

The Aviator Canada's first pilot / **Michael Adams** Will boomers retire? / **Different But Equal** The rise of alternative schools
Something About Harry Quidditch on campus / **Head Shots** The danger of concussions / **Defying Gravity** Inventing the G-suit

UofT Magazine

WINTER 2011



The Next Big Idea
10 concepts that could
shape the future



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How an alumni perk



Rupen Seoni
MSc Planning 1994

became one student's gain.

When alumni like Rupen use U of T affinity products, they're helping students like Davide win dragon boat championships and otherwise excel in numerous activities beyond the lecture hall.

What exactly are affinity products? Services like the ClearSight Investment Program at Wellington West, which provides financial support to U of T initiatives every time alumni like you take advantage of their services.

More than 100,000 friends and alumni now use U of T affinity products, which in turn support programs for our students, alumni, staff and faculty.

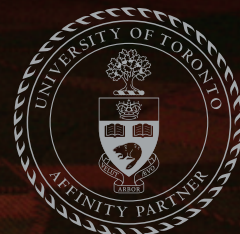


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www.affinity.utoronto.ca

Davide Cina
MD candidate 2013
Member, New Dragons Team



Winter 2011



The Aviator

A century ago, Douglas McCurdy dared to become the first person to fly a plane out of sight of land

by Alec Scott

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Digital credentials, safer drugs, DNA-tailored diets and seven other intriguing concepts that could shape the future

by Kurt Kleiner, Alison Motluk, Dan Falk, Sarah Boesveld and Scott Anderson

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Is greater choice in alternative education good for Toronto's schools?

by Cynthia Macdonald

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Departments

“It’s not segregation, it’s salvation”

*Chris Spence, director of education for the Toronto District School Board, is an advocate
of alternative schools, p. 36*



12 A new online service helps students
avoid *Codomoesticus noxious*



11 James Graham, the Dunlap Institute’s first director, is
seeking answers to how planets form



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doesn’t plan to spend his twilight years in a rocking chair

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\$250,000 to pay off the mortgage

\$45,000 to settle the loan and credit cards

\$55,000 to put the kids through university

\$350,000

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ALUMNI **TERM LIFE INSURANCE**

* Based on a 39 year old female non-smoker.

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.



“Sadly, I feel most humans are too selfish and unwilling to change to give up meat”

– *Susan Larson* MED 1983 OISE, TORONTO

Not in Our Backyard

Janice Stein, director of the Munk School of Global Affairs, made an unfortunate choice of words when she referred to Mexico as Canada’s “backyard” (“A Global Affair,” Autumn 2010) – especially when the new school aims, as Peter Munk suggests, to make “Canada’s voice heard” around the world. The derogatory label of Mexico (and Latin America by extension) as the “backyard” of the U.S. goes back to the Roosevelt Corollary to the Monroe Doctrine that justified any interference in Latin America’s politics.

– *Rosa Sarabia*
PROFESSOR, SPANISH AND PORTUGUESE
UNIVERSITY OF TORONTO

Questioning How We Eat

I was thrilled to see the issue of factory farming addressed in *U of T Magazine* (“This Looks Like a Farm,” Autumn 2010). Finally, people are beginning to openly question the way we eat.

Quite simply, there is no ethical way to eat animals or animal products. No matter how humanely the animal is raised, suffering is involved in transport

and slaughter. The meat and dairy industries would like to keep us ignorant of how they mistreat animals. This is why we are not welcome on their farms or in slaughterhouses.

Sadly, I feel most humans are too selfish and unwilling to change to give up meat, even if eating it means that the animals are exploited and mistreated. But, as an old Chinese proverb says, “To close one’s eyes will not lessen another’s pain.”

– *Susan Larson* MED 1983 OISE
TORONTO

No Easy Solution

I found Stacey Gibson’s well-written and well-researched article on factory farming both revealing and disturbing. Now I understand what cruel places factory farms can be – and that the slice of beef or pork on my plate probably came from an animal that was raised under conditions of the most unimaginable horror.

The question of cruelty to animals defies easy solution. People are not going to stop eating meat tomorrow. Nor are the owners of factory farms going to stop looking out for the bottom line. However,

we all do have the power to modify our eating habits and thus help to bring about the little bit of change that will force a curb on the worst excesses.

– *John Best* MA 1968
OTTAWA

Farmers Are Not the Culprits

Stacey Gibson’s article about industrial agriculture, “This Looks Like a Farm,” cites the farrowing crate as an example of the cruelty that sows experience on an industrial farm. The purpose of the crate is to protect the piglets. Sows will sometimes crush piglets by accidentally lying on them. The crate prevents unnecessary loss of life.

More generally, the article seems to suggest that the farmer is the culprit in this “violent” system. Yet the consumer is the driving force. The consumer wants meat at a low cost. Many farmers have gone out of business as a result of the high cost of machinery, working the land and the hundreds of restrictions, laws and inspections that affect their business. Is the consumer willing to pay for the vet to castrate the piglets under anaesthesia? Is the consumer willing to eat meat that has been subject to anaesthesia?

– *Glen Eagle* BA 1976 VIC, MDiv 1979
CHURCHILL, ONTARIO

False Hope?

I found your article “A Month in Medicine” (Autumn 2010) about mentorships for high school students very interesting. The idea behind the program, as I understand it, is to encourage African-

Canadian and aboriginal students to consider a career in health because they are under-represented in the field.

Yet every year, thousands of bright, young medical-school applicants dream of careers as doctors, but are declined because of a lack of available space in medical schools.

The problem is not a lack of interest; it's a lack of funding for medical schools. The unfortunate downside of this mentorship might be that it gives young people hope of gaining entry into a program that will ultimately be denied to them. Perhaps more attention should be given to increasing class sizes rather than generating greater interest in the medical profession.

– *Maria Orjuela*
BASC 2007
RICHMOND HILL, ONTARIO

Hot and Cold

What struck me as odd about “Can Our Forests Stand the Heat?” by Kurt Kleiner (Autumn 2010) is that I don't recall the heat last May as much as I do the snow. I remember a weekend in late May at our family cottage in Highlands East, Ontario, when big, wet snowflakes began to fall. The snow covered the ground and the newly formed leaves, creating a scene that looked more like Christmas than spring. Two weeks later, the leaves began to fall. It would have looked like autumn, except the leaves on the ground were all green.

Since then the foliage, especially on the maples, has appeared thin, with the brown tinge that Prof. Sean Thomas spoke of. Even with plenty of rain and sunshine this summer, the trees never seemed to recover from that shock. This fall, instead of turning bright colours,

the leaves appear to be simply “rusting” off of the trees. I wonder if that spring snowfall had any bearing on the condition of the trees.

– *Chris Keir*
TORONTO

Culture and the Law

As an associate professor who has taught education law at OISE for about 30 years, a U of T alumnus and a family court judge in Toronto, I was fascinated by Alec Scott's piece on Shelley Saywell (“Crimes Against Women,” Autumn 2010). I believe Ontario judges should have the opportunity to see her film *In the Name of the Family*. I am finding more and more cases involving unfamiliar cultural traditions reaching our courtroom, and, ultimately, we will have to take these customs into account. Culture is highly relevant for legal

CALL FOR APPLICATIONS *for alumni members of the governing council*

ARE YOU ACTIVELY INVOLVED WITH THE UNIVERSITY OF TORONTO? Would you or someone you know like to help shape its future? If so, consider applying to serve on the Governing Council, the senior body that oversees the academic, business, and student affairs of the University.

The Governing Council is responsible for matters such as strategic direction, finance, human resources, capital expenditures and infrastructure, academic quality, and student experience. Comprehensive information about the Governing Council is available from <http://www.governingcouncil.utoronto.ca>.

Applications for three seats for alumni members of the Governing Council will be accepted from Monday, December 13, 2010 at 12:00 noon to Friday, January 28, 2011 at 5:00 p.m. Successful applicants will be invited to serve a three-year term from July 1, 2011 to June 30, 2014. One incumbent is eligible to stand for re-election.

Members of the Governing Council serve as volunteers. Membership includes the President, the Chancellor, 8 alumni, 12 teaching staff, 8 students, 2 administrative staff, 16 government appointees, and 2 Presidential appointees.

Qualifications:

- Alumnus(a) of the University of Toronto;
- Canadian citizen;
- Not a student or member of the teaching or administrative staff of the University;
- Supportive of the University's mission;
- Active participant in the University and/or in community groups;
- Willing to learn about the University's governance;
- Available to attend regular meetings on campus between September and June;
- Willing to make a substantial time commitment to the work of the Governing Council (typically a minimum of 100 hours per year).

Application forms will be available starting at 12:00 noon on Monday, December 13, 2010 on the Governing Council website <http://www.governingcouncil.utoronto.ca>. Paper application forms may be obtained from the Office of the Governing Council, Simcoe Hall, 27 King's College Circle, Room 106, University of Toronto, Toronto, Ontario, M5S 1A1. Inquiries may be directed to the Secretary of the College of Electors by phone (416-978-6576) or by email (governing.council@utoronto.ca).

The membership of the Governing Council should reflect the diversity of the University. Nominations are, therefore, encouraged from a wide variety of qualified individuals.



UNIVERSITY OF
TORONTO

decision-making; it is often referred to as the theory of enculturation.

– *Marvin Zuker* BA 1963 UC, MEd 1973
TORONTO

The Downside of 360

As a recording engineer and artist, I've personally seen that 360 deals, as mentioned in the article about Erika Savage ("Rock Star Lawyer," Autumn 2010), are terrible for the artist.

Artists do not see income from record sales unless they recoup advances. In their early years, artists earn less from album sales than from concerts. With a 360 deal, an artist gives up a greater share of concert revenue.

This is how record companies are adapting? I'd call it a desperate attempt to generate greater profit. If the record companies had really been interested in adapting, they would have expanded into digital music 15 years earlier. Instead,

they had the Recording Industry Association of America issue subpoenas to citizens for downloading pirated music.

I hope Savage will ensure that record labels help truly develop artists by giving them time to establish a brand. This will help them build a loyal fan base and a long career – to the benefit of both artist and label.

– *Omar Kamran* BSc 2008
TORONTO

Broadly Appealing

In past years, I've found *U of T Magazine* to be inward-looking, highlighting on-campus activities and personalities. They were rarely relevant to most of your readers' everyday lives.

However, recent issues have been outstanding. I enjoyed the broad appeal of "Parents – at Last!" (Summer 2010) and "A Year in Mumbai" (Autumn 2010).

I find the Leading Edge section stimulating, and I admire the punch of the articles and sidebars. The layout and images are visually attractive. It has the look and feel of a first-class magazine.

– *Mary Howden* BA 1963 TRINITY
BARRIE, ONTARIO

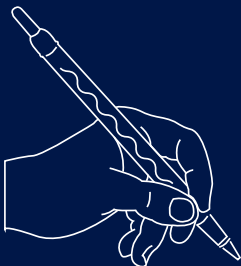
Green Folly

Does David Beattie really believe that if all the participants in U of T's Alumni Travel Program were to boycott air travel it would alter the world's environment one iota (Letters, Autumn 2010)? It certainly would not!

Beattie reveals a political agenda when he claims that such trips are for "the privileged." He seems to belong to the movement that more and more often is being referred to as green fascism.

– *George Varcoe* BMus 1955
ÖSTERSKÄR, SWEDEN

Attention All Aspiring Poets & Short Story Writers!



Announcing
U of T Magazine's 2011
Alumni Short Story
& Poetry Contest

First prize in each category:

\$1,000 and publication in the Summer 2011 issue of *U of T Magazine*

Runner-up and "People's Choice" prizes in each category:

A University of Toronto prize pack and publication on the *U of T Magazine* website

**Deadline for submissions:
FEBRUARY 1, 2011**

This contest is open only to U of T alumni.
For complete contest rules, visit
www.magazine.utoronto.ca/alumni-writing-contest

Investing in Talent

Scholarships and bursaries transform lives

SHORTLY AFTER THE SECOND WORLD WAR, Leslie Dan arrived in Canada alone and found work in a lumber camp and as a busboy to save money for university. After 18 months, he enrolled in pharmacy at U of T, became the first Canadian pharmacist to earn an MBA (also from U of T), and went on to found what became one of the world's largest drug manufacturing companies. The rest – including an historic donation to U of T's Faculty of Pharmacy – is history.

Although Dr. Dan's early challenges, outsized success and generosity are unusual, in some respects his story is not. Alumni tell us time and again how important their U of T education was to their subsequent endeavours. And for many, a scholarship or bursary opened doors that might otherwise have been closed.

Devon Ethier, for example, received a National Scholarship covering his tuition for all four years at U of T. Now a fourth-year commerce student, Devon says the award, in addition to providing much-needed financial assistance, enabled him to leave his home province of British Columbia, broadening his life experience. The scholarship also led indirectly to a three-week placement earlier this year in a village in Mali, working with Hands Across the Nations, a small Toronto development agency. He is now thinking about how his business education might be applied longer-term in the development arena.

Scholarships and needs-based awards give countless University of Toronto students like Devon the opportunity to receive a first-rate education while at the same time developing important life and leadership skills. That's why, over the past 20 years, the value of bursaries and scholarships U of T offers annually has grown from \$8 million to \$143 million. Bursaries and scholarships now account for about 10 per cent of the university's operating expenses, up from four per cent in 1996.

As per-student provincial grants have dropped in recent years, the university has had to rely more on tuition revenues. To ensure that U of T remains open to the best students, regardless of their economic circumstances, in 1998 the Governing Council affirmed that "no student offered admission to a program at U of T should be unable to enter or complete the program due to lack of financial means."

I'm proud that U of T made this commitment and has followed through on it. Compared to its Ontario peers, U of T has relatively more students from lower-income households. And more than 2,000 students in the Faculty of Arts and Science who receive OSAP effectively pay zero tuition because of the financial support they receive from the university, while 8,000 students pay \$4,000 or less.


Our commitment applies to graduate students as well as undergrads. The majority of students in our doctoral-stream programs receive funding packages for up to five years of study. As Canada's pre-eminent graduate university, we have also created a program of competitive doctoral completion grants for students requiring additional support to finish their programs beyond the usual timeframe. In 2008-09, graduate students received \$195 million in funding.

Based on the exceptional growth in student aid over the past two decades, one might think that additional support is not required. That's simply not the case. Enrolment has soared in that time – by about 40 per cent. More high-achieving students than ever are applying to U of T, and our peers, nationally and internationally, are offering them ever-larger scholarships. Costs of education and living expenses have increased. And in a changing educational context, we need to offer our students a broader and better learning experience. For example, some of our peer institutions send substantially more undergraduates overseas for a term abroad. Supporting students in this way helps to equip them for success in a world that grows ever more interconnected.

Time and again, we have seen accomplished alumni not only mentor their successors at the university, but give back to their alma mater by funding awards for today's and tomorrow's students. It's a virtuous cycle that has had a huge impact on the institution, and is a very wise investment in Canada's next generation of leaders. For that, among other things, I send my thanks and warmest wishes to the University of Toronto's remarkable alumni.

Sincerely,
David Naylor

Calendar of Events

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

**JANUARY
14 TO 29**



Dirty Rotten Scoundrels: The Musical at Hart House Theatre. Based on the film starring Michael Caine and Steve Martin, *Dirty Rotten Scoundrels* centres on two

con men living on the French Riviera. One is a sophisticated who charms rich ladies out of their money. The other is a small-time crook who swindles women by telling lies about a sick grandma. This is the Toronto première of the Tony Award-winning musical. Tickets: \$25 (seniors/students, \$15; \$10 for students on Wednesdays). Jan. 14-15, 19-22 and 26-29 at 8 p.m. A 2 p.m. show on Jan. 29. 7 Hart House Circle. (416) 978-8849 or www.uofttix.ca.

||  For more info: www.harhousetheatre.ca.

ALUMNI

*February 2
Washington*

Alumni Reception. Speaker: Prof. Ron Deibert, director of U of T's Canada Centre for Security Studies. 6-8 p.m. Embassy of Canada, 501 Pennsylvania Ave. NW. For details: Teo Salgado at (416) 978-2368 or teo.salgado@utoronto.ca, or www.alumni.utoronto.ca.

*February 9
Ottawa*

Alumni Reception. Speaker: Prof. Ron Deibert, director of U of T's Canada Centre for Security Studies. 6-8 p.m. Location TBA. For details, contact Teo Salgado at (416) 978-2368 or teo.salgado@utoronto.ca, or visit www.alumni.utoronto.ca.

February 22

San Francisco

San Francisco Skule Alumni Event. Dean Cristina Amon will host the first U of T engineering alumni event in the Bay area. It will coincide with the IEEE International Solid-State Circuits Conference. All alumni in the area and those attending the conference are welcome. Free. 5:30-7:30 p.m. Marriott Marquis, 55 Fourth St., San Francisco. For info and to RSVP: Sonia De Buglio, (416) 946-8143 or sonia@ecf.utoronto.ca.

March 16

Galbraith Building

Skule Nite Reception and Show – Alumni Night. Sketch comedy, musical numbers and a dash of engineering mayhem.

Reception prior to the performance. Tickets are available for the show, reception or both. Price TBA. 6-7:30 p.m. Galbraith Building, room 202. 35 St. George St. For info, contact Megan Murphy at (416) 978-4941 or meganm@ecf.utoronto.ca.

EXHIBITIONS

*January 5 to 12
Doris McCarthy Gallery
U of T Scarborough*

Fellow Travellers. Work by the Visual Studies faculty at U of T Scarborough. 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. (416) 287-7007, dmg@utsc.utoronto.ca or www.utsc.utoronto.ca/dmg.

January 18 to March 19

U of T Art Centre

The University College

Collection: Great Art for a

Great University. The first major exhibition to highlight the University College Art Collection, which focuses on Canadiana and includes 19th-century works, Group of Seven landscapes, Quebec abstraction, First Nations art and contemporary Canadian holdings. Free. Tues. to Fri., 12-5 p.m., Sat., 12-4 p.m., 15 King's College Circle. For more info, contact (416) 978-1838 or visit www.utac.utoronto.ca.

January 19 to February 20

Doris McCarthy Gallery

U of T Scarborough

Inbetween presents several artists examining the interplay of physical and psychological space. 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. (416) 287-7007, dmg@utsc.utoronto.ca or www.utsc.utoronto.ca/dmg.

February 7 to May 30

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. (416) 978-5285 or www.library.utoronto.ca/fisher/exhibitions/current.html.

