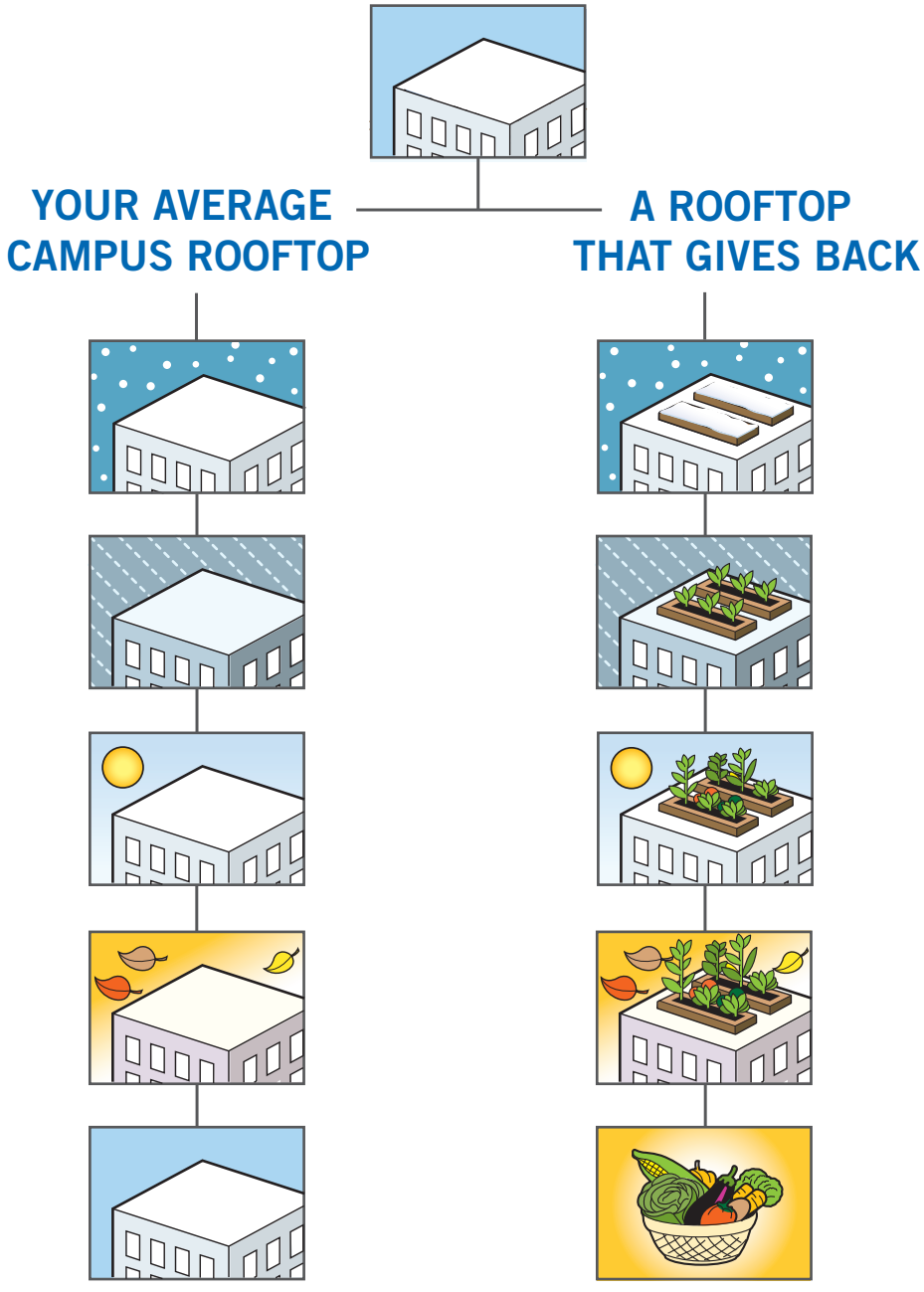
Marshall's Law Appreciating McLuhan / **Time Sensitive** Resetting the body's clock / **The Next Internet Sensation?** Peer tutoring
Speaking in Tongues Instant translations / **A Dancer's Dream** Helping through movement / **Europe's Debt Troubles** Is there a solution?

UofT Magazine

AUTUMN 2011

Mind Games

How should we define mental illness?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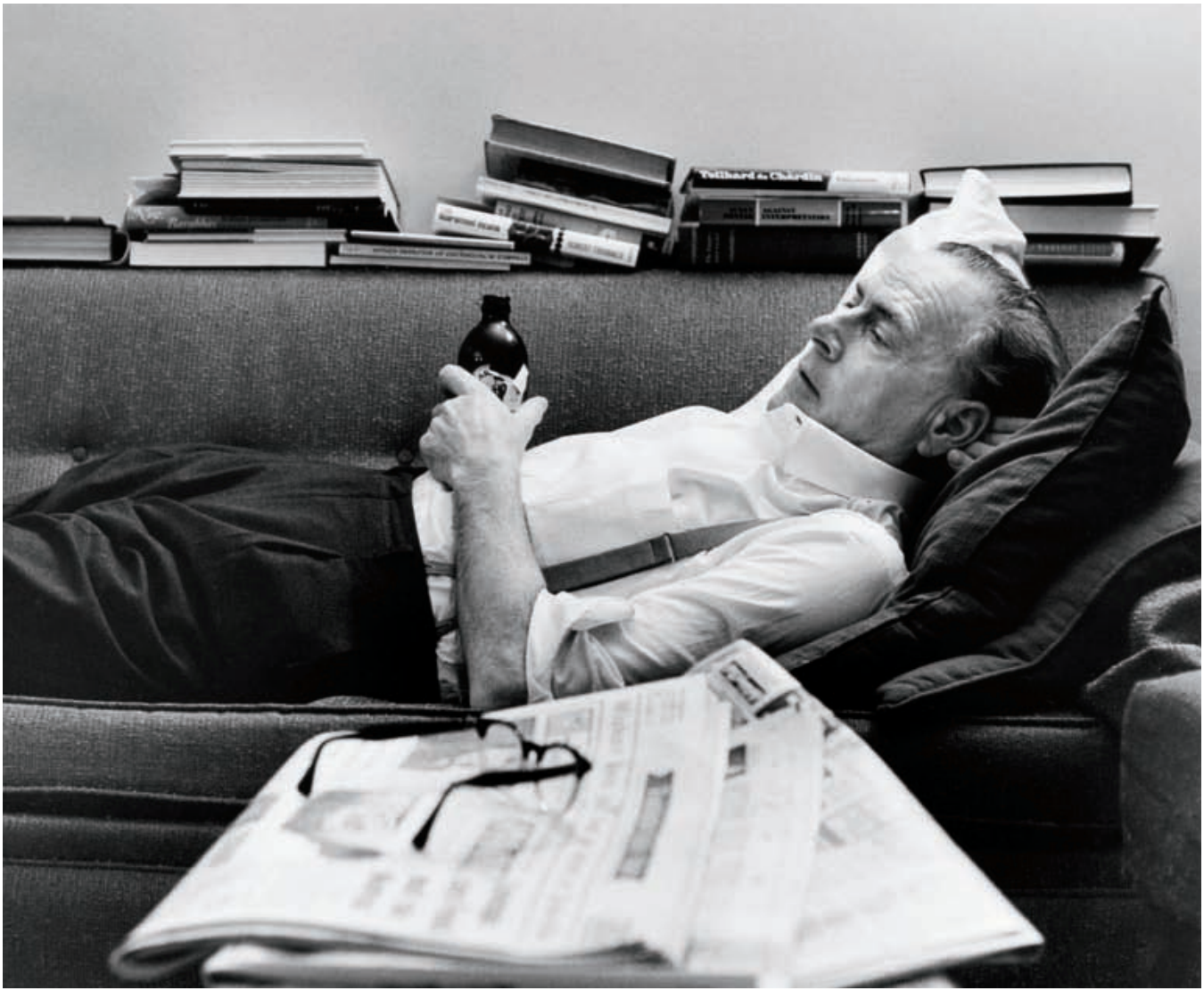
Autumn 2011

Volume 39, No. 1



UofTMagazine

AUTUMN 2011 VOLUME 39 NO. 1

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U of T Magazine, with a circulation of 300,000, is published quarterly by University Advancement. Alumni receive the magazine free of charge. Donations accepted at www.magazine.utoronto.ca under "Support the Magazine," or send a cheque, payable to University of Toronto, at the above address.

Publications Mail sales agreement
No. 40065699

Non-profit postage paid Buffalo, NY
Permit No. 3415. U.S. Postmaster send address corrections to P.O. Box 29, Lewiston, NY 14092

Printed in Canada by Transcontinental Printing Inc. ISSN 1499-0040

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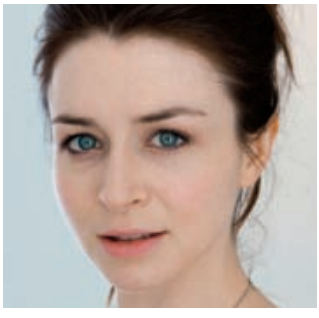
Departments

I need some "Macarena" back in my life!

– Cristina Santander, a fourth-year student in economics and political science, on what song should be used for a U of T "lipdub" being planned for this fall, p. 14

14 Celebrating 150 years of football at U of T



50 Caterina Scorsone plays TV's troubled doctor Amelia Shepherd

19 Aakash Sahney (left), Alexander Levy and Kevin Tonon (not pictured) have developed an app that helps people with speech problems express themselves more easily

Letters

What I find most disturbing is the subtext of these studies – the drive to scientifically categorize what it means to be a "good" mother and, therefore, a "bad" mother.

TAMARA MASSEY
BEd 2000 OISE, TORONTO

The Cult of Motherhood

While I agree that the years until age 4 are incredibly important in a child's development, I find studies that try to find the so-called ideal conditions for rearing children highly essentialist (biologically women must do X to be "good" mothers) and biased. The section of your cover feature "Unlocking Our Potential" (Summer 2011) that discusses stress during pregnancy and the amount of time that a child should be breastfed is, frankly, insulting. Is Prof. Stephen Matthews arguing that mothers who experienced extreme stress during pregnancy – and who subsequently could not or did not breastfeed – have doomed their child? What I find most disturbing is the subtext of all of these studies – the drive to scientifically categorize what it means to be a "good" mother and, therefore, a "bad" mother. Should we call it the "cult of motherhood"? I didn't think we were living in the Middle Ages.

TAMARA MASSEY
BEd 2000 OISE, TORONTO

An Exciting Initiative

"Unlocking Our Potential" covered several difficult and important subjects. In spite of its complexity, I found the article very well written and informative. I wish the best for the proposed Institute for Human Development. It strikes me as a very exciting initiative.

MAHIR AYDIN
TORONTO

Too Perfect?

Your article "Unlocking Our Potential" created for me the eerie image of somnambulant, conflict-free, self-regulating young students streaming into the future school system. And then the questions: Where are their minds? What are they actually learning? Where is the notion of "interest"? And what happens when someone is in error? Or is "error" itself to be eradicated?

MIKE SCAPILLATO
BA 1972 UTSC, TORONTO

Me and McLuhan

The photo and accompanying article, "Sage of Aquarius," on the back page of the Summer 2011 issue, brought back fond memories. That's me sitting to the immediate right of Prof. Marshall McLuhan! I was a third-year English student at St. Mike's, taking McLuhan's modern poetry class and listening to stories about Ezra Pound. For some of us, it was a scary class – we were in awe of this great man.

I remember the day McLuhan was discussing his theory of extensions (when an individual or society creates something that extends the capacity of the human body and mind: for example, a chair extends our ability to sit). One of the young men, who clearly got into the idea, put up his hand and asked, "What about a basketball?" McLuhan shot back, "That's an extension of our ability to dribble!"

Taking that class was a wonderful opportunity. McLuhan was generous with his students, and graciously welcomed us into his home for an evening party before the fall term ended.

By the way, another photo from the same gathering was published in *U of T Magazine* several years ago. I spotted it and kept it, and now, thanks to you, I have two pictures of me and McLuhan.

MAURA BLAIN BROWN
BA 1974 ST. MICHAEL'S, MA 1975
NEPEAN, ONTARIO

Undue Caution

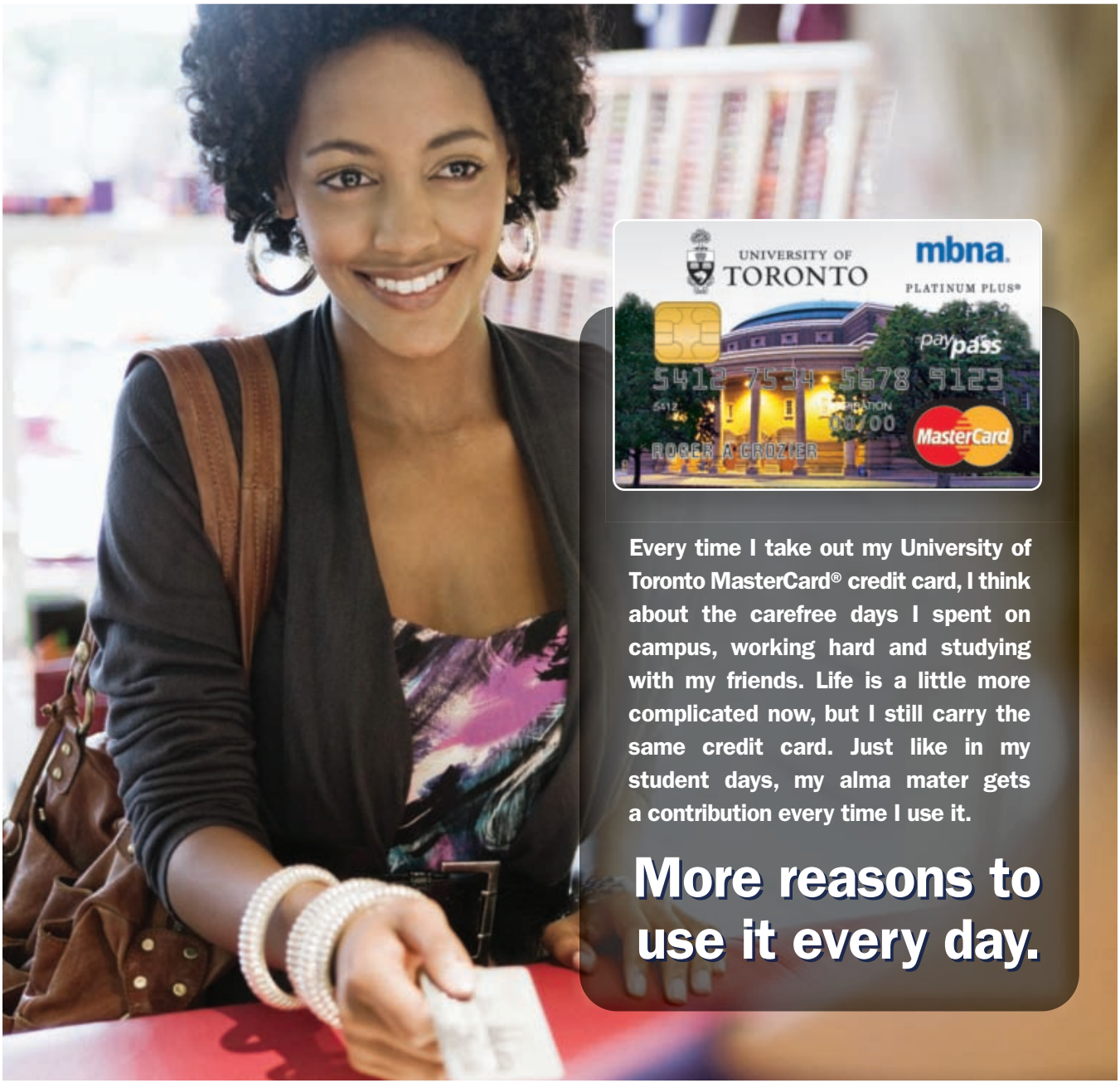
I was surprised to see a language warning accompanying Brittan Coghlin's award-winning story "Delivered" (Summer 2011). Do the editors truly believe that the U of T community is so sensitive that the presence of two expletives expressing frustration in a painful situation requires a cautionary note? Some people don't like profanity, but I shudder to think that anyone might have skipped over such a wonderful story for fear of being offended.

JACOB SCHIFF
BA 2002 UC, TORONTO

CORRECTION

U of T Magazine reported in the summer issue that the Alzheimer Society of Ontario had earmarked $10 million for a new campaign for the Tanz Centre for Research in Neurodegenerative Diseases. In fact, the ASO has provided $11 million since the centre was founded.

Show your pride.



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The Value of Great Teaching

U of T is committed to providing students with a unique, globally oriented learning experience

U OF T REGULARLY ATTRACTS INTERNATIONAL ATTENTION with the big ideas and cutting-edge discoveries generated by our faculty and students. We've never forgotten, however, that education is the cornerstone of our mission. To that end, U of T has intensified its efforts to support and value great teaching, and to create programming that helps our students learn more effectively and think more clearly and creatively.

The university's various departments and faculties have long honoured excellent teachers with a variety of awards. Six years ago, the President's Teaching Award was established to recognize academic staff who demonstrate sustained excellence in teaching. Awardees receive an annual professional development allowance of $10,000 for five years. As far as I'm aware, this represents a unique commitment among Canadian universities to honouring teaching excellence.

Many of our President's Teaching Award winners are highly accomplished researchers. In fact, at U of T, about 90 per cent of the professors who hold major research awards teach at least one undergraduate course a year – a very different picture than what occurs in many elite institutions south of the border. This commitment by our professoriate means that U of T students are routinely taught by global leaders who are helping shape their disciplines.

At the same time, U of T has developed a strong teaching stream for academic staff who seek a career weighted in favour of pedagogy. These dedicated colleagues have had a big influence on teaching university-wide, and, not surprisingly, are well represented among winners of the President's Teaching Award.

We are fortunate, too, that faculties, colleges and departments have developed a stream of exciting initiatives to improve the learning experience for U of T students. The philosophy department, for example, created the Socrates Project to give upper-level undergraduate students the chance to learn philosophy by teaching it to their first-year peers. Our renowned "Skule" of engineering has reworked its curriculum to help the next generation of engineers acquire the "soft skills" required to lead multidisciplinary teams and solve complex problems. Experiential or hands-on learning, already prominent in many disciplines, continues to expand, led by our Scarborough campus with its thriving co-op programs.

Fortunately, U of T's decentralized administration leaves room for innovation and, as appropriate, diffusion. The exemplar here is the ONE program. Started at Victoria College several years ago, it gives first-year students the opportunity to study a subject in depth from a variety of perspectives, with some classes in a small, seminar format. The program was soon adopted by Trinity College, and this fall starts at University College.

