is fine, I learned it from you.'" Or the indolent obituary writer who comes fully alive in the presence of his daughter, Pickle – a quirky, smart eight-year-old described as a "wonderful nerd." Or the imposing careerist who, in the late stages of cancer, pronounces: "Nothing in all civilization has been as productive as ludicrous ambition.... Cathedrals, sonatas, encyclopedias: love of God was not behind them, nor love of life. But the love of man to be worshipped by man."

Random House published the novel last April, and the book hit a strong chord with both readers and critics. A month after release, *The Imperfectionists* was lauded on the cover of the *New York Times Sunday Book Review*. (Rachman's publisher read it to him over the phone. "I was sort of breathless; it was one of those points where you hear the words come in but you can't process them," he says.) Eight international editions have been released, with 17 more slated for publication. Brad Pitt's company, Plan B Entertainment, has optioned film rights. And Rachman toured North America this January, following the release of the novel in paperback.

Rachman's parents also explore interior lives, albeit in a different vein: both are psychologists. His father, Jack, was a lecturer at the University of London. The family lived in London's outer suburbs, and his dad endured a workaday slog, commuting 90 minutes each way – not to mention the challenge of raising children on a lecturer's salary. When Jack was offered a professorship at the University of British Columbia in Vancouver, the family moved. (Rachman is both a Canadian and British citizen.) His dad – whom Rachman describes as "very driven and hard-working" – specializes in obsessive-compulsive and other anxiety disorders, and has written several books on the topic. (Although now officially retired at 77, he is still conducting research.) Rachman's mother, Clare, is a therapist who specializes in management of chronic pain. For many years, starting in her 50s, she ran a landscape-gardening company in Vancouver, while also operating a private therapy practice.

Rachman and his siblings have all followed suit with successful careers: brother Gideon is a journalist at the *Financial Times* and sister Carla is an art historian who lives outside

Geneva and directs a student-abroad program for Boston University. (Both are half-siblings from his dad's prior marriage.) His sister Emily has worked at a government agency for Afghanistan reconstruction in Washington, D.C.

It was Emily (BA 1994 UC, MA 1995) who encouraged Rachman to attend U of T. He describes his years at the university as an "intellectually and emotionally lively" time. "We were all trying to figure ourselves out in a wonderfully vibrant way," he says.

It took Rachman five years to graduate because he was intellectually peripatetic – endlessly fascinated by a variety of subjects. He considered history and criminology as majors, and then, dreaming of becoming a filmmaker, finally chose cinema studies. When he found himself drawn to Italian cinema, he decided to minor in Italian.

Rachman's interest in film led him to his "first and last" leadership position – as president of Victoria College's film society. During his first year, he had noticed posters soliciting volunteers and thought it would be a good way to meet interesting, like-minded people. He attended the first meeting. As did one other person. The past-president asked, "Well, who wants to be the president?" The woman in attendance said she wasn't going to do it. Rachman declined, too. An ultimatum was issued: if one of them didn't accept, the society would end with them. So Rachman, "by default," found himself in the presidential role.

In his new position, Rachman picked movies for Saturday-night showings at Northrop Frye Hall. Limited to library selections, he would show well-known classics such as *Casablanca*, *Citizen Kane* and Truffaut's *The 400 Blows*. The other volunteer served as projectionist. Rachman would introduce the movie to an audience that often numbered under 10 – and talk his way through plenty of technical glitches. "It would be a packed crowd of three people. It was humiliating every time because I was talking in front of nobody," he says. "Then in the second reel, the film would snap because they were all old prints from the library, and I would have to tell people what happened at the end. It was kind of a weekly fiasco."

As Rachman progressed at U of T, he grew more passionate about literature and more disillusioned with film. (He particularly disliked the idea of relying on other people to fund a film, as he believed this would impede his autonomy.) In his final year, he decided he wanted to pursue writing. Rachman began trying his hand at short stories, typing them in his College Street apartment – but they were all rejected for publication. (*The Imperfectionists* is his first published work of fiction.) "I thought, 'How do I go from wanting to do this to *actually* doing it – and how do I find satisfactory material to write about?' I ended up deciding I wanted to become a journalist."

With only a few months left before graduation from U of T, Rachman decided to apply to Columbia University's journalism program in New York City. He began writing articles to submit, including a *Varsity* piece on some colourful eccentrics who hung out playing chess all night at the Annex's Future Bakery – where Rachman and his friends often frequented. He wrote a piece on Woody Allen and Jewish humour for the U of T Jewish student newspaper *Images*. He also netted the first interview with Cecilio Ismael Sambra Haber – an author and Cuban dissident who received asylum in Canada after five years as a political prisoner – for the *Miami Herald*. Partly on the merits of these articles, Columbia accepted him.

> Rachman is so very good at conveying complicated interiors and eliciting pathos, accomplishing both in one or two searing sentences

After Rachman graduated with an MA in journalism from Columbia, he was hired at the news wire Associated Press. He started out as an editor on the international desk in New York City, then worked for short stints in New Delhi, and Sri Lanka during the Civil War. Eventually, he earned a posting as a reporter in Rome, where he wrote many political pieces on figures such as Silvio Berlusconi, and articles on the Vatican, the Venice Film Festival and the Italian soccer team at the World Cup in Japan. He also reported on the 2003 elections in Turkey, helped provide media coverage in Egypt after the shock of the Iraq invasion, and even toured a U.S. aircraft carrier in the Mediterranean. "Despite the fact that I worked in a lot of different countries, I wasn't a swashbuckling, brave war correspondent running into all these places. I was just more interested in trying to write well and observe," he says.

