Hart House Theatre Taking a new direction / Is Your Smartphone Safe? Devious apps / Enter the Dragon Ties with Asia The Technopreneurs Biz smarts for scientists / City Building Architecture's new digs / Lives of Others Writer Ian Williams UofT azine **Apocalypse** How? The world didn't end in 2012 after all. (Hooray!) But are we prepared for global threats?



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COVER: MICHAEL CHO; ABOVE: CINDY BLAŽEVIĆ

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UofTMagazine

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OK, let's take it from after the humping

 Jeremy Hutton, artistic director of Hart House Theatre, instructing his actors in a scene from Romeo and Juliet, p. 44



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Letters





I hadn't thought that a British loss in the War of 1812 might have made *me* an American.

LYNNE CALDERWOOD
MA 2000, CAMBRIDGE, ONTARIO

Ouiet Pride

The Autumn 2012 issue was one of your best yet. I particularly enjoyed the Q & A with U of T's new chancellor, Michael Wilson ("Blue and White Pride"). Mr. Wilson served well as the Canadian ambassador in Washington, and I'm sure he will serve U of T with the same good sense and quiet pride.

The Q & A about the War of 1812 with UTM history professor Jan Noel was succinct yet impressively broad in its scope and references. I was raised on Laura Secord (both the chocolates and the history), but I hadn't thought that a British loss in the War of 1812 might have made *me* an American. Noel is correct that pondering past experiences and their significance deepens our own understanding of the world.

"The Sage of Bay Street," by John Lorinc, about economist and strategist David Rosenberg, is an outstanding and cautionary tale. Let's hope Canadians are paying attention.

LYNNE CALDERWOOD
MA 2000. CAMBRIDGE, ONTARIO

Education Should Be a Right

President David Naylor has completely missed the point of the Quebec student protests over university tuition. And to argue that low tuition fees restrict access is disingenuous ("Accessible Excellence," Autumn 2012).

Education should be a right of

citizenship. Countries with fully statefunded education, which in most cases also includes a living stipend, have rigorous entrance exams to ensure the best, brightest and most motivated students gain admission regardless of social status.

With regards to Mr. Naylor's story, I am glad that Wendy Cecil obtained her degree, but what an appalling example. Does Mr. Naylor really want to turn the university into a Dickensian institution where student opportunities are at the capricious whim of alumni donations or the passing humour of an administrator? Does he really think the best way to give underprivileged students access to higher education is to have them come, cap in hand at the end of each year, asking "Please sir, can I stay in school?" This is outrageous!

Federal transfers and provincial allocations for education have been on the wane for years. Mr. Naylor should be lobbying hard to reverse the trend until the goal of fully state-funded education, with rigorous entrance criteria, is achieved – not only for the benefit of the students and society, but also for the schools themselves. With increasing reliance on corporate and alumni donations for funding, the integrity of the university, already tarnished, is further diminished.

MARTIN GAGNE BASC 1984, TORONTO

Tuition Reductions Not an Answer

The question with respect to tuition fees and accessibility to higher education is whether we want to go with our gut – mine used to say that lowering tuition fees would improve accessibility – or use the best available evidence to inform policy ("Accessible Excellence"). If we agree that accessibility, high participation rates and social mobility are valuable goals, and we look at the best available evidence, then we are likely to come to the same conclusion that the university has come to – that is, tuition reductions are not necessarily the answer.

Obviously there is a limit to how high tuition should go, and in programs such as medicine there is no relationship between participation rates and tuition fees.

But for undergraduate programs, the policy of maintaining a reasonable tuition fee while ensuring adequate loans and grants for those who come from families with limited financial means is the most sensible option.

IRFAN DHALLA

PROFESSOR, DEPARTMENT OF MEDICINE, UNIVERSITY OF TORONTO

Intrafaith Dialogue Needed

The new Muslim Studies program described in "Leap of Faith" (Autumn 2012) will doubtless serve to aid the growth of interfaith tolerance between Canadian Christians and Muslims. From a global perspective, however, it is tragic that no such initiative is being undertaken between Sunni and Shiite Muslims; the welfare of millions, and the stability of the entire Middle East and much of Asia is at stake.

PAUL VAN LOAN

BA 1957, MA 1958, SANTA CRUZ. CALIFORNIA

Islam and Secularism

With respect to "Leap of Faith," about a new Muslim Studies program at Emmanuel College, it seems to me that the more pertinent conversation should be between Islam and secularism. We are, after all, a predominantly secular society, and Islam's agenda is political, not simply religious. I therefore do not see the overriding significance of an "interfaith" dialogue and what this is supposed to accomplish.

MIKE SCAPILLATO

BA 1972 UTSC, TORONTO

In Praise of Librarians

I greatly enjoyed reading "The Feminist Revolution at U of T" (Summer 2012). I understand that it is not possible to include all of the achievements of women as students and faculty members over the years. At the same

time, it appears that women associated with the Library School, now the Faculty of Information, are rarely mentioned. Winifred Barnstead and Bertha Bassam, the first two directors, have had a lasting impact on the development of librarianship (a "woman's profession") in Ontario. Nonetheless, their efforts in providing employment opportunities for women outside of teaching and clerical work are rarely acknowledged in discussions of women's history at the university.

AGATHA BARC

BA 2012 UC, TORONTO

Masters of Language

When I was growing up in Toronto, the Fryes were quite often at our house – my father taught philosophy at Victoria College from 1945 until his death in 1965. Northrop Frye, whom you featured

recently ("Frye's Anatomy," Spring 2012), seemed austere, although not unfriendly. However, his wife, Helen, was wonderful and took an interest in my struggles at high school. I always felt better after talking with her.

Jeffery Donaldson, one of Frye's former students (now a professor at McMaster University), has created a beautiful description of the scholar in his poem "Museum," from the collection *Palilalia* (2008). Read it and come away simply in awe of what language in the hands of a master can do.

ALLAN IRVING

PhD 1983, SWARTHMORE, PENNSYLVANIA

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Our Ties with the Asia-Pacific Region

U of T's long-standing connections with the region will serve us well in a future defined by global collaboration



As dean of the Faculty of Medicine, I used to walk each day along a photo gallery of past deans. One of them was a bewhiskered fellow named Norman Bethune, whose tenure had occurred in the 1850s. Several decades later, his grandson and namesake – also a U of T medicine graduate – became and remains famous for his service in China with the army of Mao Zedong. Today, I suspect that Bethune's recognition may be rivalled by another U of T alumnus, Mark Rowswell – the television celebrity known as Dashan.

The ties between the University of Toronto and the Asia-Pacific region are long-standing and strong. As early as the first decades of the 20th century, Chinese students arrived at U of T in search of a great education. A young man named Suat Chwan Yin, born in the southeast Chinese city of Xiamen, was one of the first, graduating from the Faculty of Medicine in 1903.

This academic year, more than 4,100 young people from China are studying at U of T – representing about 40 per cent of our international students. We have student-exchange agreements with nine Chinese universities and more general co-operation agreements with at least 20 institutions. The number of joint research initiatives continues to grow. For example, U of T researchers are collaborating with colleagues at Peking University to develop new ways of treating diabetes. In another intriguing joint venture, U of T students in political science can sign up for a summer-abroad course in international relations that's taught by professors both here and at Fudan University in Shanghai; it includes a three-week visit to China.

Our ties extend right across the Asia-Pacific region. We have a long history – and extraordinary alumni connections, along with strong academic relationships – in both Hong Kong and Singapore. Korean and Japanese universities remain pivotal partners. Korea stands second, after China, in the number of international students it sends to U of T. And our relations with Taiwan are also deepening steadily.

Why is U of T so interested in establishing closer ties with Asia? We believe that doing so will be vital to the future success of the university – and to Canada. It is increasingly

clear that the map of global economic impact, creativity, excellence, entrepreneurship and innovation is dominated by a small number of large and influential urban regions. In south Asia, one thinks of Mumbai and Delhi, as well as smaller centres of innovation such as Hyderabad and Bangalore. But the number of urban hubs of influence is growing faster in east Asia than anywhere else on the planet. As urban regions in Asia and other continents become increasingly connected to each other, more and more people who live in them are themselves becoming transnational. They are educated abroad and they live abroad, often acquiring an international spouse and another citizenship. Future leaders from these regions who have attended U of T will retain mutually advantageous connections to the university and to Canada.

This new reality of global collaboration and transnational people is vital if we are to confront humanity's shared challenges. No single jurisdiction can take on borderless and complex issues such as global epidemics, climate change or cyber-security. We recognize this reality at U of T: institutions are only as good as their people and their partners. The same is true of global urban regions, such as Metropolitan Toronto.

The Toronto region is particularly fortunate because it is a magnet for immigrants and, increasingly, international students. We therefore have a chance to leverage our proximity to the U.S. (today's biggest economy) while improving our connections with the economic superpowers of tomorrow. Above all, we can help educate successive generations of remarkably skilled and mobile young people who will be as happy in the great cities of east and south Asia, as they are in the Toronto region. For one, I hope that these global citizens will make the world more secure, stable and sustainable than it now is. That, among other reasons, is why I also hope that the relationship between U of T and our academic partners and alumni in Asia will continue to thrive, and serve as a model for global co-operation and synergy in the decades ahead.

Sincerely, David Naylor

PHOTO: ©2011 GUSTAVO TOLEDO PHOTOGRAPHY

WINTER 2013

Calendar

MORE EVENTS!

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



JANUARY 31 TO APRIL 30

Governance in Toronto

A scholar, a public governance practitioner and members of the public converge for this lecture series presented by U of T's Cities Centre. The sessions explore the formal and informal ways that our large and complex city is governed – and the plan is to generate ideas for improvement. Free. 6:30–8:30 p.m. on Jan. 31, Feb. 26, March 26 and April 30. Room 103, Fitzgerald Building, 150 College St.

RSVP required: citiescentre@utoronto.ca, www.citiescentre.utoronto.ca

Alumni

January to May Toronto Plaza Hotel

Skule Lunch and Learn. Engineering alumni gather for camaraderie, networking, lunch and guest speakers. \$30. 12–2:45 p.m.,
Jan. 9, Feb. 13, March 13, April 10 and May 8. 1677 Wilson Ave.,
North York. Please register by
Thursday of the week before the event, at my.alumni.utoronto.ca/lunchandlearn. For info, contact
Tom Vosper, 416-946-0566,
tomv@ecf.utoronto.ca.

January 3 New York City

Alumni Networking Reception.

All alumni are invited. Free appetizers. 6–9 p.m. West 3rd Common, 1 West 3rd Street, New York City. Contact: Teo Salgado, 416-978-2368, teo.salgado@ utoronto.ca, www.alumni. utoronto.ca/events/regional.

January to March Woodsworth College

Alumni Cafés. Jan. 15, The Contemporary Art World of Toronto. Feb. 19, Demystifying Financial

Planning. Mar. 5, The World Bank: Bureaucratic Rule and Partnerships for the Environment. \$10 alumni; \$12 guests. Doors open/refreshments, 6:30 p.m., speaker, 7 p.m. Kruger Hall Commons, 119 St. George St. For info: 416-978-5301, events.woodsworth@utoronto.ca.

January 14 Hong Kong

Alumni and Friends Reception.