LECTURES

Wednesdays, January through April
Faculty Club

Senior College. Weekly talks by noted authorities on topics ranging from aging to Apollo 13 to Zen Buddhism, organized by Fellows of Senior College. Free. Wed. at 3 p.m., January through April. Faculty Club,

J.W. Beatty's Forest in Autumn, part of the "University College Collection" at U of T Art Centre, Jan. 18 to March 19



PHOTO: J.W. BEATTY

41 Willcocks St. For info: (416) 978-7553 or www.faculty.utoronto.ca/arc/college.htm.

January 18

Woodsworth College

Woodsworth Alumni Café. **Plagues Past: How historical disease records can inform current public health practice.** Speaker: Prof. David Fisman of infectious disease epidemiology, U of T. Refreshments served. \$10 alumni, \$12 guests, \$5 students. 6:30-8 p.m. William Waters Lounge, Woodsworth College Residence, 321 Bloor St. W. Register at www.alumni.utoronto.ca/woodsworth. For info: (416) 978-5301 or events.woodsworth@utoronto.ca.

January 25

Robarts Library

Luncheon and lecture. **A World Transforming: Why Canada Needs to be a Giraffe.** Speaker: Prof. Janice Stein, director of the Munk School of Global Affairs. \$30. Group study area, 2nd floor, Robarts Library. To reserve: (416) 978-3600.

February 10

Flavelle House

Katherine Baker Memorial Lecture. **Prof. Ian Shapiro**, Sterling Professor of Political Science at Yale University. Free. 4:10-6 p.m. Cassels Brock and Blackwell Classroom, Flavelle House, Faculty of Law, 78 Queen's Pk. For info: (416) 946-7446 or sara.faherty@utoronto.ca.

February 14 and 15

George Ignatieff Theatre

Larkin-Stuart Lecture. **Justice, Justice, Shalt Thou Pursue: The International Criminal Court and the Return of Universal Law.** Speaker: Author Erna Paris. Free. 8 p.m. George Ignatieff Theatre, Trinity College, 6 Hosking

Ave. A reception will follow in the Buttery on both nights. Space is limited. To reserve: (416) 978-2651 or alumni@trinity.utoronto.ca.

February 15

Woodsworth College Residence

Woodsworth Alumni Café. **The King Has Returned: Religion and Violence in Mainstream Films.** An examination of biblical symbolism. Speaker: Prof. Ken Dery of historical studies, U of T Mississauga. Refreshments served. \$10 alumni, \$12 guests, \$5 students. 6:30-8 p.m. William Waters Lounge, Woodsworth College Residence, 321 Bloor St. W. Register at www.alumni.utoronto.ca/woodsworth. For more information: (416) 978-5301 or events.woodsworth@utoronto.ca.

March 3

Walter Hall

Herman Geiger-Torel Lecture. Speaker: **John Adams**, one of America's most respected composers. Short presentation of John Adams' chamber music, organized by Soundstreams Canada, at 7:30 p.m. Lecture at 8 p.m. Free. Walter Hall, 80 Queen's Pk. For more information, please phone: (416) 978-3744.

MUSIC

January 23-29

St. George Campus

New Music Festival. A festival celebrating the music of today's finest composers – including faculty and students, and guest composers Chen Yi and Keith Kirchoff – in concerts, a composers' forum, and multimedia and electro-acoustic presentations. Free. Various venues and times. For more information, visit www.music.utoronto.ca/events/nmf.

January 31

Walter Hall

Chamber Music Series: Gryphon Trio. The faculty's resident piano trio takes on Brahms' Op. 8 Trio and Schönberg's Verklärte Nacht, with a reading of Richard Dehmel's poem that inspired Schönberg's composition. \$35 (seniors/students, \$25). 7:30 p.m. Walter Hall, 80 Queen's Pk. (416) 978-3744.

February 4

Emmanuel College

Centre for Reformation and Renaissance Studies' **Annual Bowen Concert**, featuring the early music ensemble Scaramella. Free. 7:30 p.m. Emmanuel Chapel, Emmanuel College, 75 Queen's Pk. Cres. For info: Stephanie Treloar, (416) 585-4484 or crrs.vic@utoronto.ca.

February 5

MacMillan Theatre

U of T Symphony Orchestra. A special Faculty of Music event to welcome Dean Don McLean, featuring wind, brass, jazz and opera performances. The celebration culminates in Beethoven's Symphony No. 9 performed by the UTSO and the MacMillan Singers and Master Chorale. \$15 (seniors/students, \$10). 7:30 p.m. MacMillan Theatre, 80 Queen's Pk. (416) 978-3744.

SPECIAL EVENTS

March 15

St. George Campus

Skule Kids March Break Event. This one-day event will engage students in grades 1 through 12 in science and engineering topics. Students will be led through demonstrations, interactive lectures and hands-on activities. \$30. 9 a.m. - 4 p.m. St. George Campus. For more information, please contact: Tamar Adourian, enrichment@ecf.utoronto.ca.

THEATRE

January 20 to 29

U of T Mississauga

Witches and Bitches, by William Shakespeare and others. Compiled and adapted by artistic director Patrick Young. \$15 (seniors/students, \$10). Theatre Erindale. 3359 Mississauga Rd. N. Box office: (905) 569-4369. For more info: www.theatreerindale.com.

February 17 to 19

Hart House Theatre

U of T Drama Festival, presented by Hart House Theatre and the U of T Drama Coalition. Nine one-act plays compete for five awards over three nights. All plays are written, directed, produced and performed by U of T students. \$12 (\$10 seniors/students). 7:30 p.m. For tickets: (416) 978-8849 or www.uofttix.ca. For more info: www.harhousetheatre.ca.

March 4 to 12

Hart House Theatre

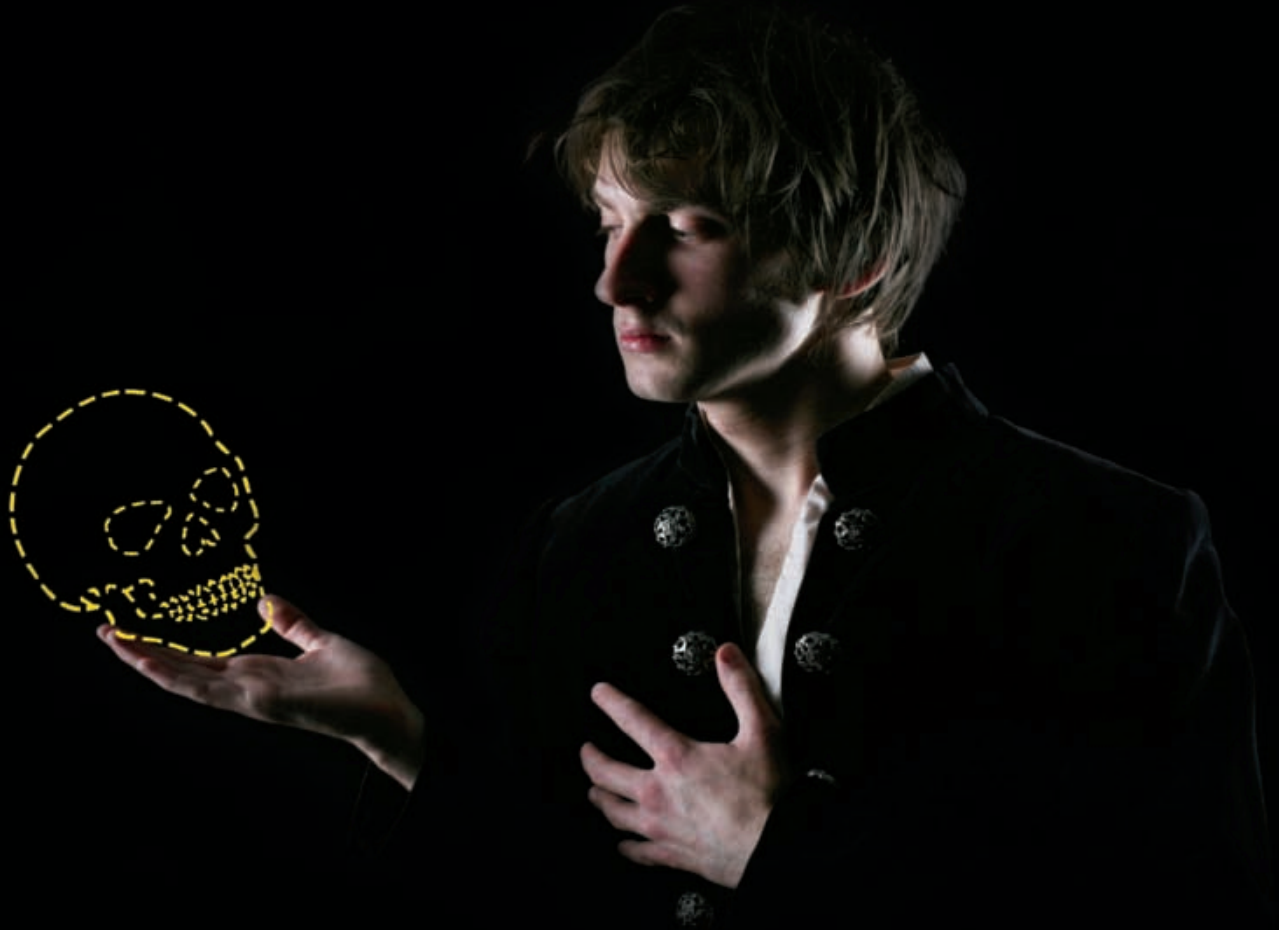
Yellow Face, by David Henry Hwang, chronicles the Asian-American dramatist's struggle to define racial identity in contemporary America. \$25. (\$15, seniors/students, \$10 for students on Wednesdays). Mar. 4-5 and 9-12, 8 p.m. Additional 2 p.m. show on Mar. 12. 7 Hart House Circle. For tickets: (416) 978-8849 or www.uofttix.ca. For more information: www.harhousetheatre.ca.

March 8 to 19

Helen Gardiner Phelan Playhouse

The Possibilities. The UC Drama Program's annual show. \$15. (Students, \$10.) 8 p.m. Helen Gardiner Phelan Playhouse, 79A St. George St. Tickets at uofttix.ca. For more info: (416) 978-8849, uc.drama@utoronto.ca or www.uc.utoronto.ca/drama.

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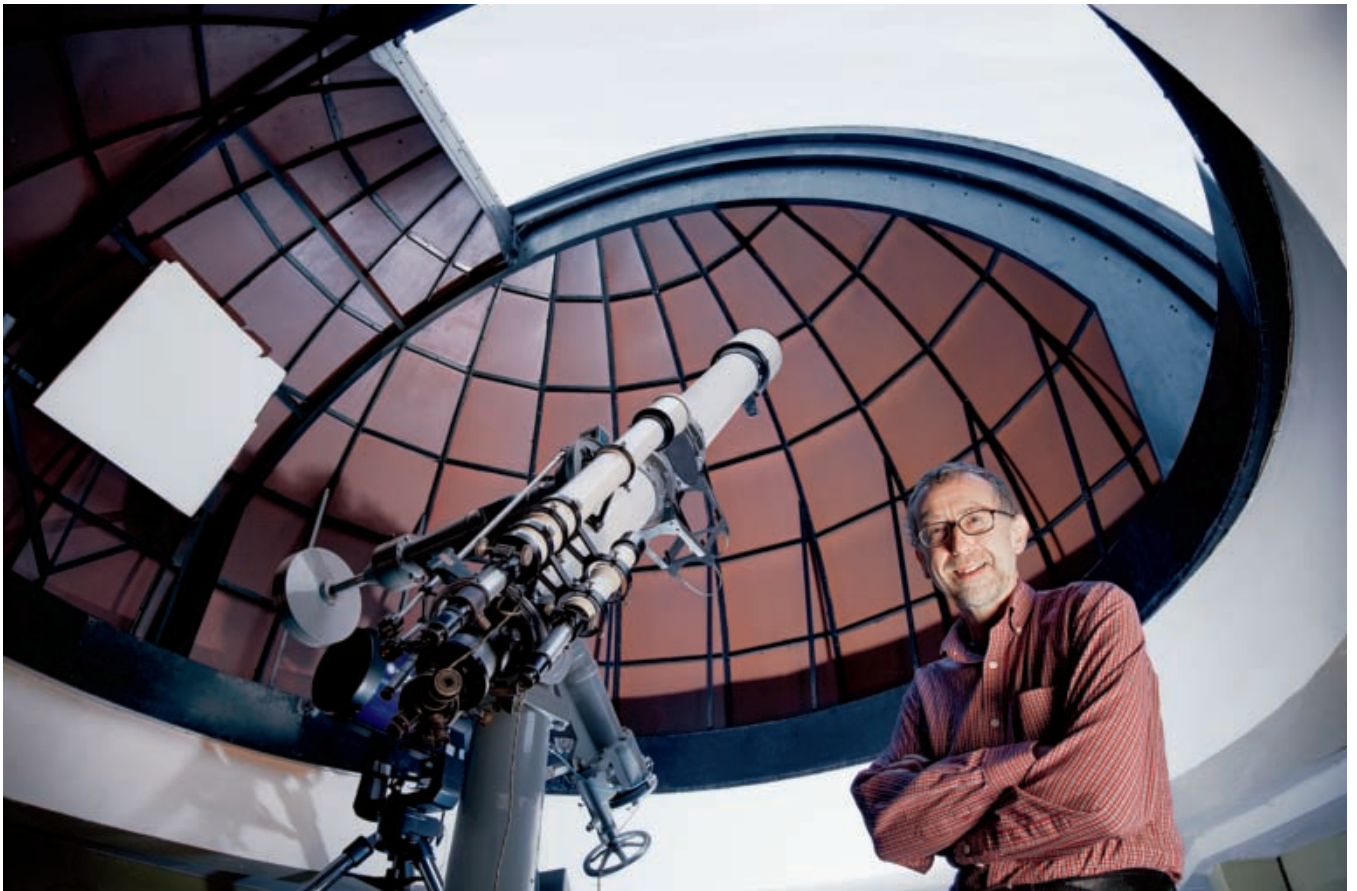
Michael-David Blostein, Hart House Productions

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UNIVERSITY OF
TORONTO

Life on Campus



Looking Skyward James Graham aims for the stars as Dunlap Institute's first director

PROFESSOR JAMES GRAHAM'S OFFICE is noticeably barren: There's no artwork on the walls, and only a handful of texts on his bookshelves. That, of course, will change; he's only been at U of T since September, when he arrived to serve as the first director of the recently estab-

lished Dunlap Institute for Astronomy and Astrophysics.

While his office may be sparse and eerily quiet, the institute itself is a beehive of activity. It is already allied with two facilities pursuing first-rate astronomical research on campus: the Department of Astronomy and Astrophysics, and >>>

>> the Canadian Institute for Theoretical Astrophysics. “CITA is already world-renowned for theoretical astrophysics,” says Graham, who was previously chair of astronomy at the University of California, Berkeley. “The goal is to match its extraordinary impact, but focusing on the experimental instrumentation aspects of astrophysics.” That, of course, means telescopes – Graham is an ardent supporter of the planned Thirty Meter Telescope, set to be the world’s largest – as well as the sophisticated devices needed to turn the dim light of unfathomably distant objects into useful scientific data.

Graham is renowned for his work in “adaptive optics,” which allows telescopes to correct for the blurring caused by the Earth’s atmosphere, and for his work in developing instrumentation for infrared astronomy. But he is also a hands-on observer: In 2008, Graham was part of the team that discovered Fomalhaut b, the first exoplanet – a planet orbiting a star beyond our solar system – to be directly imaged in visible light.

But seeing these distant worlds is just the beginning. Graham would like to understand how planetary systems form – a question that has been hotly debated but never solved. “It’s really the simplest question that you can ask about the origin and evolution of planets,” he says. There are at least two competing theories – core accretion and gravitational stability – but which one is correct? The Dunlap Institute, says Graham, is poised to build the telescopes and the detectors that will answer that question. “We have the capability within our grasp of seeing these planetary systems directly, and seeing which of these theories is valid.”

This is also an example of how, for Graham, there is really no way of separating theoretical work from experiment and observation; in fact, they go hand-in-hand. Theory can make predictions, but it also serves as “a springboard to focus your experimental activity,” he says. “[It tells you] what experiments need to be done, what technologies need to be developed to explore these predictions.”

For Graham, the rest of the universe is equally fascinating – and what he’s learning about planets will likely pay off further afield. “The wonderful thing about astrophysics is that it’s intertwined and interlocked,” he says. “Understanding how planets form is very closely related to the problem of star formation; the problem of star formation is very closely related to how clouds of dust and gas in the Milky Way form and disperse. And I don’t think you can be curious about one of those questions without being curious about the others.” – *Dan Falk*

Roommates Hiba (left) and Richa



The Virtual Search for the Perfect Roommate

A new U of T service helps students avoid *Codomesticus noxious*

MET *CODOMESTICUS NOXIUS*, known by its more common name of the “Bad Roommate.” A parasitic species, *C. noxius* invades its host by such transmission vectors as bulletin-board notices, friends of friends and Craigslist. Once infection has occurred, *C. noxius* quickly metastasizes in the host’s environment, resulting in outbreaks of dirty dishes, loud music, curious smells, bounced cheques and passive-aggressive Post-it notes. Irritation, insomnia and teeth-grinding are common symptoms. The species particularly thrives on and around university campuses. There are treatments, but there is no known cure.



PHOTO: SANDY NICHOLSON

Luckily, U of T is leading the way in the fight against this terrible disease. This summer, the University of Toronto Student Housing Service introduced its new Roommate Finder, an online matchmaking service that allows students to find the right person with whom to share an apartment.

“We’re ecstatic about the results that we’ve had,” says Jennifer Bennett, manager of the housing service. There are currently about 775 user profiles on Roommate Finder. Students fill out a survey about living habits such as sleep schedules and cleaning routines (“I don’t like to clean, so let’s just say whoever gets the urge,” reads one option under the “household cleaning” preferences). Desired price range and location are also noted. Students choose from a range of avatars – a snowboarder, a bookworm, even a toga-partier – to give their profile a shot of personality. Once they have filled out their own profile, they can browse others to find matches. Users can contact each other through a simple, Facebook-like interface to make the introduction, without disclosing personal info. “We wanted to create something that was secure

and safe for students, and we wanted to think about their privacy,” says Bennett.

So you’re a heavy metal–blasting vegetarian teetotaler seeking the same? There’s probably someone on Roommate Finder you could live with in perfect harmony off-campus. (On-campus residences and colleges still handle their own matching.)