Rachman loved the travel and exposure to foreign places that his job afforded him – he would never have delved as deeply into these cultures as a tourist. But there was much he didn't like, including the imperative to be aggressive. "Having to call people five times more than they wanted you to call them, and hassle them for a little something extra.... I hated having to stand up at a press conference and ask a question. I liked to sit back and hear what people said, I didn't like to get involved," he notes.

And not only was the pace incredibly frenetic – it wasn't unusual to write four or five small stories a day – but the

"I'd never taken into account that you have to learn how to write fiction the same way you have to learn to be a journalist, a carpenter, a doctor"

deadlines were ceaseless. Unlike newspapers, which are put to bed every night, a wire service never sleeps. "I wasn't very well temperamentally suited to it," he says. "I remember, on some locations, there would be big stories breaking and my immediate gut reaction before I could intellectualize anything was, 'Oh no, I have to go to Istanbul now because a bomb went off. I really don't want to.' When I had a few of those moments I suddenly thought to myself I wasn't made for this because my colleagues, if a bomb goes off, were like 'Let's go, let's get on the first plane.'"

Even during his first term at Columbia, Rachman knew he was not meant to be a journalist – an opinion that was reinforced throughout his career. But he hoped his experiences might prove useful for writing fiction. On the cusp of turning 30, he decided to quit the Associated Press to work on a novel. His girlfriend (also an Associated Press reporter) and many friends were in Rome. He knew it would be difficult to move in a new direction with them nearby to distract him – so he moved to Paris. Rachman had saved enough to write fiction for one year. He wasn't motivated by bravery, he says, but fear. "I suddenly saw a future in which I could get stuck in journalism, a career that wasn't suited to me."

He did write a manuscript but, according to Rachman, it wasn't any good. He gave it to a couple of family members to read, and their responses were mixed. He was out of time and out of money. A friend at the *International Herald Tribune* in Paris was looking for a copy editor. Rachman took the position on a short-term contract. It was not a good moment. He'd spent much of his 20s working toward a goal he hadn't been able to realize. "I was very depressed. I thought that perhaps I've learned that I can't do this – and that was a terrible recognition." After several unhappy months at the *Tribune*, he was determined to try fiction one more time. "I decided I've already gambled so much on this that if I stop now, I've already lost a lot. It was sort of the gambler's fallacy: just keep going and eventually maybe you'll hit the jackpot. I decided that I would try again."

Rachman started a second novel – working six months at the *Tribune*, then six months on his book, and back again. He also realized that his first attempt was not in vain, but an important investment in self-education. "I had never taken into account that you have to learn how to write fiction the same way you have to learn to be a journalist, a carpenter, a doctor," he says. "You may have some skill, you may have some good ideas, but if you don't have the craft then you're never going to get anywhere."

Amid the swirl of literary success that Rachman has enjoyed with *The Imperfectionists*, one of his great joys has been honouring his family in the acknowledgements. He thanks loved ones, including those who died before the novel's release – such as his "dear bookish grandmother." Although Rachman comes from a family of readers, he wasn't much of one in his youth; by the time he was an avid reader, his grandmother had developed Alzheimer's. He kept some of her books after she died, including a volume of William Hazlitt's essays – which still has her homemade pink embroidered bookmark and other notes in it. In a way, he feels that her books have allowed her to continue communicating with him. "I can see which essays of Hazlitt she liked and I can read them," he says. "You can sort of correspond with each other through books."

A couple of days after interviewing Rachman, I'm standing in front of J.M.W. Turner's dark classic *The Shipwreck* in the Tate Gallery in London. Like several of Turner's works, it is an apocalyptic scene: men, betrayed by a capsized ship, are adrift at sea – their once-solid vessel crushed by larger, more elemental forces. Terror etched on their faces, they struggle on in rowboats, digging into the sea with their slight oars. *The Shipwreck* also shows up in Rachman's novel: it is owned by the newspaper's publisher, and serves as a symbol of the moribund broadsheet – which is ultimately overpowered by a new wave of technology.

Of course, *The Shipwreck* could also relate to Rachman's characters, who not only face a dying industry, but battle their own stormy interiors: they struggle with loneliness; to make real connections with those around them; to find meaningful work and meaning in life; to give their love to the right people (and when the right people are there, to return it fairly and well); to deal with life's random cruelties; to mitigate the pain they've imposed on others; to escape self-delusion and self-contempt and the many ways they bring harm onto themselves.

And maybe that's why Rachman's book resonates so much, because it captures those central human struggles. His characters do what connects us all: in the face of those massive waves that threaten to submerge us and leave us gasping for air, they keep on. They paddle with frail oars and beat at the water as they aim for shore. With all their imperfections, not one of them stops fighting.

Stacey Gibson is *U of T Magazine*'s managing editor.