Prof. Emeritus Larry Richards, former dean of the Daniels Faculty of Architecture, Landscape, and Design, will speak about U of T's campus architecture. Free.
Location and time TBA. Contact:
Michelle Poon, +852 2375 8258,
michelle.poon@utoronto.com.hk,
www.alumni.utoronto.ca/events/
regional.

January 23 Ottawa

Dinner with Strangers. Enjoy good food, lively conversation and the hospitality of a fellow graduate. Free. Location will be provided. Contact: Deirdre Gomes, 416-978-1669, deirdre.gomes@utoronto.ca, www.alumni.utoronto.ca/events/regional.

January 31 Boston

Alumni and Friends Reception.

A reception hosted by Barbara Dick, assistant vice-president, Alumni Relations. Free. Location: TBA. Contact: Teo Salgado, 416-978-2368, teo.salgado @utoronto.ca, www.alumni. utoronto.ca/events/regional.

February 19 San Francisco

Engineering Alumni Event. Catch up with Skule and mingle with alumni and faculty. Free. Time TBA. San Francisco Marriot, 55 Fourth St. For info: Sonia De Buglio, 416-946-8143, Sonia@ecf.utoronto.ca, www. alumni.engineering.utoronto.ca.

February 20 Mountain View, CA

Engineering Alumni Event. Catch up with Skule and mingle with alumni and faculty. Free. Time and venue TBA. For info: Sonia De Buglio, 416-946-8143, Sonia@ecf. utoronto.ca, www.alumni. engineering.utoronto.ca.

March 13 Hart House

Skule Nite Reception. Mix and mingle before the big show put on by engineering students. Cost TBA. 6 p.m.–8 p.m., East Common Room, 7 Hart House Circle. For info: Megan Murphy, 416-978-4941,

WWW.MAGAZINE.UTORONTO.CA PHOTO: MIKE QUIGG

An armadillo incense burner is one of many Peruvian silver artifacts on display at UTAC (formerly the U of T Art Centre), January 15 to March 9



meganm@ecf.utoronto.ca, www. alumni.engineering.utoronto.ca.

Events

January 30 Woodsworth College

Vincent Lam. The award-winning author reads from *The Headmaster's Wager*. Free. 7 p.m. Kruger Hall Commons, 119 St. George St. For info: 416-978-5301, events. woodsworth@utoronto.ca.

February 7 U of T Scarborough

Lunar New Year Celebration.
Celebrate the start of the year in
Chinese culture with an authentic
Lion Dance performance and traditional food. 11 a.m.-3 p.m. Meeting
Place. For info: 416-287-7518, isc@

utsc.utoronto.ca, www.utsc.uto-

Exhibitions

ronto.ca/isc.

January 15 to March 9 UTAC

Luminescence: The Silver of Peru.

Pre-Colombian to contemporary silver artwork includes Peruvian national treasures that rarely leave the country. Free. Tues. to Fri., 12–5 p.m. Wed., 12–8 p.m. Sat., 12–4 p.m. 15 King's College Circle. For info: 416-978-1838, utac.info@utoronto.ca, www.utac.utoronto.ca.

January 28 to May 3 Thomas Fisher Rare Book Library

From Nowhere: Utopian and Dystopian Visions. A literary exhibition drawn from the U of T collections and curated by Christopher Young. Mon. to Fri. 9 a.m.-5 p.m.; Thurs. to 8 p.m. 120 St. George St. 416-978-5285, www.library.utoronto.ca/fisher/exhibitions/current.html.

Until May 15

Jackman Humanities Institute Bread and Butter. Sandy Saad and Barbara Fischer curate contemporary art on the theme of food. Free. Weekdays 9 a.m.-5 p.m. 10th floor, 170 St. George St. For more information: 416-978-7415 or www.humanities.utoronto.ca.

Festivals

February 1 to 3 Robert Gill Theatre

Festival of Original Theatre. The annual conference and festival hosted by the Centre for Drama, Theatre, and Performance Studies explores the interaction between performance and new technology. Registration is free. 10 a.m. – 10 p.m. daily. 214 College St. (3rd floor, use the entrance on St. George St.). For schedule and info: 416-978-7987, foot.graddrama@utoronto.ca, www.foot2013. wordpress.com.

Lectures and Symposia

January 29 108 Chestnut Street 34th Annual Bishop White Com-

mittee Winter Luncheon.
The ROM presents a talk by geography prof André Sorensen on posttsunami rebuilding in Japan, with lunch by the chefs of Lai Wah Heen Restaurant. \$80. 11:30 a.m-2:15

Restaurant. \$80. 11:30 a.m-2:15 p.m. Mandarin Ballroom, Metropolitan Hotel. Pre-registration required: www.rom.on.ca or 416-586-5797.

January to March Jackman Humanities Institute

Tasting Histories. Explore the culture of food at this public lecture series. Jan. 17, 15th-century Bavaria. Feb. 14, Rude Food and the Anglo-Saxon Riddle Tradition. Mar. 7, Cookbook Marketing in Early Modern France. Free. 4–6 p.m. Room 100A, 170 St. George St.

January 31 to February 2 Walter Hall

Wagner and Adaptation: An International Symposium. Free. 80 Queen's Pk. For more informa-

tion, contact: c.clark@utoronto.ca. Includes a free (to U of T students) performance by Christopher Mokrzewski of Wagner's *Liebestod* from *Tristan und Isolde*, transcribed for piano by Liszt, Sat., 9 a.m.–noon. For tickets: 416-363-8231 or www.coc.ca.

February 23 to 24 U of T Mississauga

Running with Concepts: The Sonic Edition. This hybrid event, part-workshop, part-conference, part-crit session, examines how ideas take form, with a focus on sound. Led by composer Marc Couroux (York University), artist and writer Brandon LaBelle (Bergen National Academy of the Arts, Norway) and artist Marla Hlady (lecturer, UTSC). Includes presentations by students and recent alumni. \$40 for non-students. 10 a.m.-5 p.m. Room 137, Kaneff Centre. RSVP to blackwood.gallery@ utoronto.ca or 905-828-3789.

Music

January 20 to 27 Faculty of Music

New Music Festival. The week includes nightly performances of music by Steven Mackey, Duo Contempera, Nexus, 2x10 and AftertherioT plus a student-composed version of Sophocles' classic Antigone. All events free. 80 Queen's Pk. For more information and schedule: 416-408-0208 or www.music.utoronto.ca/events.

February 4 Walter Hall

Berlin Philharmonic Wind Quintet. Don't miss this chance to hear the world class ensemble. Master Class, free, 11 a.m.—1 p.m. Monday Evening Concert playing Mozart, Haas, Ibert, Milhaud and Françaix, \$35 (\$25 seniors, \$10 students), 7 p.m. 80 Queen's Pk. For concert tickets: 416-408-0208. For more information, visit: www. music.utoronto.ca/events.

March 14 to 17 MacMillan Theatre

Britten: The Turn of the Screw

On the centenary of Benjamin Britten's birth, the Faculty of Music premières the composer's supernatural opera based on the novella by Henry James. \$35 (\$25 seniors, \$10 students). Thurs.-Sat., 7:30 p.m. Sun., 2:30 p.m. 80 Queen's Pk. For tickets, call 416-408-0208.

Sports

March 7 to 10 Varsity Arena

2013 CIS Women's Hockey

Championship. The top women's hockey talent in the country vie for a national title at Varsity Arena. 275 Bloor St. W. Prices vary. For more info: www.varsityblues.ca.

Theatre

January and March Hart House Theatre

Jan. 11–26, Robin Hood: The Legendary Musical Comedy. A wry, irreverent Canadian take on the English legend. Wed. to Sat., 8 p.m. Matinee on Jan. 26, 2 p.m.

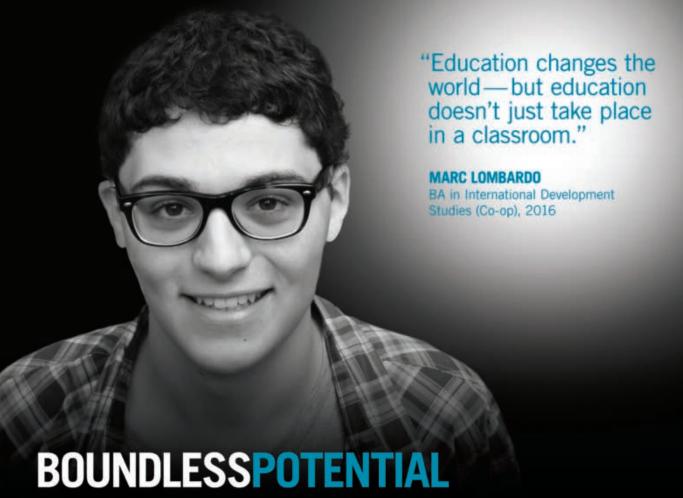
March 1-9, Bent. A Tony-winning classic about the Nazi persecution of gays and lesbians. (Language and mature content warnings.) Wed. to Sat., 8 p.m. Matinee on March 9, 2 p.m.

\$25 (\$15 students and seniors). Students, \$10 every Wed. Alumni, \$15 every Thurs. 7 Hart House Circle. For info: 416-978-8849, uofttix.ca or harthousetheatre.ca.

March 5 to 16 Helen Gardiner Phelan Playhouse

Age of Arousal. Drama students perform Linda Griffiths' play exploring repressed sexual tensions against the backdrop of a burgeoning suffragist movement. \$15 (\$10 students and seniors). 8 p.m. 79 St. George St. For tickets: 416-978-8099, uc.drama@utoronto.ca.

PHOTO: BARBOSA STERN COLLECTION WINTER 2013



Your donation has a significant impact on our students.

Marc Lombardo spent his summer teaching children in a First Nations community in Northern Ontario, where he learned as much as he taught. Your donation to the annual fund means that students like Marc can fully commit to their

studies at U of T, co-curricular opportunities and volunteer work around the world. Whether you support a scholarship, bursary or a program of personal significance, you'll have a profound impact on our students and the lives they touch.

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Life on Campus

"Every year there is at least one student who makes me think twice about what I think I know"

Teaching award winner Abdel-Khalig Ali

p. 1



City Building

The Daniels Faculty of Architecture, Landscape, and Design unveils a bold plan to transform historic One Spadina

FOR MORE THAN A CENTURY, the stern, neo-Gothic facade of One Spadina Crescent has gazed down the grand but chaotic avenue created by William Baldwin, one of Toronto's founding fathers. Early in 2013, however, the Daniels Faculty of Architecture, Landscape, and Design is launching a dramatic makeover that will transform this long-neglected icon into a state-of-the-art centre for education and research focused on sustainable architecture, landscape and city-building.

The ambitious plan involves an innovative north-facing expansion of the historic building, with a new three-storey complex that dean Richard Sommer says will be a model for environmental and urban design. The new facility will

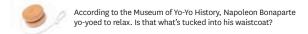
feature flexible design studios, fabrication spaces and research laboratories. Planning for the project includes a series of outward-looking pavilions, one of which will become the home of the Global Cities Institute, a new cross-disciplinary research centre.

Architect, developer and philanthropist John Daniels (BArch 1950) and his wife, Myrna, provided lead funding for the project with a \$14-million gift in 2008. Additional gifts will be announced early in 2013. The faculty has launched a campaign to raise the remaining funds as part of Boundless: the Campaign for the University of Toronto.