One of those students is Hiba Ali, in her second year of a master’s degree in forest conservation and environmental studies. Since she spent the summer in Ottawa, it was difficult to co-ordinate a long-distance roommate search and scout for apartments; Roommate Finder solved both problems. The service also allowed her to find certain qualities, beyond simply someone to split the rent. “I don’t drink alcohol, so I prefer to be with someone who doesn’t bring a lot of alcohol around,” she says. “And I prefer to keep a halal/kosher home. My roommate Richa is vegetarian, so that worked out really well. We’re even friends now.”

Score one for modern technology in the battle against Bad Roommates. – *Graham F. Scott*

Ephemera



Fluorescent posters offering essay-writing services are plastered everywhere on campus, from telephone poles to mailboxes. And while the posters might fuse into one giant papery blur, easily ignored by students, at least one company has taken a more aggressive marketing approach.

On October 5, two CanadianEssays.com reps canvassed Sidney Smith Hall, handing out pens and business cards to students studying for midterms. They were careful to say that they offered editing assistance, but the card indicates that they provide essay-writing services as well. Paying someone to help you write an essay, however, is considered cheating under the University Code of Behaviour on Academic Matters.

U of T is aware that these services exist, and takes a strong stand against academic dishonesty. “When we do catch students engaging in this kind of activity to try and gain academic advantage, the code provides a range of sanctions that can be applied,” says Edith Hillan, vice-provost, faculty and academic life, “from a zero mark in a course right through to suspension or expulsion from the university.” – *Suzanna Chang*

Quidditch Craze



“The Snitch is loose! Brooms up!” So yelled second-year student Patrick Treacy (centre, in red), as opposing teams rushed at each other on the Trinity College backfield recently in a game that’s sweeping university campuses: Quidditch.

Quidditch is a wizard’s sport, and Harry Potter its most famous player. But Muggles have gotten into the game, and altered it to accommodate their inability to fly. In a regulation match, seven players on each team try to outscore their opponents by throwing a ball through one of three hoops. At the same time, team members called “seekers” try to capture the Golden Snitch, a tennis ball held by a speedy runner who can go

anywhere, even off the field. The game is over when the Snitch is caught. Players must keep a broom between their legs at all times; no mops or other substitutes allowed.

U of T’s 18-member squad – they call themselves the Niffers in honour of the magical creature from the J.K. Rowling books who sniffs out gold – practises outside Trinity College. This fall, the team was preparing for the world championships, which was expected to draw more than 50 teams to New York in November. Treacy, fresh from a recent win against Ryerson, is confident about U of T’s chances. “We’ve started planning our strategy. I think we will do quite well.” – *Jane Bao*

Twitter@UofT

How would you improve life at U of T?



Put drinking fountains in buildings that don’t have them and stop selling bottled water on campus.

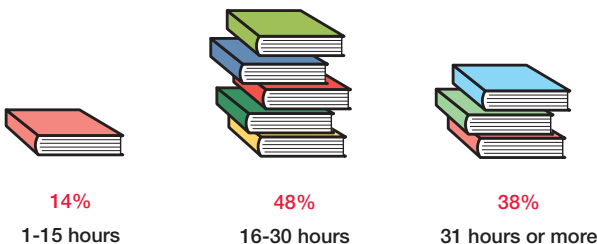
Libraries need to be open on Sunday mornings. There is almost nothing open till 1 p.m. Maybe made sense in 1920.

Install a covered area (or 10!) for bike lockup. Rain causes rust and squishy seats.



Make your own suggestion at twitter.com using #improveUofT

Poll | How many hours a week do you spend on academic work?



The average U of T student devotes 30 hours a week to academia – including classes, readings and studying – according to our latest poll. However, he or she also logs another five hours a week in front of the laptop – on social-networking sites such as Facebook (and proving, perhaps, why Mark Zuckerberg is the youngest billionaire in history). Natalie Rosado, who puts in a whopping 60 hours of academic work a week, claims that “Facebook is a way to stay in touch with the real world.” David Lee, one of the 14 per cent of polled students who don’t use social networks at all, offers an opposing version of reality: “Social networks do not help you make real friends.”

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

A Neural Network for a New Millennium

Canada's first Google fellow, Ilya Sutskever, is making breakthroughs in computer science



ILYA SUTSKEVER'S FINGERS HOVER OVER HIS KEYBOARD as he considers the blinking cursor on the monitor in front of him.

The computer-science PhD student is compelled by the idea of making computer programs capable of learning from experience. And he is demonstrating what he calls his most exciting research project yet – a neural network that has “learned” a remarkable amount about the English language based on entries from a certain crowd-sourced encyclopedia.

“I give it an initial segment of text,” Sutskever explains, typing. “And I say, from this text, keep on producing text that you think looks like Wikipedia.”

The resulting prose is gibberish, but the grammar and punctuation are for the most part accurate: quotation marks and parentheses come in pairs, and subjects and verbs agree. (For example, “Akkerma’s Alcesia Minor (including) of Hawaiian State Rites of Cassio. Other parish schools were established in 1825, but were relieved on March 3, 1850.”)

The passages, like all of the network’s output, are based on prediction – the goal of the research is simply to anticipate the next character in a sequence. “It spits out one letter at a time, which happen to form words,” says Sutskever, 24, who earned a BSc in 2005 and an MSc in 2007 from U of T. “It discovered that words exist, and it discovered grammar.” It also exceeded all expectations.

Just as there are neurons in the human brain that communicate, Sutskever’s network contains 2,000 digital counterparts whose behaviour is guided by a learning algorithm. This algorithm will look for places where the network has made a mistake, and change the connection to decrease chances for error. “If you do this long enough,” Sutskever says, “you reach a stage where it will make fewer mistakes.”

Sutskever will be refining his neural network in the near future, and he will have some extra help along the way. In June, he became the first Canadian to receive a prestigious Google PhD fellowship (introduced in 2009 to facilitate information-related academic research), which will provide him with \$50,000 over the next two years.

While neural networks are increasingly common – they are found in speech-recognition software and some search engines – Sutskever is reluctant to discuss potential applications for his work. The next step is to train the network on *New York Times* articles, with the goal of teaching it to identify authorship. Sutskever concedes this could likely form the basis for plagiarism software one day, provided it functions well enough.

For now, though, Sutskever wants to remain open to possibility. “If you know your destination, you will probably get there,” he says, “but if you don’t, there is more of a chance of stumbling upon something really interesting.”

– Jessica Leigh Johnston

The End of the Rivi Era

Rivi Frankle, who has retired after 39 years at U of T, forged friendships with countless U of T grads



WHEN RIVI FRANKLE RETIRED this past September, U of T lost one of its most passionate promoters. During her 39-year career, Frankle – whose final title was assistant vice-president (alumni and stakeholder relations) – made indelible contributions to the field of university advancement, while acting as a cherished mentor to many in the profession.

A longtime director of the Career Centre, Frankle (BA 1968 UC) switched to alumni affairs in 1988. As assistant vice-president of alumni and development, she played a significant role in the university's Great Minds campaign, which raised \$1.1 billion – an amount that remains unrivalled in Canadian fundraising history. But Frankle didn't consider herself primarily a fundraiser; her job, she says, was creating relationships. "One of the things I set out to do was to make contact personal for alumni and friends of the university," says Frankle. "I did that by putting my name on everything, so that everyone knew there was someone here they could get in touch with."

In the words of President David Naylor, Frankle "made a career out of recognizing and thanking others for their contributions." This was best exemplified through her creation

of the Arbor Awards in 1989, a celebration of alumni volunteers. An enthusiastic volunteer herself, Frankle chaired U of T's United Way campaign for almost 30 years, supervised U of T Day (the university's annual open house) throughout the 1990s and supported initiatives related to Pride Toronto and Black History Month.

Frankle also forged links with alumni who might otherwise have felt far from U of T, geographically or otherwise. She opened the Hong Kong office in 1993, which established the university as a pioneer in international advancement. And, in 2007, she brainstormed the perfect event to commemorate Convocation Hall's 100th anniversary: a special ceremony for 33 veterans who, for reasons of military service, hadn't been able to receive their degrees during the Second World War. "It was the most amazing ceremony ever," she recalls. "We were all in tears."

With creativity and consummate people skills, Frankle made alumni feel consistently valued. "People love her – pure and simple," says Jon Dellandrea, who worked with her for 11 years in his capacity as U of T vice-president and chief advancement officer. His successor David Palmer echoed that sentiment in a recent message to his staff. "There are very few who can say they have served an institution so faithfully for so long," he wrote, "and made so many friends." – *Cynthia Macdonald*

People

Two of U of T's top researchers have been named University Professor, the highest academic honour the university accords its faculty. **Prof. Barbara Sherwood Lollar** is an environmental geoscientist and Canada Research Chair in Isotopes of the Earth and Environment. **Prof. Marla Sokolowski** of biology at U of T Mississauga is a Canada Research Chair in Genetics.

Prof. Ron Deibert has been named director of the new Canada Centre for Security Studies at U of T. Deibert continues to head the Citizen Lab while providing

leadership on the new centre's activities, which include arctic security, cybersecurity and regional initiatives on global security.

Three U of T faculty have received awards from the Royal Society of Canada, the prestigious scholarly organization that recognizes accomplishments in the arts, humanities and sciences. **Prof. Robert Bothwell** of the Munk School of Global Affairs is the winner of the J.B. Tyrrell Historical Medal, which recognizes outstanding work on the history of Canada. **Prof. Andrei Yudin** of chemistry received the Rutherford Memorial Medal in Chemistry. **Prof. Shahzad Mojab** of OISE is the winner of the Award in Gender

Studies. Six faculty members were also named fellows of the society: Professors **Jill Matus** of English, **Arthur Ripstein** of law, **Stewart Aitchison** of electrical and computer engineering, **Harry Ruda** of material science and engineering, **John Carling Roder** of molecular genetics and **Howard Yee** of astronomy and astrophysics.

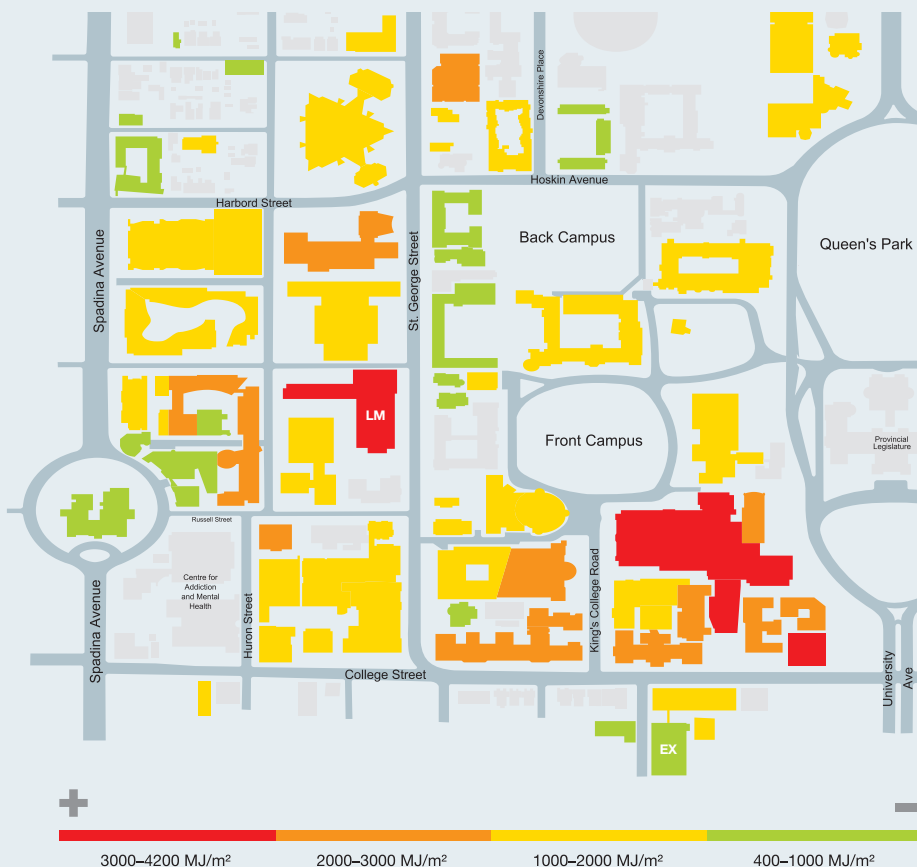
U of T's academic and research performance has been ranked among the best in the world – and the best in Canada – according to two prestigious international rankings. The Times Higher Education Rankings (which measures the institutional excellence of the world's top 200 universities in research, teaching and knowledge

transfer) rated U of T 17th overall. The Higher Education Evaluation and Accreditation Council of Taiwan (which focuses on research productivity, impact and excellence of published scientific papers of 500 universities) ranked U of T ninth overall. In both, the University of Toronto leads all Canadian universities.

U of T has also been named one of Canada's Top 100 Employers for 2011 by MediaCorp Canada, a specialty publisher of employment guides and periodicals. U of T was selected from among 2,750 organizations across the country who submitted applications for the competition.

Power Down

Keeping a campus the size of St. George warm in winter, cool in summer and humming smoothly all year round requires energy – and lots of it. This map, produced by U of T’s Sustainability Office, shows the buildings that gulp down fuel and those that sip it. Lash Miller Chemical Laboratories (LM), shaded red, is among the most intense energy users, at 3,120 megajoules a year per square metre, while the new LEED-certified exam centre on McCaul Street (EX), is among the least, at 670 megajoules. (Generally, buildings with labs require more energy per square metre than those without.) Ron Swail, assistant vice-president of Facilities and Services, says the data helps his office identify where to focus their conservation efforts to reduce U of T’s environmental footprint overall. Over the past 35 years, he estimates that good environmental practices have saved the university \$200 million on utility bills and avoided a million tonnes of greenhouse gas emissions. – *Scott Anderson*



Honouring Multiculturalism

John Yaremko made a \$2-million gift to the Chair in Ukrainian Studies

EARLIER THIS YEAR, JOHN YAREMKO – a staunch advocate of education, multiculturalism and human rights – made a \$2-million gift to the university’s Chair in Ukrainian Studies. The donation will support an internationally distinguished scholar to teach and conduct research at U of T in the history and politics of Ukraine and Ukrainian-Canadians.

Yaremko, who died in August just shy of his 92nd birthday, was Ontario’s first Secretary and Minister of Citizenship. In that role, he advocated strongly for Canada to become the first country to adopt an official multicultural policy.

Born in Welland, Ontario, Yaremko worked on farms and in steel mills to put himself through U of T, where he earned a BA in 1941 while attending University College. He also graduated from Osgoode Hall Law School, and was called to the bar in 1946. Five years later, Yaremko became the first Ukrainian-Canadian to be elected to provincial parliament.

For the next 24 years, he was a passionate voice for social justice and multiculturalism in the Ontario legislature.

Yaremko and his wife, Mary, were generous supporters of many organizations in Canada. At U of T, they funded various scholarships and awards, as well a program in multiculturalism and human rights at the Faculty of Law. In 1981, Yaremko became a founding member of the University of Toronto Chair in Ukrainian Studies Foundation. The chair, which now bears his name, is symbolic of Yaremko’s deep connection to his heritage and a testament to his leadership within the Ukrainian-Canadian community. – *Barrett Hooper*




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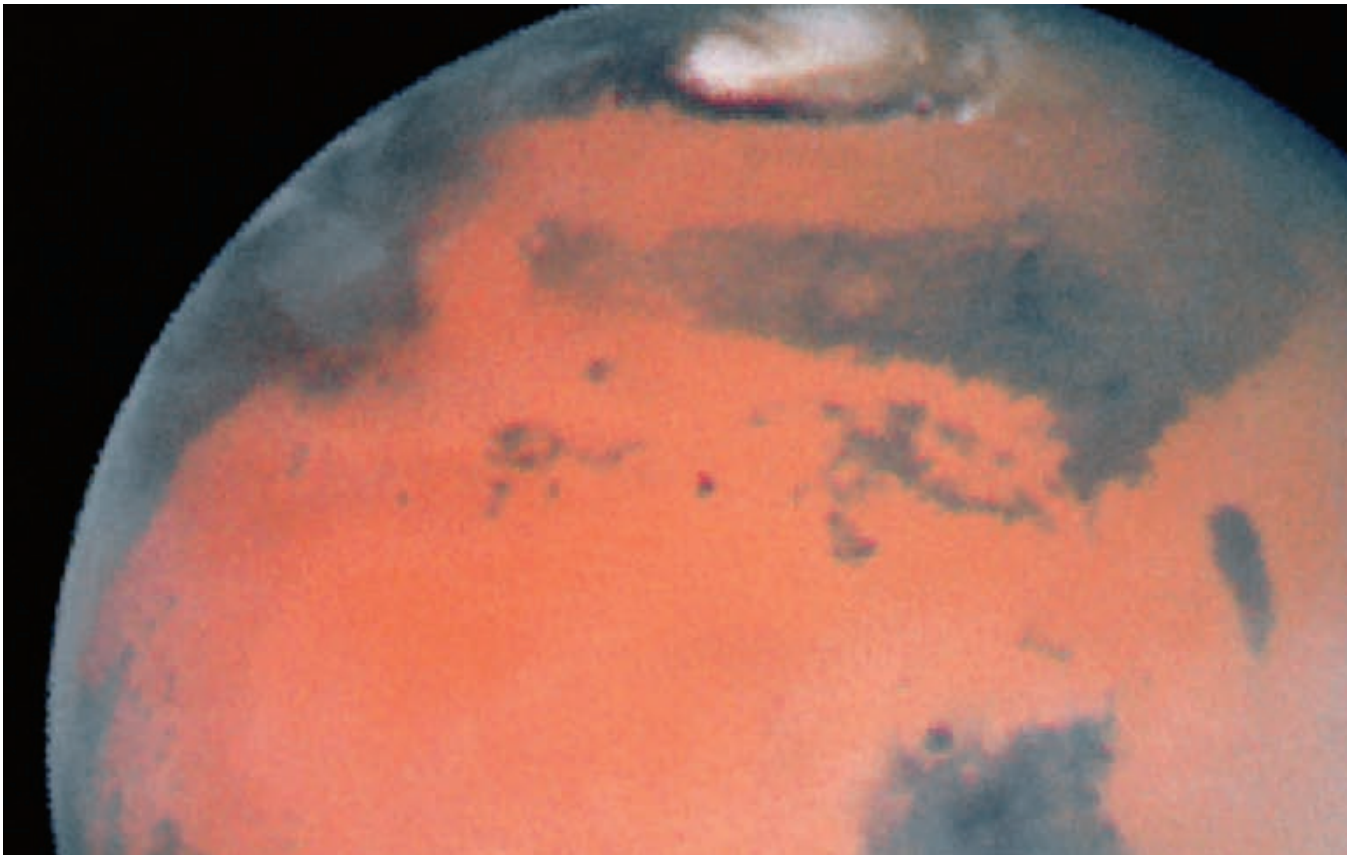
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Leading Edge



Life on Mars?