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UNDERSTANDING

AUTISM

Scientist Stephen Scherer aims to uncover the genetic causes of an incurable neural disorder

By **Marcia Kaye** Illustration by **Christopher Silas Neal**

LISA BOND SPENT 11 FRUSTRATING YEARS trying to figure out why her son was the way he was. Joshua was unusually awkward, avoided eye contact, was delayed in talking, struggled mightily in school, and screamed bloody murder when his socks were changed. Doctors kept dismissing Bond's concerns as the obsessions of an over-anxious mother. Finally, at age six, Joshua underwent a thorough physical and psychological assessment. The diagnosis: autism. It was a difficult diagnosis for Bond and her husband to hear, but at least the family now had an answer to *what* Joshua's disorder was. Still, no one could tell them *why* he had it. Like many parents, Bond blamed herself for her son's troubles. Perhaps her prenatal diet hadn't been quite perfect, she thought, or maybe she'd caused some damage when she'd slipped on the ice a month before his birth.

Still seeking answers, the family enrolled in an autism study at U of T. When Joshua was almost 12, they all agreed to undergo genetic testing, and willingly gave blood samples. The results were both surprising and reassuring: the boy had a genetic glitch on chromosome 16. Neither the parents nor Joshua's big sister had this alteration; Joshua's disorder seemed to be no one's fault but the result of a random roll of

If autism is diagnosed in an infant, research has shown that early intervention by therapists and parents can "push" the child into enjoying certain activities

the genetic dice that had likely happened at conception. And that's when his mother finally breathed a sigh of relief. "It was just like a huge weight had been lifted off me," she says.

Thanks to the blistering pace of genetic research, families like the Bonds will no longer have to wait years for answers, or even months. "We'll be able to identify these kids on day one, or even prenatally," says geneticist Stephen Scherer, director of the McLaughlin Centre at U of T and the Centre for Applied Genomics at the Hospital for Sick Children. Scherer is also a professor of medicine at U of T and one of the world's top autism researchers. As things stand now, most autistic children in Canada aren't diagnosed until between ages three and six – too late to get the maximum benefit from crucial early-intervention programs. Experts say early diagnosis could lead to closer monitoring of symptoms, earlier access to beneficial programs (such as for speech and social skills) and brighter outcomes. Not only that, but based on genetic research, pharmaceutical companies are working on developing new drugs for autism, now that they finally have an idea of which neurobiological processes to target. "Our genetic advances have cracked open this black box," Scherer says.

Autism has indeed been a black box – in truth, almost an impenetrable vault, with autistic individuals locked inside and their families shut out. Increasingly called autism spectrum disorder (ASD) to reflect the diversity of symptoms and abilities, it's more common than childhood cancers, juvenile diabetes and pediatric AIDS combined, yet has been largely a mystery (see "The ABCs of Autism," facing page).

When Scherer, 47, started his own independent laboratory 15 years ago, he was anything but an authority on the subject. "I'd kind of heard about autism, but to be perfectly honest I didn't know what it was," he acknowledges. At the time Scherer, fresh from earning a PhD in genetics from U of T, was contributing to the Human Genome Project, the international study that was in the process of generating maps and sequences of all 20,000-plus genes on the 23 pairs of human chromosomes. Scherer was a world expert on chromosome 7.

Within a single week, two seemingly coincidental things happened: Scherer received a letter from a California woman whose autistic son was shown to have a swapping of genetic material from chromosome 7 to chromosome 13; and a colleague of Scherer's at the University of Oxford in England published an autism study on a certain region on chromosome 7, which happened to be the exact region where the California boy's translocation had occurred. Could this genetic change be a clue to the elusive cause of autism? No one in Toronto was investigating the link between genes and autism, so Scherer took the plunge. "I was essentially thrown into the pot, and it was just fascinating to me," he says. The more he read about autism, the more he realized it was all around him. One of his best buddies from high school had an autistic brother, although the term was never used. Among the 40 children in his own six-year-old son's playgroup, four have ASD.

Previous studies of twins suggested that autism had genetic roots, but no one knew which genes were involved. The long-held theory was that humans all have largely the same genetic profile, and that those with a given disorder such as ASD inherited common mutations in the same few genes. It was also assumed that everyone inherits two copies of every gene – one copy from each parent. But Scherer suspected that these theories didn't tell the whole story. Since people with ASD often remain single and childless – very few form close relationships, get married, create families and pass on their genes – it seemed that at least some mutations must be arising spontaneously, and that maybe more than just a few genes were involved.

Scherer became part of the international Autism Genome Project, a consortium that would ultimately include groups in 11 countries, mostly in North America and Europe, to analyze the genes of 1,600 families worldwide who have at least two members with autism. Scherer adopted what he calls his "garbage-can approach": he started looking closely at the data that other scientists tended to discard as insignificant. When he compared gene sequences from autistic people with the control group, instead of looking solely for predictable large differences, he began noticing tiny differences that seemed to arise spontaneously. The group found that several regions of the genome, particularly involving chromosome 11, were highly associated with autism.

Even more exciting – instead of having the usual two copies of genes, some people had only one, while other people had three. This suggested that some of the key directions in the body's "instruction manual" were missing or

duplicated, which would affect development. Scherer and his co-discoverer, Charles Lee of Harvard Medical School, dubbed these differences copy number variants, or CNVs. Since one particular gene, neurexin 1, plays a major role in determining how nerve cells in the brain communicate, it made sense that CNVs of this gene might be a cause of autism. This didn't constitute proof, but it was certainly a smoking gun.