Nader Tehrani, the principal with Boston-based NADAAA Architects, is leading the design team. Tehrani's earlier scheme to revamp the faculty's current headquarters at 230 College St. won numerous awards. His team's new concept, anchored in the back courtyard of the One Spadina building, will burst outwards, with angled glass, stone and steel exteriors facing north. "We didn't want just another glass box. This project needs to raise the bar for Toronto," says Sommer, who anticipates it will be complete within three years.

ILLUSTRATION: NADAAA ARCHITECTS

WINTER 2013



EPHEMERA

String Theory

U of T's yo-yo master finds the secret to unwinding



astronomy and astrophysics – but he has managed to discover inner cosmic balance Mastering the art of the yo-yo.

Last August, the University of Toronto graduate student travelled to Calgary for the 2012 Canadian Yo-Yo Nationals. Ngan manipulated both butterfly- and imperial-shaped yo-yos to create intricate looping tricks, bouncing the yo-yo off the string and, unusually, mixing four yo-yoing styles. "Combining all styles into a single routine was probably shocking for some viewers," says Ngan, 27. "But I think bringing something fresh to the table worked to my advantage." It did – he finished third in the open freestyle division.

Despite his success, Ngan plans to return his yo-yoing to its roots – as an activity that relieves stress, rather than creates it. "I don't want to associate it with the pressures and anxieties of

a competition," he says. Like video gaming, the art of yo-yoing requires hands-on skills and lots of practice. But Ngan's game doesn't cause carpal tunnel or confine him to the house. "It's relaxing, fun and rewarding," he says.

When the current president of the University of Toronto Yo-Yo Club isn't researching dark matter in galaxy halos, you can probably find him effortlessly swinging a yo-yo around his head in horizontal circles (without getting a concussion) at the Bahen Centre for Information Technology every other Sunday afternoon. "There's a steep learning curve, but you can't be afraid to stray from the rules," he says. "That's how some of the most amazing tricks are invented." - NADIA VAN

Watch Wayne Ngan perform yo-yo magic at magazine.utoronto.ca.

WAYNE NGAN HAS YET to complete his PhD in while studying galactic mysteries. His secret?

On August 13, Canada Post unveiled the 100th Grey Cup Game commemorative stamp collection, illustrated by Canadian artist Ron Dollekamp. Each of the eight team stamps features one star player and one defining moment from each Canadian Football League team's history at the Grey Cup.

The Toronto Argonauts stamp depicts Michael "Pinball" Clemons against the backdrop of the iconic Mud Bowl, the 38th Grey Cup that took place at U of T's Varsity Stadium in 1950. Despite the cold and heavy rainfall throughout the game, the Argos defeated the Winnipeg Blue Bombers 13-0, claiming their ninth Grey Cup. Though Clemons, born in 1965, didn't play in the Mud Bowl, he says he represents all Argos players, since football is "bigger than the game itself." - NADIA VAN

The new complex will be more welcoming because the fence that has long surrounded portions of the existing building will be removed, and the 19th-century structure will be expanded to include open spaces oriented to Spadina. Sommer sees the project as the beginning of a long-term effort to better integrate the western edge of the St. George campus with the adjacent neighbourhood.

Apart from the project's urban-design aspirations, faculty officials knew they had to take a big step to accommodate fundamental shifts in architectural education and urban research. This past fall, the Bachelor of Arts, Architectural Studies (BAAS) degree program was brought back to the Daniels Faculty from Arts and Science - effectively doubling enrolment. A new PhD program in architecture, landscape and urban design studies is also being planned.

Most significantly, though, Sommer believes the future of the field lies in a cross-disciplinary approach that connects

architecture training to the study of urbanization and city dynamics. That's why One Spadina will also become home to the Global Cities Institute – including the Global City Indicators Facility, which gathers and analyzes urban data and a Model Cities Lab and Theatre, which will use innovative visual techniques to model alternate forms of urbanization. Also in the mix will be U of T's Cities Centre, the Green Roof Innovation Testing Lab and the Responsive Architecture at Daniels Lab, which is researching how to use embedded technology and ubiquitous computing in the built environment. These are all seen as part of U of T's eventual contribution to the Centre for Urban Science and Progress, a joint venture with New York University and several other institutions that was unveiled last spring by New York City mayor Michael Bloomberg. "We have incredible momentum now," says Sommer. "Everyone is excited to get shovels in the ground."

- JOHN LORINC



Khalil Gibran is the third bestselling poet of all time, after Shakespeare and Lao-tzu

POV

Secrets of Arabic



I love teaching. Without fail, every year there is at least one student who makes me think twice about what I think I know and inspires me to improve how I teach. I'm looking to get an idea across in the best way I can, and the way I can assess my success or failure is by looking at the cases where I *didn't* get it across, where I thought, "Ah, I never thought you'd understand it *that* way." And that's what I work on next. It's a cumulative thing.

U of T's department of Near and Middle Eastern Civilizations used to teach only Classical Arabic. But now we offer varieties of the language, which gives students access to all of the Arabic-speaking world. Three levels of Arabic coexist: Classical, Modern Standard and regional varieties. The

Don't expect the plural to be a suffix. Don't expect the sentence to go in a certain way domain of Classical Arabic is religious texts, Muslim and Christian – no one speaks it as a mother tongue. Modern Standard Arabic is the standardized variety that's taught at school. It's the language used in newspapers, on the radio – in formal situations – and

is what I was hired to teach. And the language that you learn as a child and use in everyday life is one of the dozens of spoken varieties – such as my own native language, Sudanese Arabic. Each of these shows influence from other languages that were spoken in those areas before Arabic arrived, such as Nubian in northern Sudan. This makes them very different. If you take someone from Morocco and someone from the Gulf, they will have to resort to Modern Standard to communicate.

Poetry is one of the best ways to appreciate a language.

Even with some languages that I've studied just briefly, what I remember is the poetry because it establishes a connection with the language at a level that's closer than reading a text or a novel. Naming my favourite work by an Arabic writer would be very difficult! But in English translation, Khalil Gibran's *The Prophet* is very accessible and, I think, one of the best books of all time.

Right from the beginning, I tell students: don't expect the Arabic language to behave in a certain way. Don't expect the plural to be a suffix. Don't expect the sentence to go in a certain way. Try to figure out what it *is* that the language does. For example, the way words are structured in Arabic is a source of difficulty for English speakers. At some point in the course I'll say, what do you notice about the words *maktaba* (library), *kitaab* (book), *kutub* (books) and *kaatib* (writer)? They all have these sounds: *k-t-b*. And then I explain, we give them different shapes with different vowels around them rather than suffixes or prefixes, and that's how Arabic works. That root *k-t-b* is unpronounceable, though it has a meaning—all the "ktb" words have to do with writing.

When you are learning a language, you're learning a way of thinking. In English, we say "I have a book;" in Arabic, we say "a book is at me." It's not the same relationship between the book and myself. I don't want to read too much into it, but it's not just different ways that people express themselves; it's a different way of thinking about the world.

NAMECHECK

Wymilwood Café



Have you ever wondered where the name of one of U of T's most beloved campus hangouts came from? In 1925, financier Edward Rogers Wood and Agnes Euphemia Smart Wood – a Victoria Women's Association member – donated their stately home, Wymilwood, to Victoria University as a residence and social centre for women. The unusual moniker was derived from the names of the Wood children: "Wy" for William, who died in infancy, and "Mil" for their daughter, Mildred. The original Wymilwood house, located directly

west of Emmanuel College at 84 Queen's Park, served as a space for women students of Vic until 1952 – it is now known as Falconer Hall. The Wymilwood building on the east side of Queen's Park, in the heart of Victoria University, will reopen, expanded and renovated, as the Goldring Student Centre in 2013. – NADIA VAN

Curious about how a building or place on campus got its name? Send the name in question to uoft.magazine@utoronto.ca and we'll research its origins for the next issue!

PHOTO: MARK BALSON WINTER 2013 1



In the 1950s, Christian Dior haute couture fashion shows lasted more than two hours and featured 200 outfits





Fine Art in Fabric

The dress on the left is a painting come to life. The Christian Dior couture piece, currently on display at the Royal Ontario Museum, recreates in three dimensions the classic 1940s watercolours of French artist René Gruau. Designer John Galliano layered black tulle over silk, says Alexandra Palmer, a U of T art history professor and the exhibit curator, to create "this chiaroscuro effect of light and shade, like watercolour as it bleeds into the paper. It's technically a very, very complicated piece that took over 500 hours to make."

That's why the dress takes pride of place in *BIG*, an exhibition that Palmer assembled with co-curators Sarah Fee and Anu Liivandi to showcase "beautiful things that we have a difficult time

getting out on display because they're so large. And then we expanded the idea to the concept 'big'." So besides the complex dress, the exhibit of 40 never-before-seen items from the ROM's 50,000-strong world textiles collection includes giant two- by four-metre tapestries, painstakingly embroidered West African royal trousers and a Vivienne Tam silk dress that uses new digital printing technology (right).

"Textiles are very, very sensitive towards light and handling, so no touching," says Palmer regretfully. "It's what people want to do, but this is window shopping only!" - JANET ROWE

Big is at the ROM until November 2013.

SOUND BITES

What's the best place at U of T to steal a kiss with a special someone?

The bench in the Knox College courtyard Tamara Adizes

> Philosopher's Walk Dora Konomi

Our biased opinion: Leslie Dan Faculty of Pharmacy

PharmacyWorx

Hart House men's locker room

Emmett Choi

My fave spot is front campus. Love is beautiful: let everyone see it!

Hardy Weinberg

Join the conversation at twitter.com/uoftmagazine.

Poll | Would you rather take courses online or in a classroom?

The digital revolution may be changing the world, but 77 per cent of U of T students say they prefer traditional learning methods. First-year student Hiba Kariem says the structured classroom environment helps her get work done on time, while recent graduate Angela Huang (BSc 2011 NEW) says interactive, face-to-face discussions are a vital component of education. "It's important to ask questions and exchange ideas with classmates," says Huang. "You can't replicate that experience behind a computer screen."

Most students who preferred digital learning over in-class instruction had unique circumstances that required a flexible schedule. Nearly half this group (10 per cent of all students surveyed) supported the virtual classroom because they were pursuing part-time studies, a second degree, professional development or graduate studies. No reason to find new uses for lecture halls quite yet. - NADIA VAN

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

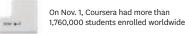




23% Online

7/% In-class

WWW.MAGAZINE.UTORONTO.CA PHOTO: LAZIZ HAMAN



U of T's Biggest Class Ever

Coursera brings online learning to the masses



IT WOULD TAKE ALMOST 50 Convocation Halls to hold the 82,000 students who signed up for U of T's introductory computer science class in the fall. Fortunately, they didn't have to squeeze into a physical classroom; rather, they took "Learn to Program: The Fundamentals" online, thanks to the university's new partnership with Coursera, a company specializing in Internetenabled learning.

Online learning is booming: Coursera, in partnership with more than 30 universities in the U.S. and Europe, now reaches some 1.7 million students in 196 countries – with U of T being the first Canadian university to join the platform. And it's an intriguing challenge for instructors Paul Gries and Jennifer Campbell of the computer science department, who are co-teaching the introductory programming class. "We're figuring it out as we go," says Campbell.