For individual instructors interested in brushing up, U of T's Centre for Teaching Support and Innovation (CTSI) offers ongoing workshops and consultations aimed at improving teaching skills. The CTSI's course design institute also enables professors to work with leading experts in fields ranging from student assessment to effective use of the latest learning technologies.

Students' views are an integral part of the equation. Recently, U of T's Council on Student Experience conducted focus groups and surveys with students on all three campuses to ask them how their learning experience can be improved. We also ask students to participate in external surveys to benchmark our progress. Data from this year's National Survey of Student Engagement show continued positive change in indicators such as student-faculty interaction. The trend affirms our belief that U of T can help students get the best of both worlds – a small college experience in a big globally oriented university.

As U of T prepares to embark on a major new fundraising campaign, we will ensure that teaching remains central to our mission. We plan to create more effective spaces for learning – both physical and virtual – in order to support a wide range of students, including distance learners and those engaged in continuing studies later in life. We also want to give students more opportunities to study or research abroad.

If, as the French writer Anatole France argued, great teaching involves the art of awakening the natural curiosity of young minds, the university's role is plain. We can help our teachers to ply their art, recognize those who excel and provide an environment that helps our students learn to think more effectively – not just in their time with us, but for the rest of their lives. These are simple but large aspirations. When realized, I believe they define the enduring value of a U of T education.

Sincerely,
David Naylor

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Join us as we sail the Queen Charlotte Islands to see old Haida villages and tour the Gwaii Haanas National Park Reserve with its wealth of marine wildlife. Or enjoy a family adventure vacation that invokes confidence, curiosity and joy in kids and teenagers on our multi-generational heli-hiking trip in British Columbia. Music lovers can experience Dresden and Berlin with UofT alumnus Rick Phillips, host and producer of Sound Advice, CBC Radio's weekly guide to classical music.

We are thrilled to introduce the Lifestyle Explorations series to Cuenca, Ecuador and Aix-en-Provence, France. These month-long stays allow you to immerse yourself in the lifestyle and culture enjoyed by the locals. Our Great Cities program was developed for those who love to explore all that the world's greatest cities have to offer and in 2012 we give you an Insider's Perspective of London and Berlin.

We hope you will join us as we explore the unique culture and history of communities around the world.

Prices are in Canadian dollars (unless otherwise noted), per person and based on double occupancy. Dates and prices are subject to change. Individual tour brochures are available approximately 6 – 9 months prior to departure.

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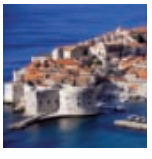

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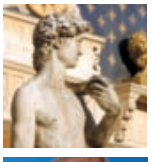

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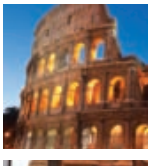

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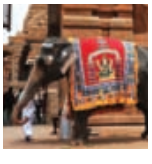

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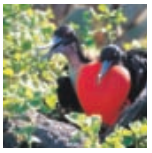

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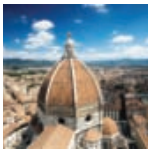

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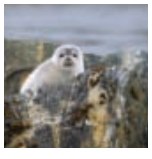

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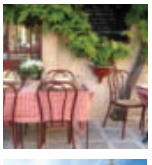

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Sep 26 – Oct 9
FROM $3495 US + AIR

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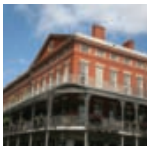
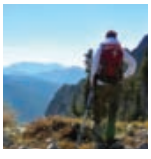


NEW ORLEANS & THE GULF COAST
United States
Dec 2 – 9
FROM $3995 US + AIR

GREAT ADVENTURES



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$4400 + AIR

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Calendar

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

Juno Award–winning violinist Lara St. John

SEPTEMBER 26

Chamber Music Series: Lara St. John

Violinist Lara St. John – this year's Wilma and Clifford Smith Visitor in Music – has performed as a soloist with major orchestras in North America, Europe and Asia. She also won the 2011 Juno Award for Best Classical Album (soloist with large ensemble) for her latest album, with her brother Scott St. John, of Mozart's Sinfonia Concertante. In this recital, she is accompanied by pianist Matt Herskowitz. Pieces include Debussy: Violin Sonata; Bartok: Violin Sonata No. 2; Corigliano: Stomp; Matt Herskowitz: Freilach No. 19; Gene Pritsker: Russian Evening Trilogy; Traditional: Ca La Breaza. $40 (seniors and students, $30). 7:30 p.m. Walter Hall, Edward Johnson Building, 80 Queen's Park.

For tickets and info: **416-408-0208 or www.music.utoronto.ca/events**

Alumni

September 24,
The Fairmont Royal York
Industrial Engineering 50th Anniversary Gala. $125, or $75 before Sept. 1. 6 p.m. The Fairmont Royal York, 100 Front St. W., Toronto. www.uoft.me/ie50thgala

September 24,
Sanford Fleming Building
Industrial Engineering 50th Anniversary Symposium. Free. 9a.m.–4p.m. Sanford Fleming Building, room 1105. 10 King's College Rd. www.uoft.me/ie50thsymposium

September 28,
Shamba Foundation
Biz Skule alumni networking reception. Learn how to make your equity investments count from alumnus Erol Uzumeri, co-founder of Searchlight Capital Partners. $25. 6–8 p.m. Shamba Foundation, 48 Yonge St., Toronto. Registration: alumni.utoronto.ca/bizskulefall2011. For more info: 416-978-4274 or deirdreg@ecf.utoronto.ca.

October, Asia Pacific
Skule Comes to Asia Pacific. Join Dean Cristina Amon and fellow alumni as Skule travels to Hong Kong, Singapore and Beijing. **Singapore:** Oct. 17 at the Pierside, 1 Fullerton Rd. 7 p.m. **Hong Kong:** Oct. 18 at the American Club Hong Kong, 49/F, Exchange Square Two, Central Hong Kong. 7 p.m. **Beijing:** Oct. 20 at Lakeview Hotel, No.127, Zhongguancun North Rd., Haidian District. 7 p.m. Free. For more information, contact Deirdre Gomes at 416-978-4274 or deirdreg@ecf.utoronto.ca.

October 13,
Royal Ontario Museum
Vic 175 Anniversary Gala Dinner. Alumni and friends join special guests to celebrate Vic's 175th anniversary. Seating limited. Black tie optional. $175. 6:30 p.m. Royal Ontario Museum, 100 Queen's Pk., Toronto. Register at 416-585-4500 or www.my.alumni.utoronto.ca/vic175gala1.

October 15, Victoria University
Vic 175 All-Years Reunion. Alumni celebrate Vic's 175th anniversary. $15. Reunion starts at 2 p.m. Registration in Old Vic. Attend the Vic Pub in Burwash Hall, and Coffee House in Alumni Hall, for $20, at 9 p.m. Register at 416-585-4500 or www.my.alumni.utoronto.ca/vic175gala1.

October 16, Victoria University
Vic 175 Closing Ceremonies: Service and Afternoon Tea. Join alumni and friends at an Ecumenical Service of Thanksgiving and Celebration. Victoria College Chapel, Old Vic. $15. 2 p.m. Afternoon tea to follow in Alumni Hall. Register at 416-585-4500 or www.my.alumni.utoronto.ca/vic175gala1.

October 26, U of T Mississauga
Theatre and Drama Studies Program Reunion. Theatre and Drama Studies alumni celebrate 20 years. Indian buffet, followed by the play Nicholas Nickleby, Part 1. Dinner reception: $15, 6 p.m. U of T Mississauga Student Centre. Nicholas Nickleby, Part 1: $15 ($10 grads and students). 7:30 p.m. Theatre Erindale. Register by Oct. 23. 905-569-4924, events.utm@utoronto.ca or www.alumni.utoronto.ca/tdreunion

November 6, Spigel Hall
Graduation Brunch. Fall 2011 grads celebrate convocation with family members over brunch and short program at U of T Mississauga. Free. 11 a.m. Spigel Hall, Davis Building, 3359 Mississauga Rd. alumni.utoronto.ca/utmgrad

PHOTO: PAUL CLANCY

Scare yourself silly with the 1920 horror flick *The Cabinet of Dr. Caligari* at U of T Scarborough on October 27

Charity Run

October 2, Mississauga
Run for the Cure. U of T Mississauga hosts a Canadian Breast Cancer Foundation CIBC Run for the Cure. Walk or run a one- or five-kilometre route through campus and Mississauga. www.runforthecure.com or m.heide@utoronto.ca

Cinema

October 27, U of T Scarborough
World Rhythms Concert event: "The Cabinet of Dr. Caligari." A screening of the silent horror expressionist film from 1920. Includes a live performance of a soundtrack composed by Andrew Downing. Free, but by RSVP only. 8 p.m. Leigha Lee Browne Theatre, 1265 Military Trail. RSVP at 416-208-4769 or aep@utsc.utoronto.ca. For info, www.aeplive.ca.

Exhibitions

To November 2, Doris McCarthy Gallery, U of T Scarborough
Blue Republic: Super It features the work of multidisciplinary art collective Blue Republic. Free. Tues. to Fri., 10 a.m.–4 p.m., Wed., 10 a.m–8 p.m., Sat., 12–5 p.m., 1265 Military Trail. 416-287-7007, dmg@utsc.utoronto.ca or www.utsc.utoronto.ca/dmg

To November 26, U of T Art Centre
Angela Grauerholz. The inexhaustible image… épuiser l'image. This exhibition highlights Grauerholz's photographic career over the past 25 years. Free. Tues. to Fri., 12–5 p.m., Sat., 12–4 p.m., 15 King's College Circle. 416-978-1838 or www.utac.utoronto.ca

October 11 to mid-February, Thomas Fisher Rare Book Library
"How Beautiful My Brethren and Sistren": Derek Walcott, Life and Work. Exhibition and catalogue by Jennifer Toews. Mon. to Wed. and Fri., 9 a.m–5 p.m.; Thurs. 9 a.m.–8 p.m. 120 St. George St. (416) 978-5285 or www.library.utoronto.ca/fisher/exhibitions/current.html

Festivals

October 6, U of T Scarborough
ArtSideOut. An arts extravaganza, presented by U of T Scarborough students. Free. All day. Campus-wide. 1265 Military Trail. 416-208-4769, aep@utsc.utoronto.ca or www.artsideout.ca

October 1, St. George Campus
Scotiabank Nuit Blanche @ U of T. Toronto's all-night celebration of contemporary art returns to St. George Campus. Visit Project AIRship at the Terrence Donnelly Centre; the student exhibition captures a past world, when powered balloons carried mail and passengers across oceans. View Justina M. Barnicke Gallery's exhibitions throughout Hart House, and more. www.arts.utoronto.ca

Lectures and Symposia

September 26, U of T Scarborough
History on Film: "The Return of Martin Guerre." Speaker: U of T prof Natalie Zemon Davis, author of the book of the same name. Free. 5–8 p.m. Leigha Lee Browne Theatre, 1265 Military Trail. 416-208-4769, aep@utsc.utoronto.ca or www.aeplive.ca

September 27 to November 29, Faculty Club
Senior College: Weekly talks by authorities on topics ranging from Sir Ernest MacMillan to Rabindranath Tagore, organized by Fellows of Senior College. All welcome. Free. Tuesdays, Sept. 27–Nov. 29 at 10 a.m. 41 Willcocks St. 416-978-7553 or www.faculty.utoronto.ca/arc/college.htm

October 13, 20, 27; Nov. 3, 10, Erindale United Church
Canadian Perspectives Lecture Series. These public lectures are designed to inform and educate. Thursdays, Oct. 13 to Nov. 10. Cost for full series: $50. Individual lectures: $12. 10 a.m. Erindale United Church, 1444 Dundas Cres. www.utm.utoronto.ca/perspectives

October 24, George Ignatieff Theatre
S.D. Clark Memorial Lecture. How social networks create competitive advantage: balancing social capital with human capital. Speaker: Prof. Ronald S. Burt, University of Chicago. Free. 5:30 p.m. George Ignatieff Theatre, 15 Devonshire Pl. 416-946-4058 or sociology.dept@utoronto.ca.

November 7–10, Toronto
McLuhan 100: Then | Now | Next International Conference and DEW Line Festival, organized by the iSchool, on Marshall McLuhan's work and influence. Price TBA. 9–5 p.m. daily, plus evening events. At U of T and throughout Toronto. 416-978-7026, mcluhan.program@utoronto.ca or www.mcluhan100.ca

Music

September 24, Walter Hall
John MacLeod's Rex Hotel Orchestra. Bandleader MacLeod and his all-star orchestra perform a concert dedicated to the music of Rick Wilkins. $30. 8 p.m. Walter Hall, Edward Johnson Building, 80 Queen's Pk. 416-978-3744 or www.music.utoronto.ca/events

Nature

October 8, Koffler Scientific Reserve at Jokers Hill
Mushrooms on the Moraine, Late-Season Workshop led by naturalist Richard Aaron. Gather specimens on the Oak Ridges Moraine, and then identify your fungal finds. $60 (includes a sandwich luncheon). Registration limited to 16. 9:30 a.m.–5 p.m. Koffler Scientific Reserve, 17000 Dufferin St., King City. To register and for info: www.ksr.utoronto.ca or ksr.info@utoronto.ca.

Sports

September and October, Varsity Centre
Sept. 30. **Football:** Varsity Blues vs. Queen's Golden Gaels. 7 p.m.
Oct. 15. **Football:** Varsity Blues vs. Western Mustangs. 1 p.m.
Oct. 22. **Football:** Varsity Blues vs. Waterloo Warriors. 1 p.m.

All events take place at Varsity Centre, 299 Bloor St. W. Ticket info and details at www.varsityblues.ca.

Theatre

September 23 to October 8, Hart House Theatre **The Great American Trailer Park Musical** is a tongue-in-cheek, rockabilly romp. Toronto première. $25 (students and seniors, $15. Students, $10 every Wed. Alumni, $15 every Thurs.). Week 1: Fri. and Sat. at 8 p.m.; Week 2: Wed. to Sat. at 8 p.m.; Week 3: Wed. to Sat. at 8 p.m. plus Sat. at 2 p.m. 7 Hart House Circle. For info: 416-978-8849, uofttix.ca or www.harthousetheatre.ca.

October 19–22, Hart House Theatre
The Gentleman Caller. For many years, Tennessee Williams was the foremost American playwright, but then he descended into a haze of drugs and promiscuity. This play begins with the 72-year-old Williams encountering a stranger who causes him to revisit his past. $35 (students/seniors, $18). Wed. to Sat. at 8 p.m. 7 Hart House Circle. 416-978-8849 or www.uofttix.ca

Canada's most prestigious international award is right at home on the U of T campus

This October, you can share the excitement of great medical discoveries as the 2011 Canada Gairdner Award recipients and other scientists from Canada and abroad discuss their latest work.

So mark these free events in your calendar.

Diabetes: 90 Years After the Discovery of Insulin
The insulin story began 90 years ago at the University of Toronto, and it's still unfolding
Wednesday, October 26
8:15 am – 4:00 pm
MaRS Centre Auditorium, 101 College Street

Minds That Matter: The 2011 Recipients' Lectures
What kind of research garners a Gairdner?
The newest recipients describe their breakthroughs
Thursday, October 27
9:00 am – 3:00 pm
McLeod Auditorium, 1 King's College Circle

Advances in Immunity and Inflammation
Some of the world's top scientists explore the mysterious workings of our immune systems
Friday, October 28
9:00 am – 3:30 pm
McLeod Auditorium, 1 King's College Circle

For program details visit www.gairdner.org

Gairdner is grateful to those who are supporting the Toronto programs

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Life On Campus

We should all go do Queen's "Bohemian Rhapsody"
Tweeter "UTMInsider" suggests a song choice for the U of T lipdub being planned for this fall
p. 14

The Next Internet Sensation?

Donny Ouyang, a second-year commerce student, has high hopes for his online tutoring service. The question is: Will students pay?

DONNY OUYANG IS SURELY NOT THE ONLY UNDERGRAD to have fantasized about emulating Mark Zuckerberg and building the next billion-dollar Internet company. But when the second-year Rotman commerce student mentions that he plans to create the next Facebook, it's not just the idle musings of a teenager.

This fall, Ouyang, 19, will launch Rayku.com – an online "peer-to-peer" tutoring service that allows undergrads to obtain real-time, interactive help with their assignments and problem sets whenever they need it. The site, he says, will function like an open marketplace, with students and tutors negotiating a per-minute rate before starting each session (40 cents is a suggested price). PayPal will handle the fee processing, while customers can buy credits– Ouyang's version of prepaid phone cards – to use when they wish. Rayku.com receives a cut of the fee, depending on how satisfied the students are with the tutoring they receive.

Ouyang, who developed the idea with a team of seven programmers, says the site will also come with features such as an interactive "white board" that tutors can use as a teaching aid. Like an academic version of a dating website, the service will rank tutors based on their skills, work experience and area of expertise so customers can find the best match. "You type in your question and we generate a list of experts most qualified to help you," he says. ›

PHOTO: VINCE TALOTTA/GETSTOCK.COM

Law Gets Down to Business

New global law degree is designed for execs who can't take time off work

BUSINESS SCHOOLS INITIATED THE NOTION of an executive master's degree, but U of T's Faculty of Law is now putting its own stamp on the concept.

Beginning this fall, the faculty will offer a global professional master of laws degree focusing on business law. Modelled on executive MBA programs, the part-time program is aimed at business executives who would like to earn a law degree but can't take a year away from their jobs, as well as working lawyers who would like to specialize in global business. Successful applicants will have three or more years' experience practising law or will be mid-level to senior managers whose jobs involve legal issues. Classes take place one evening a week, with occasional weekend sessions.

Mayo Moran, dean of the Faculty of Law, says the courses will be taught from the perspective of Canadian law, but through the lens of globalization. "This degree is a unique intersection of law and business, and participants will see how much of corporate legal practice is now touched by the global economy."

Courses will be jointly taught by U of T faculty and full-time practising lawyers, giving students access to both the latest scholarship and an understanding of current legal practice. University Professor Michael Trebilcock, an expert in law and economics, is the program's academic director. – **ELAINE SMITH**

EPHEMERA

The University of Toronto's historic contribution to the discovery of insulin for treating diabetes is one of the high-profile innovations being featured on the new Bank of Canada polymer bank notes being issued this fall. The $100 bill commemorates the 90th anniversary of the discovery of insulin by U of T researchers Charles Best and Frederick Banting. The note features images that focus on Canadian innovations in the field of medicine. – **ANJUM NAYYAR**

Born in China, Ouyang and his parents moved to the U.S. when he was six, but eventually settled in Richmond, B.C., where he spent most of his childhood. He started building and selling websites at age 12. In Grade 11, he bought a gaming site for $6,000 and eventually sold it for $35,000. By then, Ouyang and several programmers he'd met online had formed an Internet consulting company but Ouyang wanted to do something more ambitious.