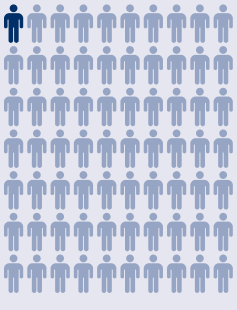
Further, the researchers reported that various types of CNVs are present in all of us, and that in fact they're the most common type of human genetic variation. Our own individual collections of CNVs, they surmised, contribute not only to our physical and mental development but to our personal uniqueness, as well as offer clues about development of disease and human evolution. "We were the first in the world to find these new genetic variations in everybody," Scherer says. "It was a real eureka moment." When the study was published in 2007, it generated worldwide publicity. The international journal *Science* named the copy number variant theory the "breakthrough of the year."

Scherer's research has huge implications for the doctors who see autistic patients. "Three or four years ago we were ready to throw up our hands and say we'll never find an answer," says Wendy Roberts, co-director of the Autism Research Unit at SickKids and a professor of pediatrics at U of T. "But these are some of the most exciting and important autism studies ever done." One of Roberts' jobs is diagnosing ASD in children, but it can take up to three or four years to see a specialist and begin intervention. The kids are often four or five by the time they get publicly funded treatment. "Having to wait that long for help is criminal, considering you've got the most chance of making a difference early on," she says.

Roberts, a developmental pediatrician, notes that if ASD is diagnosed in an infant, research has shown that early intervention by therapists and parents can "push" the child into enjoying certain activities, or "pull" him away from his obsessive preoccupations. "We've got an amazing ability to affect expression of genes," she says, "and we believe that with early intervention we're pushing the best possible gene expression at every stage." By the time many kids are diagnosed, that window has already started to close, she says, when the "hard-wiring" sets in and some genes are turned off for good.

Building on its findings, Scherer's lab published a study in 2008 that described CNVs found on other genes related to autism. The work also identified a new ASD-related region on chromosome 16. With improvements in the technology they were using to analyze the genes, the researchers kept finding more and more genes involved, on several different chromosomes. In 2010 the consortium published another paper, this time in the prestigious journal *Nature*. The largest-ever study of its kind, it identified even more genes involved, including SHANK 1 and 2, neuroligin 3 and 4 and patched-related 1. In total, the identified genes account for at least 15 per cent of autism cases. Scherer says the research is moving so quickly that within five years they'll have identified all the genes involved – he estimates there are more than 100 – and that these will ultimately account for at least 90 per cent of all autism.

The ABCs of Autism



Autism spectrum disorder (ASD) is the most common serious developmental disorder in children, affecting one in 315 girls and a startling one in 70 boys. It's not a single disorder but a group of conditions characterized by deficits in three areas: communication; social interaction; and behaviours and interests. Many children with ASD engage in repetitive activities such as hand flapping, spinning, rocking, or hyper-fixating on certain objects or topics. Symptoms don't begin to appear until between nine and 18 months, and they're often so gradual that only in hindsight can their onset be traced.

ASD is not a continuum but a spectrum, says developmental pediatrician Wendy Roberts. "It's like light going through a prism or a cloud and coming out in a rainbow of colours. The language, behaviour and temperament of people with ASD come out in some unique arrangement of these consistent colours." Some children with autism withdraw into an eerie silence, while others scream at the slightest provocation. One may be able to type but not talk; another draw intricate detail but not be able to print a word. Contrary to stereotypes, most don't bang their heads, and fewer than one per cent are brilliant savants like the famous Dustin Hoffman character in the 1988 movie *Rain Man*.

To add to the complexity, there's significant overlap with other conditions such as learning disabilities and mental illnesses. Autism used to be called infantile schizophrenia (although the two are different disorders), and it's estimated that up to half of people with autism also have attention deficit hyperactivity disorder (ADHD). As a result, many people get treated for ADHD, obsessive-compulsive disorder or bipolar disorder, without ever learning that they also have autism.

ASD is four times as common in boys as girls, and Canadian researchers, led by geneticist Stephen Scherer, may have found a clue to this mystery. Last September they published a study describing a specific ASD-related gene they'd found on the X chromosome. All males inherit an X chromosome from their mother and a Y chromosome from their father, whereas females inherit an X chromosome from each parent. Boys who inherit a glitch on their single X chromosome are at higher risk of developing ASD, according to the study, but girls are more protected because they have a second, often-normal X chromosome as a backup. – **MARCIA KAYE**

After most of the genes have been identified, Scherer says researchers will have to decide on a new direction – perhaps investigating how the environment affects the proteins that influence how brain cells develop and interact. "There certainly could be some environmental agents that trigger genetic changes or alter how the proteins work in the cell, but we haven't found those yet," Scherer says. Whatever these environmental culprits may be, they're likely not childhood vaccines, as some people believe. The 1998 British study that linked childhood vaccines to autism was retracted last year for being incorrect and dishonest, and numerous studies since have shown no increased risk at all. (Scherer had his own two children fully vaccinated.) It is known that chemical compounds such as valproic acid and thalidomide have been linked to autism. But Scherer says it's necessary to identify all the ASD genes first, before investigating how the environment may affect them.

Here's another tricky thing about those genes: even if the same genes are involved in many people, ASD individuals could each have their own personal combination of genetic glitches – and therefore, their own unique version of autism. The genetic variations don't become common in the population because they're not passed on by the often-childless people with ASD. "They kind of go extinct," Scherer says. "So with this whole concept of rare genetic variations, the studies suggest that each individual who has a genetic form of autism has their own specific genetic form." It certainly would explain why no two people with ASD are alike.