This giant experiment is called a "massive open online course," and U of T is offering five

of them this school year – three in computer science, one in social work and one through OISE. They're free to take, and open to anyone (sign up at www.coursera.org/utoronto). They don't quite duplicate traditional university courses – there are no invigilated exams, for one thing – and so students do not receive university credit. But they do get a certificate of completion, a potentially valuable asset in today's competitive job market.

Much to the relief of Gries and Campbell, the "massive" concept does not involve having tens of thousands of students peering at the instructor by video link in real time. What it does involve is actually much more sophisticated: Students learn from online modules, each lasting from five to 10 minutes and packed with multimedia content. For the programming class, each module begins with a short recorded video introduction from Gries or Campbell, which then dissolves to a screen where lines of computer code appear, along with additional commentary from the two professors. Thanks to a program called OmniDazzle, the instructors can draw freehand on top of whatever else is on the screen – rather like a TV sportscaster analyzing football strategy. The students can also take quizzes, and write and submit computer programs, which get assessed automatically.

What excites Gries and Campbell even more is how, in the for-credit version of the course, this new teaching venture will benefit the more than 350 U of T students who enrol each term. For one thing, the "local" students can study the online modules at home, and come to class better prepared; this will also free up class time for more

creative and interactive learning. "We want our students to have the best possible experience," Gries says.

"It makes these wonderful teachers we have at U of T available to people on a very broad scale" For the university, the Coursera partnership is an experiment with tremendous potential. "It's uncharted territory," says Cheryl Regehr, U of T's vice-provost of academic programs. "It allows great teachers to experiment with new methods. And it makes these wonderful teachers we have at U of T available to people on a very broad scale." – DAN FALK

People

For developing a bacterial culture that renders dry-cleaning solvents harmless – and that has been used to clean up hundreds of polluted groundwater sites – Prof. Elizabeth Edwards of chemical engineering has been named a Fellow of the Royal Society of Canada. Sixteen more U of T profs also received the distinction in November. It's the largest number of new fellows ever to come from one institution.

U of T students snagged 29 Vanier Canada Graduate Scholarships in 2012. U of T's winners are researching everything from cardiac surgery (Saswata Deb) to aircraft design (Rhea Liem) and dialogue in Black literature (Karen Yaworski).

Profs Julie Claycomb and Jason
Moffat of molecular genetics, Scott
Schieman of sociology, Sabine
Stanley of physics, Dwight S. Seferos
and Mark S. Taylor of chemistry,
Michael Baker of economics and
Trevor F. Moraes of biochemistry all
won Canada Research Chairs in the fall.
Twenty more profs also had their chairs
renewed.

Mental health care in Ethiopia is getting a huge boost with a \$1-million Grand Challenges Canada award to U of T psychiatry profs Clare Pain and Paula Ravitz, and Atalay Alem and Dawit Wondimagegn of Addis Ababa University. In a nine-year partnership, the four have already increased the number of psychiatrists in Ethiopia from 11 to 44; the grant will go to train nearly 300 more counsellors.

Prof. Balázs Szegedy of mathematics shared the 2012 Fulkerson Prize, one of the most prestigious international math awards, with László Lovász of Hungary.

Students love great teachers, and the Ontario Confederation of University Faculty Associations agrees. The group has named UTSC psychology prof Steve Joordens and chemistry lecturer Andrew P. Dicks as two of Ontario's most outstanding university teachers.

Cristina Amon, dean of the Faculty of Applied Science and Engineering, was named one of Canada's Top 25 Women of Influence by Women of Influence Magazine.

PHOTO: CAZ ZYYATKAUSKAS WINTER 2013 13

Hands-On Learning

New College's ONE program gets students into small classes – and out of the lecture hall

A MOVE BY NEW COLLEGE to offer first-year students smaller, more hands-on learning experiences has received a big financial boost from one of its alumni.

Last September, the college launched New ONE, a group of interdisciplinary courses that will be delivered in seminars for up to 25 students each. They are part of the University of Toronto's ONE programs, which aim to help new arts and science students more effectively make the transition to university. Already offered in different variations at other St. George colleges and at U of T Mississauga and U of T Scarborough, the courses build critical thinking and writing skills, relationships with peers and professors, intellectual independence and creative imagination.

The financial boost came in the form of a \$2-million endowment, half of which was donated by Richard Rooney (BA 1977 NEW), chair of the New College campaign cabinet. "I came from a really small town of less than 500 people, so I can't say I was thrilled as a student about sitting in large lectures," says Rooney, the president and chief investment officer of Burgundy Asset Management and a longtime New College supporter. "I think it's wise to be experimenting with intimate classroom experiences, particularly for new students."

The three full-credit courses that are part of this year's New ONE program are on topics suited to hands-on learning: Food Matters covers alternative food systems, biotechnology, animal rights, and health and wellness; Travelling Words:



Language and Diversity is about how migration affects language use; and Digital Technology: Promise and Perils covers the impact of new media on modern life. A fourth course to be introduced next year, called Art, Culture and Community Building, will look at how Toronto's diverse communities use art to build identity and a place for themselves.

Course curricula are rooted in New College's focus on social advocacy, and feature a Learning without Borders theme – students in all three courses engage with each other, and with senior students and community organizations. Experiential learning takes place through field trips to such places as Kensington Market and the Regent Park Arts and Cultural Centre.

"Students coming from high school where the teacher knew their name now face huge classes, and they can get quite lost," says Linzi Manicom, the program co-ordinator. "This kind of experience is foundational to them forming relationships with other students and faculty, and building their capacity to learn and solve problems that come up in academics." - SHARON ASCHAIEK

U of T: World-Beater	U o	of T	UBC	Mo	eGill
Times Higher Education World University Rankings	21 st	1 st	30 th 2	nd 34 th	3 rd
QS World University Rankings	19 th	2 nd	45 th 3	rd 18 th	1 st
Shanghai Jiao Tong University's Academic Ranking of World Universities	27 th	1 st	39 th 2	nd 63 rd	3 rd
National Taiwan University	7 th	1 st	28 th 2	nd 33 rd	3 rd

The University of Toronto continues to lay claim to the title of best Canadian university in the world. U of T eclipsed its Canadian peers on three out of four of the most prestigious international university rankings this past fall, and claimed a top-30 spot on all of them. QS World University Rankings, which evaluates universities in 29 specific subject areas, gave U of T a prized top-10 ranking in three fields: English, modern languages and environmental sciences. Departments in which U of T placed among the world's top 20 were: philosophy, geography, history, linguistics, computer science, medicine, psychology, pharmacy and pharmacology, sociology, law and education. In every instance except geography, U of T was the top-ranked institution in Canada. - scott anderson

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Scarborough Rising

UTSC seeks \$35 million to bolster its position as intellectual and cultural hub for the eastern GTA

NEW STUDENTS, new faculty, new programs, new buildings - and a visionary new donation toward mental health education. The University of Toronto Scarborough had a lot to celebrate at its Boundless campaign launch in November.

During a ceremony held on campus at the historic Miller Lash

House, UTSC principal Franco J. Vaccarino announced a \$1.25-million gift from an anonymous donor to support several clinical placements each year for students in psychology. The department recently launched an undergraduate program in mental health studies that has since attracted a large cohort of new students - and has proposed a PhD program in clinical psychology.

"UTSC's transformation is about much more than new cutting-edge buildings and facilities," says Vaccarino. "It is about the students, staff, educators and researchers who inhabit these buildings and bring them to life. Through their research, our faculty make leading contributions to their fields, while our students receive an education that is both first class and responsive to a rapidly changing labour market."

At the campaign launch, UTSC also celebrated its largest gift-in-kind. More than 200 paintings and 6,000 pieces of memorabilia – valued at \$3.8 million – were bequeathed from the estate of Doris McCarthy, Canada's celebrated landscape artist, to enhance the campus's art history instruction and expand its public art programs. UTSC also announced that \$1.7 million has been raised for more than 65 scholarships.

UTSC is growing rapidly, having recently made 30 faculty hires, added six academic departments, two new interdisciplinary centres and a number of degree programs, including a PhD in environmental science. In September, ground was broken on the Aquatics Centre and Field House Complex that will be used by students, the community and the 2015 Pan Am/Parapan Am Games.

The campaign seeks to raise \$35 million to bolster UTSC's position as the intellectual and cultural hub of the eastern Greater Toronto Area and as a world-leading centre of scholarship in such vital areas as mental health, world hunger research and environmental science. - ALLYSON ROWLEY

Why I Give



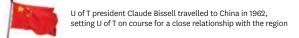
Ophthalmologist Agnes Wong was a resident of Dr. Bill Macrae's in the late 1990s. His vision for teaching surgery has inspired her to support an award in his name for graduate students who pursue a PhD in ophthalmic education

Agnes Wong: "When you're starting to learn cataract surgery, many doctors are hesitant to give you cases. Dr. Macrae had a very different approach. He just asked us to do it. He said, 'Agnes, you can't learn how to swim standing at the side of the pool watching other people swim.' That really impressed me. Because of his confidence, the other residents and I got the exposure we needed to become better ophthalmic surgeons.

"Dr. Macrae is a great teacher because he strongly believes in the surgical education of residents. Through this award, I wanted to support his philosophy and encourage research in surgical education. The idea is to train PhD students in ophthalmic education so they can bring innovative techniques to our program and improve the curriculum. It will sow the seeds for the next generation of ophthamologists to be better educators and researchers. Cataracts are a natural part of aging, so as our population gets older, there will be a greater need for ophthalmic surgery. And we shouldn't think just about Canada. Cataracts are the number-one cause of avoidable blindness in the world. Twenty million people in the world are blind because of them.

"What better way to honour a teacher who had a huge impact on me and to support his vision for excellence in surgical education?"

As told to Scott Anderson. Agnes Wong is the John and Melinda Thompson Chair in Vision Neurosciences at the University of Toronto.





Eastern Promise

U of T celebrates its connections to the Asia-Pacific region

A GALA EVENT MARKING THE ASIA-PACIFIC launch of the Boundless campaign and honouring U of T's decades-long relationship with people in the region drew more than 250 alumni and friends to the W Hotel in Hong Kong in October.

The sold-out celebration, co-hosted by U of T president David Naylor and alumna Daisy Ho (MBA 1990), also recognized two significant gifts to the fundraising campaign. Ms. Ho, who chairs the University of Toronto (Hong Kong) Foundation, has given \$2 million to support visiting scholars and undergraduate exchanges – initiatives that are seen as central to the university's goal of improving the student experience in an era of globalization.

Her gift will fund two specific projects: an Award for Emerging Leaders at the Rotman School of Management, designed to attract the brightest international academic

The U of T (Hong Kong) Foundation scholarships have opened doors of opportunity for promising young leaders fellows; and a major new undergraduate program to encourage student research projects on contemporary China and student exchanges with Chinese institutions.

Ms. Ho, who is now deputy managing director of Shun Tak Holdings, says she never studied harder in her life than when she attended Rotman. "I think what helps me to push myself along in my career is the perseverance and the determination that U of T instilled in me," she says. "It is indeed a lifelong education."

David Palmer, U of T's vicepresident, advancement, also announced a \$4-million gift – from an anonymous donor – to establish a chair in Chinese-Canadian Studies at University College. "The chair will be the cornerstone of a new program to promote understanding and awareness of the significant contributions of Chinese-Canadians to our country," he said.