Scientists are trying to determine if methane in the Martian atmosphere came from living organisms

EVER SINCE ASTRONOMER PERCIVAL LOWELL observed what he thought were canals on the surface of Mars more than a century ago, the possibility that the red planet harbours life – or did so in the remote past – has fascinated humankind. We now know that Lowell's canals were an optical illusion, and that Mars is cold and dry. But scientists haven't ruled out the possibility that microbial life might possibly lurk

below the surface, and recent developments have prompted them to take a closer look.

The latest clue involves methane, a gas that may indicate the presence of living organisms. Astronomers have found that there's significantly more of the gas on Mars than previously thought, and they want to know what's producing it. Now a team of scientists – including several researchers from >>>

>> U of T – are developing an instrument designed to answer that question, among others.

The instrument is called the Mars Atmospheric Trace Molecule Occultation Spectrometer (MATMOS). While the Martian atmosphere is predominantly carbon dioxide, MATMOS will measure other gases that occur only in trace amounts. The instrument will fly aboard a robotic orbiter scheduled for launch in 2016.

Members of the team – including professors Barbara Sherwood Lollar of geology, Kimberly Strong and Kaley Walker of physics and Jonathan Abbatt of chemistry – will analyze the MATMOS data. Sherwood Lollar says there are two possibilities for the methane’s origin: biological, indicating that microbial life exists (or has existed) below the planet’s surface, or geological. If geological, the methane could stem from volcanic activity on Mars or from chemical reactions that take place when sub-surface water reacts with the surrounding rocks – something that Sherwood Lollar has studied extensively on our own planet.

The MATMOS detector will measure precisely how much methane is found in different regions on Mars, and how the concentrations vary from season to season. Scientists may then be able to pinpoint which regions are actually producing the methane, and perhaps target those areas for future rover missions.

MATMOS will also measure other trace gases, such as sulphur dioxide and hydrogen sulphide, and other molecules containing carbon, sulphur and nitrogen. The relative concentrations of methane and these gases will help researchers determine if the methane’s origin is biological or geological.

Leading scientists agree that the discovery of any trace of life on Mars – present or past – would be a tremendous breakthrough. But even if no signs of life are found, it would still be an important finding. Although Mars is a cold, dry planet today, scientists believe it may have been much warmer and wetter billions of years ago. If that’s the case, “scientists are eager to understand why life arose on Earth, but not on Mars,” Sherwood Lollar says. – *Dan Falk*



New Year’s Revolution A proposed new calendar would give February an extra week and start every month on a Monday. Christmas would always fall on a Thursday

NEW YEAR’S DAY THIS YEAR IS ON A SATURDAY. In 2011, it falls on a Sunday. Every year, the dates of many important events – and some religious holidays – don’t change, but the day of the week they land on does.

A new calendar devised by Irv Bromberg, a professor in U of T’s Faculty of Medicine, does away with this: it ensures that the same date always falls on the same day of the week. In Bromberg’s calendar, New Year’s Day is always on a Monday and Valentine’s Day is always a Sunday. Every month of every year starts on a Monday.

Bromberg proposes more significant changes, too. All months in his calendar – which he has dubbed Symmetry454 – have either four or five weeks of seven days. January and March, for example, slim down to 28 days, while February bulks up to 35. Each quarter follows the same pattern: a four-week month, followed by a five-week month and then another four-week month.

In total, a Symmetry454 year has only 364 days. Bromberg compensates by giving every sixth or fifth year (depending on an arithmetic rule), a whole extra week at the end of December.

Bromberg – who, as a hobby, has refined or created several calendars – says businesses would benefit from Symmetry454 because each quarter has exactly 91 days (except the last quarter in a leap year), and the same number of weekdays and weekends. Businesses might also like that the midpoint of the quarter always falls on the same day. Schools and universities wouldn’t have to create a new academic schedule each year. Monthly fees such as rents might have to be pro-rated according to the month, though.

In the much longer term, Bromberg says his calendar would require fewer adjustments than the Gregorian calendar, which will begin to seriously drift from true solar time around the year 6000.

Although Bromberg does not expect the world to adopt the Symmetry454 calendar in his lifetime, he does think it could catch on among computer enthusiasts. A programmer in Brazil has already found a way to incorporate it into the Linux operating system, he says. – *Scott Anderson*

The Big Idea

How Cities Compare Urban centres have a huge impact on their residents' well-being. So how can we make them better?



THE YEAR 2009 MARKED A WATERSHED MOMENT: for the first time in history, half the world's population lived in cities. But while global urbanization is often associated with vast mega-cities such as Tokyo, Cairo and São Paulo, a majority of the world's city-dwellers actually live in compact metropolitan areas with fewer than 500,000 residents.

In developed nations, many cities now function as economic hothouses, bringing together high concentrations of expertise, capital and entrepreneurs. A World Bank study in 2006 noted that different-sized cities often specialize – in pharmaceuticals or post-secondary education, for example – or act as a transportation hub or financial centre. At the same time, growing urbanization in developing nations is exacerbating problems of poverty, congestion and pollution. Even wealthy cities increasingly suffer from a widening gap between the very rich and the very poor. The upshot is that local governments will become ever more crucial players in global affairs, perhaps even eclipsing their regional or national counterparts.

With this ongoing shift, says Patricia McCarney, a development expert at the Munk School of Global Affairs, city officials worldwide are anxious to learn how their counterparts elsewhere deliver vital local services, from water treatment to transit, policing and garbage collection. By exchanging knowledge about best practices, she says, cities can improve their quality of life and attractiveness to international investors.

It was this sort of thinking that led to the creation of the Global City Indicators Facility, a database of comparable statistics that allow cities to track their effectiveness on everything from planning and economic growth to transportation, safety and education. The project has the backing of the World Bank, whose officials have pushed for more reliable data to support its lending in heavily urbanized regions, such as Latin America.

Two years after the launch of the Global City facility, McCarney's team tracks more than 100 indicators and has signed up 125 cities of all sizes and from every part of the world, from Dallas to Kabul. McCarney – who travels extensively to promote the project – is aiming to reach the 1,000-city mark in time for Milan's 2015 Expo on sustainable development.

The project has posed all sorts of methodological challenges, not least of which is settling on a precise definition of the term "city." Metropolitan areas and urban agglomerations, especially those experiencing high growth, tend to spill over political boundaries. McCarney says her group chose to focus solely on municipal statistics that correspond to existing municipal boundaries. For large cities, they have formulated a way of aggregating data across a region to build indicators that apply to sprawling urban areas, such as Greater Toronto.

Each year, Global City publishes a statistical compendium, which is distributed to the members, as well as to the project's funders. "Good, comparable data on cities didn't exist until now," says McCarney, patting the latest volume with a satisfied grin. "This is a first."

The index is a boon to international development agencies, urban researchers and businesses looking to set up new facilities. McCarney notes that some municipalities also use the data to counter much-hyped but less rigorous city rankings, which may provide misleading snapshots about what some cities have to offer. But she observes her index's most meaningful benefit is that it provides members with a forum to exchange ideas on how cities can function. "The exciting part is that the cities themselves have started to build a network," she says, "and Toronto is now at the hub." – *John Lorinc*

ILLUSTRATION: NICK HIGGINS

Lingo

Sexsomnia



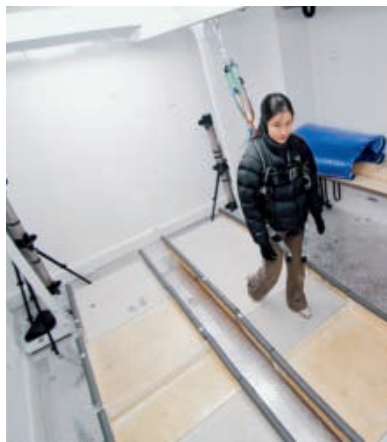
People talk in their sleep and walk in their sleep – but have sex in their sleep? Some do, according to Dr. Colin Shapiro. A study conducted at the Sleep Research Laboratory at the University Health Network's Toronto Western Hospital, where Shapiro is head of neuropsychiatry, found that as many as one

in 12 patients reported engaging in sexual activity while sleeping. The research found that the phenomenon was about three times more common in men as women. The term "sexsomnia" falls under the category of sleep disturbances known as parasomnias.

Prototype

These Boots Are Made for Walking

Jennifer Hsu is studying how people walk in icy conditions in the hope of designing “smarter” footwear



THE COLD OF A CANADIAN WINTER is bad enough, but it’s the fear of slipping on ice that keeps many elderly people indoors for much of the season. They know that falls can be deadly: 40 per cent of seniors who break a hip will die within a year.

Jennifer Hsu, a PhD student in the department of biomedical and mechanical engineering, wants to make winter walking safer for everyone, but especially for older people. She’s studying how people walk in treacherous cold-weather conditions and what sorts of

devices might help them stay upright and in control.

Many companies market gadgets that you can attach to the soles of your winter boots to give you more traction. One uses rubber grips going in two directions (much like fish scales), while another employs gritty, sandpaper-like strips. In the first phase of her study, which began in October, Hsu invited 36 healthy people, aged 20 to 45, to test out the existing concepts in her cold lab – to see which work and which don’t. Later, she will study older healthy people.

Hsu’s lab is an insulated cold room in the Toronto Rehabilitation Institute with a slightly elevated walkway running from one side to the other. The walkway is made of concrete, but the researchers can coat it with patches of ice. “We want to see how body motion changes when moving on or off the ice,” says Hsu.

Sometimes there’s an incline, sometimes a decline and sometimes there’s a patch of ice. Luckily for participants, there’s always a harness to stop them before they hit the ground and a researcher in the room to help. Temperatures in the lab can go as low as -20 C.

Hsu and her team observe participants through a broad pane of glass. An array of sensors measures the subject’s muscle activity, the pressure distribution under each foot and how much pressure the person exerts on the ground. A set of cameras also tracks the motion of each foot. A computer then replicates each person’s movements so Hsu and her team can analyze them in detail.

Not all of the data will come from lab experiments. Cameras perched on the 12th floor of the Toronto Rehab building capture live winter footage of people slip-sliding through the intersection at University Avenue and Elm Street.

Eventually, Hsu would like to design truly “smart” footwear – with traction that responds to whatever conditions a person may encounter, and made from materials that can help improve our gait. – *Alison Motluk*

Findings



Not-So-Busy Bees

A new U of T study provides the first long-term evidence of a downward trend in pollination, and suggests that climate change is a contributing factor.

James Thomson, a professor in the department of ecology and evolutionary biology, says bee numbers may have declined at his research site, but he suspects that a climate-driven mismatch between when flowers open and when bees emerge from hibernation is a more important factor.

Thomson’s 17-year examination of the wild lily in the Rocky Mountains of Colorado is one of the longest studies of pollination ever done. It reveals a progressive decline in pollination over the years, with particularly steep declines early in the season. Because of the remote location of his study, Thomson suggests that pollination is vulnerable even in a relatively pristine environment that is free of pesticides and human disturbance but still subject to climate change.

The study appeared in *Philosophical Transactions of the Royal Society B: Biological Sciences*. – *Kim Luke*



Ancient Squid

Researchers at the University of Toronto and the Royal Ontario Museum have identified a previously unclassifiable 500 million-year-old marine carnivore known as *Nectocaris pteryx* as an early ancestor of squids, octopuses and other cephalopods.

Martin Smith, a PhD student in U of T’s department of ecology and evolutionary biology and the department of natural history at the ROM, says the finding is significant because it means that primitive cephalopods originated 30 million years earlier than thought.

The new interpretation became possible with the discovery of 91 new fossils that were examined by Smith along with Jean-Bernard Caron, of geology and ecology and evolutionary biology at U of T, and a ROM palaeontologist.

The new specimens show that *Nectocaris* was kite-shaped and flattened, with large, stalked eyes and a pair of grasping tentacles, which the researchers believe helped it to hunt for and consume prey.

The findings were published in *Nature* in May. – *Sean Bettam*

Q/A

Ask an Expert

Dr. Charles Tator Preventing Concussions



Last year, Toronto neurosurgeon **Dr. Charles Tator** publicly criticized *Hockey Night in Canada* personality Don Cherry for promoting an aggressive style of hockey. Concussions have been on the rise in the sport, and Dr. Tator is trying to promote awareness of the dangers posed by even mild head

injuries. A founder of ThinkFirst and SportsSmart Injury Prevention programs, he spoke recently with **Daniel Baird**.

What is a concussion, exactly?

It's a mild brain injury. But part of the dilemma we face is that we don't really understand the biology of concussions. We've been unable to locate the exact sites in the brain that, when injured, cause concussion. We can't identify damage on a CT scan or MRI – despite all of the research into advanced imaging technologies, there is no physiological test for a concussion. For now, only a knowledgeable practitioner can diagnose it.

If there are no physiological tests, then how does a practitioner diagnose a concussion?

There are about 30 different symptoms, not all of them present at a given time. Some patients might have a headache; others might experience nausea, vomiting, or personality and memory changes. There are a very large number of symptoms, and they evolve over time: some might have one symptom, others might have 10; someone might not be dizzy at first, but become dizzy the next day. With first concussions, there is usually complete recovery. It might be a day or a month, but most people get over it.

What additional risks do repeated concussions pose?

Patients who suffer multiple concussions can suffer serious long-term consequences. Repeated concussions, especially after incomplete recovery, can cause dementia similar to that seen in Alzheimer's, and depression. We've known about this for at least 100 years from studies of boxers – it was called *dementia pugilistica*. But now we know it happens in soccer, football and hockey players as well. We don't know how many concussions some of these players have had since in many cases we have incomplete clinical records. When I interview these players, they don't know how many times they've been concussed. Both patients and doctors have to be more diligent in recording this.

How are concussions treated?

The frustration is that there is zero treatment for concussion. We have nothing that completely eliminates symptoms. A lot of research is being done and there are a lot of unsubstantiated claims but no treatment, so prevention is crucial. There are, however, specific guidelines to manage concussed patients, such as when people can safely return to normal activity and playing sports. People should have complete physical and mental rest until their symptoms are gone. We feel that this period is important for the brain to recover.

What is the best way to prevent concussions, especially in popular sports such as hockey?

We recommend a whole range of activities specific to causes, like cars having side airbags and the use of seatbelts. In sports, helmets are now being used, but unfortunately there are no concussion-proof helmets, though they prevent other more serious head injuries. In hockey, banning all hits to the head would help. Information and diagnosis is important, since we still find there are hockey coaches and leagues that don't take this seriously. Even some of my colleagues are not up to speed on this. Still, in the past 10 years there has been a marked increase in knowledge about how to manage concussions. A cultural shift is underway in sports. There are posters in NFL locker-rooms, for example, about this topic.

The Fallen

Three years ago, unhappy with Canada's role in the Afghanistan war, artist Joanne Tod set herself a grim task: she would paint a portrait of every Canadian soldier who died in the conflict.

The decision reflected her own mixed feelings about the war. On the one hand, Tod, who lectures in U of T's visual studies department, wanted to honour the individuals who had lost their lives. But as a "staunch pacifist" she also strongly opposed Canada's involvement.

The result is "Oh, Canada – A Lament" – a series of 121 six-by-five-inch portraits painted on birch ply and mounted on a free-standing wall among segments of a Canadian flag. Tod says the fractured flag, which appears to have been blown into pieces, symbolizes a "weakened state."

The Canadian Heritage Warplane Museum in Mount Hope, Ontario, displayed "Oh, Canada – A Lament" between June and November. Tod hopes that a philanthropist will buy the piece for a museum – in which case, she says, she would donate the proceeds to a fund for families of soldiers who lost their lives.

– Scott Anderson



Icicology 101 Most icicles have the same carrot shape. But differences in temperature, wind conditions and water composition affect their final form

ONE MORNING IN JANUARY OF 1998, residents of eastern Ontario and southern Quebec awoke to find their world covered in ice. Icicles hung from everything – homes, trees, electrical wires – and more than a million people were left without power.

Physics professor Stephen Morris is not interested in the atmospheric conditions that caused the ice storm, but is intrigued by the spectacular results – the icicles themselves. Are there physical laws that cause them to take the shape they do? And are all icicles the same?

Morris is attempting to answer these questions in a chilly, closet-sized laboratory in McLennan Physical Labs. His interest in the subject is not purely whimsical. He points out that it's important to know how ice forms on surfaces such as airplane wings, and says the physics behind icicle formation can be applied to other phenomena, such as how roads get ripples and how stalactites form in caves.