But if everyone has his or her unique syndrome, wouldn't that make it almost impossible to come up with drugs and other therapies? Not at all, Scherer says. So far, the genes identified seem to involve the same biological networks in the brain, which suggests common areas for drug makers to target. "My dream is that there will be a pill that can help alleviate at least a few of the core deficits in autism in some individuals, and maybe all of the deficits in others," he says.

Funding for Scherer's research has come from various international public sources, including Genome Canada, the Ontario Genomics Institute and the U.S. National Institutes of Health, along with several private sources. Last summer Scherer's lab received $8 million to sequence the genomes of 1,000 ASD children in Ontario, to discover new genes and to help families get into assistive programs, with a goal to ultimately testing all autistic children in Ontario. Right now, parents are lining up to be part of the study. "To see it all come together is so satisfying," says Scherer. "But I'm not going to retire until we find a cure."

Marcia Kaye (marciakaye.com) of Aurora, Ont., is an award-winning magazine journalist specializing in health issues.

Genetic Testing – a Double-edged Sword?

While many parents are anxiously awaiting the arrival of widespread genetic testing for autism spectrum disorder, others are reserving judgment. "The genetic stuff for me is a wild card," says Roy Jacobs,* a physician, a U of T professor and the father of an autistic son in his twenties. "Autism isn't a curable or preventable disorder, so what do we do with the ability to know?" When his son, as a preteen, was diagnosed with ASD, he had already been receiving years of special education support, speech therapy, individual counselling and social skills training. There was nothing else to be done.

Jacobs acknowledges, though, that his daughter, who used to pray for her brother to love her more, was reassured to learn that his condition wasn't her fault. Still, even though she's now old enough to have children, she's in no hurry to be tested for ASD-related genes. Even if she does carry them, the chance of passing them on to her children is a risk, not a certainty.

With prenatal testing on the horizon, such as that for Down syndrome, there's also the potential issue of abortion based on genetic test results. "We're not at the point of testing for autism genes through amniocentesis," says developmental pediatrician Wendy Roberts. She adds that it's not the researchers' goal to wipe out high-functioning autism. For instance, it's believed that pianist Glenn Gould and physicists Albert Einstein and Isaac Newton had some form of autism.

There's also Carly Fleischmann, a 15-year-old Toronto girl with severe autism who cannot speak but can use a keyboard, and is providing insights about life with ASD through her website, www.carlysvoice.com. She has written that for her, making eye contact is like taking a thousand photos of the other person's face at once; that she can't sit still because she feels as though her legs are on fire and her arms are crawling with ants; and that when she hits the table or screams, it doesn't mean she's not listening. She wrote, "If I could tell people one thing about autism it would be that I don't want to be this way but I am. So don't be mad. Be understanding."

Roberts says, "There are some very gifted people with autism who enrich our lives tremendously. But if there was a medication or a way to change the expression of some of those genes that relate to severe aggression, for example, I would prescribe it to my patients." – **MARCIA KAYE**

*Name changed by request.

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10 a.m.

- The Birth of Christ in Rome: Pagan Roots in Early Images of Christ – with Mary Redekop
- Transition Towns: A Global Social Movement Builds Community Resilience in the Face of Climate Change and Peak Oil – with Blake Poland
- The Undercover Associate: Tales from the Dark Side of the Cash Register – with Caitlin Kelly

11 a.m.

- The Best Things in Life – with Thomas Hurka
- Engineering Today – with Goldie Nejat, Brendan Frey and Doug Reeve
- Art at Work: A Behind-the-Scenes Look at Corporate Art Collecting in Canada – with Natalie Ribkoff

12 p.m.

- Stretching: The Truth – with Doug Richards
- Should our Genes Determine what we Eat? – with Ahmed El-Sohemy
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UNIVERSITY OF TORONTO ALUMNI ASSOCIATION

All About Alumni

He looked like Ted Nugent or Jesus, depending on your state of mind

Ann Auman, speaking about her husband, Steve Petranik
p. 48

Tales from a Troubadour

Justin Rutledge talks about the art of writing lyrics, working with Michael Ondaatje and surviving cat attacks

WHEN SINGER-SONGWRITER JUSTIN RUTLEDGE brought home a new puppy, his girlfriend was delighted. His cat was less pleased, and attempted to maim the canine while Rutledge was holding her in his hands. As a result, the guitarist's left hand is in a protective brace when we meet in a coffee shop on Roncesvalles near his home in Toronto's West End. "I've been bitten by cats twice before, which led to trips to the emergency room – it can be dangerous," says Rutledge, 32.

Small mercies: the injury comes during a rare break for him. Since the release of his fourth album, *The Early Widows*, last spring, he's toured the American West Coast with Blue Rodeo and will soon return to L.A. for a stint co-fronting a six-piece band. "It'll be nice to be part of something, not a solo artist, for a bit," says Rutledge, who was recently nominated for a Juno. By February, he will have appeared in his first play, working with four legends: Michael Ondaatje (BA 1965 UC) wrote the script *Divisadero: a performance* (based on ›

PHOTO: IVAN OTIS

Green Gadfly

Tom Rand wants companies to lay off the fossil fuel

WHEN TOM RAND SOLD his software company in 2005, at the age of 38, he could have retired. Instead, he decided to try to address climate change. Rand (MA 2005, PhD 2008) wanted to help grow businesses that would support a new economy that isn't perilously dependent on carbon, as ours is today. His need to make a difference didn't come out of nowhere: Rand's dad is a retired professor of molecular biophysics, and family conversation often turned to climate change. "There were many discussions around the family table about just how bad it could get," he says.