The chair will reinforce another long-standing initiative supporting cultural exchange – the University

of Toronto (Hong Kong) Foundation scholarships, which have brought more than 60 students to U of T from Hong Kong since 1995. "These scholarships have changed lives and opened doors of opportunity that otherwise have been beyond the means of promising young leaders," Palmer said.

David Naylor noted that collaboration between U of T faculty members and their peers in the Asia-Pacific region goes back more than a century. U of T faculty and students have also benefited from dozens of inter-university partnerships across the Asia-Pacific region, from MBA exchange programs to engineering collaborations.

Today, more than 10,000 international students attend U of T, with about 75 per cent of them coming from China, India, Japan and other Asian countries. "This mix of students, ideas, perspectives and disciplines is more important than ever before," Naylor said. "The global challenges we face together are complex, multifaceted and interconnected – from our substantial thirst for energy, to the vitality of urban regions; from cyber security to food security."

The celebration was one of a number of U of T events designed to celebrate and strengthen the engagement of alumni and academic partners in the region. President Naylor spoke at the Science and Technology in Society Forum in Kyoto, Japan, hosted an alumni event at the Canadian Embassy in Tokyo, and delivered a keynote address to the Canadian Chamber of Commerce, which drew the highest attendance in its history. - STAFF

To see more pictures from the Boundless campaign launch in Hong Kong, visit magazine.utoronto.ca or download the $\it U$ of $\it T$ Magazine iPad app from the App Store.

16 WWW.MAGAZINE.UTORONTO.CA PHOTO: OSCAR YU

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Leading Edge

"Smartphones are vulnerable to the same security risks as a laptop"

Prof. David Lie of electrical and computer engineering **p.19**



Is Your Smartphone Safe?

As we become inseparable from our mobile devices, the risk of identity theft is growing

BREACH OF PRIVACY? THERE'S AN APP FOR THAT. Identity theft? There's one for that, too. In fact, viruses, spyware and worms are proliferating on smartphones. On Android phones alone, the number of known malicious programs jumped from 400 to more than 13,000 over the span of six months in 2011. These nasty bits of code can do anything from monitoring and reporting on your web browsing habits to allowing complete remote control of your phone.

"Smartphones are vulnerable to the same security risks as a laptop," says David Lie, a professor of electrical and computer engineering, whose lab is studying smartphone security and working to find improvements. "But you always take your mobile phone with you. It knows all the people you talk to, all the places you go." It stores far more information about you than a laptop, which raises the stakes of a security breach.

Yet, while most people would never buy a computer without virus protection, they are much less likely to protect their smartphones – in part because existing virus protection programs are less effective or often don't work on smartphones.

Many mobile operating systems address security issues by allowing users to set "permissions" that determine whether apps can do things such as connect to the Internet, identify a phone's location, or access certain files. Lie says that's a good start, but far from foolproof.

"A lot of smartphone privacy has been about restricting access to information. But current tools don't look at what is done with information," he says. "It tells you, for example, 'This app can access your contacts and access the Internet,' but what you really want to know is whether it is going to send your contacts to some stranger online."

PHOTO: KRYSTIAN NAWROCKI//STOCKPHOTO WINTER 2013 19



In 2010, a panel of pedestrian advocates selected Vancouver as Canada's most "walkable" city. New York and San Francisco took top honours among large U.S. cities

Smartphone apps seem safe because they usually come from a single source an app store. But these online stores are not invulnerable. A powerful spyware program known as FinFisher, for example, has been found to worm its way onto phones through a bogus upgrade to an otherwise benign app. (Repressive governments have been using the program to spy on dissidents, according to recent news reports.)

Because smartphones are becoming more central to commerce, social interaction and even health services, Lie's lab is working on smartphone security systems that provide more complete control over what apps can do with your information. "Banking and health data are sensitive things you don't want to inadvertently share," he notes.

While Lie acknowledges that user education can address some privacy issues, he also believes that software can help mitigate the risks. The challenge for his lab is to create a security system that's simple enough for inexperienced users, but flexible enough to suit those with very different privacy thresholds.

One simple-yet-flexible solution he is investigating would allow a prompt such as: "Don't let any app share photos of my children with any computer other than my own laptop." The phone would use facial recognition software and other smart tools to intelligently identify any attempts to breach this rule.

While all software solutions necessarily rely on user awareness of security issues, Lie believes that a new generation of flexible, intelligent, plain-language security software can go a long way toward enabling smartphone users to protect themselves.

- PATCHEN BARSS

Neighbourhood Health

People who live in less "walkable" communities, especially new Canadians, are more likely to develop diabetes

DOES IT TAKE YOU MORE THAN 10 MINUTES to walk to the nearest shops? Does your street wind on forever without a crossroad? If so, your neighbourhood may be bad for your health.

Gillian Booth, an endocrinologist and a professor in the department of medicine, already knew that a community's design can affect the physical activity levels of its residents. But she wanted to find out if this translated into higher rates of Type 2 diabetes, especially among immigrants. Many Toronto newcomers arrive from regions such as the Middle East, Africa and India, where members of the population are known to be genetically susceptible to the disease. She speculated that suddenly embracing a western-style diet high in fat and refined sugar and a sedentary lifestyle could lead to higher rates of diabetes among new Canadians.

So Booth and colleagues at U of T and St. Michael's Hospital developed a tool to rate the "walkability" of different parts of Toronto. Then they looked at all people aged 30 to 64 living in the city on April 1, 2005 who had been covered by OHIP for at least three years but did not have diabetes. They identified recent immigrants as people who had first registered for OHIP in the 10 years before.

When they checked to see how many of the group developed diabetes in the subsequent five years, they saw an association: the less walkable the neighbourhood, the higher the incidence of diabetes among its residents. As feared, immigrants were the hardest hit. The incidence of diabetes was 50 per cent higher in the least walkable areas compared to the most walkable areas, and when poverty was added into the mix, it was 200 per cent higher. "It's very hard for people who depend on local opportunities to be physically active if they live in places like these," says Booth, adding that Canadians should rethink how we build communities. We could set minimum standards for density and public transit, for instance, and reevaluate how development happens, she says.

- ALISON MOTLUK

LINGO Hairball



Scientific research often yields vast amounts of data. This is particularly true in computational biology, where a large experiment might examine interactions among dozens or hundreds of genes and the proteins they produce. Prof. Brenda Andrews, director of the Donnelly Centre for Cellular and Biomolecular Research at

U of T, says biologists typically represent this information visually using a network graph, in which each gene is identified as a "node" on a network and is connected by a line or "edge" to the genes and proteins it interacts with. This visualization technique works well for a small number of nodes, but when thousands of

interactions are displayed in one diagram, the result, from a distance, can look like a hairball. Andrews says she's not fond of the term: "To me, it seems derogatory and underplays the importance of the information in these networks." She prefers "infoball."



THE BIG IDEA

Voter Inequality

In a federal election, why does a vote from Charlottetown count for more than one from Markham?

THE NOTION THAT EVERY ADULT CITIZEN should have an equal say in electing a government is an essential principle of democratic countries around the world, including Canada. The concept is simple: each citizen gets precisely one vote. But in the messy world of real-life politics, it turns out that some votes count for more than others – a lot more. In Canada, for example, the Member of Parliament for Oak Ridges-Markham represents more than six times as many people as the MP for Charlottetown. In other words, the people of Markham, Ontario, would have to be split into six groups – each electing their own MP – to be as well represented in Ottawa as the people of Charlottetown.

This clearly isn't fair. And census data shows that, because of ongoing immigration and internal migration patterns, it's most unfair to visible minorities, who make up a significant chunk of the population in the most under-represented ridings in the country (see chart). Nationally, 16 per cent of Canadians identify as visible minorities.

What's the best way to fix this situation? And should perfect equality be the goal?

Matthew Mendelsohn, the director of U of T's Mowat Centre at the School of Public Policy and Governance, notes that there are two kinds of imbalance in the Canadian electoral system: between provinces and within provinces. Imbalances between provinces exist partly for historical reasons (under the Constitution, for example, P.E.I. is guaranteed four seats even though it warrants only one by its current population), and partly due to population changes. Over the past three decades, Ontario, Alberta and British Columbia

have grown much faster than other jurisdictions. Under new federal legislation, these three provinces have been awarded a total of 30 additional seats for the next election, which, although an improvement, is not quite enough to bring their per-capita representation in line with the other provinces. Urban and suburban regions within all provinces have also grown, so ridings in these regions, in theory, should be subdivided, while those in rural areas, which have seen population declines, should be merged.

The job of redrawing electoral districts falls once every decade to provincial "boundary commissions," which, earlier this year, released a series of maps showing proposed new ridings. (In the fall, the public had an opportunity to comment on the proposals, which may subsequently be revised before they receive final approval in Ottawa.) While the maps indicate some progress, significant pockets of inequality persist, says Mendelsohn – although he adds that perfect voter equality is not necessarily the goal. "Canadians traditionally have been comfortable with the idea that the North and remote communities should receive greater representation," he says, partly because a remote community's "voice" can get lost relative to more powerful interests in urban areas. Also, provinces and regions that are overrepresented have traditionally refused to give up a seat in Ottawa.

Comparing provinces, Mendelsohn says the Ontario boundary commission "didn't come close" to what the Alberta and B.C. commissions achieved with respect to voter equality. In the two westernmost provinces, the population of a large majority of the proposed new ridings falls within five per cent of the national average. In Ontario, almost half of the ridings exceed this differential. In Mendelsohn's opinion, Ontario's boundary commission erred by trying to keep federal electoral boundaries aligned with municipal ones. "Moving forward," he says, "they need to do more to accept voter equality as the driving principle in rebalancing."

Mendelsohn notes that immigrant communities have not traditionally advocated for greater representation in Ottawa, but he senses that this may be beginning to change. "People are more aware now that having two MPs for their community instead of four is a problem." - SCOTT ANDERSON

Riding	Population	% Visible Minority	Vote Weight
Oak Ridges-Markham	228,997	42	0.47
Brampton West	204,146	54	0.53
Halton	203,437	19	0.53
Canadian average	108,691	16	1.00
Charlottetown	34,562	3	3.14

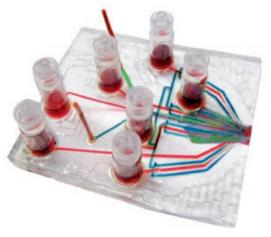
Read more about electoral boundaries and riding size at voterequality.ca

Leading Edge

PROTOTYPE

Second Skin

Machine-made skin being developed at U of T may be safer, faster and cheaper than traditional grafts



Tissue "printer" developed at U of T. Actual size.

tissue engineering has taken a big leap forward with the U of T invention of a process that can create functional replacement skin quickly and inexpensively.

The one-step device is believed to be the first in the world to create tissue rapidly on a large scale – important in repairing skin destroyed by burns or other major wounds. It's hoped that, in future, instead of traditional skin grafts that remove patients' own healthy skin for transplant, patients will receive machine-made skin grafts that are safer, faster and cheaper.

Graduate students Lian Leng, Boyang Zhang and Arianna McAllister contributed to the invention in the labs of Axel Guenther and Milica Radisic, professors at the Institute of Biomaterials and Biomedical Engineering.