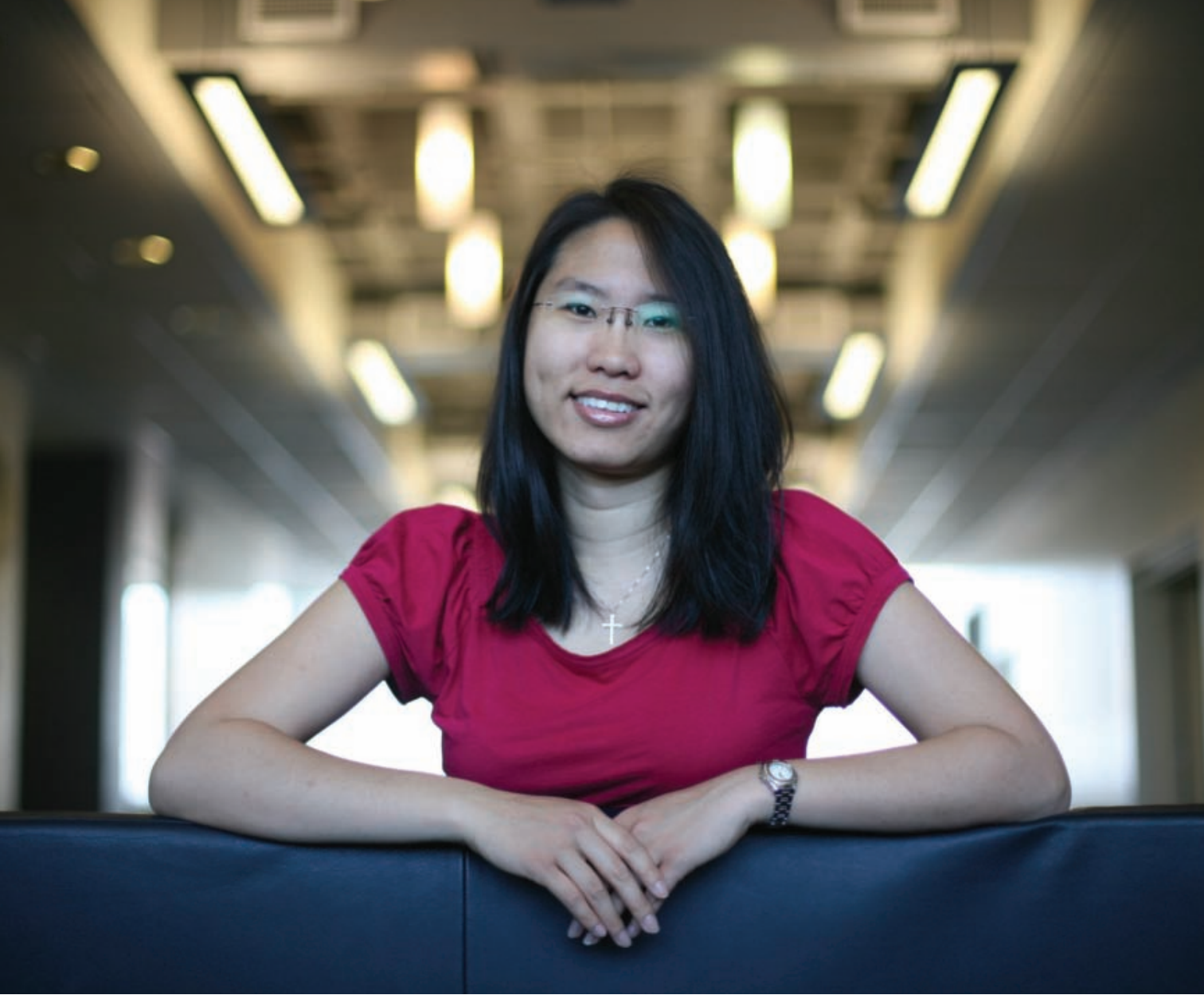
In his lab, Morris and PhD student Antony Chen tested a mathematical model for the ideal or Platonic icicle (as theorists

call it), an elegant set of formulas that predicts a universal shape for all icicles. Using a machine with a central rotating dowel, they created icicles and photographed them as they formed over 10-hour stretches.

While most icicles are carrot-shaped and some are very close to the Platonic ideal, Morris and Chen found that differences in temperature, wind conditions and water composition affect their final form. Curiously, icicles grown in perfectly still air split at their tips, and water impurities can cause asymmetrical lumps.

While the wide variety of icicle shapes they created was surprising, the physicists took greater interest in the mathematical aspects of the problem and the motion of ripples that form on the icicles' surface. Morris added that theories about the patterns that emerged can be applied in fields as diverse as economics and, yes, weather. – Daniel Baird

|| To watch a video of Morris and Chen's icicle experiments, visit www.magazine.utoronto.ca.



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Philiz Goh
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THE
NEXT

BIG

IDEA

Ten concepts that could shape the future

Every year, U of T faculty members generate hundreds, maybe thousands, of ideas. Sometimes, as with James Till and Ernest McCulloch's discovery of stem cells in the early 1960s, they change how we think about the world.

The sparks of ingenuity you'll read about here are new. They could one day affect our health or the environment, or cast new light on concepts such as honesty, justice and privacy. And although it's still unclear how far they'll reach, they show that the spirit of inquiry burns brightly at U of T.

We hope you enjoy.

Computers That Understand Speech

New software can condense long spoken-word recordings into a few key highlights

Ever since *Star Trek* first aired, we've imagined a world where we could simply talk to our computers and listen to their replies, without the clunky diversion of typing and reading. Suppose, for example, that you missed an important meeting: wouldn't it be great if a computer could just tell you what the highlights were?

Gerald Penn, a professor of computer science, has been working toward this goal. His specialty is "speech summarization" – not by the traditional method, which would require a human to transcribe every word spoken, but rather an automated process that uses audio recordings of the events themselves, bypassing text altogether.

Penn is developing software that can listen to an audio file (an MP3 of a recorded speech, for example) and keep track of pauses, emphasis and repeated words – what he calls "recurring acoustic patterns." The software then uses those indicators to condense the audio recording into a new, shorter file that contains the most salient points of the original. And it can do it quickly, too, processing a one-hour recording in just a few minutes.

Until now, Penn says, you would have had to make do with a textual summary. But a text-based summary requires a transcript, and these are time-consuming if done manually and typically error-riddled when done by a computer program. Even if speech-recognition programs were error-free, a perfect transcript would hold little appeal, given that human speech is full of "ums" and "ahs," sentences that seem to change gear in the middle, and strings of words and phrases that generally flout the rules of grammar. A condensed audio file, in contrast, still conveys the key message of a given speech, Penn says, without sounding jarring to the ear.

Potential demand for the software could come from any field where short summaries of spoken-word content are required – such as businesses that need brief accounts of speeches or news broadcasts; students who need summaries of lectures at exam time; or even government security agencies on the lookout for signs of criminal activity in phone conversations.

The next step, Penn says, will be to compare computer-generated summaries with those generated by humans, to see how well they match up – bearing in mind that human listeners might not agree with each other about what the most important points in a given speech were. Collaborations with colleagues in psychology are a possibility. "We need to consider what artificial intelligence is all about," he says. – *Dan Falk*



DNA and Diet Why can some people drink all the coffee they want and others can't? The answer may be genetic

Reducing your salt intake could save your life – or imperil it. It depends on your genes. Same thing with coffee: four cups a day could be divine for me but dangerous for you. How can we know? At the moment, it isn't easy. But that's something Dr. Ahmed El-Sohehy, a professor in the Faculty of Medicine, is working to change.

El-Sohehy holds the Canada Research Chair in Nutri-genomics, which is a branch of nutritional science that explores how the nutrients we consume interact with our genes to affect our health. His research has bolstered the idea that our genetic makeup determines in part how we react to certain foods. In 2006, for instance, El-Sohehy and his colleagues published a startling paper in the *Journal of the American Medical Association* about coffee drinkers. People with a particular gene variant metabolize caffeine slowly. So whereas genetically "fast" metabolizers can drink all the coffee they want with impunity, slowpokes under the age of 50 have a four-fold increased risk of heart attack when they imbibe four or more cups per day. And, lest you think you can tell your genotype by whether the dark stuff keeps you up at night, that effect is totally unrelated, he says.

This is the sort of useful genetic detail we'd all like to know about ourselves. Luckily, El-Sohehy and others are at work on a personalized nutrigenomics test kit. In addition to pinpointing our caffeine risk, the test will reveal whether we will be deficient in vitamin C if we don't take the recommended daily allowance of 75 to 90 milligrams and whether we should curb our salt habit. Guidelines tend to focus on the upper and lower limits, he points out, but not the individual: "You are just one point in the range," he says. – *Alison Motluk*

Restoring a Way of Life

Did the settlers take more than land from North America's indigenous peoples?

When one person is wronged by another, our sense of fairness demands that the injustice be corrected. If someone steals your car, at the very least you deserve to get your car back. But when it comes to historical injustices committed by one group against another – say, European settlers against indigenous North Americans – there's little agreement about what to do.

One influential argument is that historical injustices can't really be redressed. Jeremy Waldron, a professor of law and philosophy at the New York University School of Law, has argued that historic claims from past injustices weaken as time passes. In the case of indigenous peoples, Waldron contends that the descendants of the European settlers have gradually built a legitimate claim to the land that their ancestors took.

Douglas Sanderson, a U of T law professor studying the issue of justice for groups that have suffered historical wrongs, disagrees. He says claims to justice don't fade because of the passing of time, in part because today's indigenous people are still suffering – the injustice is ongoing. Nor can the injustice be corrected simply by restoring stolen land.

“My view is that what settler people took from indigenous people was the capacity to live lives that are meaningful to indigenous people as indigenous people,” says Sanderson, who is a member of the Opaskwayak Cree Nation.

He imagines what life would be like for modern indigenous people who had maintained their independence even as settler society grew up around them. They would drive cars, use roads, live in houses and work for wages. But their institutions – government, schools, health care – would affirm their traditional cultures. For example, a Cree child-welfare system would place neglected children in the extended family context of the clan system, rather than in foster homes with strangers. Leaders might be elected through public consensus, rather than secret ballot. A right to vote might be tied to a traditional coming-of-age ceremony, rather than simply a birthday.

Justice means allowing modern indigenous people to live in the way they would have if the injustices had never been done in the first place. Sanderson's vision would require a change in Canadian laws to give indigenous people more legal, political and cultural autonomy.

“I have to believe that at some point down the road there's some set of policies where in the end settler people and indigenous people can look at each other across the table and say, ‘OK, we're even,’” says Sanderson. “There just has to be a way of getting there.” – *Kurt Kleiner*

Toxic Cleanup

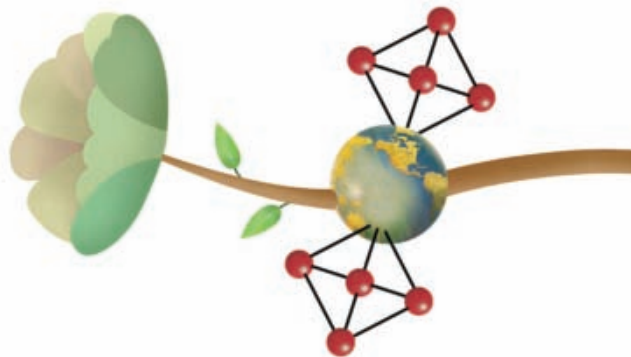
Plants and bacteria do a pretty good job of cleaning up our noxious messes. But which of these organisms are most effective? And under what conditions?

Humans have been releasing chemicals into the environment for years, and the Earth does a fairly good job of breaking these down over time. But what if we could speed up the natural process? What if we could determine precisely which bacteria and plants eliminated toxins such as PCBs and pesticides from the environment the fastest?

That's the ultimate goal of Roberta Fulthorpe, a professor in the department of physical and environmental science at U of T Scarborough. So far, researchers have only studied the way bacteria take apart toxins in contaminated areas. But Fulthorpe says there are possibly hundreds of species of bacteria living in uncontaminated soil that scientists have never encountered. Her research aims to uncover some of these.

Fulthorpe has previously studied the genetic diversity of bacteria in areas contaminated by pulp-and-paper waste-treatment systems. She also hopes to study plant tissues, which contain bacteria that can aid in breaking down toxins. “We know it's common for plant tissue to have non-harmful bacteria, but we don't know what they do,” she says.

At the moment, it takes many years for natural processes to break down organic pollutants. So when contaminated land is being considered for residential or commercial uses, developers are often unwilling to wait. They simply scoop up the toxic soil and ship it somewhere else, or use other chemicals to scrub the more toxic ones away. Finding a faster way to clean up the soil naturally would have plenty of practical uses, says Fulthorpe, and lead to a cleaner habitat for all. – *Sarah Boesveld*



Clean Power Solid oxide fuel cells are more reliable than wind and more efficient than solar. Now if only they were cheaper . . .

As countries around the world try to cut their greenhouse gas emissions while still satisfying a growing demand for electricity, interest in wind and solar energy has soared. But each has its challenges: energy from the wind is unreliable and solar energy is inefficient. Most photovoltaic cells convert only 15 per cent of the light energy that falls on them to electricity, which limits the amount of power that can be produced within a small space, such as a rooftop.

Olivera Kesler, a professor of mechanical and industrial engineering, is conducting research into solid oxide fuel cells – an alternative energy source that produces electricity using a variety of naturally occurring gases, such as methane and propane. Solid oxide fuel cells do not make sulphur dioxide or nitrogen oxide – common air pollutants – and are four times as efficient as photovoltaic cells at converting energy to electricity. They also use half as much fuel and create half as much carbon dioxide as coal-fired generators (to produce the same amount of electricity).

But some technical challenges must be solved before solid oxide fuel cells will be adopted widely. The cells must be made cheaper to produce and more durable. To accomplish this, Kesler and her students are creating supports for the cells made from stainless steel and fabricating new fuel cell structures with the aim of maximizing electricity production while lowering cost.

The lab is working with a Canadian industrial partner to see if the fuel cell structures can be developed and marketed to companies that buy equipment to make electricity. Eventually, they may be used in homes, industrial sites – and even cars. – *Sarah Boesveld*

Making Drugs Safer By identifying all the proteins a drug acts on in yeast, researchers may be able to better predict unwanted side-effects in humans

Most drugs on the market were discovered serendipitously. And even ones we use every day aren't well understood. Pharmaceutical companies tend to know a lot about how a drug affects the particular protein it targets. But the human body has some 20,000 genes, each encoding its own protein. They may know little about what other proteins the drug affects.

Guri Giaever, a chemical geneticist at the Donnelly Centre for Cellular and Biomolecular Research, has devised a way to figure that out – using yeast. The yeast genome was sequenced in 1996. It was the first organism to have every letter of its DNA instruction manual spelled out. Scientists immediately realized, though, that it wasn't enough to know what the genes were: they had to know what they did. So 16 labs around the world (Giaever worked in the lead one) collaborated to systematically knock out each of the 6,000 genes one at a time, to understand their functions.

Using these “knockout” yeast strains, Giaever developed a unique platform for testing drugs in live yeast. “We can study a drug's effects on all the proteins at the same time,” she says. True, it's not a human, but roughly 70 per cent of the essential genes have a strong human homologue. “It's humbling how many genes we share,” she says.

Giaever's system works by growing all 6,000 knockout strains together, bathing them in the drug molecule of interest, then seeing which cells thrive and which do poorly. Each strain has a unique “bar code,” made of a 20-base-pair string of DNA, which makes it possible for the researchers to separate the flourishing cells from the floundering.

One way the system is used is to help drug companies better understand how their own drugs work. For a drug that requires regulatory approval, for instance, a company might need information on what is causing an unwanted side-effect. Giaever's system can identify other yeast proteins affected by the drug and thus throw light on the mechanism behind the undesired effect.

Giaever and her collaborators are also screening drugs that have been approved for use to see if they can be “repurposed.” They identify all the proteins the drug acts on, and then make that information available to researchers who might see how that action could help combat disease. There's a lot of potential. All the drugs out there, she says, only target about 300 proteins out of 20,000 or so produced in humans, leaving plenty more to be investigated. – *Alison Motluk*



An Electronic Veil We routinely give away more information about ourselves than we need to. Digital identification could help us keep personal details under our control

Showing identification to prove who we are – or that we have the credentials to engage in a particular activity – is something we do almost every day. But in showing our ID, we usually reveal more about ourselves than we need to, says Andrew Clement, a professor in the Faculty of Information. A liquor-store clerk might demand to see a driver's license for proof of age, but all he really needs to know in most cases is the year of birth. Similarly, a health-club supervisor only needs to know that the person wanting to enter the facility is a member in good standing. She doesn't need to know the member's name.

So far, people generally have been willing to accept this kind of encroachment on their privacy in exchange for convenience. But Clement is concerned that as digital identification becomes more commonplace, the information we provide will be stored in databases and used in ways that we didn't anticipate – or, worse, aren't permitted by law. He is researching a way for people to identify themselves digitally that would reveal only the minimum amount of information required, without sacrificing convenience. This principle, called "data minimization," is fundamental to Canada's privacy laws, but is not broadly enforced, he says.

He holds up his smartphone and notes that he could display a credential on the screen. Ideally, two things would happen at this point, he says: the person showing the ID would wirelessly transmit only the minimum information that's required to the organization; and the organization would be able to establish with a high degree of certainty that the credential is authentic.

Clement explains that authentic electronic credentials would be digitally "signed" by the agency that issues them. Someone wishing to create a fake ID would have to decode the agency's digital signature – a challenge so mathematically complex as to be impossible, he says.

Under this system, organizations would have to make an electronic request for the specific information they need – year of birth, photo, address – and the basis for why they need it before a person's smartphone or other digital device would send it. The request would be logged on the individual's device and could be reviewed later to ensure that it complied with privacy legislation, Clement says.

Clement has no plan to set up this new digital ID system himself beyond developing educational prototypes. But he would like to see the idea gain traction in the marketplace. "People almost always provide organizations with the information they ask for because they don't want to interrupt the transaction," he says. "Digital credentials could help rebalance this in the public's favour." – *Scott Anderson*



Education for All Why do some immigrant groups fare better than others in school?

Canada has an official policy of multiculturalism, but the country's largest school board might not be meeting the needs of children of newcomers – at least in the case of one significant ethnic group. The dropout rate for first-generation Latin American students and Spanish-speaking youth is 37 per cent, almost double the Toronto average.

That's cause for concern. Why do children of some immigrant groups fare better than others in the Toronto school system? And how can the system be improved to meet the needs of newcomers from all parts of the world?

Conventional wisdom says cultures that place a low value on education are at least partly to blame for high dropout rates among some student groups. But in interviews with Latin American students, Professor Ruben Gaztambide-Fernandez of the Centre for Urban Schooling at OISE found precisely the opposite to be true: Spanish-speaking students are highly aware that getting a good education and mastering the English language are crucial for their future. "The situation that leads them to leave school really has nothing to do with how committed they are to school," he says.

What administrators should be asking is what conditions are making it difficult for some groups, such as Latin American students, to stay in school. Gaztambide-Fernandez points to three significant issues. First, cutbacks in the 1990s left school boards with less money for ESL instruction. Students are now slotted into one of three ESL levels, meaning that many are placed in a class inappropriate to their skills. In some worst-case scenarios, advanced students are placed in beginner classes because the school doesn't have the resources to offer more than one level of instruction.

Second, Latin American students report feeling subject to prejudice from teachers and their peers, and believe that the curriculum "ignores" their culture and history. Better teacher education can help, says Gaztambide-Fernandez, but so can

asking students to share stories about their own history and culture with their class. This tells students that their culture is valued, and gives them responsibility for shaping their peers' views, he says.

Finally, many immigrant students work in the evenings to help support their family. They have no choice but to sacrifice academic achievement for economic security. As well, some students might choose an academic path that is less appealing to them if it holds out the promise of being able to obtain a job sooner. The question for schools, says Gaztambide-Fernandez, is how to support students so their choices aren't dictated solely by their social and economic circumstances.