Ouyang's "light bulb moment" for Rayku.com can be traced to a problem he encountered in his own life. In class, he often found his attention wandering to his business ventures, which meant that he'd miss key academic details. "I figured it would be good to be able to ask questions when I needed to [and obtain] one-to-one tutoring that follows my personal schedule," he says.

When Ouyang scanned other online tutoring sites, he found what he considered to be shortcomings – especially with the quality and responsiveness of the experts. His alternative was built around the tutor ranking and a 24-7 instant-messaging system so customers can link up with a tutor when they need one – even if that need arises at 3 a.m. before the big exam.

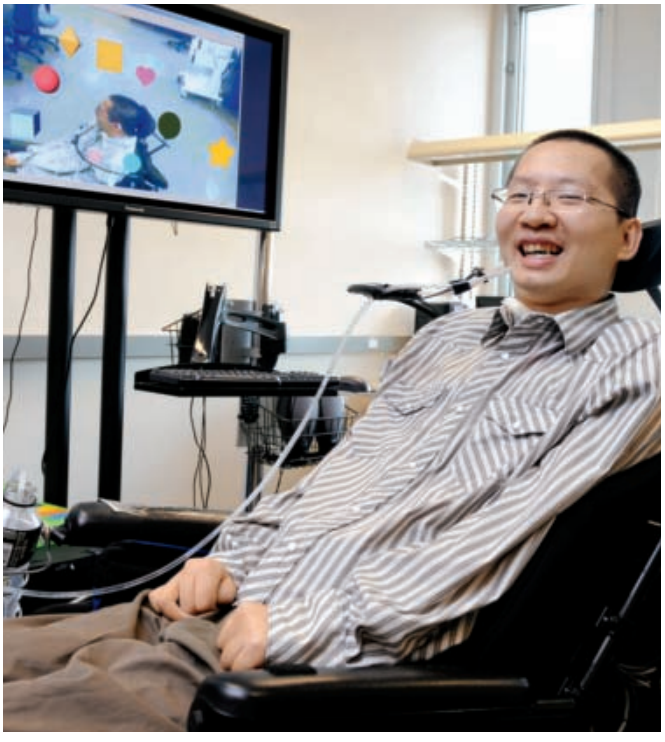
Initially, Rayku.com will only be available to students studying math at U of T and possibly students at a university in B.C., or another one in the Toronto area. But, Ouyang adds, "We're looking to expand pretty quickly." And not just to post-secondary institutions: he eventually wants to make Rayku.com available to high-schoolers, as well.

"Education is about the experience, atmosphere and connections. It's not just what you learn in class."

His ambition and entrepreneurial instinct does raise one question: Can Rotman's business program teach him anything he doesn't already know? Of course, Ouyang says. "It's very good to be in an environment where there are so many smart people around." He's getting strategic advice from one professor, and soaking up insights about consumer behaviour in a large psychology course. "Education is about the experience, atmosphere and connections," he says. "It's not just what you learn in class." – **JOHN LORINC**

PHOTO: COURTESY OF BANK OF CANADA

The first song publicly played on a computer was "Colonel Bogey March," in 1951 in Australia



Ode to Joy

Master's student Eric Wan helped develop software that allows anyone, including people with severe physical disabilities, to make music

ALTHOUGH HE'S PARALYZED FROM THE NECK DOWN and can't hold a musical instrument, Eric Wan recently performed Pachelbel's *Canon* with musicians from the Montreal Chamber Orchestra. The stirring rendition, filmed at the Royal Conservatory of Music in Toronto without an audience present, was accomplished through a remarkable piece of software engineering that Wan helped design. "I was astonished that I was able to perform with professional musicians," says Wan, 33, a computer engineer at the U of T-affiliated Holland Bloorview Kids Rehabilitation Hospital.

Called the Virtual Musical Instrument, the computer program enables almost anyone to make music – including people with any level of physical disability. The virtual instrument works with any standard computer and webcam. On the screen, budding musicians see their own image, on which are superimposed coloured shapes representing different notes, chords or entire bars of music. The camera captures movement over these shapes – whether it's the waving of an arm, nodding of the head or even blinking of an eye – and translates it into musical sounds, which can be programmed to sound like any of 128 instruments.

"I was astonished that I was able to perform with professional musicians"

The invention combines Wan's two loves: computer programming and music. In 1996 he was a healthy, violin-playing, 18-year-old computer whiz when he suddenly developed transverse myelitis, an inflammation of the spinal cord's nerve sheath. Wan spent four months on life support before gradually learning to breathe consciously. He now uses a ventilator only at night.

Three years after becoming quadriplegic, Wan started taking computer-engineering courses part time at the University of Toronto. "I just did it out of interest, not to pursue a degree," he says. For many years, he has relied on a computer system with a head-tracking device. A camera on top of his screen tracks the movement of a sensor on his eyeglasses. Moving his head moves the cursor, and lingering for more than a quarter of a second clicks it. "I'm able to control the mouse cursor as efficiently as a healthy person," says Wan. He graduated with a bachelor of applied science in 2010, 11 years after he began.

For his undergraduate thesis, Wan used a vocal sensing switch to allow people with severe physical disabilities to control a power wheelchair with their voice. For his master's degree, Wan is designing a new technology for people who are unable to move or speak that translates thoughts into functional activities, such as turning a light on or off or indicating yes or no.

But it's the virtual musical instrument that continues to make headlines. Last October, the four-member design team – senior scientist Tom Chau, music therapist Andrea Lamont and engineers Wan and Pierre Duez – travelled to Dearborn, Michigan, to receive the da Vinci award, the equivalent of an Oscar for adaptive and assistive technology. It was the first time Wan had been on a plane since coming to Canada from Hong Kong as a 10-year-old.

With his programming skills, sharp memory and quiet charm, Wan is a valued member of the team. "First and foremost he's a good engineer and a good researcher, and he's great to get along with," says Duez. "But he also brings the personal experience of someone with physical limitations, and he acts as a reminder of that."

– MARCIA KAYE

PHOTO: KEITH BEATY/GETSTOCK.COM

Former U of T Governing Council member Tim Reid was the leading scorer on the 1958 Blues football team that won the Ontario championship. For a slide show of historical football shots, visit www.magazine.utoronto.ca

150 Years of Varsity Football

It's been almost 20 years since U of T's football team won the Vanier Cup, but the team does bear the distinction of having won U of T's first national football championship – way back in 1895. Pictured here are the members of that winning team and University of Toronto's president at the time, James Loudon (at centre).

Loudon was also a participant in the first documented football game at U of T, in November 1861. This fall marks the 150th anniversary of that initial game, and U of T is celebrating with a gala fundraiser on Nov. 9 at the Great Hall in Hart House. All proceeds from the dinner will go to the Friends of Varsity Blues Football's Varsity Leadership Foundation, which provides support for athletic scholarships and enhancements to the Varsity football program. A 200-page commemorative book will also be for sale.

For tickets, or more information, visit www.friendsoffootball.ca. – **SCOTT ANDERSON**

SOUND BITES

What song should U of T students use in the "lipdub" they're planning this fall?

A medley of Journey power ballads
SARAH_UOFT

I need some "Macarena" back in my life!
CRISS_SANTANDER

What about Lady Gaga's "Just Dance" or Cee Lo Green's "Forget You" for something upbeat?
TEDXUTIH

I think we should go all out and do Queen's "Bohemian Rhapsody"
UTMINSIDER

To find out more about the U of T Lipdub, visit www.utlipdub.com/blog

Make your own song suggestion at twitter.com using **#UofTlipdub**

Poll | Do you plan to pursue a postgraduate degree?

If Canada wants to maintain its economic standing in the world, it will have to enrol more graduate students. That's the message from the Conference Board of Canada, which gives the country a failing grade on innovation – in part because too few of our citizens go on to earn master's degrees and PhDs.

U of T students appear to be heeding the call: **60%** of those polled say they intend to pursue graduate education. Of this group, **67%** say they would like to get a master's degree, **12%** intend to earn a PhD, and **22%** plan to pursue a professional degree in law, business or medicine.

Most of those interviewed have a practical reason for wanting more education: to be more competitive in the job market and eventually earn more money. Others say they just love to learn, read and study. Fifth-year student Umme Haque has her own particular reason. "Education is empowerment," she says, "especially for women."

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

PHOTO: UNIVERSITY OF TORONTO ARCHIVES

Professor **Ray Jayawardhana** is the author of *Strange New Worlds: The Search for Alien Planets and Life beyond Our Solar System*

Rotman Goes to School

New program teaches integrative thinking to Toronto high school students

THE ROTMAN SCHOOL OF MANAGEMENT has teamed up with the Toronto District School Board to bring an integrative-thinking program, called I-Think, to high school (and eventually primary school) students. The Rotman School uses integrative thinking, a concept developed by dean Roger Martin, to teach MBA students that there's an alternative to either-or choices. Students learn to make decisions that keep the positive aspects of both choices while getting rid of the bad.

The success of integrative thinking in the business world led Rotman to develop the program for students in kindergarten to Grade 12. I-Think began last year at a high school in the Lawrence Heights neighbourhood and will be rolled out in public schools across Toronto over the next several years.

I-Think teaches students to think differently about challenges that aren't easily solved in school or their personal lives. "How do we get them to use conflicting ideas and opposing tensions to reach a more creative solution?" says Ellie Avishai, an educator and Rotman grad who is the director of the Rotman I-Think Initiative. Avishai trained teachers and co-taught the program to a Grade 12 leadership class during the previous school year.

Avishai recently helped a student apply integrative thinking to a dilemma involving group work. If the high achiever did more than her share, the group would get a good grade. If she did just her share of the work, they would not excel. Either option was unsatisfactory to her. She and her classmates ended up creating a process that involved setting milestones and timelines for group projects. "They realized that if they invested time upfront to develop some processes with their team, they would have control over group work," says Avishai. "Students reported an amazing change." – **SHARON HO**

People

Richard Nunn, a Toronto chartered accountant, and **Judy Goldring**, a Toronto lawyer and Victoria College alumna, have been appointed, respectively, chair and vice-chair of Governing Council. Their appointments are for one year. Both Nunn and Goldring are long-term governors and supporters of the university.

Professor **Allan Borodin** of computer science and Professor **Lynne Viola** of history have been awarded the title University Professor. The designation recognizes scholarly pre-eminence in a particular field of knowledge. They will each receive a research stipend of $10,000 for five years.

Professor **Ray Jayawardhana** of astronomy has won the 2011 McLean Award. The award provides $100,000 for researchers within 12 years of their PhD who are conducting work in physics, chemistry, computer science, engineering sciences or statistics. Jayawardhana, the Canada Research Chair in Observational Astrophysics, is highly regarded for his work on the origin and diversity of planetary systems.

U of T researchers **Richard Bond** of the Canadian Institute for Theoretical Astrophysics and **Richard Lee** of anthropology were elected to the National Academy of Science in recognition of their excellence in original scientific research.

Professor **Dwight Seferos** of chemistry is among 17 university researchers worldwide to receive a 2011 DuPont Young Professor award, which identifies talented researchers early in their career. Winners receive $25,000 a year for three years for their research.

Ben Kim, a second-year student at U of T Mississauga, has been named one of Youth in Motion's Top 20 Under 20, an award celebrating youth who have demonstrated significant leadership and achievement. Kim is the founder of Musicians Without Borders Canada.

PHOTO: ISTOCKPHOTO

Late Bloomer

A unique scholarship helps Trevor Crowe continue his education, long after he left high school

FIFTEEN YEARS AFTER WINNING A SCHOLARSHIP that first ignited his academic aspirations, Trevor Crowe, 29, is using his opportunity to pursue an almost fully funded university education.

In 1996, Crowe, then 14, won the University of Toronto's Andra Takacs Scholarship. Each year the award is given to two Grade 8 students in Toronto, and includes an initial cash prize and four years of tuition assistance that can be used at any accredited university or college in North America.

"Once I got the scholarship, it made university or college seem more real. It provided a lot of motivation. I just needed to wait until the time was right," says Crowe, now a second-year U of T student.

Winners have the option of being mentored through high school by a U of T student

The award is for kids involved in Big Brothers and Big Sisters of Toronto who show academic potential and are active in their community. Winners have the option of being mentored throughout high school by a U of T student to prepare for the demands of higher education.

"The scholarship encourages younger kids from disadvantaged backgrounds to consider post-secondary school and to believe in themselves," says Andra Takacs, a former executive for the Ontario government who established the scholarship with her husband, Bryan Davies, in 1994.

For Crowe, who grew up in a one-parent, single-income family, the award transformed post-secondary education from a hypothetical concept to an obtainable goal – one he never lost sight of during his years away from school. Unsure of his future after graduating from high school, he sought adventure abroad, travelling across Southeast Asia, India and Australia. During his last stop, in Korea, he found work teaching English to Korean children – and finally discovered his calling. But without post-secondary training, he couldn't advance, so after two-and-a-half years in Korea, he returned to Canada to start university.

Originally, Crowe received a $100 prize, and was to receive $1,000 annually for four years upon starting his degree; the amount of the award has since increased to $5,000 a year to accommodate rising tuition fees. Majoring in East Asian studies, Crowe has adapted well to post-secondary academics: his strong performance in a bridging course for mature students led to an additional $2,500 scholarship, and his high marks during first year landed him on the Dean's Honour List.

Now taking a full course load while raising an 18-month-old daughter with his wife, whom he met in India while travelling, Crowe is focused on completing his degree and returning with his family to Korea, where he plans to teach again.

– SHARON ASCHAIEK

Revitalized Robarts

Its concrete exterior hasn't changed in 40 years, but step inside Robarts Library and you can't help but notice some very modern upgrades. Most recently: the addition of north and south porticos, where banks of state-of-the art touch screens offer interactive maps of each floor and allow visitors to determine where study space is available.

The porticos mark the closing stage of a two-year renovation that included a complete make-over for the map and data library, the Media Commons and the apexes on the buildings' top five floors. The library has created new study space tailored to students' preferences for lots of natural light and comfortable furniture. The study space was also designed to support laptops and other electronic devices.

The renovations were made possible by benefactors Russell (MA 1947) and Katherine Morrison (PhD 1979).

Phase Two of what U of T provost Cheryl Misak has dubbed the "Great Robarts Revitalization" – a planned five-storey, glass pavilion dedicated to study space – is contingent on additional private support.

PHOTO: SHARON ASCHAIEK

3,200 alumni belong to U of T's President's Circle in recognition of their gifts of $1,827 or more to the university's Annual Fund

Lifelong Learning

Barbara Dick wants to ensure that grads can build on their academic experience throughout their lives

HOW DO YOU ENGAGE A DIVERSE community of 500,000 alumni with the life and mission of the University of Toronto? That's the question facing Barbara Dick (BA 1987 UC), who in July took over as assistant vice-president of alumni relations.

Because alumni recognize the ongoing importance of education, Dick believes that U of T should make it easy for grads to take advantage of new learning opportunities, career assistance and to build upon the richness of their university experience throughout their lives.

"My vision is to create the most loyal, engaged, supportive alumni group in the world," says Dick, who previously served as U of T's executive director of alumni affairs. "But we'll only win the hearts and minds of our alumni by adding real value to their lives through meaningful programs of the highest quality."

In particular, Dick wants to offer alumni ongoing access to the U of T academic experience – by having professors deliver talks about their area of expertise to alumni groups, for example, and making videos of interesting lectures available online.

"In the midst of a city that offers the best of everything, the University of Toronto's unique offering is our intellectual capital," she says. "Our alumni can share in the excitement of our discoveries and benefit from lifelong learning opportunities on our campuses, and more remotely through the web and through regional programs."

The goals are challenging, but Dick is no stranger to challenges. She led the recent revitalization of Spring Reunion that has seen an unprecedented number of alumni return to campus, expanded the regional alumni network to 33 countries and oversaw the relaunch of the alumni website with its compelling video portraits of prominent graduates.

Dick's own story highlights the immense power of education to change lives; like so many U of T grads she is the child of new Canadians. In her new role, she considers it extremely important to tell these stories. "We want to inspire our alumni to have pride in and awareness of the impact they and their fellow alumni make in Canada and around the world. If we tell that story in a compelling way, it will benefit both the university and the alumni."

– ELAINE SMITH AND SCOTT ANDERSON

Calling All Alumni

Fatema Pardhan phones grads for U of T's Annual Fund. She, like many students, also benefits from the fund

IT'S NOT EASY CALLING STRANGERS TO ASK THEM FOR MONEY. But Fatema Pardhan, a fourth-year pharmacology student, believes in her cause. Pardhan works for U of T's call centre. And for many evenings this fall, she will be calling U of T alumni to ask them to donate to the university's Annual Fund.

Pardhan, 21, knows better than many how important the Annual Fund is to U of T students: she herself has benefited from it. Originally from Tanzania, Pardhan works three part-time jobs to cover some of her university expenses (her father used to pay tuition and rent). She says that, until recently, balancing work and school had been challenging but manageable. Then – seemingly overnight – "things changed." Due to circumstances at home, her father was unable to continue supporting her.

A U of T registrar advised Pardhan to apply for a bursary, which she gratefully received. Now, Pardhan says, she works at the call centre to "fundraise for all the students like myself, so we can afford to study."

More than 20,000 U of T alumni and donors contribute between $12 million and $15 million a year to the Annual Fund, which supports scholarships, bursaries and student-life initiatives. According to Dean Hughes, U of T's executive director of annual and leadership giving, half of all U of T students benefit from financial aid at some point in their university career. Alumni support of the fund is crucial for students in need, he says. Pardhan herself readily agrees. "Receiving the bursary changed my whole third year," she says. "I don't know what I would have done without it." **– SUZANNA CHANG**

PHOTO: AMANDA KEENAN

Photo: University of Toronto Archives - November 11, 1924

THEY PROTECTED US.

NOW IT'S OUR TURN.

Built by U of T alumni as a living memorial, Soldiers' Tower honours the 1,185 students, alumni, faculty and staff who fell during the two World Wars. Help us restore this architectural landmark and preserve their memory.

Please make a donation to the Soldiers' Tower Restoration Fund today. And join us at the Tower for our Remembrance Day service at 10:20 a.m., November 11, 2011.

Here is my gift of: ❑ $35 ❑ $100 ❑ $250 ❑ $500

❑ Other $_____

NAME _____

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Leading Edge

I think we could see a second financial crisis

Economics professor Margarida Duarte on the implications of Europe's debt troubles
p. 23

Aakash Sahney (left) and Alexander Levy of MyVoice

Say the Right Thing

Student-developed app helps people with speech problems express themselves – at a fraction of the cost of other devices

FREEDOM OF SPEECH IS ONE OF OUR MOST treasured human rights. But some medical conditions – including some types of autism, strokes or Lou Gehrig's disease – can rob people of their ability to talk. A U of T alum and two students aim to help patients express themselves again with a new technology called MyVoice.