Leng, a PhD student in microfluidics and the lead on the project, explains that the core of the printer is a small, unassuming-looking

rubber device with seven tiny wells. Each well holds a different biologically compatible polymer solution preloaded with molecules or cells, such as skin cells. The liquids are then extruded through the device, forming a soft, pliable, continuously flowing sheet of artificial skin full of living cells.

Unlike the "scaffolding" method of tissue creation, where a structure is created and then cells planted onto it afterward, this method seeds cells right into the sheet at the same time it's being created. This dramatically increases the precision of the cell placement, which is important to allowing the cells to function normally, and to enabling the fabricated tissue to mimic natural tissue.

As the sheet of skin rolls out, it's collected on a rotating drum, which produces multiple layers like plastic wrap on a roll, up to several centimetres thick. Until now, tissue could be created only in samples a fraction of that size. Thicker tissue is needed for sustaining blood vessels. Ironically, Leng, a mechanical engineer, had no experience with cell culture before helping to design the device. "Someone had to show me how to culture and feed cells," she says. Last winter she spent months checking the cells daily to ensure they survived, attached and thrived.

Not only is the device faster and more precise than other tissue "printers," it's also much cheaper. "Compared to other printers, which cost about \$200,000, even by the most conservative estimates this one will produce tissue at a thousandth of the cost," says Radisic. The invention, on which U of T has filed two patents, is being commercialized to sell to other research institutes and hospitals. While replacement skin is the focus now, future applications may include replacing cardiac tissue damaged by heart attacks. Preclinical trials will begin at U of T this year. - MARCIA KAYE

Findings

Men at Risk



A parental divorce might affect boys' health in later life, according to University of Toronto research.

A study by Esme Fuller-Thomson, a professor at the Factor-Inwentash Faculty of Social Work, and recent graduate Angela Dalton showed that adult men who experienced parental divorce before they turned 18 are three times more likely to suffer a stroke than men whose parents did not divorce. Women from divorced families did not have a significantly higher risk of stroke than women from intact families.

The link may lie in the body's regulation of cortisol, a hormone associated with stress, says Fuller-Thomson.
"It is possible that exposure to the stress of parental divorce may have biological implications that change the way these boys react to stress for the rest of their lives."

- MICHAEL KENNEDY



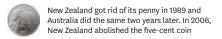
Parkinson's Protection

Joanne Nash, a professor of neurobiology at U of T Scarborough, has received a \$250,000 grant from the Michael J. Fox Foundation to study a protein called Sirtuin-3 and its role in protecting brain cells from dying in Parkinson's disease. If successful, the research could point the way to the first treatment capable of slowing or halting the progression of the nervous system disorder.

Sirtuins are a family of anti-aging proteins. Sirtuin-3 seems to be associated with the health of mitochondria, which generate a cell's chemical energy and control its growth. "It's now believed that mitochondria, if they're dysfunctional, can promote neurodegenerative diseases," says Nash. She is investigating whether more Sirtuin-3 will protect the mitochondria, and slow or prevent degeneration of dopamine-producing neurons in the brain, a cause of Parkinson's. - KURT KLEINER

WWW.MAGAZINE.UTORONTO.CA

PHOTO: COURTESY OF LIAN LENG





Tossing a Coin

The Royal Mint has finally produced its last penny. Is it time to get rid of the nickel, too?

In February, Canadians will say goodbye (or good riddance) to the penny, and, later in 2013, will start using polymer \$5 and \$10 bills. *U of T Magazine* editor **Scott Anderson** spoke to economics professor **Jack Carr** about the art and science of making change.

The Bank of Canada has announced it will phase out the penny. Why now? John Palmer, an economist at Western University, has been telling the Bank of Canada to get rid of the penny for the past 30 years. Pennies are a nuisance. How many people nowadays would stop to pick up a penny off the ground? A century ago, you could pay for a chocolate bar with two or three pennies; now they have no real purchasing power. And they cost the bank 60 per cent more to produce than they're worth. The question is why the bank took so long! The answer is that it probably just came down to inertia. In any institution, there's always risk with change.

How does the bank determine which denominations should be bills and which should be coins? Before the Bank of Canada introduced the loonie, in 1987, a dollar bill lasted only about nine months in circulation. So the bank weighed the cost of continually collecting all the old bills, destroying them and replacing them with new ones every nine months against a dollar coin, which costs more to produce but lasts 30 to 50 years or longer. The coin won out. People may not like loonies and toonies because they put a hole in your pocket, but they're a lot more durable.

Will the nickel disappear anytime soon? Is the bank cooking up plans to replace the \$5 bill with the "foonie"? Prices today are about six times what they were in the early 1960s, so a nickel doesn't buy much these days, either. It may make sense to get rid of it now! The real challenge for the bank is to determine the optimal distribution of notes and coins to minimize transaction costs for the Canadian economy. And it must revisit this question every so often as prices



change and non-cash transactions become more prevalent. But no, I don't think we'll be getting a \$5 coin anytime soon. Consumers don't want one.

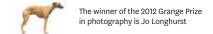
Why does the bank change the design of our bills so frequently? People need to have faith in their currency, so the bank normally would *not* want to change how the currency looks. But they have to do so in order to stay ahead of counterfeiting, which is a big problem.

Hence the polymer bank notes? Yes, you can include security features on the polymer that you can't on our current bills. The new notes have transparent windows containing raised text, hidden numbers and metallic images. These are extremely difficult to replicate, and relatively easy for consumers and businesses to check. But the polymer is also intended to give the notes greater longevity; they're expected to last two-and-a-half times as long as the old cotton paper ones.

There are a lot more non-cash transactions now. How does that affect the bank's decisions about how much money to print? The amount of currency – bills and notes – in circulation is strictly determined by the needs of trade. If the retail banks ask for more, because, for example, it's Christmastime and people are taking out more cash, the Bank of Canada will give them more.

Will the amount of money in circulation decline over time as non-cash transactions become more popular? Thirty years ago, people thought we'd become a cashless society. It hasn't happened. And there's a reason for this. For small transactions, cash has lower transaction costs than cheques or credit. And unlike cheques or credit, cash can't be traced. There are plenty of people who don't want others to know what they're paying for. Criminals come to mind, people who engage in black market transactions, and people who want to avoid taxes. That's not going to change.

PHOTO: ISTOCKPHOTO WINTER 2013 23



Future Forest



In a warmer world, we expect glaciers will melt and sea levels will rise, but what impact will higher air temperatures have on Canada's vast - and economically vital - evergreen forests? Ingo Ensminger, a professor of biology at U of T Mississauga, is heating a patch of land at Koffler Scientific Reserve north of Toronto as part of an experiment he hopes will yield some answers. Earlier this year, Ensminger and his team planted 1,200 white pine seedlings on a dozen small plots at the U of T facility (a portion of the site is shown at left). Using infrared heaters controlled by a network of sensors, the researchers have elevated the air temperature in six of the plots during daytime by 1.5 degrees Celsius and during the night by three degrees to mimic air temperatures predicted in southern Ontario 50 years from now. Six of the plots are unheated; seedlings planted there experience regular temperatures. Ensminger says he will be monitoring photosynthesis and growth in each tree, as well as gene regulation. By comparing the heated and unheated plots, he and his team will assess how well the trees will survive in a warmer climate. The study began in August and will continue for three years. - SCOTT ANDERSON

Tweet If You Love Monet

New technologies are taking art directly to the people, forcing galleries and museums to adapt



ONE OF CANADA'S LEADING visual arts journalists, Sara Angel has long been fascinated by the way that art finds its audience. With the rise of the Internet, she says, "more people have an understanding and awareness of what the art world is about than ever before." They can take virtual walks through the Tate in London or the Uffizi Gallery in Florence, Italy; they can view Internet-specific art only meant for online eyes. And this, says Angel, has left museums and galleries with the challenge of defining their role in the world.

Now pursuing a PhD in art history at U of T, Angel has received a \$60,000 scholarship from the Pierre Elliott Trudeau Foundation to examine the interface between media and art, and particularly the impact of communications technology. While she's still researching her thesis,

Angel expects she'll find more museums and galleries harnessing technology to open their doors to a wider audience. She's curious, however, whether their role in the art world is changing. "Online traffic does drive real-life traffic," she points out. "It's not a situation where people say, 'I've seen the Mona Lisa on my phone, so I don't need to see it in real life."

Angel has already found some museums that are adapting well to the new age. She welcomes innovations such as the Art Gallery of Ontario's Grange Prize for photography, awarded by online voters instead of curators, and, in New York, the Metropolitan Museum of Art's plans for an "augmented reality" feature, which would allow in-person visitors to scan information about artworks on their mobile devices.

Her grant will also let her investigate the new ways visual art is being made and seen outside institutions. Angel cites the example of Nuit Blanche, an international, overnight event that enables artists to display their work at public places in a given city. It's strongly linked to social media, as participants post messages about the best work they've seen over the course of the night.

Angel calls Nuit Blanche "the museum of the 21st century," and she believes that free and social events of this type are wildly boosting art's popular appeal. "We're in the middle," says Angel happily, "of a complete revolution." And it's giving her plenty to explore. - CYNTHIA MACDONALD











































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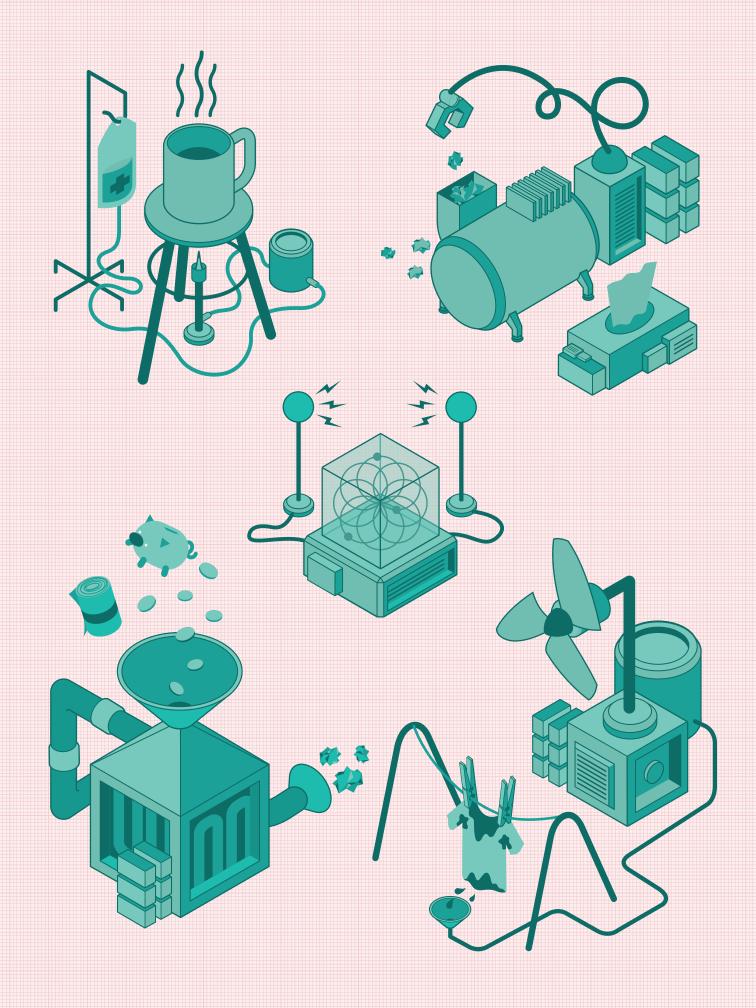
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By Alison Motluk Illustration by Adam J. Hilborn



Science students get a month-long crash course in turning an idea into a viable business at U of T's "Techno" program

DANIEL HUYNH WANTS TO LEARN THE NUTS AND BOLTS of starting a business. He and his two partners, Wen Ma and Jacky Mak, are electrical engineers who would rather be entrepreneurs. They have what they think is a good idea. But is there a market for it? Could they turn a profit? Are there legal issues that could tangle them up?