Ultimately, ensuring that the education system is meeting the needs of new Canadians will ensure a brighter economic future for everyone. "If we want multiculturalism to be a strength of Canadian society, then we have to learn how to take advantage of the differences immigrants bring," he says. – *Scott Anderson*



What Keeps People Honest? We seem to balance a desire for personal gain against a desire to see ourselves as basically good

The economic human – perfectly rational, perfectly informed and perfectly self-interested – is a useful fiction for studying how economies work. Our behaviour is rational, informed and self-interested enough that economic models based on those assumptions work pretty well.

But not perfectly. People make decisions for all sorts of reasons, including social and emotional ones. Some of the most interesting advances in economics are in a field called behavioural economics, which looks more closely at the psychology of actual humans making actual economic decisions. Inspired by fear, fairness, social pressure, and other not-entirely-rational factors, real people make decisions that economic humans would simply not understand.

Nina Mazar, a professor of marketing at the Rotman School of Management, is especially interested in dishonesty. Her work examines a seeming paradox – people cheat more than they would if they were strictly moral beings, but not nearly as much as if they were strictly economic ones.

In one study by Mazar, people were offered 50 cents for each arithmetic question they answered correctly. Given the chance to cheat (by reporting their own scores rather than handing in their papers) most goosed their scores by a few points. But almost no one cheated to the maximum level possible, even when they knew they wouldn't be caught.

Mazar says that people seem to balance their desire for personal gain against their desire to continue to see themselves as basically good. They cheat as much as they can without being forced to revise their self-image as honest people.

“You can be a little bit dishonest and benefit a little bit from these temptations, but you don't have to change your view of yourself,” she says.

But in the same study, if she asked subjects to write down as many of the Ten Commandments as they could remember before completing the task, cheating disappeared. The same held true if she asked them to sign an honour code. Mazar says that simply calling people's attention to their own standards – to their image of themselves as honest – helps reduce cheating.

Mazar has talked to the Canadian Revenue Agency about her research, which could lead to tax forms that are designed to minimize cheating. Eventually, she thinks, businesses might use insights from the work to deter employee and customer theft. But she warns that it's still not clear how insights from the lab stand up in the real world. “The world outside is much more complex than the lab,” she says. – *Kurt Kleiner*

Memory and Aging Problems with the brain chemical acetylcholine could be partly responsible for cognitive decline

Age-related dementia isn't just a personal tragedy. As the global population ages, increasing resources will have to go toward caring for people suffering from Alzheimer's disease and other dementias. The number of sufferers worldwide is expected to surpass 65 million by 2030, and the associated annual cost will exceed \$1 trillion.

In the case of Alzheimer's disease, much attention has been paid to the formation of amyloid plaques and protein tangles in the brain that might interfere with cognitive function. But Eve De Rosa is exploring another possible cause. The psychology professor is investigating the key role that a brain chemical called acetylcholine plays in learning and attention, and how problems with the acetylcholine system might also contribute to cognitive decline.

Acetylcholine levels dwindle during normal aging, and are especially affected in Alzheimer's patients. Brain receptors that respond to the neurochemical also stop doing their job.

One of acetylcholine's functions is to enhance perceptual attention – our ability to pay attention to important stimuli and tune out distracting ones without having to think about it. For example, we automatically filter out background noise while listening to someone speak.

“It's been shown in the literature over and over again that elderly people are susceptible to distraction by things that are irrelevant to what they should be doing,” De Rosa says. She thinks the memory loss of dementia might be explained by a failure to filter out irrelevant information, which means important details never make it into memory in the first place. De Rosa has shown that in rats a lack of acetylcholine doesn't interfere with the ability to access memories that are already established. Instead, it interferes with efficient formation of memories.

In a recent experiment with humans she put young people and older people in a functional MRI machine, and had them look at pictures of overlapping faces and places. She asked them to pay attention only to the faces. In young people, a brain region responsible for responding to faces was active during the task, while a brain region responsible for responding to places was not. But in older people, both regions were active; they couldn't filter out the irrelevant information.

De Rosa says that acetylcholine is unlikely to be the whole story of age-related dementia. But she thinks it's an important component, and understanding it could lead to effective treatments. – *Kurt Kleiner*



Chris Spence, the director of education for the Toronto District School Board, believes in providing parents and students with choices in public education. Under his leadership, alternative schools have flourished.

Different but --- Equal

Is greater choice in alternative education good for Toronto's schools?

IN A WAY, IT'S SURPRISING that Chris Spence's professional football career ended with an injury to his Achilles tendon. As director of education for the Toronto District School Board, he needs heels of steel to fend off the arrows that fly his way each day.

Some come from parents, angered about his plan to close schools. Others come from trustees skeptical about his strong ideas on à la carte schooling. And still others from teachers who question the intensity of his old-fashioned idealism, embodied in a bold plan he calls his "Vision of Hope."

"I believe the world's changing," Spence says, with the quiet conviction that's steadied him throughout his remarkable career. "The only thing that isn't changing is our schools.

We have to keep our eyes on the future so we can best prepare our kids for it."

Without doubt, Spence's biggest enemy is numbers. In Toronto, children have been leaving public education in droves: the system is losing almost 4,000 children each year. A declining birthrate, families with kids moving to suburbia, the attraction of private schools and even home-schooling have caused enrolment to fall significantly over the last decade. Then there is the dropout rate. Roughly 25 per cent of students are not graduating from high school, but this figure rises within certain ethnic groups that Spence intends to target for special attention. These groups include aboriginal and Middle Eastern students, as well as students from Central and South America and the Caribbean, whose dropout rates exceed 40 per cent.



Spence thinks he might be able to stem the flight from public schools by giving parents more choice in how their children are educated. He would like to see four new specialized schools open in 2011, adding to the 41 (out of 557 schools in the Toronto board) that already exist. The new schools will concentrate on choir and sports, as well as unisex education. “One size doesn’t fit all,” says Spence. “We’re going to try to provide opportunities so that parents and their children can sit down and say here’s what we want in terms of a learning environment, and where can we get it?”

Many of these choices were available long before Spence came along. French immersion, the granddaddy of boutique schooling, has been around for more than 40 years. But the Toronto of today offers vastly more: there are schools that concentrate on the arts, on math and science, on social justice and the environment. There is a school specifically for gay teenagers, and one for single parents. One school holds kindergarten classes outdoors when possible, and others are unstructured, without tests or homework.

Most controversial, perhaps, are the schools tailored to student ethnicity, such as the east end’s First Nations School, or the much-discussed Africentric Alternative School. For some, such schools revive the ugly spectre of segregation, exactly the sort of menace the U.S. mercifully struck down with *Brown vs. the Board of Education* in the 1950s. “I don’t think it’s a good idea,” said Ontario Premier Dalton McGuinty when the idea of an Africentric school was first proposed. “I think our shared responsibility is to look for ways to bring people together. One of the most powerful agents of social cohesion is through publicly funded education.”

But total cohesion may be something of a pipe dream, says Spence. “I think we are very much segregated, based on socio-economics. It’s happening already!” he exclaims. In Toronto, seven out of 10 students belong to visible minority groups – and since the city is carved into ethnic enclaves, certain groups

will naturally predominate in a given school. But the teachers and curriculum are not reflecting these changing circumstances, and that’s what Spence aims to correct.

“It’s not segregation, it’s salvation,” he says. (Catchy slogans are often the glue Spence uses to get his messages to stick.) “Getting an opportunity to be in an environment that reflects who they are is salvation for many kids who end up not even dropping out, but being pushed out because they don’t fit the status quo.”

SPENCE “WOULDN’T CHANGE A THING” about his own upbringing, but he clearly knows what it’s like to feel alienated in school. Born in England in 1962, he immigrated seven years later with his parents and siblings to Windsor, Ontario. There, as one of very few black students in his school, he was bullied routinely. “I didn’t want to come to school,” he says. “There were guys there who were going to try and take my lunch and make me feel like I didn’t belong.” Still, attentive professional parents (his mother was a nurse, his father an engineer) and good relationships with teachers helped him to prosper.

He has joked that running from bullies helped him develop athletic talents. In the 1980s, he played two seasons as running back for the B.C. Lions before injury propelled him back to school. After earning a degree in criminology, he started working with juvenile offenders. “It was just really demoralizing,” he says of that time. “I thought, I want to get to these kids before they end up here. Because when they do, it’s almost like society’s given up on them. So that was the contribution that I was going to make: I wanted to make sure kids didn’t end up in those circumstances.”

In 1996, he earned a doctorate from the Ontario Institute for Studies in Education and decided to apply his knowledge as a teacher – then middle-school principal – in one of Toronto’s lower-income neighbourhoods. This last experience informed the second of his four books, entitled *On Time! On Task! On a Mission!* It diarizes the 1998-1999 school year at Lawrence Heights Middle School, a place where students were given to hurling library books out the window, mooning teachers, defacing property and worse. A place where one student told him, “It doesn’t matter what you guys do. By the time I’m 16 I’m going to end up in jail.”

With a vigorous program of changes, including school uniforms, summer camp and Saturday schooling, Spence was able to instil hope in many of these young adolescents. It’s something he’d been doing for a while. While teaching in



1993, he co-founded a program called Boys2Men, through which at-risk boys are assigned a male mentor who helps tutor them and acts as a role model. The program now boasts more than 70 chapters located in schools across the province.

In fact, strengthening the fragile state of boys' education has become Spence's abiding passion. In general, girls now outperform boys on tests of reading and achieve equal results in mathematics and sciences, resulting in a marked gender split by the time students reach university; in Canada, there are currently three women for every two men studying at the post-secondary level. Spence is not alone in his concerns: in the bestselling book *Boys Adrift*, psychologist and physician Leonard Sax bemoans a culture in which many males now live at home well past boyhood, confused in a world in which traditional notions of masculinity have lost their meaning, and where many boys grow up without fathers.

Experimental all-boys classes have been offered by the school board for years; Spence taught several of them himself. He thinks the time for a publicly funded all-boys school is long overdue. "Anything that we do really has to be driven by the data," he says, "and when you look at who we suspend or who's underachieving, it's boys." (Records from the Toronto board show that male students receive 77 per cent of all suspensions.)

As a teacher of an all-boys class, Spence's methods were extremely personal and decidedly old school. "I wouldn't let the students come into the classroom until I'd shaken their hand," he says. "I'd say, Ricky, I believe in you. Today's your day. I really need you to focus in period two. Next guy: John! How was your evening? Hope you have a great day. Let's do lots of learning today. It took 10 seconds. But it demonstrated that whatever happened to them yesterday, that was yesterday. Today was a new day."

Research does suggest that boys and girls learn differently, and a casual observation bears this out. On a September

morning at Lord Dufferin Public School in Regent Park, I observed a select group of middle-school pupils in unisex classrooms. Both groups were focused and attentive, but the girls were much more static – "I should see some movement here," admonished their teacher, urging them out of their desks to fetch equipment. They also appeared more consultative, asking each other "what do you think?" when working on a group activity.

In the boys' math class down the hall, things were different. Small groups working on a problem were more hierarchical in nature, and the boys' apparent need to move around was not discouraged. One boy stood while figuring out a problem, another lay on the rug and yet another sat hunched over his desk, kicking his heels together.

But both groups were equally well-behaved: it is a myth that boys naturally descend into *Lord of the Flies* savagery when deprived of the "civilizing" influence of girls. Lord Dufferin principal Gary Crossdale says that in single-sex classes, "the boys are more calm," since they don't feel the need to show off. "Teachers can talk directly to the boys about proper interaction with girls," he says, "and really make it part of the learning. Sometimes we assume kids just learn these things, but we can't assume anything."

In spite of the evidence supporting him, Spence has met with opposition from those who do not buy his vision. A 2007 report by the provincial government's Literacy and Numeracy Secretariat suggested that if anybody benefited from unisex education, it was actually girls, not boys. And certain trustees on the board are firmly entrenched in their opposition. "To say that boys are fundamentally different than girls runs counter to our core philosophy, and is something that will damage all our schools," says trustee Howard Goodman. He attributes differing success rates for boys and girls to things such as student-teacher interaction and school quality. Goodman also cites a recent northern Ontario study, which showed that



simple changes in kindergarten pedagogy could eliminate a long-standing (and in his opinion, highly patronizing) notion: that girls generally enter school with as much as a two-year head start in reading and writing over boys. In the end, “some boys are superior academically, and some girls are dropouts,” he says. “The question is, how do we help all kids who are at the bottom end?”

Spence admits that boys are not a homogeneous group. “I have a son who’s seven years old. Would I put him in an all-boys’ school? Probably not! He’s doing fine in the [public] school that he’s in right now. But there are a whole lot of boys who aren’t, for a whole lot of reasons. So why not try to find, and customize, an environment that’s going to meet their needs?”

One of the hallmarks of emotional intelligence – something Spence has always tried to encourage – is the idea of being comfortable with ambiguity. If ever there was a debate that demanded ambiguity, it’s the one about customized schooling. There are other objections: some have questioned whether the increase in alternative schools will siphon resources from a cash-strapped board, since they are small institutions with separate administrative costs. And even though these schools were designed to provide private-style options to parents who can’t afford \$20,000 in yearly tuition, education activists such as Annie Kidder have observed that they still appeal mostly to white, middle-class students.

Further, fixing one aspect of a student’s difficulties might not fix all of them. Tailoring schools to ethnicity, for example, is not in and of itself a perfect solution. The Africentric Alternative School (not a stand-alone school, but one housed within a regular public school building) is now in its second year and thriving, with a waiting list and excellent results on standardized tests. The much-older First Nations School, however, has struggled with poor test results and frequent suspensions.

Like many alternative schools, the First Nations School shares space with another school, and its high suspension rate has been attributed to fighting between the two. Spence thinks “the environment there has to be refreshed somewhat. When you walk into a school, you need to feel that sense of belonging.” Still, the school-within-a-school model seems a necessity for tiny programs offered by a system with large, underpopulated buildings.

These school buildings are relics from a time when children came from bigger families, hailed mostly from Northern Europe and were thought of as identical, empty vessels, without particular needs or learning challenges. Many of these schools are severely undersubscribed now; for those who cherish the idea of schools as places where community bonds are forged, school closings are a regrettable reality. “When a school’s half empty, you have half the resources. And kids don’t get the kind of programming that they want and deserve,” says Spence. So even though alternative schools now represent a small fraction of the board’s total complement, schools-within-schools are almost sure to increase in the future, as the board seeks to fill them with students who would otherwise have sought other educational options.

Yes, it will mean longer commutes for children used to walking. It will mean more separation, in a city that prides itself on being a model of multicultural, and increasingly non-sexist, harmony. But Chris Spence is banking on the idea that when students obtain a strong sense of self early in life, they will be better equipped to take their place in a community as richly varied as Toronto. “More voice and more choice,” he says, ever the sloganeer. “If we can give them those things, we have a better chance of success for all our kids.”

Cynthia Macdonald (BA 1986 St. Michael’s) is a writer in Toronto. She profiled the Munk School of Global Affairs in the Autumn 2010 issue.

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— The — Aviator

Brave, dashing and touched by the spirit of adventure, Douglas McCurdy became the first person to fly an airplane out of sight of land

BY ALEC SCOTT

ONE HUNDRED JANUARIES AGO, at the outset of 1911, a young Canadian prepared to become the first person to fly a plane so far out over the uncertain sea that he would lose sight of land. He intended to pilot his biplane from Key West, Florida, 94 miles over the Straits of Florida to Havana. If the flight succeeded, it would also set a new world record for distance travelled over open water.

Douglas McCurdy was a lean, soft-spoken Cape Bretoner who had finished his undergraduate degree in engineering at

U of T four years earlier. In 1909, he had become the first in the British Empire to lift a plane into the skies. He was the ninth man ever to fly a mechanized craft after Orville Wright had done it first at Kitty Hawk, North Carolina, in 1903.

After his first few shaky flights, and some crashes, McCurdy had solidified his piloting skills, and between 1909 and 1911 he participated in flying exhibitions all over the continent. Hoping to give the people of Cuba their first glimpse of mechanized flight, *The Havana Post* and the City of Havana together

offered McCurdy the then princely sum of \$8,000 (equivalent to more than \$100,000 today) to be the first person to fly from Key West to Havana. “Being young and having the spirit of romance and adventure in my soul, to say nothing of the prize involved, I decided to attempt the flight,” he said.

He planned to make it all the way, but, just in case he didn’t, McCurdy paid a tinsmith to make hollow pontoons to attach to the wings. If the plane and pilot survived a sea landing, these flotation devices would buy him some precious time. Caught up in the collective enthusiasm for the nascent field of aviation, the U.S. navy offered to string six torpedo boats along the line of flight, each puffing out smoke to help McCurdy navigate, and prepared to steam to his aid should he crash into the water.

On the island at the southern tip of Florida, huge crowds assembled before dawn on the day of McCurdy’s scheduled departure in mid-January 1911. But a harsh northerly wind was blowing, whipping up the sea, and McCurdy decided to put off the flight. For each of the next six days, the same wind blew and each day the crowds became more restive. Some accused McCurdy of cowardice.

On the seventh day, the wind rested and McCurdy took off.

McCurdy had decided to do a brief test flight in Key West to make sure the plane was running well, but, after liftoff, onlookers surged over the landing field. Going back became out of the question; he headed out to sea. “It was a brilliant morning,” he said, “and as I flew over the intense blue water, I felt a thrill of happiness and contentment known only to those who have delighted themselves by this form of travel.” He reached an altitude of 1,000 feet and a speed of 48 miles an hour. “Out on the water, I could see the smoke from the funnels of the nearest torpedo boat. Half a mile out, I saw a beautiful mirage before me over the water. It was magnificent – words fail me to describe it.”

As he passed over each successive torpedo boat, he could hear the sailors blowing their whistles, and then, after two hours, he spied the waterfront of Havana, the foreboding hulk of Morro Castle, the wharves “black with people,” the harbour festive with hundreds of small, brightly coloured sailboats. A cheer went up among the Cubans. “Then I heard a terrific noise behind me,” he recalled, “and one cylinder after another went, until I had no engine.” Within tantalizing sight of his destination, he had no choice but to hazard a water landing. A cry from the crowd as the black speck tumbled into the sea: “My God, he’s fallen!”

The water was thankfully smooth as he set down on the swell, and the pontoons did their job of keeping the plane afloat, but for how long? There were three 14-foot tiger sharks circling below. The U.S.S. Pauling took only four-and-a-half minutes to reach the downed craft. “I didn’t even get wet feet,” McCurdy said, but the plane was a dead loss.