"The devices that currently exist to help people communicate are extremely expensive, and really bad," says Alexander Levy (BA 2010 UC), MyVoice's CEO and lead designer. The project's origins lie with Bill Scott, a patient at the Toronto Rehabilitation Institute who had developed an acute speech impediment after a stroke. Unable to talk reliably on his own, Scott was given an assistive speech device – a clunky computer that speaks words aloud when he taps or selects them from a list. Like many people using such machines, he found it slow, difficult to use and a battery hog (sometimes lasting only a few hours). But unlike those other patients, Scott was referred to U of T's Technologies for Aging Gracefully lab (TAGlab) in the department of computer science. The TAG team knew they could build something better.

Levy and his colleagues – Aakash Sahney, who is in the professional experience year of his engineering degree, and Kevin Tonon (BSc 2007 VIC), a master's student in computer science – found a solution literally in their own back pockets. The iPhones and Android smartphones they were already carrying had speakers, touch screens and Internet access. Write some software, they concluded, and presto: a next-generation speech aid for a few hundred bucks (current devices run up to $15,000). Because smart- ›

PHOTO: BRENT LEWIN

phones have GPS built in, MyVoice is the first speech aid that can tailor its words by location. At a movie theatre? MyVoice shows you words such as "tickets" and "popcorn," and because it's Internet-connected, it can download new vocabulary on the fly. Finally, it boasts a polished, glossy aesthetic that its ugly-stepsister tablets can't match. "There's a lot to be said for strong design," says Sahney, noting that MyVoice's users may have cognitive impairments or scant technological literacy.

MyVoice won its first award before the software was even finished, a $2,500 prize from the Ontario Centres of Excellence (a provincial technology incubator) for a video explaining the technology. In early 2010, search giant Google awarded Levy's team a $50,000 research award and some Android phones to work on.

Levy and his team officially launched MyVoice as a free app for iPhone and Android last spring, and by early August the software had been downloaded 6,000 times. Levy planned to unveil a version of MyVoice for the iPad in September, along with a subscription service that will allow users to extensively customize the program with their own words, pictures and phrases. The team is promoting MyVoice in the medical community, and investigating potential applications for the program in special education.

Showing off the software in their seventh-floor lab in the Bahen Centre, Levy and Sahney describe their enthusiasm for their project. "We're *psyched*," says Levy, pausing a moment to pick just the right word. If MyVoice takes off, tens of thousands – perhaps even millions – of people could similarly find themselves never again at a loss for words. – **GRAHAM F. SCOTT**

Always the Victim?

A criminology student questions long-standing assumptions about women and domestic violence

WOMEN MAY PLAY A MORE ACTIVE ROLE in domestic violence than is currently acknowledged, according to Alexandra Lysova, a PhD student in criminology at U of T who has received a Pierre Elliott Trudeau Foundation scholarship.

There are two major schools of thought about violence between intimate partners, she says. One is that women become violent primarily when defending themselves against male aggressors. The other is that women are equal participants. The first way of viewing intimate partner violence has been dominant in our society for years, says Lysova, but her research has led her to believe that the second is closer to reality.

Lysova has been studying family violence for more than a decade. She first became interested in the field while living in eastern Russia, a region with high crime rates. Based on police statistics and forensic data, she determined that a third of all killings in Russia involved intimate partners. She wanted to better understand what triggered them.

We dismiss female aggressive behaviour too lightly, she says. "We think a slap on the face is not serious," she notes, "but it may actually be very serious." Lysova wants to investigate the role that female aggression, including verbal taunts and public humiliation, plays in escalating fights between spouses.

She is currently examining transcripts from detailed interviews with 256 incarcerated women from Ontario who have had experiences with intimate partner violence (although only some of the women are incarcerated for this reason). She is looking at who started the attack, how each partner reacted and details such as whether alcohol and drugs were involved.

Lysova hopes that once this is better understood, more can be done – by psychologists, police officers and intimate partners themselves – to avert intimate partner violence in the first place. – **ALISON MOTLUK**

LINGO

"cybrarian"

Way back in the days of the "information superhighway," someone coined the term *cybrarian* to denote a new kind of librarian who would use the World Wide Web to retrieve information. As the Internet became commonplace, the word fell out of favour. Joe Cox, director of information services for U of T's Faculty of Information, says librarians didn't like the word because cybrarians did exactly what librarians had always done: manage, find and use good information. "Electronic data just became part of the librarian's everyday work," he says. Still, *cybrarian* has staged a comeback lately, thanks to the success of *This Book Is Overdue!: How Librarians and Cybrarians Can Save Us All*, by Marilyn Johnson, a former *Life* editor. In her book, Johnson notes that although a third of American library graduate programs have formally ditched the word *library* (as has U of T's program), librarians, as a rule, have not embraced the "part cyborg, part cat's-eye reading glasses" image that *cybrarian* conjures.
– **SCOTT ANDERSON**

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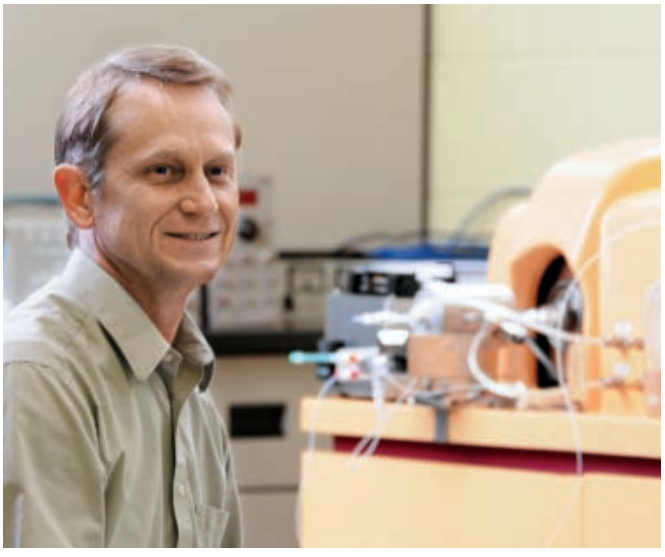
The rare earth metals are a set of 17 elements. Despite their name, they are actually quite plentiful



THE BIG IDEA

Seeing Into the "Soul" of Cells

A technology developed at U of T to analyze cells could lead to earlier disease diagnoses and more targeted treatments

U OF T CHEMISTRY PROFESSOR SCOTT TANNER has invented a cell-analyzing machine that could transform the way we diagnose and treat serious diseases such as cancer. Using a new technology called mass cytometry, the CyTOF machine can offer a far more detailed picture than ever before of how cells become diseased and how they respond to various drugs. "We're going to see therapies derived from this technology in the next five to 10 years," predicts Tanner, winner of U of T's 2011 Inventor of the Year award in biomedical and life sciences.

Mass cytometry is a happy confluence of two disparate technologies – mass spectrometry and flow cytometry – which until now had never been brought together. Mass spectrometry, which analyzes the mass of particles to determine their chemical structure, has traditionally been useful for geological purposes, such as measuring arsenic in water or finding gold in rock. But Tanner, a world authority in mass spectrometry, says, "We looked over our shoulders to see what else we could do with this technology." With chemist Vladimir Baranov, physicist Dmitry Bandura and biologist Olga Ornatsky, Tanner's team looked to biology; specifically, the genesis, diagnosis and treatment of disease.

Prof. Scott Tanner predicts that within a few years his machines will be standard in major hospitals

For 30 years, flow cytometry has been the standard method of analyzing and sorting microscopic particles to diagnose certain diseases, especially leukemia and other blood cancers. This process, using fluorescent dyes to tag various biomarkers that cells express as they change, can at best determine only a handful of measurements per cell. Instead of using fluorescent dyes as tags, Tanner used rare-earth metals – those often-forgotten elements at the bottom of the periodic table, including neodymium, europium and ytterbium. He found that the new technology could monitor many more substances, analyzing up to 100 cell markers simultaneously at a rate of 1,000 cells per second. Tanner recognized that having so much more information about the cells' biochemistry could enable earlier diagnoses of disease, which could lead to more appropriate treatment options and less aggressive therapies.

Excited by the potential, Tanner approached flow cytometry researchers at California's Stanford University School of Medicine with his new technology. Using the CyTOF, the Stanford team undertook research that revealed what lead investigator Garry Nolan calls the heart, mind and soul of bone-marrow cells – where all immune cells, blood cells and diseases such as leukemia originate. Nolan, a professor of microbiology and immunology at Stanford, says, "For the first time we had the ability to produce a picture of the immune system to overlay drug reactions onto and understand how changes to immune cells in one part of the immune system relate to changes in other distant parts." Published in May in the journal *Science*, the study has attracted worldwide attention.

Requests for the approximately $600,000 machines are coming in from research centres and pharmaceutical companies, with machines already installed at the U.S. National Institutes of Health and centres in Taiwan and Japan, as well as at Stanford and U of T. Tanner predicts that within a few years they'll be standard in major hospitals, research labs and, eventually, diagnostic clinics.

The technology is a quantum leap toward personalized medicine, Tanner says, and could lead to targeted therapies for cancers, HIV-AIDS, multiple sclerosis, rheumatoid arthritis, lupus and chronic lung diseases, as well as diabetes – complications from which Tanner's sister died of last December.

Nolan, who says he's not prone to hyperbole, calls the technology revolutionary. "Scott's wonderful invention," he says, "is going to change the world of immunology, at the least." – **MARCIA KAYE**

PHOTO: COURTESY OF ONTARIO GENOMICS INSTITUTE

PROTOTYPE

Meet Brian, the Social Robot

Advances in technology are bringing us robots that can interact naturally with humans

AN OLD WOMAN SITS IN FRONT OF her dinner. Her mind has wandered, and she hasn't taken a bite for a few minutes. Brian notices. "Do you not like your pasta?" he asks solicitously. "Please pick up the fork in front of you and put some pasta on the fork." She does, and Brian smiles encouragingly.

What's odd about this scenario is that Brian's voice is computer synthesized, and his face is made of silicone rubber. The smile is controlled by wires and actuators built into his head.

Brian is a human-like robot being developed by a research team led by Goldie Nejat, a professor of mechanical and industrial engineering. Nejat hopes that Brian soon will be helping the elderly in assisted-living facilities and eventually even in their own homes. This fall she hopes to test him at a long-term care facility at Baycrest in Toronto.

"The idea is that Brian will be a socially assistive robot for the elderly with cognitive impairment," says Nejat, who is also the director of the Autonomous Systems and Biomechatronics Laboratory at U of T. As baby boomers age and there are fewer people in the workforce to take care of them, robots such as Brian could aid health-care staff, she says.

Until now, robots have mostly been used for what roboticists call the "three Ds" – jobs that are dirty, dangerous and dull. But advances in computer vision, speech recognition and artificial intelligence, among other things, will soon bring us social robots that can interact in a natural way with humans.

Brian looks part C-3PO, part department-store dummy. His torso is mounted on a platform, and his arms are clearly mechanical. The artificial look is intentional, Nejat says. Robots that look too human can be confusing to the elderly, and even creepy.

Despite all that, Brian does manage to create a human-like presence. When he speaks you look at his face, not at the laptop that for the moment serves as his brain. That sense of presence is one reason to use a robot, and not simply a computer animation on a screen, Nejat says.

In addition to helping people remember to eat, Brian can also help people play a card-matching memory game, giving encouragement and hints to the human player.

Eventually Brian will be able to roll around a room, looking for people to interact with. He might even be an in-home assistant, chatting, keeping track of medication, and generally engaging with and helping the person he lives with.

Nejat says that the biggest challenge is teaching Brian to recognize people's behaviours. By monitoring things such as word use, body language and gestures, gaze and even heart rate, Brian will be able to tell if someone is upset, engaged, happy or sad, and change his own behaviour accordingly. If he recognizes a person is sad, for instance, he might try especially hard to cheer them up. "These robots will help to improve our quality of life," she says.

Brian will be a socially assistive robot for the elderly with cognitive impairment

– KURT KLEINER

Findings

Heightened "Gaydar"

A study by psychologists at U of T and Tufts University shows that a woman's "gaydar" – her ability to judge whether a man is gay or straight – is best during her time of peak ovulation.

In one experiment, 40 undergraduate women were asked to judge the sexual orientation of 80 men, based on a single image of each of the men's faces. Forty of the photos were of self-identified gay males while the other 40 were of straight men. The men did not differ in emotional expression or attractiveness, and the female participants were encouraged to use their intuition in making judgments.

The researchers found that the nearer a woman was to peak ovulation, the more accurate she was at judging each male's sexual orientation. The study, led by Prof. Nicholas Rule of psychology at U of T, was published in *Psychological Science*. **– SEAN BETTAM**

Violent Sleepers

U of T researchers have discovered a genetic link for a severe sleep disorder that has been closely linked to Parkinson's disease and other neurodegenerative diseases.

Between 60 and 80 per cent of people diagnosed with rapid-eye-movement sleep behaviour disorder go on to develop a neurodegenerative disease later in life, says John Peever, a professor of cell and systems biology and lead author of a recent study in *The Journal of Neuroscience*. "Understanding how to treat this disorder could have direct implications for understanding and treating Parkinson's disease," he says.

People who suffer from the REM sleep disorder do not experience normal muscle paralysis that occurs during dreams and they often hurt themselves or their bed partners with rapid, forceful movements.

– MIKE KENNEDY

PHOTO: COURTESY PROF. GOLDIE NEJAT

More than 40 per cent of Greek workers under the age of 24 are unemployed; in comparison, only 15 per cent of Canadian youth lack jobs

Q&A

Europe's Debt Troubles

With the markets betting on a Greek default, and the situation in Spain deteriorating, a second global financial crisis looms

U of T Magazine editor **Scott Anderson** spoke recently with economics professor **Margarida Duarte** about the risk of a new financial crisis, originating in Europe.

How did some countries – Greece, Portugal and Ireland – get into such a bad situation with government debt? Countries joining the euro 10 years ago were required to meet "convergence criteria" to ensure that every country pursued policies that were consistent with fiscal discipline and low inflation. Many eurozone countries failed to meet these criteria. Then, the financial crisis of 2008 exacerbated many countries' fiscal problems. Now, the markets are signalling that Greece and Portugal will not be able to repay their debts.

Past experience suggests that the markets are usually right. Even if Greece implements reforms and is able to eliminate its deficit in two years, its accumulated debt will be about 150 per cent of GDP. The government's annual interest bill will be about eight per cent of GDP. Given this situation, Greece's most rational course of action is to default. However, one reason that Greece has not yet defaulted is that a large part of Greek debt is held by German and French banks, and the EU desperately wants to avoid triggering another banking crisis.

So a Greek default could lead to the implosion of one or more banks in Europe? Yes, that is the fear. Looking at it simplistically, France and Germany are in the position of having to either bail out the Greek government or bail out their own banks.

What do you think the correct course of action is? Institutional reform within the EU is needed. There needs to be a loss of fiscal independence among member countries and a credible commitment by all governments – and in particular the less disciplined ones – to follow strict fiscal policies. There also needs to be an institution at the EU level or the eurozone level (similar to the Fed in the U.S.) that is responsible for recapitalizing banks in the event of a banking crisis.

What can the Greek government do? There's already a lot of opposition to reforms. It's a very difficult situation. The cost of defaulting is exclusion from the capital markets – international and also, potentially, domestic. But the market's memory is short. If Greece defaults, adopts structural reforms and eliminates its primary deficit, the country would be in a much better situation.

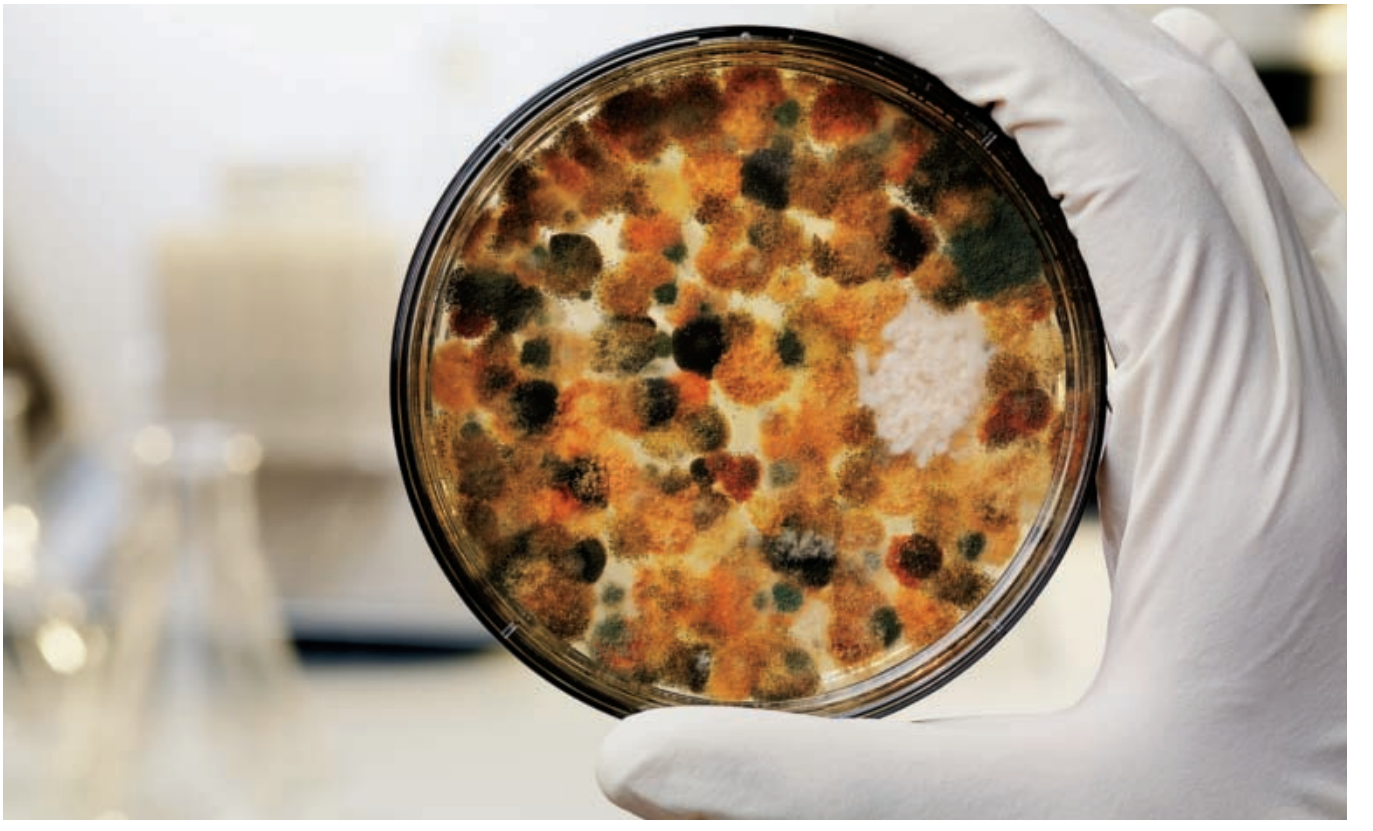
With the lack of an institution within the EU to recapitalize banks, could this trigger another global financial crisis? Yes. The general perception is that the European banking system is very fragile and cannot absorb the losses that would be associated with a disorderly Greek default.