It's Day One of Techno, U of T's entrepreneurial boot camp for science and engineering students. Huynh, Ma and Mak – and I, and others – have spent this sweltering June day inside the air-conditioned confines of the Best Institute on College Street learning about the program. Only one month long, Techno provides intensive, hands-on guidance in product development, patent law, finance, marketing and people management, among other things – and it's free.

More than 50 individuals and groups applied, but only 18

were accepted. "They have to be serious about building a company," says founder Cynthia Goh, a chemistry professor, who devised the Techno concept a few years ago. Goh, who is also director of the Institute for Optical Sciences, tells me she helped pick the chosen few based on in-depth applications and interviews. "Their science has to be solid," she says.

Members of team Huynh-Ma-Mak have come up with the idea of creating affordable add-ons to a particular kind of optical system used in labs. These instruments examine materials by looking at changes in the way light is scattered – a technique that shows potential for distinguishing normal cells from cancerous ones. The team members know they can build the add-ons because Mak has already designed, built and tested one that they hope will be their first product.

The problem with optics, Huynh explains to me, is that the

equipment is designed and priced for commercial research labs, not universities. A complete system can cost upwards of \$300,000. And if you want to do a different type of analysis than the instruments were intended for – examining a liquid, for instance, instead of a solid – you have to kit yourself out with a whole new system. There are few options to buy individual components, he says.

The prohibitive cost and the limited capability of the systems are what drove Mak to design his own add-on. But it took him two years to do it. Lots of optical engineers are forced to do this to save money. What if Mak and his partners could sell basic, reasonably priced components to university researchers, as adjuncts to the systems they already have? One stumbling block may be intellectual property, says Huynh. "Someone holds a patent that may be similar," he notes. The first thing they plan to do is look into that.

Across the room, I meet Chris Pettigrew, one of only two undergraduates in the program, the other being his twin brother and business partner, Michael. Chris is confident about their proposed company, which aims to produce lab instruments that will be able to determine cellular lifespan – measured by the number of times a cell divides before it dies. This work is often done manually, mostly by students, by looking through a microscope, separating the dividing cells with a tool called a micromanipulator, and counting.

Chris believes their idea is such a good one that he is uncomfortable telling me much about it. He's certain, both from working in the field and from reading the literature, that there will be demand. Cancer, aging, genetics labs – lots of life sciences facilities – do this. "It's the lifeblood of all these labs," he says. And he and his brother have cracked how to automate it.

Another person I talk to is Xingxing Xing, a physicist interested in quantum information and computing. While working on his PhD, he developed a new high-precision way to measure how long it takes a pair of photons to get from one point to another. This can be helpful information if you want to determine the characteristics of something in their way – a tumour, for example. You can already buy equipment that does this, he says, but it costs tens of thousands of dollars. He thinks his device could sell for a few thousand. He imagines selling it to other physicists or to biophysics labs. He's not sure yet, but that's one of the details he hopes to figure out over the next month.

Along with this year's participants, there are former Techno grads here, as concrete evidence that the program can lead to business success. I speak with Michael Montgomery, who has developed a novel way to dampen the sway of super-tall buildings, which occurs even in regular winds. Two Toronto highrises are currently testing designs that incorporate his "viscoelastic coupling damper." I shake hands with Mallika Das, whose eco-safe wood protection company I wrote about for *U of T Magazine* last year.

It's been a long day and the Techno folks unwind with

some sausage rolls and falafel. It's not lost on anyone that we're inside a building named after Charles Best, co-discoverer of insulin, and that the discovery of insulin has provided U of T with more than \$3 million in research money every year, through the Connaught Fund.

There is a certain frisson in the air.

DAY 9

One of the perks of Techno is free advice from pros, such as financial gurus and patent experts. Xing is interested in how planning and budgeting works. He tells me he's been advised not to use overly optimistic projections in his business plan because investors will look at the plan and later judge his performance based on the targets he's set for himself. You can privately strive to be aggressive, he says, but you should think twice about setting public targets you might not be able to meet.

Meanwhile, both the Pettigrews and Huynh and his team ask for help with patent issues. Chris and Michael have already spent their own funds filing a provisional patent application, which program advisers confirm was a smart move: it will save the brothers money while also acting as a placeholder as they work out some bugs.

The news is less rosy for Huynh, Ma and Mak. They ask for help understanding the technical language of the patent they fear they might infringe. Their hunch is right; the patent holder, though not in their field, has staked a broad claim, and if they follow their current plan, they risk treading on his territory. The three huddle together in a little glassed-in boardroom, debating what they should do. Do they approach the patent holder to collaborate? Risk ignoring the claim? After a few days of intense discussion, they decide to ditch their idea and come up with something new.

"There's something I really picked up here from Professor Goh," says Ma. Goh's philosophy is that the most important thing about the company is not the idea, but the people. "The biggest asset is you, your knowledge," says Ma. "We have to make our expertise generate revenue for us."

DAY 16

Today, results are out from the Global Innovation Index – a ranking of countries jointly published by INSEAD, a leading business school, and the World Intellectual Property Organization. Canada has dropped from number 8 last year to 12 this year. There's lots of noise in the media these days about how Canada is not entrepreneurial enough. The Organisation for Economic Co-operation and Development reported in June that the Canadian business sector devotes only one per cent of the country's GDP to research and development, compared to two per cent in the U.S. – and 2.5 per cent in Japan and Korea. An expert panel convened by the federal government to report on Canadian innovation said last year that we're not going to be able to maintain our standard of living if we don't do something to turn this around.

"Innovation is the ultimate source of the long-term competitiveness of businesses and the quality of life of Canadians," the report, Innovation Canada: A Call to Action, states.

Goh told me that one of her reasons for starting the Techno program is that she doesn't want to lose any more Canadian scientists to California. This is the program's third year and so far more than 76 people have completed it, resulting in the launch of 35 new companies. She's proud of the program's job-creation record. "Techno enables students to create their own high-value jobs and control their future," she says. Commercialization also has important societal benefits, and Goh's epiphany was that graduate students are an underutilized resource. "They are really the ideal candidates to serve as conduits to move technology outside of the university and to create value to society in as short a time as possible," she says.

This is not Goh's first fling with commercialization. She was also the instigator behind what has now become "Entrepreneurship 101," a course run by the Medical and Related Sciences discovery district (MaRS) – the Toronto nonprofit devoted to helping researchers turn theory into commercially viable products. But whereas the MaRS offering takes a more academic approach, Goh keeps Techno very much hands-on. "We are cultivating early stage innovation," says Derek Newton, executive director of U of T's Innovations and Partnerships Office, about Techno. "We take a university startup, give it enough support to grow up and survive and thrive in the real world."

With this year's Techno now past the halfway mark, Chris and Michael Pettigrew have just received the results of an intelligence report that MaRS commissioned for them. It confirms the brothers' hunch that there is a strong market for their product. (Techno participants have access to all the services that MaRS offers its members.) The Pettigrews have already spoken to a design firm about creating a prototype, which they want to be able to show to future investors.

I ask Chris if he's learned anything surprising from Techno. One thing, he says, is an appreciation of the importance of a good sales pitch. He credits a talk by Angel Morales, one of the program's mentors and a real estate agent, for showing him and his brother that sales means far more than "moving product" in a used-car salesman sort of way; it means putting together the most compelling case for their company. The first sale will be to investors.

I find Xing still mulling over a talk given early in the program by Darren Anderson, the founder of Vive Crop Protection, a U of T spin-out company that predates the current Techno. Anderson told the group about how Vive started in 2006 as a company that made fluorescent nano tags used in the biomedical industry. But that market was limited, they found. So they explored other options for their technology: an anti-reflective glass coating, a water treatment catalyst and sales of the nanoparticles directly to academic and industrial researchers. About three years ago, he told them,

Canada's Next Tech Success?



LabInvasion Jacky Mak, Wen Ma and Daniel Huynh

"What if your only means of transportation was a Ferrari?" asks Wen Ma. Over-powered, over-fancy, with all kinds of features you'll never even get to use - and at a prohibitive price. That, she says, is what the world of lab optics is like. An optical power meter, for instance, which measures the intensity of light coming from a light source, can cost \$1,400. Her company intends to halve this price with a sturdy, simple low-cost meter that fits the need of universities rather than commercial research institutions. "We want to build the Corollas of the optics world," says Ma.



Cytospan Technologies Michael and Chris Pettigrew

Figuring out how many times a cell divides before it dies is a key operation in labs around the world. But it's labour-intensive: big labs employ up to 20 students, squinting through microscopes, counting cells and recording data with pencils. Chris Pettigrew was one of those students. "It's awful," he says. "And in 50 years it has not changed." Now it might. Chris and his twin brother, Michael, have developed an automated bench-top lab instrument to do the job. They expect to roll it out in late 2013. Says Chris: "It's three times faster and will pay for itself in five months."



Sonola Imaging **Xingxing Xing**

Brain imaging is a life-saving technology, but many small, remote or low-income communities don't have access to scanners that use MRI or PET. Ultrasound is much more widely available, but the bones of the skull make ultrasonic brain imaging tricky. Sonola proposes to change this. The company will adjust for the skull bones, using a method Xing invented to measure how long it takes a photon to get from point A to B. Xing hopes to partner with existing ultrasound manufacturers - after he develops a proof-of-principle device next year. "It is a challenge," he says.

"You think your idea is the best in the world.
But your strength is your knowledge and background, not this one idea"

the company began focusing on crop protection. They developed a system that can deliver existing pesticides more efficiently. And they haven't looked back: the company had to hire 10 new people in the last year to keep up with demand.

Xing is intrigued by the company's reincarnation. The decision to venture into crop protection was "not obvious," he says. He's thinking about his own technology and whether he's on the right track with it. One of the most important things he's learning is that you have to be prepared to adapt your business idea to unforeseen circumstances. "Ninety-three per cent of all new businesses change their initial idea," he tells me. He heard that here at Techno, and it's stuck with him.

Huynh, Ma and Mak are a case in point. "The initial company that we were thinking of starting has completely changed," says Mak, as the four of us convene in the same boardroom where they made some tough decisions just days earlier. Instead of designing and building add-ons for existing optical systems, they've decided to design simple, sturdy, fair-priced stand-alone equipment designed specifically for post-secondary teaching labs. They have examined what their competitors offer: too many bells and whistles that students never use, but which the university nonetheless has to pay for.

Their first order of business now is to talk to potential buyers at U of T – lab managers in the electrical engineering, computer engineering and physics departments – to find out more about their needs. "We'll see what kind of tweaks they need," says Ma. "The biggest difference is we're now starting with the problem and looking for a solution."

DAY 26

It's the final day of Techno, what they call "pitch day," when company ideas are formally presented to the group plus a smattering of invited guests. The main room has been converted into a makeshift auditorium, with rows of chairs facing a podium and a large projection screen. Some participants have traded in shorts and T-shirts for business casual.