With the financial freedom to reinvent himself, Rand founded VCi Green Funds – which invests capital in technology that reduces greenhouse-gas emissions. Then he opened Planet Traveler, a hostel in Toronto that counts as North America's most environmentally friendly hotel. He retrofitted an old College Street building with technology such as geothermal heating and cooling, so that it emits 80 per cent fewer greenhouse gases than an average establishment. He believes the building is proof that greening is good for business. "I'm wealthier as a hotelier by reducing my energy needs," he says.

Then, in an attempt to popularize the ideas he is exposed to every day, Rand published *Kick the Fossil Fuel Habit: 10 Clean Technologies to Save Our World* (Eco Ten Publishing, 2010), a coffee-table book that showcases technology and ideas that can reduce society's carbon load. These days, he helps others start green companies as lead adviser in the Cleantech Practice at the MaRS Discovery District in Toronto. Rand feels now that he's earned his stripes in business, he can talk about the changes businesses need to make. "I'm a gadfly," he says, "but I'm a gadfly who has earned the right to be heard." – **SARAH ELTON**

OVERHEARD

> Today, my husband and I took our three kids to Tahrir Square. I am truly happy that they saw the exact spot where the brave men and women had stood just days before. It was not a place of fear, but a place of peace, tranquility and hope. The kids are still chanting the songs they heard. Amena said: 'Bokra haruh tany li masr' – 'Tomorrow I will go again to Egypt.'

Sarah Attia (BASc 02, MASc 05) lives in Cairo. From CBC.ca, Feb. 9.

Right: Husband Khaled AlQazzaz (MASc 03) and son Abdelrahman, 5

his 2007 novel); Tom McCamus and Liane Balaban starred; and Daniel Brooks (BA 1981 UC) directed. Rutledge plays a farmhand-turned-gambler. "I may just retire from the theatre after this," he says, making the word *theatre* mock dramatic. "That way I can begin and go out on top."

After seeing Rutledge perform his music three years ago, Ondaatje approached him to write a score for the proposed theatre piece. Collaborating with Ondaatje was a dream for the avid reader – he'd studied Ondaatje's poems during his three years at U of T. "My favourite course was one called 'Reading Poetry.' I learned to love Richard Brautigan and e.e. cummings – and Ondaatje," he says.

That Rutledge knows his way around a poem shows in his lyrics, which are by turns soulful and clever. "Jack of Diamonds" – a song on his latest album, which is also featured in the play – has lyrics that place him firmly in the troubadour tradition, with an introduction that deftly draws you in: "Over that horizon, past the streets of Evangeline/ Past the bedrooms where the wounded girls recline..."

Rutledge's music isn't mere accompaniment – his tunes are catchy enough. "Things start for me, 95 per cent of the time, with the melody. I write songs in my head, so I can write them even with my hands out of commission, like now." He holds up the result of his cat's savagery, the brace, waving it about, as if conducting a piece he's hearing in the air.
– **ALEC SCOTT**

PHOTO: LEFT, COURTESY OF MARS DISCOVERY DISTRICT; RIGHT, COURTESY OF SARAH ATTIA

Joy Fielding was a full-time actress in the '60s. She even kissed **Elvis Presley** while working on a *Gunsmoke* episode

The Ties That Bind

Joy Fielding explores a tangled mother-daughter relationship in *Now You See Her*

JOY FIELDING HEROINES have much to endure. At the outset of Fielding's latest thriller, *Now You See Her*, middle-aged Marcy is mourning a double loss as she drags herself desultorily around rainy Ireland – her daughter, Devon, has apparently perished in a canoe accident, a suspected suicide. In the wake of that tragedy, her husband's left her for a comely, young golf pro. As it happens, I'm reading this novel – the 23rd produced by this international publishing phenom – the day after seeing the classic *Mildred Pierce*, starring Joan Crawford. The juxtaposition makes me realize how much Fielding's oeuvre has in common with emotionally full-figured, female-centric movies: Fielding (BA 1966 UC) loads her Everywoman characters with multiple travails to see if they break, bend or beat back the challenge.

Fielding loads her Everywoman characters with multiple travails to see if they break, bend or beat back the challenge

As with *Mildred Pierce*, where the title character struggles under the lifelong burden of an ingrate daughter ("She gave her daughter everything, but everything was not enough"), Fielding focuses here, and in her work generally, on the ties between mothers and daughters. "I am the daughter of an extraordinary mother, and the mother of two daughters," she says. "I use that in my work, and find myself returning again and again to it." In fact, her latest novel is dedicated to her two daughters, now in their 30s: Shannon, an actor-singer who's appeared in a TV dramatization of a Fielding book, and Annie, an ad exec and mother of Fielding's first grandchild.

Her daughters haven't struggled with bipolar disorder, as Marcy's daughter does, but Fielding gives Marcy her own worries about whether she's been a good – or good-enough – mother. "Like her, I've always felt guilty for yelling at my daughter for drawing on the walls, once when she was little," Fielding admits. Still, she fondly recalls dandling them on her knees as she typed out her early thrillers.

Although the latest book is a meditation on the tenacity of the mother-daughter bond, it is also, as per Fielding's usual, a page-turner. The book's action gets underway when Marcy sees, or thinks she sees, her daughter – alive! – in pretty, historic Cork. This compelling setup enables Fielding to go deep into the disturbed psyche of a woman who blames herself for her daughter's departure and her impending divorce. As all those women's pictures wonder, will she have the strength to carry on? – **ALEC SCOTT**

The Making of a Judge

As we get older and wiser, we tend to pay more attention to the stories our parents tell. Linda Carter took things further, dedicating four years to making a documentary about her father, George Carter (BA 1945 TRIN), the first Canadian-born black judge in the country.