What are the implications for North America? I think we could see a second financial crisis causing shortages in liquidity and another economic downturn. I think it would be less severe for Canada than the first crisis. However, financial systems are so interconnected that it is unclear which banks are exposed to which risks. Financial products these days are so complex that it's very hard to track.

Spain is often mentioned as a risk. Do you see danger there? Yes. Spain was hit hard by the first financial crisis: unemployment is very high, tax revenues are plummeting and the fiscal position of the Spanish government is deteriorating rapidly. The financial markets could target Spain, and the EU would not be able to bail it out. This would be a much larger crisis.

A longer version of this Q&A appears at www.magazine.utoronto.ca.

PHOTO: ISTOCKPHOTO



Overcoming Resistance

Professor Leah Cowen is researching a way to lower drug resistance in fungi

DRUG RESISTANCE OCCURS WHEN THE ORGANISM YOU'RE trying to kill evolves ways to outsmart the drug with which you're trying to kill it. Like antibiotic resistance, anti-fungal resistance has become a huge problem in health care, making many of our best drugs useless.

But now a U of T researcher has discovered that thwarting a particular protein might prevent fungi from becoming drug resistant. Her approach is emerging as a promising anti-resistance strategy – not only in fungi, but in diseases such as malaria and cancer.

Prof. Leah Cowen, a molecular geneticist and microbiologist, knew that cells normally die when their proteins aren't folded properly. She also knew that a protein called "heat shock protein 90" (HSP90) helps misshapen proteins refold back into their correct shapes if they've somehow been damaged. Cowen was the first to realize that this refolding was helping drug-resistant mutant cells to survive, and that, if she could stop HSP90, the mutant cells would perish.

To test the idea, Cowen and her colleagues tried various ways of interfering with HSP90. One method involved creating such a high demand for refolding that the protein couldn't keep up. In another experiment, they tried blocking HSP90 with a drug that inhibited its actions. In each case, hindering HSP90 made drug-resistant strains of fungus more vulnerable – so much so that old anti-fungal drugs that had stopped working began to kill off the fungi again. "When you take resistant organisms that normally don't respond to anti-fungals and treat them with HSP90 inhibitors, you make them responsive," she says. "It enables the drugs to work."

Although Cowen's experiments worked in the petri dish and in moth larvae, they didn't work in a mouse model. Mice suffering from fungal infections, which were then infused with HSP90 inhibitors along with traditional anti-fungal drugs, didn't survive. Cowen speculates that the anti-HSP90 drug she was using may have been harming the mice as well as their infections – so she and her team are now looking for inhibitors that specifically target the fungal form of the protein. – **ALISON MOTLUK**

PHOTO: ISTOCKPHOTO

Learn more.

Andrew Zhou

Student, Business & Professional Studies, and Business Financial Analyst at Johnson & Johnson.

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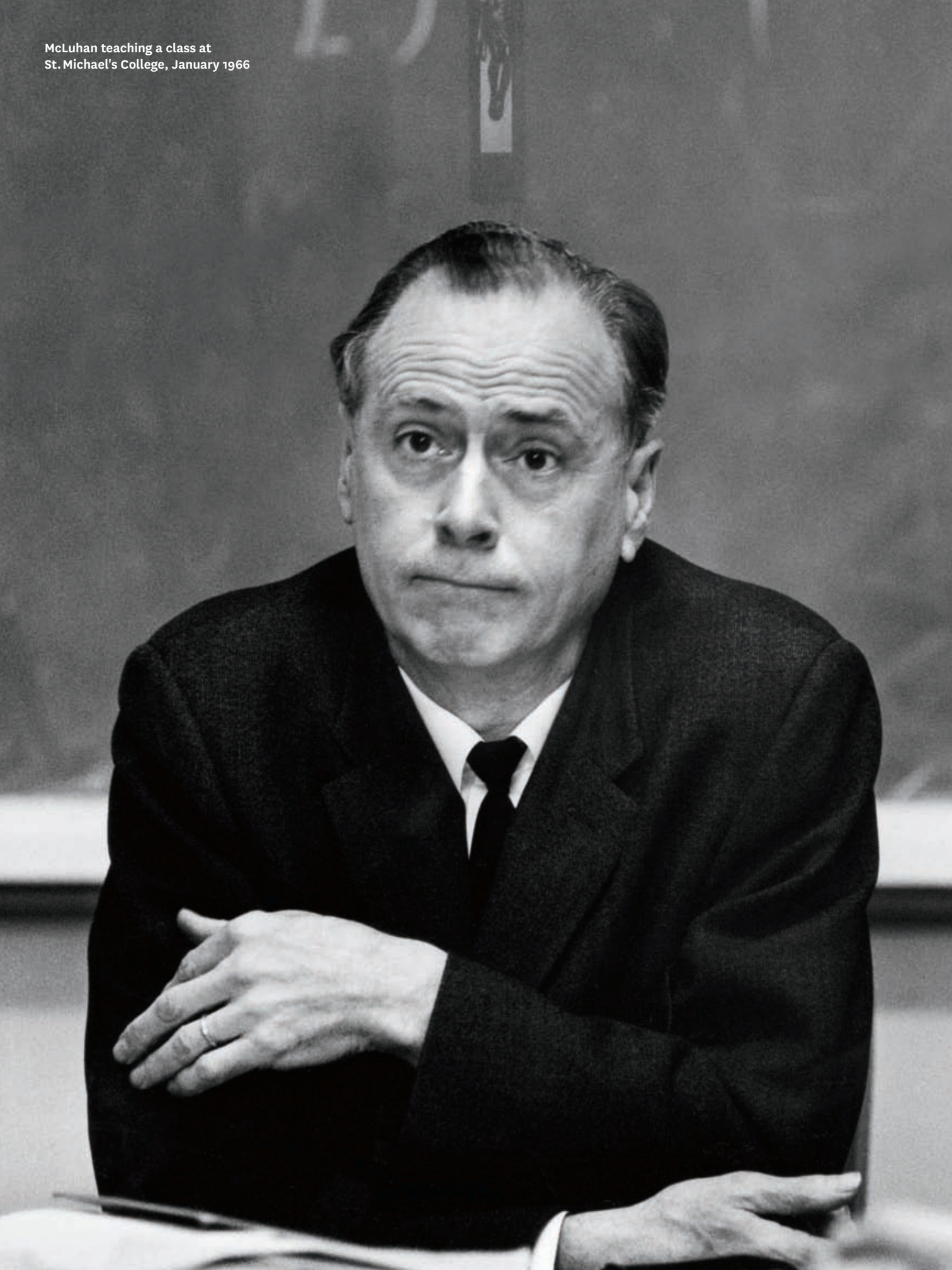
Marshall's Laws

He predicted the rise of the Internet and turned pop culture into an acceptable academic pursuit. Now, nearly 50 years after the publication of his most famous works, we're still making sense of all Marshall McLuhan had to say

By **Alec Scott**



McLuhan teaching a class at
St. Michael's College, January 1966

It's inconspicuous, even humble, just about the size of a tall two-car garage off a parking lot, near the larger buildings that make up St. Michael's College. On the summer day I visit, the diminutive coach house where Marshall McLuhan once worked has been temporarily cleared of most of its furniture and umpteen books. There is just a sole remaining intimation that McLuhan spent the last decade of his life working here (he took it over in 1968 and died in 1980): In the almost empty main room, there's the chaise longue that the lanky man used to lie upon during his famous seminars, extemporizing fluently. By the accounts of people who knew him, he was one of the 20th century's great talkers.

Nearby, the bells toll at St. Basil's Church – where McLuhan, a devout (but not dogmatic) Catholic went to mass every midday and where, in honour of his centenary (he would have turned 100 in July), a memorial mass was recently held for the family, friends and enthusiasts of the late media theorist.

On the walls of the coach house are photos of bygone technologies, ones that were cutting edge in McLuhan's day – typewriters, Dictaphones, computers larger than 747s, which, despite their size, were less powerful than today's laptops. These pictures, shot by photographer Robert Bean to honour McLuhan's centenary, emphasize the theorist's achievement in anticipating so much about the Internet. On a white screen, near the chaise longue, a slide-show depicts miscellaneous items from archives relating to McLuhan: the gaudy bands from the cigars he savoured; pages from a draft of one of his books typed by his wife with his edits scrawled all over them; a passport photo from when he was a fresh-faced youth from the prairies, about to embark on the international academic odyssey that would (eventually) bring him such acclaim.

I peer hard at this photo of a blandly handsome, long-headed young man, looking (in vain) for signs that he'd become remarkable. "Marshall McLuhan, what are you doin'?"

This was a catchphrase on *Rowan & Martin's Laugh-In*, the comedy show big in the late 1960s – intended to poke gentle fun at the abstruse thinker. Certainly, McLuhan had been fab in that era. With the publication of *Understanding Media: The Extensions of Man* in 1964, he'd captivated – and puzzled – a generation. Suddenly, he seemed to be everywhere, referenced on *Laugh-In*; interviewed by *Playboy*; giving talks to the top executives at GE, IBM and Bell Telephone. No less astute a cultural observer than Tom Wolfe compared him in the pages of *New York* magazine to revolutionary thinkers such as Freud, Newton and Darwin. The Sage of Aquarius, they called him. Another academic might have squirmed at the cutesy designation. With his own love of wordplay and disdain for the often stuffy, standing-on-ceremony of academic life, he probably loved it.

Lewis Lapham, the former editor of *Harper's* and current head of *Lapham's Quarterly*, says that McLuhan was no less than the foremost oracle of his age. "Seldom in living memory," he comments, "has so obscure a scholar descended so abruptly from so remote a garret into the centre ring of the celebrity circus."

McLuhan grew up in the "remote garrets" of Edmonton and Winnipeg, the son of a sociable, seldom-do-well father and a striving and strident mother, who helped support the family by giving dramatic readings of the acknowledged literary greats across the prairies and sometimes beyond. After studying some of those sonorous greats himself at the University of Manitoba, McLuhan won a scholarship to continue his literary studies at Cambridge – the reason for obtaining a passport photo.

At Cambridge, he learned to prefer the modernists – James Joyce and T.S. Eliot, particularly – to the grand figures of the Victorian and earlier eras. The modernists larded their technically difficult works with references to the new electric technologies – telegraph, telephone, radio, motion pictures – providing a model for engagement with technology that McLuhan himself would follow. He learned to analyze poetry and prose dispassionately – the no-nos were to say how a work made you feel or to speak to its moral compass. He also closely examined combinations of words for their effects. This was, essentially, the same close-reading, ostensibly judgment-free, effects-based approach he'd later take to parsing newer media.

He began to shift gears from literary criticism to media analysis during his first teaching job at the University of Wisconsin – Madison. "I was confronted with young Americans I was incapable of understanding," he was quoted saying in *Playboy*. "I felt an urgent need to study their popular culture in order to get through."

And so, in his first book, *The Mechanical Bride: Folklore of Industrial Man,* he applied his literary-critic tools to magazine advertising and comic strips. His book, a series of essays, came out in 1951, five years after he'd come to the University of Toronto as a junior English professor at St. Michael's College. It was idiosyncratic enough to dismay some of his new colleagues – pop-culture criticism was not yet a wholly respectable pursuit for an academic – and it also didn't make much of a splash beyond the academy.

The Mechanical Bride lacked the intellectual framework that would distinguish his later works, but the book's scattershot brilliance did impress a man who would become McLuhan's key intellectual model: U of T economic historian Harold Innis, who had made his reputation by analyzing Canadian history through the lens of the staples it exported. The admiration was returned: McLuhan would emulate Innis's so-called "mosaic" writing style (aphoristic, dense, not linear) and appreciated the substance of the older man's

PHOTO (PREVIOUS PAGE): HENRI DAUMAIN, FOR *LIFE MAGAZINE*, COURTESY OF THE ESTATE OF MARSHALL MCLUHAN

McLuhan at the CBC in Toronto, January 1966

thought. He found particularly intriguing Innis’s theory that different types of media each had a “bias” – a tendency toward different political and social messages. This would presage McLuhan’s more radical dictum that made the medium itself the message.

McLuhan’s thoughts also gained solidity and momentum through an innovative collaboration with U of T colleagues from different disciplines, including anthropology, psychology, urban planning and economics. With a generous grant from the Ford Foundation to study the shifting media environment in the early days of the television era, McLuhan and his colleagues conducted research, held seminars and wrote up their thoughts in an academic magazine called *Explorations*, which was published at U of T. Typical was an experiment that had different students absorbing the same lecture by print, television and radio, and then being tested on their retention. TV won, radio came second and print brought up the rear. “In these seminars,” says Janine Marchessault, a York professor and McLuhan scholar, “it was really a think-tank environment, everyone trying to figure out, in McLuhan’s words, what the hell was going on.”

McLuhan conceived of and led this interdisciplinary project at a time when university departments were still, by and large, jealously guarded, separate fiefdoms. This was one of the many ways McLuhan would challenge academic tradition in the course of his career. “This was the dawn of interdisciplinarity,” says Dominique Scheffel-Dunand, director of the McLuhan Coach House Institute. “He pioneered the concept.” Just as his thoughts revolutionized thinking about the media, his actions challenged the idea of what a university was and what the professors who served it might usefully do.

And so, with the benefit of a framework adapted from Innis and the fresh thoughts coming out of the interdisciplinary seminars, McLuhan launched his first major intellectual rocket, *The Gutenberg Galaxy: The Making of Typographic Man* (1962). It opened the discussion that he would continue for the rest of his life – in the confines of the coach house and elsewhere. Here, he began to say what, to his mind, the (dying) print age meant and what the (rising) electric era entailed.

In the *Gutenberg Galaxy*, in his magnum opus, *Understanding Media* (1964), and in the playful *The Medium is the Massage: An Inventory of Effects* (1967), he’d contrast the Gutenberg Galaxy with what he called the Marconi Constellation. He spoke in pithy sound bites, something the media loved. In this way also, he was ahead of his time: soon it

PHOTO: HENRI DAUMAIN, FOR *LIFE MAGAZINE*, COURTESY OF THE ESTATE OF MARSHALL MCLUHAN

Global Nerve Centre

$1.8-million campaign will revitalize U of T's culture and technology program and build on McLuhan's legacy

The University of Toronto has recently launched a $1.8-million fundraising campaign to renovate the storied coach house and to revitalize the McLuhan Program in Culture and Technology. "It's a very small building but a historic one, and any renovation has to take care of its heritage," says Seamus Ross, dean of the Faculty of Information, which oversees the program. "We want to draw students back into the space, to bring it alive again."

To that end, this fall the university is reintroducing the wide-ranging Monday night seminars that were a fixture in McLuhan's day. "There was a speaker, a moderator and a commentator on each topic – a framework that we're working with," Ross says. The coach house will also serve as a key venue in the event U of T has scheduled for November to consider McLuhan's work and legacy, titled "McLuhan 100: Then, Now, Next – International Conference and DEW Line Festival."

Throughout the fall, the Faculty of Information will also be looking into offering a new concentration in culture and technology as part of its master of information degree. "The university has a rich legacy in communications and media [and hopes to build] on the scholarship of Harold Innis and McLuhan," Ross says. He believes the program will be distinct from offerings in the same field at other universities by focusing less on communication technologies per se, and more on how these technologies are reshaping our culture and being reshaped by it.

To make the coach house a more suitable venue for classes about media and technology, it will be equipped with virtual conferencing capacities, enabling people to participate in seminars from anywhere in the world. Multimedia art installations are also part of an ongoing plan to reanimate the space. As part of last year's Scotiabank Contact Photography Festival, David Rokeby and Lewis Kaye displayed video of McLuhan through a ground-floor window of the coach house that was visible and audible to passers-by. And for this year's Contact, photographer Robert Bean lined its walls with McLuhan-themed pictures. "The first one drew people to the outside of the building, the next one drew them in," says Ross. "We want the coach house to become a global nerve centre for discussions around communication and digital media. Just as it was in McLuhan's day."

– ALEC SCOTT

McLuhan at the Centre for Culture and Technology, April 1973

would become common, even *de rigueur* for professors to try to share their ideas with the larger public. But it wasn't so common then.

"He attracted a lot of attention to the university and also to himself," says his son (and, in later years, his frequent collaborator) Eric. "This didn't make some of his colleagues very happy, because they thought they knew at least as much as he did and they weren't getting noticed."

McLuhan served up a typical verbal gust in the *Playboy* interview, summarizing his view of what the invention of type meant: "As a drastic extension of man, it…was directly responsible for the rise of such disparate phenomena as nationalism, the Reformation, the assembly line and its offspring, the Industrial Revolution, the whole concept of causality, Cartesian and Newtonian concepts of the universe, perspective in art, narrative chronology in literature and a psychological mode of introspection or inner direction that greatly intensified the tendencies toward individualism and specialization."

With this ability to cover such a sweep, it is little wonder that his students would sometimes leave his seminars exhilarated, sometimes stunned. One of his former students (and one of his biographers) Philip Marchand comments, "The class was at 9 o'clock, which for me was too early. But you didn't want to miss them – they were events – so much went on in them." Once, for instance, as a surprise, McLuhan brought the then-new prime minister Pierre Trudeau, a fan of McLuhan's, to a class.

Another student, Bruce (B.W.) Powe, who'd become a friend of McLuhan's and is now a media studies scholar and professor at York, remembers having an oral exam with McLuhan. "I asked him a question early on, and he just took off, and for the next two hours spoke." Powe got an A. "Maybe I asked him the right question," he says with a chuckle. Marchand heard many such stories when he worked on the biography *Marshall McLuhan: The Medium and the Messenger*. "He always struck his colleagues as a bit of a wild man; he violated so many canons of academic behaviour."

Still, on the strength of his first book, the attention he was garnering and the growing popularity of his seminars, U of T set up the Centre for Culture and Technology in 1963 for McLuhan to lead. It would "study the psychic and social consequences of technology and the media." There wasn't initially much to the centre apart from the title (it would move to the coach house in 1968) but it gave McLuhan the official approval to do what he was doing anyway: forging a new discipline – communication studies.

He never attempted to sketch out a globalizing theory of media. Instead, he poked at it with a series of intuitions he'd test in talks with his students and colleagues. He called these aphoristic thoughts "probes." (This was another way he didn't quite fit in academe, where definitiveness tends to be valued highly.)