He’d broken two records with his flight – it was the longest and the first out of sight of land – even if it hadn’t ended in triumph. McCurdy had taken the precaution of shipping another plane to Havana, so, without changing clothes, he gave the Cubans a flying exhibition – the first of several over the coming days. “Everywhere McCurdy went he was besieged by a mob...and by countless influential citizens begging to bestow some favour on him,” his biographer H. Gordon Green commented.

Eager to bask in the pilot’s glory, the newspaper and City of Havana promised to award McCurdy the prize money – after all, he’d reached Cuban territorial waters even if he hadn’t touched down on terra firma. At a gala ceremony at Havana’s ornate opera house, Cuba’s president José Gómez praised the young man lavishly and handed him an envelope with fancy red and green seals – with no cheque inside. (McCurdy later asked the American minister to Cuba how he could get his money, and the diplomat advised him that there was no easy political or legal way to do so, and to let it go.) “Still, my grandfather remembered this as a happy time,” McCurdy’s grandson Gerald Haddon says from the study of his house in Oakville, Ontario, surrounded with mementoes of his grandfather’s flights. “He set some new records on that Cuban flight – and, of course, he survived.”

MCCURDY WOULD BECOME one of the few early barnstormers to outlive his youth – partly due to luck, but also because he was never foolhardy. His relatively conservative attitude toward risk and his insistence on knowing everything about the machines he piloted can be attributed to the influence of his mentor and his family’s longtime Cape Breton neighbour, Alexander Graham Bell.

The probably apocryphal story goes that Bell, while visiting the town of Baddeck in Cape Breton, looked through the window of the local newspaper office and saw the editor – who was McCurdy’s father, Arthur – trying to fix his telephone. Bell reportedly helped by removing a fly from the phone’s mechanism. However the friendship between the men actually



Douglas McCurdy survived a spill at an aviation event at Donlands Farm in Toronto in August 1911. It was the city's first airplane crash – and one of several close calls for McCurdy

started, it developed rapidly. After Bell's return to Washington, Arthur helped the inventor find land for a stately summer house in Baddeck (next to Bras d'Or Lake) and assisted with the purchase. Arthur also became Bell's private secretary, and the young Douglas – whose mother had died during the birth of his younger brother – spent much of his time on the Bell estate. Bell and his wife, Mabel – whose own sons had died in infancy – were taken with the boy and offered to adopt Douglas, but a redoubtable McCurdy aunt resisted.

Douglas and his brothers spent much of the summers on the lake, Huck-Finching it on a sailing raft they built. At many other times, Bell encouraged the boy's interest in science, and later helped pay for his engineering studies at U of T. After graduating, Douglas and his friend Casey Baldwin (BASc 1906) came to Baddeck to assist Bell with his ongoing experiments with flight.

Bell had the young grads work on kites made of pyramidal cells. He wanted to make one that could carry a grown man into the air. In September 1907, after a bitterly cold day of working on the latest model, they sat, sipping hot coffee before Bell's baronial fireplace, brainstorming. Mabel could see how much her husband, just turned 60, was enjoying the company of the young men and proposed that Bell and his protégés form an association with one goal: "to get into the air." She had, she said, a nest egg from the sale of property that she was prepared to risk on the fledgling group.

Bell had come across two men with useful skills whom he proposed to add to the group. He persuaded U.S. president

Teddy Roosevelt to loan out the leading aeronautical expert of the time, Artillery Lieutenant Thomas Selfridge, a Californian with an easy, chivalrous temperament. The other, Glenn Curtiss, had no expertise in flight, but knew everything about small, lightweight engines from owning a motorcycle-engine factory in upstate New York. He had no higher education, but was a tinkerer par excellence and had already shown a comfort with risk by breaking the world speed record on a motorbike.

At the Bell Museum's archives in Baddeck, the inventor's handwritten scrawls – bad penmanship seems to be the privilege of geniuses – document the progress of these four men. The papers also reveal Bell's developing opinions of each member of his "brilliant coterie" – Baldwin he called "a thinker," McCurdy "a doer."

Bell gave each man the task of designing his own aircraft (to foster competition), but encouraged them all to pitch in with ideas and observations on each other's experiments and shared with them all his own considered feedback. There seemed to be no jealousy among the quartet – they were too busy, the stakes were too high (an error could mean death or severe injury). Each week, at Bell's insistence, they produced a newsletter to record their latest victories and setbacks – and the breathless pace of their innovations is documented in these missives.

Because there was more snow – needed to soften landings – in Curtiss's hometown of Hammondsport, New York, the foursome relocated there in early 1908. They kept in constant touch with Bell, who remained in Baddeck. From kites, the group had moved to gliders, which they'd fly off the steep-sided New York hills. With just wings attached to their arms, they lacked stability; they wobbled and often crashed. So they added a stabilizing tail to their gliders, after which 30- and 40-yard flights down the hillsides became common.

Then the men began to integrate lightweight engines into prototypes they'd shown to be airworthy. Selfridge's plane was ready first, and was named the Red Wing for the scarlet silk (left over from one of Bell's kites) stretched over its bamboo frame. In what was the first public airplane flight in North America – the Wright flights had been done in secrecy – the Red Wing lifted off (with Baldwin at the helm) from a frozen lake on a windless day, remaining four or five feet high for just over 100 yards. However, on a flight five days later, a gust of wind caught it, tilted it, and its right wing crashed into the ice, shattering it.

Undaunted, the associates came up with a flap at the end of each wing, which could be lifted or dropped to compensate for wind gusts. These balancing devices – which a French aviator named “aileron” (meaning, “little wings”) – remain in use to this day. They were applied to Baldwin’s plane, the group’s second, the White Wing, which debuted in the spring of 1908. Although the plane proved more maneuverable in the wind, its lifespan was also short. On his maiden flight, McCurdy flew it at a height of 20 feet for almost 200 yards, but crashed it so severely that everyone was surprised he walked away. The plane was beyond repair.

Then, in the summer of 1908, came Curtiss’s plane, the June Bug. When watching it fly on Independence Day, one of Bell’s daughters expressed the sense of wonder common among mechanized flight’s first witnesses: “In spite of all that I had read and heard, and all the photographs I had seen, the actual sight of a man flying through the air was thrilling to a degree I can’t express. We all lost our heads and shouted, and I cried and everybody cheered and clapped.”

Putting his crash behind him, McCurdy got back in the cockpit and in this craft really learned how to fly, using the ailerons to become the first pilot ever to carve a figure eight in the sky.

In the fall, McCurdy returned from Hammondsport to Baddeck with his plane, the Silver Dart, with the idea of showing his friends and neighbours how it could fly – and, with an eye to history, of piloting the first flight in the British Empire. He took off in February of 1909 from the frozen surface of Bras d’Or Lake, and remained aloft for three-quarters of a mile, flying at about 40 miles an hour. He wanted to go right back up, but the always cautious Bell prevented him. “You can fly her again tomorrow if you like, but that’s all for today.” The British aviation authorities recognized McCurdy’s achievement by ultimately awarding him the first pilot’s licence in the Empire.

With this, all four men had completed the task Mabel Bell had set for them (and funded) – “to get into the air.” But the triumph was tinged with sadness. A few months earlier, the U.S. government had asked Selfridge to be an observer on a test flight piloted by Orville Wright near Washington. While the plane was up in the air, there was a crack like a pistol shot, a piece of the propeller blade fell off and the craft plummeted to earth. Wright survived, but his passenger Selfridge died.

Mrs. Bell wrote the remaining three: “I can’t get over Tom’s being taken. He was so quiet, it seems strange how large the place is he has left vacant.... I am so sorry for you in this breaking of your beautiful association.” It meant the end of their group, and the close of a period of extraordinary invention and camaraderie.

McCurdy believed the plane would play a role in future wars, and in exhibitions he would drop oranges, which he called bombs, on targets identified as battleships to prove his point

AFTER THE BREAKUP, the U of T chums Baldwin and McCurdy decided they would put their hard-earned aeronautical knowledge to use and set up an airplane factory in Baddeck. With Bell’s help, they sought to convince the Canadian government that planes could assist in national defence. A demonstration flight of the Silver Dart was scheduled at Camp Petawawa in Ontario in August of 1909. As cadets, officers and defence department officials watched, McCurdy made the plane float, turn and bob through the air satisfactorily, at 50 miles an hour and 50 feet above the earth. But when he brought the plane down, the wheels dug into the sandy runway and the plane tumbled over on its nose, splintering into pieces. No government orders for planes would be forthcoming.

Baldwin chose to help Bell on his experiments with hydrofoils, while McCurdy decided to join Curtiss on the then nascent barnstorming circuit – doing exhibition flights for money across the U.S. The young pilots on this circuit were the idols of their generation. Humans had always dreamed of soaring like the birds and now, as a result of careful science and engineering and devil-may-care bravery by the first test pilots, the impossible had become possible.

McCurdy joined what they called the “aeronautical circus,” and did shows (for \$500 each) in almost every major city east of the Mississippi – in D.C., he circled the Washington Monument; in Brooklyn and Palm Beach, he became the first pilot to transmit and receive wireless signals on board; in Ontario, he won a race from Hamilton to Toronto against another member of the flying fraternity by cutting over the lake. Accidents, many fatal, abounded on the circuit and McCurdy had his share of close calls. In Chicago, his plane caught fire after coming into contact with live wires. In Allentown, Pennsylvania,

his motor stopped 800 feet in the air, and wind capsized the plane, before he righted it and glided to a violent landing.

McCurdy continued to believe the plane would play a role in future wars, and in exhibitions he would drop oranges, which he called bombs, on targets identified as battleships to prove his point. Some Japanese observers at a U.S. airshow took note, and wasted no time placing orders for planes on behalf of their military.

Even the onset of the First World War didn't change the mind of the Canadian government, though, with Sam Hughes, the minister of militia and defence, blustering at McCurdy: "The aeroplane is an invention of the devil and will never play any part in such a serious business as the defence of the nation."

"I am sure," the young man said quietly, "you will live to regret those words, General Hughes."

During the First World War, McCurdy and Curtiss helped supply aircraft to the British, and McCurdy ran a flight-training school in Toronto, sending trainees to join the newborn British air force. (It was only in the 1920s that Canada belatedly inaugurated its own flying force.) Soon after the war, McCurdy met and married a Woodstock, Ontario, beauty, Margaret Ball – with whom he'd have a boy and a girl.

Throughout his life, McCurdy would continue to contribute to the growth of aeronautics in Canada – albeit in less dramatic ways than he did in his youth. In the 1920s and '30s, he was president of the Curtiss-Reid aircraft company, which sold civilian aircraft around the world. In the Second World War, he oversaw Canadian aircraft production. From 1947 to 1952, McCurdy served as Nova Scotia's lieutenant-governor and there are photos in his province's archives of the still lean, distinguished-looking man squiring the impossibly young-looking Crown Princess Elizabeth about Halifax.

McCurdy never retired from flying, becoming, before his death in 1961 at age 74, the oldest licensed pilot in the world. In his later years, he sometimes spoke about his early flights – "he wouldn't talk much about them, unless you asked," Haddon says. When people did press him, the Cuban flight generally took pride of place among his recollections. In speeches and radio broadcasts, he tended to spend the longest time describing it, lingering fondly over the enthusiasm and duplicity of his hosts, remembering that stunning mirage over the water. Among the many firsts, the inventions and innovations he helped in, the successful takeoffs and flights, the crashes he'd somehow survived, there was this: McCurdy was the first man to have such confidence in himself and his plane to head so far out over the open sea that he lost sight of land.

Alec Scott (LLB 1994) splits his time between Toronto and San Francisco. He writes frequently about arts, travel and the law.

Like a Bird

In August, a U of T engineering student became the first ever to fly a human-powered "ornithopter"

There may be no one who better understands how Douglas McCurdy felt during his first flight a century ago than Todd Reichert, who is an engineering PhD student at U of T.

Last August, in Tottenham, Ontario, Reichert became the first person to fulfil the vision Leonardo DaVinci set down in his notebooks in 1485 – of flying a human-powered vehicle through the air like a bird. "This is the original aeronautical dream," Reichert says. "Humans have always wanted to fly like birds."

On a quiet summer morning, Reichert pedaled hard to get his 43-kilogram craft's immense wings flapping; at 32 metres from tip to tip, the Snowbird's wingspan equals that of a Boeing 737. Aloft for 20 seconds, the "ornithopter" covered a distance of 145 metres at an average speed of 26 kilometres an hour.

Like McCurdy before him, Reichert had a core group of four behind him: U of T professor emeritus James DeLaurier,

playing the role of Alexander Bell; Cameron Robertson (MASc 2009), the chief structural engineer; and two aviation enthusiasts from Vancouver, high school student Robert Dueck and his father, Carson. They call themselves the "five amigos."

Another 30 U of T students helped during the four years of designing and building the craft. The key engineering problem: the wings had to shift their angle of attack between the upstroke and downstroke, thereby providing sufficient lift and forward propulsion.

Like his predecessor McCurdy, Reichert had his share of bad landings along the way: "I never flew higher than I was willing to fall. I did get a scratch once, but mainly when I was coming in for a crash, I was thinking, 'Oh crap, we have to repair this thing.'" – Alec Scott

Watch a video of Reichert's historic flight at www.magazine.utoronto.ca.



Engineering PhD student Todd Reichert flew a flapping-wing airplane for 20 seconds, covering a distance of 145 metres

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All about Alumni



The Autonomous Rebel

Like the rest of his generation, Environics co-founder and author Michael Adams has no plans to spend his twilight years in a rocking chair

WHEN HE WAS FINISHING HIS LATEST BOOK, *Stayin' Alive*, the pollster and author Michael Adams (MA 1970) was living the meat-in-the-sandwich lifestyle that is currently the lot of countless middle-aged Canadians: teens in high school, parents frail and dying. “A classic baby boomer place,” as he puts it, sipping white wine in a favourite haunt in Toronto’s Yorkville neighbourhood. “This is the most

personal of all the books I have produced,” says Adams, “as it is the story of me, my family and my friends.”

After completing it, Adams found himself wondering whether *Stayin' Alive* would become his swan song. It’s unlikely. Adams, who has been tracking social values since 1983, still seems far too engaged with the business of unearthing Canadian public opinion to hang up the towel – a stance that >>>

Breathing Lessons

Nurse Almir Alicelebic brings an element of kung fu to the bedside

A MAN ARRIVES IN THE ER with a racing heartbeat. A nurse takes the man's pulse. It's over 150, well above the normal range of 60 to 100 beats per minute.

At the Weeneebayko hospital in Moose Factory, Ontario, nurse Almir Alicelebic (BScN 2009) not only provides the appropriate care for atrial fibrillation, he teaches the patient how to slow down his frantic heartbeat with a Kungrobics breathing technique. He also refers the patient to his weekly Kungrobics class, which he holds at a health centre.



Alicelebic learned Kungrobics in Toronto, and the practice emphasizes the breath work used in kung fu training. Alicelebic, 25, finds that it promotes health and fosters feelings of well-being. As a nursing student, he introduced Kungrobics to Na-Me-Res, a shelter in Toronto for native men. "The breathing exercises were quite successful for some of the residents, especially ones off the street with cravings, anxiety and non-clinical depression," says Alicelebic, noting that a treatment program is also necessary for people dealing with cravings. At the end of his placement, he taught Kungrobics to a First Nations counsellor at the shelter to ensure the practice could continue. The counsellor thought the movements resembled those of the animal spirits depicted in traditional native dances.

"My favourite successes come from the bedside," continues Alicelebic, who has offered the breathing exercises to patients battling everything from arthritis to suicidal feelings. He is now hoping to work with a physician to integrate Kungrobics into the Weeneebayko hospital's traditional healing program.

Five years ago, when Alicelebic started studying Kungrobics, he just wanted to learn a martial art. "I had no idea to what extent it would shift my perception, morality and outlook on life," he says. "I've been extending this sort of thinking into my everyday life, and I've been noticing more while being happy with less." — Susan Pedwell

Overheard



On *CSI*, all deaths are murders. In Ontario, most people die of natural diseases. Of the approximately 80,000 deaths that occur in a year in Ontario, only about 250 altogether across the province are suspicious or homicides.



Dr. Toby Rose, a forensic pathologist, highlighting one media distortion of her profession. Rose trained in pathology at U of T. She spoke at ideaCity in Toronto last June.

>> also marks the 64-year-old Environics co-founder as a card-carrying boomer. "If I were to be zapped by a Vespa jaywalking across Bloor Street today, I would be happy to have ended my authorial career with this book," he says. "If I manage to dodge that Vespa, then I will continue to work for the rest of my life as long as it does not feel like work."

On a sunny fall day, he's fuming (still) about the Conservative Party's decision to scrap the long-form census. Adams is also full of talk about his latest venture, the four-year-old Environics Institute for Survey Research. Its aim is "to stimulate constructive discourse" based on public-opinion research geared at specific groups, such as Muslims and aboriginals, who tend not to be the subject of values surveys.

Adams' previous titles probed and prodded the body politic; his bestseller *Fire and Ice* definitively laid to rest the notion that

Canadians are simply Americans with snow shovels at the ready. In *Stayin' Alive*, he divides the boomers into four "values" tribes, reasoning that people's beliefs shape our opinions to external forces at least as powerfully as more traditional categories (age, region, party affiliation). He slots himself into the "Autonomous Rebel" tribe — which most closely resembles the prevailing stereotype of the boomer as a countercultural hippie.

Looking ahead to the boomers' dotage, Adams doesn't expect the much-studied generation born between 1946 and 1964 to make a sharp right turn into reactionary old age. The boomers, his findings further indicate, are not morphing into their parents, and the progressive values of their youth remain intact. "The Autonomous Rebel at 60 looks like the Autonomous Rebel at 40," he says. "We're becoming more like ourselves." — *John Lorinc*



The World According to Walt *Wingfield Lost and Found* hits Toronto

“BY THE TIME GILBERT AND SULLIVAN had worked together as long as we have, they were only talking to each other through lawyers.” That’s writer Dan Needles, speaking about his longtime collaboration with the Beattie brothers – actor Rod and director Doug – on the *Wingfield* chronicles. This series of one-man shows about stockbroker-turned-farmer Walt Wingfield has played on stages from Victoria to Halifax to acclaim for more than a quarter century. The plays initially mined the urban-rural divide for humour, but lately they’ve gone deeper: portraying an agricultural community in transition and exploring the vicissitudes of family life. In the seventh instalment, *Wingfield Lost and Found*, the title character

struggles to save his crop from a terrible drought, and considers using the skills of a traditional diviner to help him locate a new source of fresh water.