In *The Making of a Judge*, Carter highlights her father's accomplishments, including his studies at U of T's Trinity College and at Osgoode Hall. The oldest of 14 children, Judge Carter worked as a train porter to help pay his tuition; his own father had aspired to a career in law but was sidetracked while supporting his large family. In 1945, Judge Carter articled with the only black lawyer practising in Ontario (B.J. Spencer Pitt), then opened his own Bay Street practice – which covered real estate, family and criminal law. He was appointed to the bench in 1979. Carter says she wanted to highlight how "perseverance, intelligence and confidence in oneself can really make a difference."

OMNI will broadcast the documentary in April. The Royal Ontario Museum screened it during Black History Month (February), and Carter also hopes that schools will show it. At the film's first screening at Osgoode Hall, 89-year-old Judge Carter was surprised so many people were in attendance. He appears to be adjusting, however: the day after that first showing, he answered his phone with "It's the king." – **SARAH TRELEAVEN**

PHOTO: TOP, DAVID LEYES; BOTTOM, MICHAEL CHAMBERS PHOTOGRAPHY

THE TWO OF US

Steve Petranik and Ann Auman

JOURNALISTS STEVE PETRANIK (BA 1980 St. Mike's) and Ann Auman (BA 1978 UC, MBA 1987) met, fittingly, at the *Varsity* newspaper. Ann was a news writer who liked to hang out with the rowdier reviews staff, which included Steve. (Plus, Steve got free tickets to concerts; on their first official date they went to see Dead Boys and Teenage Head.) Steve is now the editor of *Hawaii Business* magazine and Ann is a professor at the School of Communications at the University of Hawaii and the journalism program chair. They live overlooking the Pacific Ocean, with their children, James, 20, and Aliya, 13. The couple celebrated their 30th wedding anniversary in March, but it almost wasn't to be...

Steve: We met in the late 1970s, and at parties we would dance to the Rolling Stones, Bruce Springsteen and the Sex Pistols. Even now we love to dance – even if it's just in our living room. Springsteen is still a favourite, but so is Taylor Swift, who my daughter enjoys. We're still trying to act young.

In 1980, Ann got a scholarship at the East-West Center in Hawaii, and she moved while I stayed in Toronto. We thought maybe it was over. I remember listening to Springsteen's *The River* and thinking I had lost her; it was the saddest moment of my life. But we kept in touch – my phone bill was $200 a month! I flew out to see her in December and I proposed.

Ann, even before I met her, had been all over the world. The extent of my travels was a triangle of Sudbury, Montreal and Cleveland. I got into journalism because I wanted to see the world, but Ann took me there.

Ann: Steve threw great parties. He's a good dancer and when he was younger, he knew how to toss that long hair. People said that he either looked like Ted Nugent or Jesus, depending on your state of mind.

When our first child was born, I was just starting my job as a professor. I would work all day while Steve was home with James, who was a very energetic child. Then I came home mid-afternoon. We would talk for a minute, then Steve was off to work the late shift at the *Honolulu Star-Bulletin*. We rarely had time together. It was tiring, but Steve and I had such a strong love and trust that we made it work.

Steve's also a smart newsman, and the best editor in Honolulu. We love to walk Lanikai beach near our house at sunrise, sunset or moonrise. It's very romantic.

Pigeon River in Kawartha Region

On a December morning, 89-year-old Lou Wise was soaring through the air in his Piper Cherokee, taking pictures of new tree growth in the York region from 1,000 feet above.

Wise, who served in the Royal Canadian Air Force and earned his pilot's wings during the Second World War, has dedicated much of his life to his dual loves of flying and photography. He earned a master's degree in educational media in 1975 at OISE, and subsequently took photos for several conservation groups.

Wise has been retired for more than 25 years from the Toronto Board of Education, where he worked in the media resources department. Most of his work now involves snapping images of rivers and wetlands (and their states of disrepair, thanks to human intrusion) for Southern Ontario conservation authorities. He has also taken aerial pictures of St. George Campus, to showcase the story of Taddle Creek (which ran through campus until it was buried in the late 1800s). DVDs of his work are available through University of Toronto libraries. – **SARAH TRELEAVEN**

PHOTO: TOP, JAMES PETRANIK; BOTTOM, LOU WISE

60 SECONDS WITH

Fred Gitelman

Master Bridge Player

If you're serious about bridge, then you know **Fred Gitelman**. His Bridge Base Online is the largest bridge website in the world, and, this October, the Toronto-born player and his U.S. team won the World Bridge Championship. Gitelman, who majored in cognitive science and artificial intelligence at U of T for three years, talks to **Lisa Bryn Rundle**.

When did you first discover bridge? When I was a teenager. It's a beautiful game. Every time you deal the cards, there's a completely new problem to solve. People have said golf is like that: every time you play, there are shots you haven't faced before and that makes the game more interesting.

How did you end up making bridge your profession? My wife deserves credit for that. She convinced me that starting a software company and developing bridge software might actually work. Most people thought that what we were doing was really stupid. Nobody even knew the Internet existed at that time. PCs were not household things.