Type, he'd say, privileged the eye over the other senses, as had the alphabet before it. By contrast, radio and television re-engaged the ears and were fluid where type was fixed. He'd point out that different media engaged the senses differently and therefore – this was the key point – had radically different effects on the brain. In this way, the medium itself

PHOTO: ROBERT LANSDALE

is the message. This is an idea subsequent neurological research has largely borne out. "The recent research on the so-called iBrain," Powe says, "That's all anticipated in McLuhan." (Gary Small and Gigi Vorgan summarize the latest research showing how significantly new technologies are altering our brains in a recent book, *iBrain: Surviving the Technological Alteration of the Modern Mind*.)

What did McLuhan believe the social consequences of these new technologies would be? The immediacy of television and other electrically powered devices (such as computers) would shift the very nature of time: instead of the one-thing-after-another, linear time of print, electronic media fostered an "all-at-onceness" that would characterize the new age. (Certainly, this observation seems even more applicable in the Internet era than it was in McLuhan's day. "What is the Internet, but 'all-at-onceness'?" Marchessault argues.)

This simultaneity – of everyone all over the world plugged in to the same media – would connect us in a "global village." This term is often misused; it is not a warm and fuzzy place. For McLuhan, this village is as nasty as it is nice: "The global village makes maximum disagreement and creative dialog inevitable. Uniformity and tranquility are not hallmarks of the global village; far more likely are conflict and discord as well as love and harmony – the customary life mode of any tribal people."

A new age called for a new kind of literacy taught in a new kind of university. As a *New York Times* reporter who interviewed McLuhan at the height of his fame summarized: "McLuhan advocates radical changes in education because he believes that a contemporary man is not fully 'literate' if reading is his sole pleasure. 'You must be literate in umpteen media to be really 'literate' nowadays.'"

McLuhan pushed for a move away from what he saw as an over-reliance on print teaching tools, since these wouldn't reach many young students weaned on the new technologies. A good teacher would equip students with tools to understand and engage with the new media, and would treat the classroom as a place where the group, through lively debate, could make joint discoveries. A professor was a facilitator of fresh thoughts about the environment, not a revealer (in lectures) of definitive truths. "The university he saw has yet to exist," Marchessault says. "Its transformation into an institution for the electronic age remains incomplete."

Indeed, there was a sense of mission not quite completed at his death in 1980. Afterwards McLuhan's star faded as abruptly as it had risen. U of T cleared out the coach house, while it considered whether to continue McLuhan's centre in the absence of its prime mover. As Lapham comments, "McLuhan's name and reputation were sent to the attic with the rest of the sensibility (go-go boots, Sgt. Pepper, Woodstock, the Vietnam War) that embodied the faded hopes of a discredited decade."

A professor in Fordham's communication and media studies program (a program inspired by McLuhan's work), Lance Strate remembers: "As graduate students then [in the 1980s], we were told if you want to get a job, don't mention that you like McLuhan. If you want to get something published in a journal, don't cite McLuhan."

But McLuhan's ideas wouldn't stay down. His return to favour began, Lapham says, in the 1990s, when *Wired* magazine anointed him the patron saint of the Internet, and devoted space in some of its early issues to quote seemingly prescient bits of McLuhan's writings on the media.

In a recent paper, McLuhan's longtime collaborator and friend Robert Logan, a U of T physics professor emeritus, argues, convincingly, that McLuhan's work anticipated many particulars of the Internet age, from Twitter to Wikipedia, from laptop computers and smartphones to, as a result of the "all-at-onceness," reduced attention spans. "He paid such attention to the present," his son Eric says, "and that enabled him to understand what would necessarily happen in the future."

The Guardian and *New York Times* both recently put a book of McLuhan's – most remarkably, different books – on their lists of the 100 greatest non-fiction works ever written. They were the only Canadian entries on either list.

And his centenary is turning out to be a big deal, in Toronto and elsewhere. There are slews of McLuhan-themed events: many book launches, mainly for works arguing that he remains relevant in the Internet Age (among them, Logan's recently released *Understanding New Media: Extending Marshall McLuhan*); multimedia art installations (on the walls of the Toronto subway system and at Toronto's Nuit Blanche in October); and, of course, conferences (in Australia, Germany, Italy, Paraguay, Spain and at U of T and throughout Toronto in November on the theme of "McLuhan 100: Then, Now, Next").

At his beloved coach house there have been talks this year on the topic of the "Edge of Academe" – the metaphorical space McLuhan consistently (and gladly) occupied. Scheffel-Dunand comments: "We want his space, the Coach House, to be a place where you can do slow conversations, where you can really scrutinize what is happening to the university and the world today."

McLuhan's essential message to his students at the coach house was the same as his justification for studying new media in the context of a reformed university. As he told *Playboy*: "In the electronic age of instantaneous communication ... our survival, and at the very least our comfort and happiness, is predicated on understanding the nature of our new environment. If we understand the revolutionary transformations caused by new media, we can anticipate and control them; but if we continue in our self-induced ... trance, we will be their slaves."

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mind games

\ˈmīnd\ \ˈgāmz\ *n.*
How should we define mental illness?

1. By *Kurt Kleiner* **2.** Illustration by *The Heads of State*

THEORIES OF HUMAN PSYCHOLOGY INFLUENCE not only how we treat mental illness, but how we understand ourselves. The ancient Greek notion of the four humours remains with us in our idea of sanguine or phlegmatic personalities. Freud's ideas gave us unconscious motivations, egomaniacs, narcissists and more.

These days, if you know someone who's suffered from major depression, or think you may have social anxiety disorder, or know a child with attention deficit disorder, you've been influenced by a more modern psychological viewpoint – one put forth by the American Psychiatric Association in its *Diagnostic and Statistical Manual of Mental Disorders* (*DSM*), which describes all recognized mental disorders. Psychiatrists in North America, and also elsewhere in the world, rely on the *DSM* to make their diagnoses and communicate them with others in the health-care profession.

But the manual's immense influence is a problem says Edward Shorter, the Hannah Professor of the History of Medicine at U of T. He thinks that many of the disorders described in the *DSM* are not actual diseases discovered through the scientific method. Instead, they resulted from political deal-making among different factions in the professional community, each with conflicting ideas about causes and treatments of psychological problems. The result, he says, is a description of mental disorders with too little relation to real diseases.

In Shorter's opinion, the manual sometimes pathologizes perfectly normal behaviour, while actual diseases get lost in a thicket of non-existent syndromes and disorders. And as the association works through a new revision of the *DSM*, it looks like things will only get worse, he says.

"The *DSM* continues to run off the rails in terms of its ability to come up with true disease entities that exist in nature," Shorter says. "The problem is that the document itself is profoundly unscientific."

Shorter is a social historian of medicine. He has written books on obstetrics and gynecology, the doctor-patient relationship, psychosomatic illness and psychiatry. His books include *Written in the Flesh: A History of Desire*, and *Shock Therapy: A History of Electroconvulsive Treatment in Mental Illness* (which he wrote with psychiatrist David Healy). One reviewer, Dr. Nassir Ghaemi of Tufts Medical Center in Boston, called his *A History of Psychiatry from the Era of the Asylum to the Age of Prozac* (John Wiley & Sons, 1997) "the best single volume to read on that topic."

The American Psychiatric Association's *DSM* guides treatment decisions in the U.S., Canada and other countries. Often a *DSM* diagnosis is required by an insurer before payments will be made for treatment. The manual's categories are also frequently used by researchers studying mental disorders. And the categories influence the way we think about mental illness, and for that matter how we think about mental health.

The *DSM* has been in the news a lot lately as it goes through a fifth major revision, due to be published in 2013. Some critics have accused the task force that's leading the process of excessive secrecy. Others have specific complaints about disorders they think should be included, or excluded or redefined.

But Shorter's critique is more general. He thinks that the *DSM* is both an example and a cause of psychiatry's wrong turn beginning sometime after the mid-20th century. He says the profession moved from a relatively small, relatively valid list of mental diseases – many of which could be treated effectively by tranquilizers, lithium and first-generation antidepressants – toward a vast list of disorders with no scientific validity. Some of the disorders overlap so much that they are almost impossible to distinguish from one another. Worse, he says, some of the disorders are really descriptions of normal, if difficult, human experience.

In the past there has been a consensus in psychiatry based on what is really wrong with patients. This sound body of wisdom of the ages has been ignored, Shorter says.

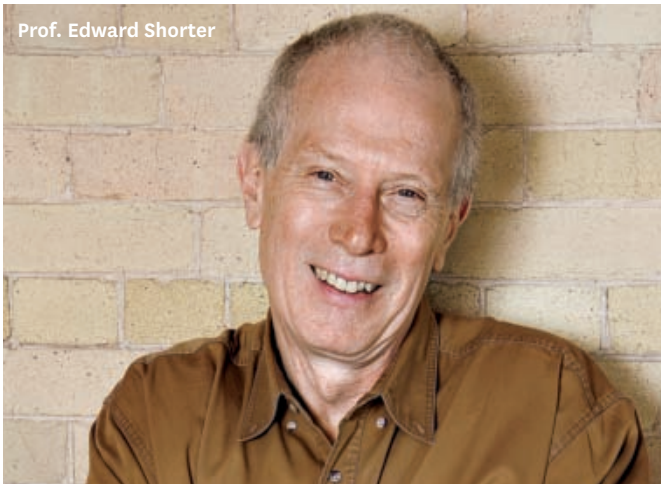
The *DSM* got its start in the early 1950s. The first version, published in 1952, reflected the then-prevailing psychodynamic viewpoint of psychology, with heavy emphasis on the complex interplay between personality and life history. The manual described 106 disorders, but with no strict criteria for determining if a patient had a disorder. A revision in 1968 didn't change much.

But the 1980 revision took a radical turn. Dr. Robert Spitzer, a psychiatrist at the New York State Psychiatric Institute, was put in charge of the project. He wanted to move away from a psychoanalytic view of mental illness, and toward a more biomedical view. In the *DSM III*, disorders were supposed to be reliably diagnosed and categorized according to symptoms, in the same way that physical illnesses were. If you had enough of the symptoms on the checklist, you had the disorder.

The *DSM III* increased the number of disorders to 265. New disorders included major depression, attention deficit disorder, post-traumatic stress disorder and social phobia. Left out or downgraded were formerly important concepts such as neurosis. Although the *DSM* has gone through a significant revision since then, its underlying structure and philosophy have been left largely intact until now.

The current American Psychiatric Association task force, comprising 29 psychiatrists and other mental health specialists, wants to recognize that many conditions often overlap – for instance, anxiety and depression – so that a diagnosis of only one or the other doesn't always make sense.

Perhaps most significantly, the new version of the *DSM* will also include a "dimensional" component – one that considers the severity of symptoms in making a diagnosis. This could lead to some symptoms being classified as below the threshold needed for diagnosis with an actual disorder,


Prof. Edward Shorter

med·i·ca·tion \ˈme-də-ˈkā-shən\ *n.*

"One of the disadvantages is instilling in people the idea that normal life includes chronic medication. This has been a terrible development in the last 30 years, the idea that you cannot have a normal life unless you're on pills"

but still severe enough to be a problem. For instance, someone could be diagnosed with pre-psychotic syndrome or mild cognitive disorder. Shorter and other critics worry that this could further shift the line between what's considered normal human experience and a pathology that requires medical treatment. For Shorter, the main problem with the new *DSM* is that it continues what he sees as the mistakes of the *DSM III*. Shorter plowed through the American Psychiatric Association's records of the *DSM III* task force deliberations, and concluded that the process was largely a political rather than a scientific one.

At the time, Shorter says, there were two conflicting schools of thought within the association. Psychoanalysts, with their theory of mental illness as the result of unconscious conflict, were on one side. Supporters, such as Dr. Spitzer, of a biomedical model of mental illness were on the other side. Although the biomedical view largely won, the document the task force created showed signs of the political compromises, Shorter says.

For instance, our current ideas about depression – that it's a single illness ranging from mild to severe – is a result of that compromise. Before *DSM III*, depression was generally considered to come in two distinct flavours. One was sometimes called neurasthenia, with relatively mild symptoms of general dysphoria and unhappiness. The other was full-blown melancholia, marked by mental and physical slowing, high levels of the stress hormone cortisol and feelings of personal worthlessness.

Over a number of years the task force considered many different terminologies for the various types of depression, including "major depressive disorder," "chronic depression," "neurotic depression," "chronic minor depressive disorder," "melancholia," and "dysthymia." Different interest groups favoured different terms, often based on whether they seemed to suggest a biological or psychological cause of depression.

Eventually, a compromise was struck. The biomedical side got "major depression," which many of them considered to be "real" depression. The psychoanalysts got "dysthymia," a concept that included "neurotic depression." Since neurosis implied unconscious conflict, this was a diagnosis with which they could be satisfied.

Although on the surface this sounds like the old melancholia/neurasthenia distinction, the diagnostic criteria that actually apply to them are different. Shorter says that the symptoms of major depression and dysthymia overlapped so much that they just about erased the distinction between a depression that was chronic and relatively minor, and full-blown melancholia.

"There isn't any other discipline in medicine that depends on consensus for its scientific truths," says Shorter. "Consensus really means horse-trading – I'll give you this diagnosis if you'll give me that diagnosis. That's the way they do business in politics. That's not the way you do business in science. The speed of light wasn't determined by consensus."

Even worse, according to Shorter, is the sheer number of disorders listed in the *DSM*. Although the listed disorders attempt to make fine distinctions, Shorter says they are largely distinctions without a significant difference. Distinctions between, say, social anxiety disorder and generalized anxiety disorder probably aren't meaningful, he says. Both are probably going to be treated with the same drugs. Newly proposed disorders relate to hypersexuality, binge eating, hoarding and gambling. Also being proposed is "premenstrual dysphoric disorder."

The multiplying disorders have also tended to pathologize our lives, so that feelings that fall within the range of normal human experience are sometimes interpreted as disorders. Dr. Paul Chodoff, a psychiatrist in Washington D.C., jokingly suggested in a letter to the journal *Psychiatric News* that there be a new diagnosis called "the human condition." Diagnostic criteria would include "unhappiness," "dissatisfaction with one's looks," and "getting upset when things go wrong." In a more serious article called "The Medicalization of the Human Condition," in the journal

Psychiatric Services, Dr. Chodoff says that "... in their eagerness to include all varieties and vagaries of human feelings and behavior in their professional domain, [psychiatrists] are running the risk of trying to medicalize not only psychiatry but the human condition itself."

According to a report from Health Canada released in 2002, 20 per cent of Canadians will experience mental illness sometime in their lives. Approximately eight per cent of adults will experience major depression, and one per cent will experience bipolar disorder. "There is such a thing as real psychiatric illnesses," Shorter says. "But these diagnoses have simply gotten out of hand."

"One of the disadvantages is instilling in people the idea that normal life includes chronic medication. This has been a terrible development in the last 30 years, the idea that you cannot have a normal life unless you're on pills."

ma·nia \ˈmā-nē-ə, -nyə\ *n.*

"How do we draw a line when sadness becomes depression, joy becomes mania, fear becomes paranoia?"

Last year, Shorter published an op-ed in the *Wall Street Journal* laying out his criticism of various versions of the *DSM,* including the forthcoming edition. Among other things he complained about the proposed category of "psychosis risk syndrome," for people who have either delusions, hallucinations or disorganized speech, but who are not full-blown psychotics.

"Let's say you have 'disorganized speech.' This would apply to about half of my students. Pour on the Seroquel for 'psychosis risk syndrome'!" Shorter wrote.

Not surprisingly, Shorter's views have been criticized. His *Wall Street Journal* article drew a critical response from Dr. Alan F. Schatzberg, president of the American Psychiatric Association, who accused Shorter of falling victim to common misperceptions about psychiatry and diagnoses. It's absurd, he wrote in a letter to the newspaper, to suggest that anyone would be diagnosed as having a specific disorder because of a single symptom.

Another letter came from Dr. Henry J. Friedman, a psychiatrist at Harvard Medical School, who described Shorter's article as a "brutal attack on contemporary psychiatry."

In a phone interview, Dr. Friedman agreed that disorders listed in the *DSM* are proliferating, and may not describe actual organic diseases. But that doesn't mean the diagnoses aren't helpful, he said.

For instance, a person with social anxiety disorder has anxiety triggered by social situations. A therapist using cognitive behavioural therapy would help the patient focus on thoughts and feelings around social interactions. Treatment for a general sense of anxiety would be different.

Dr. David S. Goldbloom, a University of Toronto professor of psychiatry, says that Shorter has identified a real issue in psychiatry – the underlying cause of a disorder is often not known. No blood test or X-ray can confirm a diagnosis. That means psychiatrists are left to make diagnoses strictly according to symptoms. But that doesn't mean the diagnoses are without value.

"We, as clinicians, need a common language in order to communicate. That's really what the *DSM* is and should be, rather than a statement of the 'truth' of psychiatric illness. That truth remains unknown.

"The *DSM* tries to incorporate the best available evidence of how symptoms cluster into recognizable disorders. Given the limits of the science there has to be some measure of expert consensus," he says.

The problem of "diagnostic creep," in which normal human emotions are classified as pathology is also a valid concern, he says. "Being sad, angry, afraid or joyous – that is part of the normal fabric of human experience. How do we draw a line when sadness becomes depression, when joy becomes mania, when fear becomes paranoia?" he asks.

Other branches of medicine face similar problems, he says. Blood pressure exists along a continuum. At some point, a doctor will diagnose a patient with hypertension based on a medical consensus of what a problem blood pressure reading is. The medical condition is real, but the criterion is necessarily arbitrary.

Dr. Goldbloom agrees that the *DSM* isn't perfect, as you would expect from a consensus document. In the future, the committee may decide to eliminate some of the new diagnostic categories, or lump together conditions that are now split apart.

Nevertheless, Shorter thinks that we would all be better off if psychiatry would return to the days of trying to treat a few well-established diseases with clear organic underpinnings, such as melancholia. Most of the rest of what the *DSM* describes could be dealt with by trained psychotherapists, such as psychologists, social workers and nurse practitioners.

"There's no doubt psychotherapy makes patients feel better. At the same time, I'm not in favour of training psychiatrists to be better psychotherapists. Their job is to make a diagnosis of biological origin and to treat them with effective agents."

Kurt Kleiner writes about science and technology from Toronto. He blogs at http://organizedcommonsense.com

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In her book, *The Siesta and the Midnight Sun*, science writer Jessa Gamble investigates the impact of circadian rhythms on all forms of life

TIMING IS EVERYTHING

A lot can go wrong when we ignore the body's internal clock

Text by Cynthia Macdonald | Photos by Dave Brosha

IT STARTED WITH RATS.