The play is at Toronto’s Panasonic Theatre in January, and it’s a homecoming for the trio: the Beattie brothers and Needles grew up in the city, playing ball hockey on its streets, before going on to study at U of T. Rod (BA 1972 WOODS, MA 1976) vividly recalls a one-on-one seminar with the redoubtable Robertson Davies, who had almost finished writing his locally set Deptford trilogy of novels. Needles and Doug also acted together in Merrill Denison’s *Marsh Hay*, a bleak portrait of rural

Ontario life. “We were all excited by this idea that things could be set here, that we could tell our own stories,” Rod says, but their multi-episode tale would take several years of gestation.

After university, Needles (BA 1978 WOODS) tried his hand at farming in Rosemont, an hour north of Toronto, but he didn’t make much profit in his first year, so he took a job at the local paper. There, he began a popular column about a fictional city slicker who moves from Toronto to Larkspur, a town like Rosemont. Rod, who was trying to make his way as an actor, saw the material’s dramatic potential – and a nice role for himself in it. Needles and Rod toiled over an early draft script, while Doug (BA 1978 TRIN) gave comments on the near-final version and, as director, shaped Rod’s performances – their process to this day. Unlike solitary playwrights, Needles involves his compadres in every stage of the process. “We all have the understanding,” he says, “that theatre is not kind to single visions.” – *Alec Scott*

TOP PHOTO: COURTESY OF IAN JACKSON; BOTTOM PHOTO: COURTESY OF TORFORGE



The Damage Done

A young woman walks along a darkened street in a strange neighbourhood, stalked by a shadowy figure. The knot in your stomach tightens; you’re scared for her. She turns the corner and walks a little faster, and now you’re sweating bullets. This is the kind of psychological drama – which translates into a physical reaction – that Hilary Davidson (BA 1994 VIC) executes so well in her debut novel, *The Damage Done* (Forge).

Lily Moore, a successful travel writer, moves to Spain to distance herself from Claudia, her heroin-addicted sister, her ex-fiancé Martin and the demons of her past. But when Lily receives a call

from the NYPD notifying her that Claudia has drowned in her bathtub, she’s forced to return home. The tale only gets stranger when Lily discovers that the dead woman is not her sister. Lily finds herself exploring the underbelly of New York City to solve the mystery of Claudia’s disappearance.

One doesn’t have to be a crime-fiction enthusiast to appreciate the rapidly paced plot or well-developed characters. Davidson weaves together a murder mystery so complex, it’ll have you asking “whodunit?” right up until the last page. – *Suzanna Chang*



First Person

Warnings from the Red-Light Districts *Katie Palmer helps protect youth from sex tourists in Southeast Asia*

LAST JUNE, I LEFT CANADA during the highly controversial G20 Summit and flew to the other side of the world to investigate an even more contentious issue: sex tourism in the red-light districts of Pattaya, Thailand, and Phnom Penh, Cambodia.

People often assume that my interest in this deeply troubling subject stems from knowing someone who was a victim of sex tourism. That's not the case. But in 2006, I did meet Andrea, a fellow U of T student who was a sex-trade worker. She was in her early 30s, a single mother of two sons, and a prostitute by night. She hated the work, but, from her perspective, it was the only job that would enable her to financially survive. The day I met Andrea is the same day that I became more sympathetic to the plight of women who, for reasons related to social inequalities, choose to enter the sex trade.

As a result of my encounter with Andrea, I began volunteering with OneChild, a Canadian organization dedicated to eradicating the commercial sexual exploitation of youth throughout the world. While working one evening a week from home, I became aware of some horrifying statistics. For example, the International Labour Organization estimates that 1.8 million children under 18 (most reported cases in the 15-17 age range) are exploited in the sex industry each year, experiencing extreme physical, sexual and psychological abuse.

This past summer, Cheryl Perera, director of OneChild, and I headed off to conduct research on the major sex capitals of Southeast Asia. The material we collected will be used for OneChild's fundraising projects. We wanted to find out what local agencies across Southeast Asia are doing to combat youth sex tourism and what their financial needs are. From there, OneChild will try to raise the necessary money on their behalf.

One of our first stops was "Walking Street" – the red-light district in Pattaya. We saw dozens of Caucasian men wandering the neon-lit streets with their much younger and more attractive escorts. The lack of job opportunities available to women with few skills, coupled with a low-quality national education system, makes prostitution one of the few viable options for those in need of money. Some women are sold into prostitution by their parents during childhood, while others are runaway youth who stumbled into the "glamorous" world of sex and drugs.

As Cheryl and I made our way along Walking Street, two locals tried to sell us tickets to the infamous Ping-Pong Show. We had heard about these types of performances where women (who are often underage) insert ping-pong balls into their nether regions and then bounce them out. What makes the reality of ping-pong shows absolutely horrifying to me is that we – whether we are Canadians or Europeans, part of the wealthy business class or the backpacker community – perpetuate the demand for these types of "exotic" dances by attending them out of sheer curiosity.

We decided to leave Walking Street and head over to "Boyz Town" – the gay area of the red-light district. Even though the two areas were adjacent to one another, we got lost. We approached an older Caucasian man – an individual whom we correctly assumed was a sex tourist. It turned out he was heading over there and offered to guide us. He was an Australian expat living in Tokyo, and a retired pilot who enjoyed free flights around the world. And where did Mr. Retiree fly? The red-light districts of New York, Paris, Amsterdam and Bangkok, of course!

We asked him where we could find the youngest boy. Roger froze. "You don't want to go too young," he said. According to our guide, police all across Southeast Asia had begun cracking down on sex tourists who exploited youths. Sex with a minor was not worth a jail sentence of 20 years, he said. Cheryl and I exchanged glances. We both recognized the value of this information. We knew what our next project would be: We would pressure governments to develop and enforce laws allowing their citizens to be prosecuted for sexual abuse of young people and exploitation crimes abroad.

Katie Palmer (BA VIC 2008, MA 2010) has returned to Southeast Asia until March on a CIDA-funded internship.

The Two of Us

Angela Cox-Daly and Ross Daly

ANGELA COX-DALY AND ROSS DALY are professional musicians, and have been performing as a duo for 30 years. They met as teens at the Royal Conservatory of Music, where they both played violin and viola. They attended U of T's Faculty of Music, graduating in 1987, and now live in Kitchener, Ontario, with three musical kids.

Ross: I started playing violin when I was 11. By the time I was 12, I knew that I wanted to be a musician and marry a musician – specifically, a violin player. To seal this, I bought a double violin case and waited patiently for my future wife and music partner to fill it. When I met Angela, I was dating another girl who played violin. Three years later, when my girlfriend broke up with me, I was devastated – but Angela was delighted. Eight days after graduating from U of T, we got married.

I love Angela because she always sees the bright side of things without being blind to the not-so-bright, and knows how to turn ordinary moments into extraordinary ones. The kids sometimes get embarrassed and ask their mother to “calm down.” They just don’t appreciate yet her marvellous gift for seeing life’s wonders.

Angela: Ross once got a call from someone asking him if he could play Latin music. “Sure,” he said, and afterward asked



Angela Cox-Daly and Ross Daly performing at Roy Thomson Hall in Toronto, in 2008

me, “What’s Latin music?” He knew nothing about the genre that he had agreed to perform. In one week, he learned how to play the upright bass, studied a new kind of music, got a band together, played the restaurant and turned the gig into a recurring event. I love Ross’s adventurousness.

He’s also a fantastic arranger. He arranged and scored the music for full symphony orchestra to accompany an ABBA and Bee Gees tribute show. It took him 400 hours to create the arrangements. I never thought I’d be playing anything other than classical music and here I am doing crazy things – like performing ABBA and Bee Gees music all over the world. I have Ross to thank for that.



TOP PHOTO: COURTESY OF ROSS DALY; BOTTOM: CINDY BLAŽEVIĆ

Since its beginning as a daring experiment in economic collaboration, the European Union has grown into a sprawling, cross-continent merger, transforming daily life for millions of people.

But what about those who remain outside the new Europe – citizens of the Balkans, for example? What do they think about the EU? And how do they think their lives will change once their countries gain admittance to this exclusive club?

It’s a question, oddly, that politicians rarely ask. But a pair of Canadian artists did. Cindy Blažević (BA 1999 TRIN) and Pascal Paquette, a former U of T staff member, spent a summer travelling the Balkans interviewing and photographing residents.

They, along with 13 other artists, have created a kind of emotional map of the region – through text, photos, audio and video at www.theculture-lobby.com – that conveys the hopes and fears of regular folk as their countries prepare for accession.

The people shown here, from southern Serbia, blamed former leader Slobodan Milošević for making their country a pariah. “[He] ruined us,” they said. And what do they want from EU membership? “Better government.” – *Scott Anderson*

60 Seconds With

Cass Enright



AD MAN BY DAY, “beer guy” the rest of the time, **Cass Enright** (BA 1998 Innis) might just be *the* most enthusiastic beer enthusiast. He founded the Bar Towel website, full of Ontario craft-beer news and views, and the Golden Tap Awards, which honours bars and brewing achievement in the province. Non-beer drinker **Lisa Bryn Rundle** tries to understand the passion for malty, hoppy, sudsy brew.

How did you become “the beer guy”?

During frosh week at Innis College, somebody gave me a can of Blue Light. And I thought: This can't be it.... There's got to be more.

An idealistic young scholar.

Yes! So I took over the Home Brew Club and renamed it the Innis Beer Connoisseurs Society. **Isn't drinking beer for the taste a little like reading *Playboy* for the articles?**

There's a lot of fun in exploring flavour, and thinking about the history and everything that goes into brewing a unique beer.

How do you define a craft beer?

One that is true to traditional styles. Because small breweries are able to do unique things, they can use interesting ingredients such as fruits, chocolate, coffee and spices to create specialty one-offs and casks. They can make a super-hoppy beer, for example, and sell it right out of their brewery. And they can collaborate with other breweries and homebrewers to make even more interesting beers.

What's the main difference in taste between a Bud or a Blue and a typical craft beer?

The mass-produced beers tend to be light-coloured, light-flavoured, no aftertaste. Craft beers tend to be the opposite. Beer is supposed to have an aftertaste. Lots of mass beers claim to not be bitter – well, bitter is a flavour you actually want in craft beers.

So would you be caught drinking one of those mass-produced beers?

Oh sure. I'm not a beer snob.

What's the most heated beer debate you've ever had?

Government intervention with how we can buy beer. You can drive to Buffalo and get hundreds of kinds of craft beer from all over, but here there's a fraction of the choice.

Is that what your campaign and website “Free our Beer” is about?

Yes. I'd like to see private-owned craft beer stores.

Canadian beer culture is still often associated with Bob and Doug McKenzie. Who would you like to see as Canadian beer icons?

The brewers themselves – they are the real characters. And no one person could represent the huge diversity of what's going on.

You're being so diplomatic! Pick someone!

How about me? Cass Enright.

And your favourite beer?

Black Oak's Ten Bitter Years. A kick-ass beer. Super hoppy, super flavourful.

Milestones



Each year, U of T recognizes alumni and friends for their volunteerism and outstanding contributions through the Arbor Awards. This September, 83 individuals received awards, including **Ike Okafor** (BA 2003 New College), who co-founded the U of T Black Students' Association and served as its first president. Okafor also helped spearhead the Tan Furu Tutoring and Mentorship Program, which promotes education to youth in Toronto's middle and high schools.

Other recipients include **Wendy Terry**, who helped found University in the Community, an outreach program that provides free university-level humanities courses to low-income individuals. Terry also helps raise funds for the program, which is sponsored by Woodsworth College. **Michael Giorgio** (BBA 2003 UTSC) is an avid volunteer at U of T Scarborough's Management Co-op Department. He mentors undergrads, and each year teaches a first-year tutorial. The book *Moving Together: Physical Therapy and the University of Toronto* was published, in part, thanks to **Diane Gasner** (Dip PTOT 1963), who led the project. Gasner also mentors alumni who wish to help develop academic programs and courses at U of T and elsewhere. **Margaret Kende** (BASc 1960) was a pioneer for women in civil engineering: she was one of a small number of females who graduated from the program at that time. Kende has been involved with the Engineering Alumni office since 1988, and works to promote the status of women in engineering and science at U of T and elsewhere. **Dario Di Censo** (BCom 1988 UTM) has served as president of the U of T Mississauga Alumni Association. He has been a guest speaker at the commerce students' orientation.



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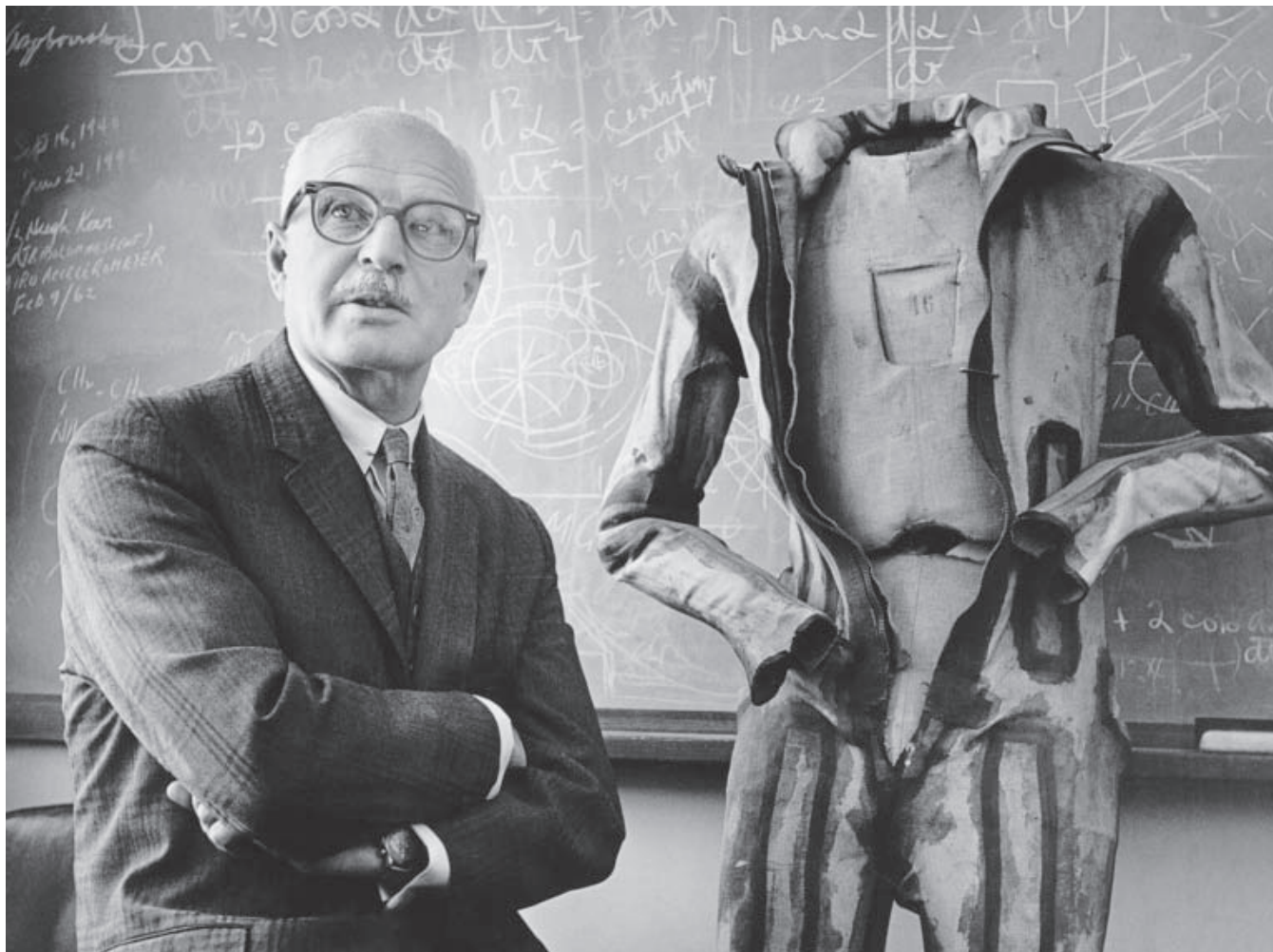


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1962

Defying Gravity

Professor Wilbur Rounding Franks developed the first G-suit used in combat

GIVEN THE AIRBORNE TALENTS of astronauts and fighter pilots, it's easy to overlook the role of their high-tech uniforms. This picture from 1962 shows Wilbur Rounding Franks, a professor in U of T's Banting and Best Department of Medical Research, posing with the Franks Flying Suit. It is the first anti-gravity or G-suit used in combat, and is still the foundational design for contemporary fighter-pilot and astronaut pressure suits.

Franks earned his BA at Victoria College in 1924, graduated from medical school at U of T in 1928 and worked in cancer research. After the death of his mentor Frederick Banting in 1941, Franks continued Banting's research into aviation medicine and the problem of Allied fighter pilots losing consciousness during high-speed exercises. The pilots

were subject to immense gravitational forces, making it difficult for the heart to pump blood to the brain.

Franks initially came up with the idea of a water-filled G-suit. By filling an outer layer with water that pressed on the legs and abdomen to prevent blood from pooling in the lower parts of the body, Franks could keep the pilots' blood circulating normally. His preliminary tests were on mice surrounded by condoms filled with water, and Franks eventually subjected himself to a barrage of successful tests in real aircraft. Later designs used air pressure instead of water pressure, and included an inflatable bladder. The Franks Flying Suit was first used in combat by the Royal Navy Fleet Air Arm in an invasion of North Africa in November 1942. — Sarah Treleaven

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Chancellor's Alumni Receptions

**SPRING
2011**

In the past year, Chancellor David Peterson has spoken at U of T alumni receptions around the world, from New York to Winnipeg to Shanghai.

This spring he will visit several North American cities to speak about the university's aspirations and share with alumni how the university is uniquely positioned to develop the talent, leadership and answers for the defining challenges of the 21st century. Some of the university's most distinguished professors will be travelling with him. Their lectures will address many of society's most pressing issues and showcase innovative responses being developed at the University of Toronto.

Join the chancellor at alumni receptions in the cities listed at right. Further information will be available closer to event dates at www.alumni.utoronto.ca.

Questions? Contact Teo Salgado at (416) 978-2368 or teo.salgado@utoronto.ca.

April 3
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April 4
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