Some articles use the word *sport*, some use the word *game* – which is it for you? It's not an important distinction for me. There was a movement to get bridge into the Olympic Games. That's when they started calling it a sport. I thought it was ridiculous. I played on the Canadian team when it was a demonstration sport in Salt Lake City and we won the gold medal, so that was kind of exciting.

Does bridge need rebranding? Absolutely. Bridge has this image of being a game that one's grandmother plays. Unless something changes, in 20 years the game is going to fall off a demographic cliff. Teaching people to play through the Internet is more appealing for young people: they can download some software and play against other computer players. I'd really like to see the software that we write help make the game more popular among a younger generation.

Poker seems to have a high profile right now. Is there a sense of competition there? I don't think so. But bridge players have been impressed by what poker has achieved. And there has been some influx of poker players who want to try something more challenging.

Snap! I don't mean to belittle poker in any way. But technically bridge is harder. Psychologically, there's more to poker.

What was the World Bridge Championship like for you? It was a lifelong dream come true, so very exciting. But it was also extremely intense. You play eight hours a day, for two weeks. You're just sitting there thinking and thinking and thinking.

Does one key moment stand out for you? My partner and I made a grand slam very close to the end. Our opponents were universally considered to be the best ever. It's like playing against Michael Jordan and getting a slam dunk with two seconds left.

Is it true you have coached Bill Gates in bridge? That's not the term I would use. I've become friends with Bill Gates; we play sometimes, and he'll ask me for advice.

So is he any good? I would say if he'd spent anywhere near as much time as I have on bridge, he would be an A1 player. But he has a very busy life.

Milestones

Canada's Most Powerful Women

They are CEOs, presidents and top-ranked bank managers – and the Women's Executive Network has named these U of T alumni, and one staff member, among Canada's Top 100 Most Powerful Women in 2010. **Jacquelyn Cyr** (MBA 2008) is CEO and owner of Espresso; **Audrey Ho** (LLB 1982) is senior vice-president, chief general counsel and corporate secretary at TELUS Corporation; **Anne Martin** (BA 1976 TRIN, BEd 1977) is president of United Van Lines (Canada) Ltd.; **Ann Kaplan** (MBA 2005) is president and CEO of iFinance Inc.; **Harriet Lewis** (LLB 1975) is university secretary and general counsel at York University; **Dawn Demetrick-Tattle** (BASc 1985) is president and partner of Anchor Shoring & Caissons Ltd.; **Lynn Tomkins** (BSc 1977 UC, DDS 1981) is president of the Ontario Dental Association; **Dr. Ruth Wilson** (MD 1976) is a professor of family medicine at Queen's University; **Marilyn Emery** (BA 1975 UTSC) is president and CEO of Women's College Hospital; alum **Laura Iacono Formusa** is president and CEO of Hydro One Inc.; **Mary Jo Haddad** (MHSc 1998) is president and CEO of the Hospital for Sick Children; **Brig.-Gen. Hilary Jaeger** (MD 1986) is an officer in the Canadian Forces; **Laura Nashman** (BA 1987 Innis, MIR 1988) is CEO of BC Pension Corporation; **Catherine Riggall** is vice-president, business affairs, at U of T; **Anne Sado** (BASc 1977, MBA 1981) is president of George Brown College; **Michelle DiEmanuele** (MA 1994) is president and CEO of the Credit Valley Hospital; **Rose Reisman** (BEd 1976) is president of the Art of Living Well; and **Carol Stephenson** (BA 1973 NEW) is dean of Richard Ivey School of Business. Named to the Executive Network Hall of Fame are **Sonia Baxendale** (BA 1984 VIC), senior executive vice-president of CIBC and president of CIBC Retail Markets; **Sandra Hanington** (MBA 1992), an executive vice-president at BMO Financial Group; **Wendy Hannam** (MBA 1983), an executive vice-president at Scotiabank; and **Shelly Jamieson** (BA 1980 VIC), head of the Ontario Public Service.

PHOTO: ACBL AND RON TACCHI

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REGAL RECEPTION

May 22, 1939

King George VI and Queen Elizabeth enjoy a visit to U of T

In April, royal-watchers will be celebrating the marriage of Prince William to Kate Middleton at Westminster Abbey. Seventy-two years ago, Torontonians were enraptured by a more minor royal event: the arrival of King George VI and Queen Elizabeth at U of T for an elegant luncheon in Hart House's Great Hall. The couple was visiting Canada, travelling from one end of the Dominion to the other.

Five hundred guests attended the luncheon, including U of T president Henry John Cody and his wife, Barbara, Hart House warden J.B. Bickersteth and Toronto mayor Ralph Day. Hart House kitchen staff prepared the meal, which included grain-fed chicken sautéed with mushrooms, caramelized yams and petits fours. Despite the King's fondness for moselle, the event was alcohol-free. Although U of T officials were willing to override their alcohol prohibition for the royals, the King respectfully drank soda water brought by his staff.

Prior to the meal, Queen Elizabeth attended another event at the university: as colonel-in-chief of the Toronto Scottish Regiment, she presented new colours to the unit on back campus.

After the luncheon, the King and Queen emerged from Hart House to cheers from 12,000 gathered admirers. In the warden's report, he remarked, "Their Majesties drove away leaving behind them lovely memories of an unforgettable day in the history of Hart House." – **SUZANNA CHANG**

PHOTO: U OF T ARCHIVES/A1973-0050/002P(01)

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