In 1999, third-year psychology student Jessa Gamble was working as a research assistant in a lab at the University of Toronto. Part of her work involved observing caged rats being kept in darkness. At first, the rodents' actions appeared random, whether they were drinking water, running on a wheel or standing on their hind feet to take a look around.

But as Gamble writes in her fascinating book, *The Siesta and the Midnight Sun* (which will be published in October), an instrument hooked up to the cage revealed that the rats were repeating their actions at precise times, day in and day out. No question about it: the data were "spookily identical."

Except for one thing. While following a 24-hour cycle, the rats would start their routines just a few minutes later each day, with some starting a little later than others. In the wild, daylight and its disappearance rigidly structures rat behaviour; but even in darkness, their internal clocks did the job almost as well.

Gamble's experiences at U of T led to her much broader study of what is most commonly known as circadian rhythms. Her book reveals how all living organisms – plant, animal and human – time their functions to take place at specific points during Earth's 24-hour rotational cycle.

The planet's natural phases of light and dark give order to our lives, and our behavioural and physical processes faithfully respond to the Earth's cycle. This means that there are, in fact, optimal times to eat, sleep, think, exercise, reproduce and take medicine. As Gamble, 32, points out in her book, scientists now believe that we disregard those times at our peril.

The word *circadian* refers to a daily cycle, but Gamble's study takes in seasonal rhythms as well. These biological oscillations "link us to the rest of the world, and ground us in this Darwinian realization that we are part of a continuum," the science reporter tells me from her home in Yellowknife. "We don't perceive the rotation of the planet. We forget that we're part of this giant universe. But we are part of it, and down to the cellular level we're responding to that reality."

The science of circadian rhythms (also known as chronobiology) is now half a century old. While that's a long time to have known about the internal clock's existence, many experts believe we haven't paid nearly enough attention to what it is telling us.

Jet travel, shift work and medication are just some of the forces playing havoc with the proper functioning of our bodies. Because of globalization, we're also more inclined to share timetables – to our possible detriment. As Martin Ralph, a psychologist and the director of U of T's Centre for Biological Timing and Cognition, puts it: "Everything is built to work over 24-hour intervals. If you disturb those rhythms, you could get chronic disease."

Anyone who has experienced jet lag knows it can derail your natural order and leave you temporarily weak and groggy. Gamble certainly courted grogginess while researching her accessible, deliciously factoid-crammed book. Travelling from Japan to Spain, England, California and Canada's Far North, she discovered her chosen subject was being studied throughout the world.

The burgeoning field is also highly interdisciplinary. As Gamble shows, chronobiology is now being studied by anthropologists, astronomers, medical doctors, psychologists and botanists, to name just a few. And it's not only the province of scientists. Athletes and executives, new mothers and nightclub bouncers – anyone victimized by the external clock's tyranny – find a place in Gamble's first book.

Born in Oxford, England, Gamble received a bachelor of science in psychology from U of T in 2003 while attending Victoria University. But she balked at killing laboratory animals – "though I'm still really interested in the research that comes out of that" – and ultimately chose to report on science instead of practising it. "Science communication is a bit of a mission for me," says Gamble. "I really want to make science accessible to the public, as they are paying for much of it. And I think they deserve to have that information."

Gamble, who came to Canada as a preteen, was an aspiring journalist who kicked around the Toronto magazine world upon graduation. She co-founded a publication on underground culture called *Neksis* ("We drove it into the ground," she says), and interned at magazines such as *Canadian Geographic* and the now-defunct *Shift* and *Elm Street*. But the grinding competitiveness of Toronto media started to wear her down, and she soon found herself travelling very far afield. "I got a job at *Up Here* magazine, which covers all of Canada's Far North," says Gamble, who still bears a slight English accent from her childhood. "That allowed me to travel extensively and cover a wide range of things, though I ended up focusing on science." In 2007, her account of life at the Eureka High Arctic Weather Station earned her a Science and Society Journalism Award from the Canadian Science Writers' Association.

A Yellowknife resident for the past five years, Gamble is well acquainted with one of the more harmful effects of altering your circadian rhythm: seasonal affective disorder. Did long, dark winters on the 62nd parallel inspire her research? "It absolutely did," she says. Gamble doesn't suffer from SAD, but she reacts to the season like many others in the region: "I experienced a real drag in the winters, and I still do; it's not something you're cured of. But I got really interested when I started visiting northern communities and learned that in living memory, people had been pursuing a totally different lifestyle in conjunction with this 24-hour darkness. It was a way more seasonal lifestyle, with different activities slotted into the different seasons."

Aboriginal northern peoples were once fully able to work in concert with this cycle of dark and light. "Elders in northern Canada recall that summers were a time of almost manic hunting and working," Gamble writes in *Siesta*, while "the starlit winters were for staying indoors, eating from the meat cache and enjoying one's family."

Now, however, northern people are inextricably linked to their fellow citizens in the south because they share schedules and resources. This resulted in northerners increasingly being forced to accommodate themselves to southern timetables, something Gamble calls "circadian imperialism." Ralph points out that children in Nunavut, for example, start school at the same time as their southern peers – but up there it's in darkness, when their bodies are still releasing vast quantities of melatonin, a sleep hormone. "It's hard to imagine people will perform that well, and they don't," he says. Ralph thinks that in the long term, this "desynchronization" could be problematic.

The northerner's predicament is comparable to "permanent jet lag," says Ralph. His animal studies have shown that shorter lifespans, obesity and cardiovascular disease are some of the potential results if this bodily disruption isn't curbed. He suspects that certain physical and mental-health problems that have long plagued the northern communities he studies (such as Iqaluit, Nunavut) may be

The human body appears to be an orchestra that plays the same symphony each day. Body temperature, hormone production, cellular division and brainwave activity – everything is subject to patterns

partially attributable to this phenomenon.

Indeed, the human body appears to be an orchestra that plays the same symphony each day. Its component instruments pipe up at predictable intervals, play their part, then move on. A clump of cells in the brain's hypothalamus, known as the suprachiasmatic nucleus, acts as the conductor, and it does its job well. Body temperature, hormone production, cellular division and brainwave activity – everything inside us is subject to patterns.

On average, a person's cognition peaks in the morning, while lung function is optimal in the early evening. This, too, appears to be the best time to exercise: it's when the perception of exertion is at its lowest, and when athletes appear most able to break world records. Further, "every hour and a half, a little wave of sleepiness comes, and then it passes," Gamble says. "That's a good thing to know if you're feeling tired, and you think it means you have to go to bed."

Digestive processes have their own timetables, too. A drop in energy levels after lunch leads to a phenomenon called the post-prandial dip – traditionally medicated in Spain with a siesta, the midday nap. (The Spanish government scrapped this idea for its employees in 2006, citing, among its concerns, the need for wakeful workers in a globalized world.) Bowels tend to be active in the morning – by way of proof, Gamble cites the example of New York City's "Big Flush," which reliably occurs each morning between 8 and 9. At this time, 150-million gallons of human waste sluice through the city's sewage system; at other times, the average is 70-million gallons.

These optimal functioning times are based on averages, of course. There are some individuals whose clocks are just . . . off. Many of us, for example, describe ourselves as "morning people" or "nighthawks." In fact, owning one of these rigidly fixed identities, known as chronotypes, isn't common. But Gamble says both "larks" and "owls" really exist. If you're the latter, she says, "then all of your rhythms are probably a little bit later. So that's why I hesitate to put down that at 10:30 in the morning you're going to be at your best, because that's going to be different for larks than for owls." Accordingly, an owl-child performing poorly at school might be diagnosed as having attention deficit disorder. But it's worth asking: is the child merely being forced to contravene the rules of her internal clock?

Some medical doctors are now taking circadian science very seriously. It's becoming more clear that the time of day when a medication is taken has a direct bearing on its efficacy. Recently, researchers at U of T and the University of Guelph found that mice with high blood pressure experienced improved heart structure and function when given angiotensin-converting enzyme (ACE) inhibitors at night. When taken in the morning, however, the medication was no better than a placebo.

The research of medical oncologist Georg Bjarnason at Toronto's Odette Cancer Centre/Sunnybrook Health Sciences Centre has focused on how circadian rhythms affect the timing of cancer treatment. Working with patients who have head and neck cancers, the U of T associate professor has shown that radiation in the morning is less toxic than when it is administered in the afternoon. In a clinical trial setting, chronotherapy (along with chemotherapy drugs) has also demonstrated positive results for men with metastatic colorectal cancer and children with acute lymphoblastic leukemia. In addition, says Dr. Bjarnason, "we know that cancer patients on therapy who have an abnormal sleep pattern have poorer survival."

Sleep. It's the bodily function that comes up most in any discussion of biological rhythms. The well-worn mantra is

that we need an eight-hour run of it or bust; but is this really true? Gamble suggests that we should be more flexible in our search for the perfect slumber. She cites the work of American psychiatrist Thomas Wehr, who conducted a four-week study in the 1990s in which the subjects, like the lab rats she once observed, were deprived of artificial light for some 14 hours in each 24-hour period.

"They slept for a lot longer than usual, but in the middle they woke up and had two hours of quiet contemplation in bed," says Gamble. "During that time, they had a surge of prolactin – a hormone we use in lactation and sex, but that doesn't surge during an unbroken eight-hour sleep. People who experienced that 'anti-nap' during the night said that the next day, they experienced true wakefulness for the first time."

Gamble notes that some very famous and accomplished people have been able to work "polyphasic" sleep into their working lives. For a time, American designer Buckminster Fuller only ever catnapped, scattering four half-hour kips throughout the day. And Gamble says that even during the Second World War, Winston Churchill managed to take a midday nap – in pyjamas, no less – prior to waking and working until 3 a.m, and then rising at 8. "By all accounts, he was energetic and hard to keep up with," she writes.

Night waking is something that bothers us enormously; many routinely ingest sleeping pills to stamp it out. But as Wehr has written: "Waking up after a couple of hours may not be insomnia. It may be normal sleep." In her book, Gamble alludes to historical evidence (references to "second" and "morning" sleeps) suggesting that people in earlier centuries regarded night waking as normal – a time for praying, meditating or communing with one's spouse.

As the science of biological rhythms catches on, it is not hard to imagine the marketing potential attached to it: one foresees a spate of quickie books with names such as *The Circadian Diet* and *Awake at Last*. But Gamble considers herself a science writer, not a purveyor of self-help.

Still, at last year's TEDGlobal (Technology, Entertainment, Design) conference in Oxford, England, Gamble gave a talk on biphasic sleep and received a barrage of attention from audience members keen on self-improvement. "I got a lot of response from people saying, OK, help me achieve this, I'm really interested. But being prescriptive is the furthest thing from my mind. I'm so much more interested in the way things are than the way things should be. I'm just curious about the way everyone manipulates the biological imperatives and tries to get around them, but I'm not trying to change things. I don't know what to say to these people!" she laughs.

Still, Gamble thinks that becoming aware of one's own personal rhythms is a very good idea, and she is not averse to experimenting on herself. One way she has done this – she swears it works – is by fighting the development of jet lag when she travels, with the help of a smartphone application. Her Virgin Atlantic Jet Lag Fighter offers a simple program: start shifting waking and sleep times three days before the trip, get a good dose of natural light in the afternoon and exercise in the early evening.

We tend to tolerate jet lag as a normal consequence of international flight, but Gamble thinks we shouldn't. "For someone who travels regularly it's worth calculating what effect your sleeping schedule is going to have, especially when there are critical decisions to be made on the other end. If it's the middle of the night in your internal time, you're doomed." Amusingly, her book notes that at various points during its history, *Monday Night Football*'s 9 p.m. EST kick-off time allowed western players an advantage. They were consistently able to derive the benefits of an early-evening performance time (the proof is in the record books).

Technology such as the Jet Lag Fighter is designed to "abnormalize" a typical day, the better to maximize activity. But scientists have also done the reverse. Gamble cites a recent example, which occurred when a group of Chilean miners were trapped underground in the summer of 2010. The miners were instructed by hastily flown-in NASA experts to divide their living area into three parts: a brightly lit waking area, a darkened sleeping area and an in-between work area. They were also given vitamin D supplements to compensate for the lack of sunlight, and told to exercise at precise times. "Their triumphant return to the surface after two months led to talk of lucrative film and book contracts," Gamble writes, "but the field of circadian rhythms is also indebted to them for a rare, real-world demonstration of circadian functioning in a totally artificial environment."

Gamble is aware that, given the demands of modern life, it is practically impossible to live in complete sync with our clocks. As the mother of a two-year-old, she has learned what it's like to care for a tiny creature whose suprachiasmatic nucleus is still developing. It's inescapably wearying, of course – and right now there's no app for *that*.

Still, she and a growing phalanx of scientists offer convincing proof: any steps we can take to better link our behaviour to our bodies may lead to improved health and longevity. It's a line of inquiry that will make us more sympathetic to our environment, too, as we become more aware that every living thing contains a splendid orchestra within it, perfectly timed and impeccably tuned.

"You want to stop people on the street and say, 'Have you heard about this? This is like the craziest thing ever!'" exults Gamble, ever the optimistic young science journalist. "It's a mystery to me why we haven't talked more about it. I hope, in my small way, that I'm contributing to changing that."

Cynthia Macdonald (BA 1986 St. Michael's) is a writer in Toronto. She profiled Chris Spence, the Toronto District School Board's director of education, in the Winter 2011 issue.

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All About Alumni

Trying to be happy is like trying to be tall

Ray Robertson, in his latest book, *Why Not? Fifteen Reasons to Live*
p. 47

Translator to the World

Entrepreneur David Lucatch is getting rid of online language barriers

"LANGUAGE IS PROBABLY THE LARGEST, LAST BARRIER FOR online communications," says David Lucatch (BA 1985 UTSC), the founder and CEO of Intertainment Media Inc., a GTA-based developer of rich-media applications. With his latest venture, Ortsbo, Lucatch aims to tear down that wall.

According to Lucatch, Ortsbo is "a real-time experiential translation platform." What does that mean? Imagine that English-speaking Alice needs to talk with Farsi-speaking Zahra. One of them can log into Ortsbo using her preferred social-media platform (such as Facebook Chat, Google Talk or MSN Messenger), and each can type and read the conversation in their own language. That minor miracle is possible because Ortsbo instantly translates the conversation into each participant's preferred language as they chat.

Computer translation isn't new – Google and Yahoo have offered such services for years – but the ability to translate an online chat as it happens across multiple platforms is novel. And evidently, necessary: Ortsbo has more than 20 million monthly users in more than 170 countries and territories, in 54 languages. (Even rock 'n' roll legend Gene Simmons of KISS is on board; he became an Ortsbo spokesman and business partner in spring 2011.)

Lucatch is a longtime entrepreneur, having started his first business – designing and printing flyers and promotional materials – while he was an undergraduate at U of T Scarborough. He worked about 25 hours a week on top of his course load in economics and commerce, which didn't allow for the most social university experience. Today, however, he's very much part of campus life: ›

PHOTO: LORNE BRIDGMAN

Finding Joy in Movement

Dancer-turned-nurse Coralee McLaren helps children with physical disabilities

IN A WORLD WHERE PEOPLE INCREASINGLY HAVE A distinct second act – accountant turned lion tamer, for example – Coralee McLaren has figured out a way to combine two seemingly disparate passions into one remarkable pursuit. McLaren (BScN 2004), a former dancer with the Toronto Dance Theatre, is currently pursuing a PhD in nursing science at U of T. Her research integrates her background in movement with the physical experiences of children with disabilities such as cerebral palsy.

When she decided to retrain as a nurse, McLaren thought she would have to make a clean break from her past in the arts. "But I figured out how I might link my understanding of the body to asking health-care questions about childhood disability," she says. The core premise behind her research holds that certain movements and gestures, often found in play, are key for reaching peak cognitive and communicative development.

McLaren has studied the movements of children in an integrated kindergarten class, and is exploring the relationship between the children's physicality and the properties of the classroom. "There is very little understanding about how any child moves in any environment, or how physical environments may be affecting children's movement," says McLaren, who has worked as a nurse at the Hospital for Sick Children.

McLaren is aiming to finish her doctorate in fall 2012. She hopes her research – supervised by Prof. Patricia McKeever – will help improve the quality of life for children with physical disabilities, and inspire a shift in how educational and health-care environments are designed. McLaren says that her work has provided plenty of moments of encouragement. "When I was interacting with the children, and saw the kind of intelligence and sophistication they brought to their movement…that was a true highlight." – **SARAH TRELEAVEN**

OVERHEARD

> Technology alone doesn't solve problems. Social media does not create revolutions. It's a tool – nothing more or less. Real revolutions are born out of righteous anger and courage and vision. The person standing up to government forces in Libya is not being sustained by their tweets or their Facebook postings.

Writer Malcolm Gladwell (BA 1984 Trinity, DLitt 2011), Convocation Hall, June 14

He's served on U of T Scarborough's Principal's Advisory Committee, is involved in Rotman Commerce events and mentors U of T Scarborough commerce students – work for which he received an Arbor Award for outstanding volunteerism last year. Crucially, he also recruits U of T graduates to work for his company.

In the '90s, when the World Wide Web took hold, Lucatch launched a new venture creating online stores and handling payments for Canadian merchants. The leap from paper to pixel didn't trip him up like it did so many entrepreneurs caught napping by the digital revolution: "Print is visual, the web is visual," he says. "Design is design." Besides Ortsbo, Intertainment still runs a printing division.

As for Lucatch's latest project, Ortsbo currently integrates into the world's most popular social-media platforms, and the company recently released an email-translation plugin for Microsoft Outlook, with additional applications on the way.

"Language is central to life on the planet," says Lucatch. And that's not just talk. – **GRAHAM F. SCOTT**

PHOTO: LEFT, CYLLA VON TIEDEMANN; RIGHT, BROOKE WILLIAMS

Ray Robertson teaches "Writing the Novel: Introduction" at U of T's School of Continuing Studies

For Toronto author Ray Robertson, reading is one of the most essential reasons to live

Chasing Happiness

Ray Robertson contemplates what makes life worth living in *Why Not?*

"TRYING TO BE HAPPY IS LIKE TRYING TO BE TALL," writes Ray Robertson, referring to the period of depression he experienced in 2008 after completing the first draft of his novel *David*. His latest book, *Why Not? Fifteen Reasons to Live,* is not a memoir of that depression, but instead a reflection upon the things he yearned for most from his darkness. Each of the 15 essays in the book – with titles including "Work," "Individuality" and "Humour" – is an attempt to understand what makes life worth living, and what happiness means.

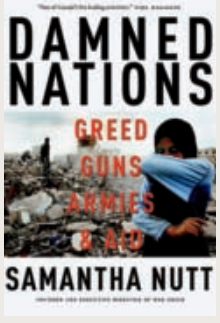
In spite of the general nature of these ideas, Robertson's address is profoundly personal – "So listen to me as if I were speaking to myself" reads part of the epigraph. Robertson admits that his approach is limited by his own experience, and also by what he has read – though this is actually not much of a limitation at all, with references to writers from Flannery O'Connor to Baudelaire (and also to TV detective Columbo and hockey player Tiger Williams) in the first four pages alone.

For Robertson (BA 1993 VIC), reading is one of the most essential reasons to live – but not just any kind of reading. Throughout *Why Not?* he calls upon Canadian readers to be more critical of their national literature, and to demand artistic works that generate an authentic aesthetic response. With these critical skills, readers are thereby equipped to better understand the world, and also to articulate their experiences of it – both two great pleasures of being alive.

He gives other reasons to live as well, including love, and meaning, and friendship, and solitude, each essay offering surprising illumination about ideas that might seem familiar. In "Duty," Robertson connects a story about his wife's futile recycling efforts to his own commitment to creating the kind of literature that goes uncelebrated in a culture of "middlebrow mediocrity." Never, ever boring, within the wild trajectory of each piece, Robertson backtracks, repeats himself, changes his mind and displays his characteristic ribald humour. *Why Not?* is provocative, stirring readers to vehemently agree or disagree. And this is Robertson's point: to be stirred at all, regardless.

– KERRY CLARE

War and Peace



Over the past 16 years, Dr. Samantha Nutt – currently the executive director of War Child Canada – has worked in such wartorn countries as Somalia, Iraq and Liberia. And in her book *Damned Nations: Greed, Guns, Armies & Aid*, which will be published in October, she reflects on humanitarian concerns: What is the ultimate goal of aid? What should people know about an organization before making a donation? How do Canadians influence armed conflicts in other countries?

Nutt, who holds post-grad degrees in community and family medicine from U of T and is an assistant prof at the university, also explains what it truly means to *do good* – showing the devastation that can be generated by well-intentioned but inexperienced groups. She also takes some corporations to task: What could be wrong with big business donating surplus goods to Africa? Corporations get a charitable receipt (even if goods were made in sweatshops in China) and garner some nice publicity – but hundreds of thousands of textile jobs in Africa are lost due to the used-clothing trade.

Damned Nations includes the stories of those who have suffered in conflict zones, and Nutt urges the reader to view people in these areas respectfully: "They confound every western stereotype of the hopeless, helpless victim waiting for us to rescue her. They seek justice not charity, solidarity not pity, and opportunity not handouts." **– STACEY GIBSON**

PHOTO: TOP, BRETT JORDON; MIDDLE, SANDY NICHOLSON; BOTTOM, COURTESY OF McCLELLAND & STEWART

THE TWO OF US

Wayne Levin and Deborah Fletcher

They met as political adversaries, but Wayne Levin (BASc 1983) and Deborah Fletcher (BSc 1980 VIC, BASc 1984, BEd 1996) soon found common ground – in both politics and their personal lives.

Deborah: Wayne and I were both elected to the Engineering Society on a split ticket. I was ready to resign because I thought the guys on his ticket were bozos. At the first meeting, Wayne and his VPs – Vince Volpe and Peter Weick – showed up with a super-long cardboard tube just wide enough to hold a beer bottle. The fresh ones came out one end and the empties went in the other. I thought, 'Are you kidding me?' But, in the end, they were more serious than they came across, and we worked well together. We launched an accessibility ramp at the Medical Sciences Building, started sexual-harassment and discrimination proceedings, and protested the inadequate computing facilities. And I really love Wayne's sense of humour. I am way too serious, and he makes me laugh.

Wayne: Everybody was shocked to see us together – even when we got married. But we've been married for 23 years. It's not so much an achievement for me, but definitely one for Debbie. She prefers to be home and doesn't like to travel, but I like to go places and Debbie doesn't hold me back. Absence makes the heart grow fonder and I need all the help I can get. Luckily there have not been many large and enduring conflicts, but one area where our differences flared up was with our kids' music lessons. Our children are Alec, 20 (who is studying sciences at U of T), Emmett, 16, and Rebecca, 12. Debbie wanted a particular instructor, but it was very difficult to get the kids from school, fed and downtown to the Toronto Suzuki Studio. I argued that we look into lessons conducted over the Internet to save a ton of energy. Debbie prevailed and good thing she did; our kids all play very well and they are a delight to hear.

During her time at the University of Toronto, Alexandra Borowik flipped her way into the position of top female Varsity Blues gymnast. Borowik won medals for her floor routine, vaulting, work on the uneven bars and the beam, and in the all-around category at several University Cups and Ontario Women's Interuniversity Athletic Association championships.

To honour her successes, Borowik (BSc 1993 NEW, MSc 1998) was inducted into the U of T Sports Hall of Fame in June, along with 11 other Varsity Blues standouts. The 25th annual event was held at Hart House.

Borowik's talents also extended into science: She was the president of the Undergraduate Geology Society and the recipient of U of T's Dr. Clara Benson Honour Award, given to a graduating student for outstanding ability in athletics and scholarship. Prior to her U of T days, Borowik was a member of the Canadian team for the 1987 World Gymnastics Championships.

To read about all the Varsity stars inducted into the Hall of Fame, visit www.physical.utoronto.ca and type "Sports Hall of Fame" into the search engine.

PHOTO: TOP, COURTESY OF WAYNE LEVIN; BOTTOM, COURTESY OF ALEXANDRA BOROWIK

The Toronto Vegetarian Association was founded in 1945. It promotes healthy eating, sustainable living and compassion for animals

FIRST PERSON

The Face on the Plate

Dyniss Roland Rainer dishes on becoming a vegetarian

WHEN PEOPLE ASK ME, "Why did you become vegetarian?" I usually reply with the unusual yet truthful response of "vanity."

In university, some people struggle with simple health issues for the first time in their lives, ranging from weight gain to sleep disorders. My only "affliction" was acne.

A student's diet isn't something people usually admire. Cheeseburgers, pizza and macaroni are often at the top of many students' must-eat lists.

One evening, after eating meat for several days in a row, it occurred to me that more meat might equal more acne – so I began paying attention to my diet and to my face. If I skipped a cheeseburger on day *x*, was my complexion a bit better on day *y*? Would it remain that way for subsequent days if I kept the same pattern?

It did.

My experiments progressed, starting with eliminating red meat, then poultry, then fish. I found it amazing that my complexion cleared up. To add certainty to my experiments, I would break discipline and eat some meat after stretches of abstinence. It didn't matter if the foods had been fried or cooked healthily, new pimples would appear the next day.

Vanity aside, I was lucky enough in those days to be surrounded by many musicians and artists who followed vegetarian or vegan lifestyles. They unknowingly became my support network. I happen to believe that a support network can be an important factor for new personal goals to succeed. I do mean *any* goals, not just dietary ones! Without my artsy network, I wonder if I would have made the transition so easily. The veg*ns (note the fun asterisk indicating letters for either vegetarians or vegans) taught me that people made dietary changes for reasons ranging from health to ethics. People's stories of change were always different, and always personal. I also learned that the veg*n lifestyle was easily achieved in a city like Toronto, where alternative food options are plentiful.

Have you ever noticed that we think of work differently when we take vacations? Perhaps we think about *other* things that we would rather be doing. As a parallel, I discovered that my attitude toward animal products changed after I began eliminating them from my diet.

Diet aside, one of my major goals in life is to *tread lightly on the earth*. I love that expression!

My mind began asking *how* the food got to my table, and *where* the food came from.

From *animals*, of course! Somehow, without direct influence, empathy for my voiceless four-legged (or otherwise) friends kicked in. Empathy led directly to ethical considerations. For example, I started thinking about the whole "off with their heads!" thing. Were executions as kind as executions could be? Were environments clean and warm and safe for my furry (or otherwise) friends?

Upon investigation, I learned that the picturesque family farms of yore have been eradicated for the most part. Apparently, an average family farm cannot compete financially with an efficient factory farm. A factory farm destroys the quality of life for animals as it tries to improve efficiency and reduce costs. It's like having one nurse take care of 10,000 human patients per day: it ain't pretty.

Lo and behold, I became a full-fledged herbivore.

I don't protest for PETA or stand outside fur retailers with anti-fur signs. I prefer to influence others by living the way I live (by example), or by playing my music at animal-rights benefits. The simplest satisfaction for me comes when I donate hard cash to veg*n-related organizations.

Diet aside, one of my major goals in life is to *tread lightly on the earth*. I love that expression! By thinking more progressively, recycling more, bicycling to work more or just doing good deeds for those in need, I think I shall be a happy camper. Being vegetarian is one of those things that helps me to tread more lightly.

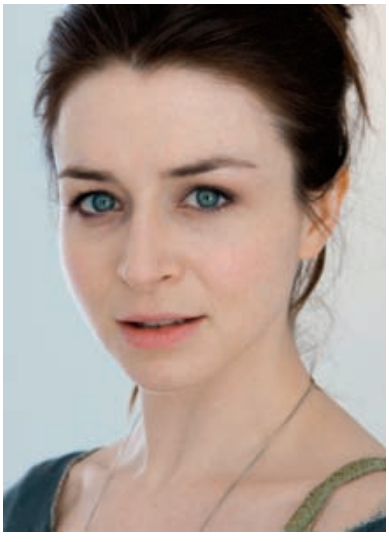
Dyniss Roland Rainer (BA 1995 Innis) is a member of the Toronto Vegetarian Association (www.veg.ca). He manages inventory for big-box retailers during the day while making original "easy-rock" music at night.

PHOTO: COURTESY OF DYNISS ROLAND RAINER

60 SECONDS WITH

Caterina Scorsone

TV's troubled surgeon



Even though **Caterina Scorsone** (BA 2006 TRIN) worked as a professional actor throughout her childhood and teen years, the introspective Scorsone was never sure it should be her only path. She now plays the brilliant but struggling Dr. Amelia Shepherd on the TV medical drama – and *Grey's Anatomy* spinoff – *Private Practice*. As the fifth season of *Private Practice* begins, **Lisa Bryn Rundle** takes a history.

You started your acting career at age 8 on *Mr. Dressup*. Do you remember anything about that first acting gig? I do! I remember the absolute shock when I walked into Mr. Dressup's house and it was in fact a studio! It was a horrifying moment of pulling back the curtain.

Oh God! And by the way, kid, Santa doesn't exist. Exactly! And off-camera the "puppets" would, on occasion, make grown-up jokes. But still, it was an incredibly positive first acting experience. We sang and drew. Mr. Dressup – Ernie Coombs – was a lovely man.

When did you first realize you wanted to act? Was it a way to stand out as the middle child of five? Basically, yes. It was a very creative family and there were so many of us! We were involved in the Canadian Children's Opera, and one of the children had an agent. One of my sisters wanted to try acting, so we both met with the agent. That's how it started. But I didn't think I wanted to be an actor at that age. I wanted to be a doctor.

And you've ended up as a doctor on TV. Why did you initially want to go to med school? There's a big emphasis in my family on giving back, and medicine seemed like a perfect way to do that.

And you weren't sure at first that acting could be a way of giving back? Have you reconciled that? Yes, I'd been acting at a pretty intense level until I was 18 or 19, but I stepped away from that and went to university really willing to follow my intellectual curiosity. My major was literary studies, and one of my minors was philosophy, and I discovered that our ability to understand ourselves through narrative is why humans are so special.

Is there one theory that seems to apply to your life today? "The medium is the message" comes to mind a lot. As an artist I get to manifest theory with my body.

Your character on *Private Practice* and *Grey's Anatomy* has struggles . . . Yes, at this point she suffers emotionally and chemically. She had her surgical privileges revoked because she fell off the wagon. So I explore depression, grief and substance abuse. I think – speaking of wanting to help people – I do get to articulate and illustrate for people what a struggle with substance abuse and mental health looks like.

What is the most complicated operation you've performed as a TV surgeon? Ah, Amelia has done so many! The hardest to pull off as an actor – because I wasn't just faking it, and most of the time we just pretend – was suturing latex skin while I delivered lines. I practiced on chicken pieces. I got pretty good at it.

Milestones

Twelve members of the U of T community were recently appointed to the Order of Canada – one of the country's highest civilian honours. Named officers were **Maureen Sabia** (JD 1965), chairman of the board of the Canadian Tire Corporation, for supporting the advancement of women in the corporate sector and for strengthening corporate governance; **Ronald Worton** (PhD 1969), former CEO and scientific director of the Ottawa Hospital Research Institute, for his commitment to health-research innovation; and **Prof. Peter Singer** (MD 1984, post-grad medical training 1986), director of the McLaughlin-Rotman Centre for Global Health at the University Health Network and U of T, for contributing to health research and bioethics, and for his dedication to improving the health of people in developing countries.

Named members of the Order of Canada were opera singer **Mary Lou Fallis** (Mus Bac Perf 1970, MMus 1972); journalist and author **Malcolm Gladwell** (BA 1984 TRIN); **Dorothy Griffiths** (PhD 1991 OISE), a professor at Brock University, who advocates on behalf of people with developmental disabilities and mental-health needs; **Eric Jackman** (BA 1957 TRIN, MA 1962), for his leadership and support in arts, education, health care and public policy; and **Josef Kates** (BA 1948 UC, MA 1949, PhD 1951), for his contributions to the development and application of computer technology. Also named members were **Dr. Samantha Nutt**, who holds post-grad degrees in community and family medicine, is a professor of family and community medicine at U of T, and is executive director of War Child Canada; **Robert Younghusband McMurtry** (MD 1965), special adviser to the Canadian Royal Commission on the Future of Health Care; **David Staines** (BA 1967 St. Mike's), a professor of English at the University of Ottawa; and **Arnold Aberman**, a former dean of medicine at U of T who also served as physician-in-chief at Mount Sinai Hospital.

PHOTO: RAPHAEL MAZZUCCO

SEWING FOR SOLIDARITY

First World War

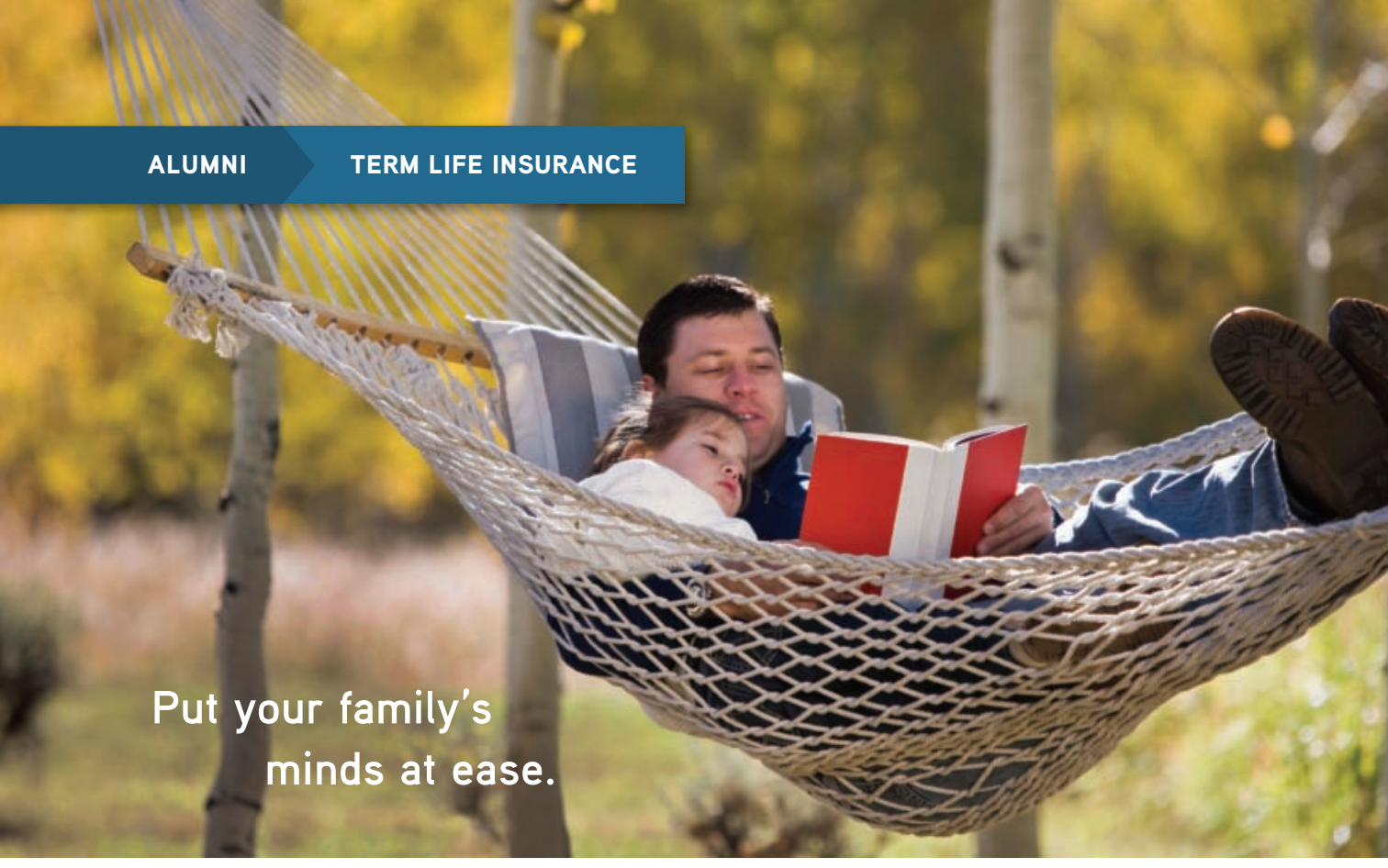
From bedding to kit bags, U of T women make items for the war effort

The Great War – described by then-U of T president Robert Falconer as "the greatest of moral struggles" – sent many male students and alumni overseas, while women largely stayed behind to piece together daily life and contribute to the war effort in their own way.

Here, in this undated picture taken during the First World War, women in the main university library on King's College Circle (now part of the Gerstein Science Information Centre) sew items required by the war effort. According to a *Varsity* article dated October 30, 1914, the Canadian Red Cross Society issued a call for everything from shirts, pyjamas and kit bags to bedding – "as some goods are better made by hand than bought." Women at U of T – students, staff and wives of staff – worked out of rooms in several buildings across campus, including the Department of Household Science's sewing rooms. The University Women's Hospital Supply Association also made items for U of T's base hospital (which was located in Greece for two years, and then in England). The *Varsity* reported on production across the colleges and faculties on a regular basis. In one stellar contribution, women from the Faculty of Education made 1,111 items during the fall term of 1917.

Women at U of T mobilized in numerous other ways: They raised funds through cake and candy sales, held teas, addressed envelopes, assembled comfort kits, enlisted for farm work and collected books to send overseas. The war effort demanded solidarity and selflessness, and the university's female community responded in full force. – **SARAH TRELEAVEN**

PHOTO: U OF T ARCHIVES A1965-0004 [140.85]



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