"LabInvasion" is the new company moniker chosen by Huynh, Ma and Mak. Ma is giving the presentation, and she plays to the crowd. She likens the optical equipment market to a world where luxury vehicles are the only way to get around. "We want to build the Corollas of the optics world," she says, and we all laugh.

Their first product will be an optical power meter. A survey conducted by the team showed that customers want robust, stable, low-cost equipment and need only a small wavelength range, a small power range and low precision. "We can match needs, maintain quality and make it affordable," she says.

She lays out the plan. In the first year, they will leverage their direct connections. Later, they hope to benefit from recommendations from their customers and online scientific equipment sites. They project one or two products and 20 customers in year one, and revenue of \$200,000 by year three.

Toward the end of the afternoon, it's Chris Pettigrew's turn, with "Cytospan Technologies." He warms up the audience with some slides illustrating how the lifespan of a cell is currently measured: here's a pencil, and here's a smudgy chart where the data are recorded. These slides are all we need to be convinced that the process needs updating. Optics may be speeding around in a Ferrari, but biology is still using the horse and cart. Cytospan is going to change all this, Chris states confidently. He predicts the company will have \$10 million in revenues by 2015. It already has six investors.

Xing's "Sonola Imaging" pitches last. He's decided to use his photon-measuring technology to make brain imaging possible with ultrasound. He had mentioned this idea earlier as an offhand possibility, but I'm surprised to hear now that it's the main focus. Later, he tells me that an Ontario Brain Institute fellowship he received in the second week of Techno helped tip him in that direction.

He points out that many communities have no access to expensive brain imaging technology, such as MRIs or PET scans. Ultrasound doesn't work well in the brain, because it uses sound waves to create images, and skull bones distort the waveforms. He is hopeful that his photon arrival-time technology, and what he's learned about optics and wave propagation, can solve this problem by providing a way to adjust for the bones.

Rather than compete with ultrasound companies, he's hoping to collaborate with them. And the market is big: more than 2,000 universities, 170,000 small clinics and countless ambulances in North America alone have ultrasound devices, and every one of those facilities could in theory extend the use of their ultrasound with Xing's technology. And there's no indication in the literature, he says, that industry leaders are developing anything along these lines.

Xing expects to have the hardware and software worked out in 2013 and a proof-of-principle device sometime thereafter. He's less sure of the timing of a real prototype or commercial product, but, he says, "I'm not aware of any reason why this should not work."

And if it doesn't? Not a problem, he says. "You think your idea is the best in the world. But your strength is your knowledge and background, not this one idea. I will find another problem to work on."

Alison Motluk (BA 1989 TRIN) is a journalist in Toronto.

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Katharine Lauder, Bachelor of Arts, Equity Studies candidate, U of T, 2013

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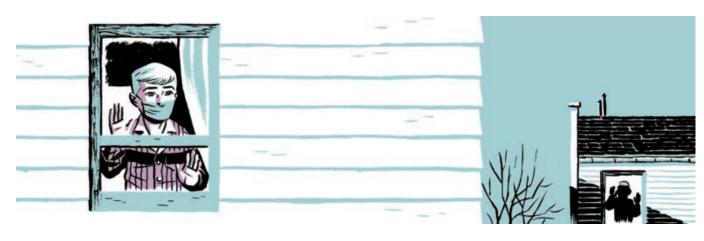
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APOCALYPSE HOM3

The world didn't end in 2012 after all. (Hooray!) But that doesn't mean we're entirely safe from a catastrophe of our own - or nature's - making. From war and disease to depleted resources and yes, even cosmic curveballs, U of T's experts weigh in on our future: why killer asteroids are worse than killer robots, how peak oil links to nuclear war, and more



PANDEMIC VIRUS

We can't prevent deadly viruses from evolving but we're getting better at fighting back

DESTRUCTIVENESS:



INEVITABILITY:

In 14th-century Europe, one person in three died from the bubonic plague. Between 1918 and 1919, more than 50 million people worldwide succumbed to the deadly Spanish flu. And in sub-Saharan Africa, AIDS has killed 30 million people – a toll that continues to rise. Despite extraordinary medical advances in the last 100 years, we can't consider ourselves immune to infectious disease. "We *know* there's going to be another influenza pandemic," says Allison McGeer, a professor of laboratory medicine and pathobiology and a specialist in infectious diseases. "There has been a flu pandemic every 30 years, on average, for the last 400 years." The question is when the next one will strike – and how severe it will be.

Any kind of virus that infects people across the globe is classified as a pandemic, even if it's not deadly, says McGeer. However, "mortality rates make a difference to how much we worry." SARS, for example, killed about 15 per cent of all people who contracted the virus while the 2009 swine flu killed less than one per cent. New and evolving viruses are a particular danger, such as the bat coronavirus identified in Saudi Arabia in the fall. That's because while we can now develop

vaccines within months, this is not fast enough to help anyone infected in the "first wave" of a new pandemic. If the disease is a virulent one, that delay could spell thousands – or even millions – of deaths.

Reducing the lethal impact of a pandemic requires more than medicines. "We know how slow we are to change behaviour," says McGeer. "The pieces of the public health system have to be in place – you can't invent them when a pandemic happens." A world that's prepared for the next pandemic has plenty of labs ready and watching to identify new viruses quickly and open channels of communication between scientists and the health officials who inform the public. And most importantly, people need to trust their health-care system (not always easy – in Nigeria, for example, persistent false rumours that the polio vaccine sterilizes children has made eradicating the disease there difficult).

On the medical side, "our prospects are getting better," says McGeer, mentioning the ongoing effort to find a universal flu vaccine (half a dozen clinical trials are underway around the world). Some countries have begun stockpiling antiviral drugs, and that will help – it definitely did during the 2009 pandemic. The genetics of new viruses can now be sequenced in days if not hours and we're making technical strides in how quickly vaccines can be developed. Though we're still not at a stage to do much about that dreaded first wave, McGeer remains hopeful that the inevitable future pandemics will be managed well. "I don't think there's any question we will get better, it's just a question how much better and how fast." – JR

End Times

Worries about the end of the world don't often appear in the historical record. The city of Rome's 1000th anniversary in AD 247 was celebrated with "no particular anxiety among pagan society," says U of T classics prof Michel Cottier. And AD 1000? "Quite probably it was not a fear of the end of the world, but for some a relatively joyful expectation of the second coming," says Isabelle Cochelin of history and medieval studies.



1545

The Aztecs (successors of the Mayans) reacted to an eclipse. "Nevermore will he give light; the demons will come to eat us!"



1666

The Fifth Monarchy Men believed the overthrow of English King Charles I heralded a new world order to begin in 1666.



1844

Up to 100,000 followers of Baptist preacher William Miller gave away their possessions in anticipation of the end of the world.

KILLER ASTEROID

Small bits of debris constantly fall on Earth; it's the city block-sized chunks of rock we need to worry about

DESTRUCTIVENESS:

IMMINENCE:

INEVITABILITY:

A million to one. Those are the actual, estimated odds that, sometime in your lifetime, you'll be killed by an asteroid hurtling in from space. "That's comparable to the risk of dying from a fireworks explosion or terrorism," says Michael Reid, co-ordinator of education and public outreach at U of T's Dunlap Institute for Astronomy and Astrophysics. "It's surprisingly small!"

That's because rocks big enough to wipe out most life only rarely collide with Earth. "Roughly every 100 million years, something [like that] comes along," says Reid. The most recent, 65 million years ago, killed 20 to 70 per cent of all species, including the dinosaurs. The 10-kilometre asteroid smashed down on Mexico, so red-hot from whipping through the atmosphere that it exploded even before it hit the ground - with the force of a billion atomic bombs. Scary, but it gets worse. "The problem is the amount of dust that gets scattered into the atmosphere," says Reid. "It darkens the skies and kills the plant life. Then everything high up on the food chain winds up dying because there isn't enough food."

Even smaller asteroids can pack a punch. In 1908, a 25-metre fireball, as powerful as 185 atom bombs, flattened trees for 50 kilometres around the Podkamennaya Tunguska River in Siberia. The United States Space Command reported that a nuclear-scale explosion over the Mediterranean Sea in June 2002 was probably a five- or 10-metre asteroid. Though one-metre rocks "are very common," says Reid, "a lot of those burn up in the atmosphere. And every moment, there's a grain of sand falling from space."

Around the world, teams of astronomers are patiently looking for and tracking the millions of asteroids that whiz perilously past our planet each year. It's not an easy task.





"We believe there are about 1,000 near-Earth asteroids larger than one kilometre, of which we have detected about 90 per cent," says Reid, but "we estimate that there are maybe one million near-earth asteroids larger than about 60 metres, and we've located fewer than 10,000 of those. There is a lot of work left to be done." That's why the Canadian Space Agency's NEOSSat (Near-Earth Object Surveillance Satellite) was launched in December: to sweep the skies for asteroids, falling satellites and other space debris. If we do spot an incoming asteroid months or years in advance, we might even have the technology to avert the "rockalypse." "As far as I know," says Reid, "the more fantastical scenarios about sending a nuclear missile and blowing an asteroid up will probably not work. You could send a probe that would land on it, and fire an engine that would gently nudge the rock out of the way. You could paint one side, and reflecting sunlight can push it out of the way."

Ultimately, another giant asteroid will be on course for our planet. It's "just a question of time" says Reid's colleague Peter Martin, a professor at U of T's Canadian Institute for Theoretical Astrophysics. But in the next century? Unlikely," he says. "The big ones are rare," adds Reid. - JR



1859

1910

1938

police phone lines.

2000

Computer programmers



Rumours of doom circulated when a week-long geomagnetic storm filled even equatorial skies with crimson northern lights.

When the Earth passed through the tail of Halley's comet on May 19, thousands feared asphyxiation from cyanide molecules.

Radio show The War of the Worlds presented a fictional worked frantically to fix story about an alien invasion. software that was about to Hysterical callers flooded fail, unable to distinguish between 1900 and 2000.

The Mayan long count calendar rolls over, sparking predictions of a new, more spiritual era for humankind.

PROF. STEIN SAYS HER CHIEF **CONCERN IS THE TENSION BETWEEN A NUCLEAR-ARMED** ISRAEL AND IRAN

NUCLEAR WAR

More countries than ever have atomic bombs. Will any use them?

DESTRUCTIVENESS:

IMMINENCE:



INEVITABILITY:

Anyone who grew up during the Cold War and remembers the "duck and cover" drills taught to American schoolchildren understands that global nuclear conflict was once an underlying but grimly constant concern. Since 1989, that particular doomsday scenario has receded, thanks to warmer relations between the nuclear superpowers and significant reductions in their arsenals. But the intervening years have also brought an increased risk of regional conflict among the newer nuclear states, says Janice Stein, director of the Munk School of Global Affairs. Whether you think the world is any safer today than it was 50 years ago depends on whether you consider far fewer bombs in a greater number of hands to be a good or a bad thing.

Stein sees it both ways: fewer bombs, good; more hands, not. She says her chief concern today is the ongoing tension between a nuclear-armed Israel and Iran, which appears to be pursuing its own nuclear weapons. The chances of a standoff between Pakistan and India remains, she says although "15 years of mutual education about the dangers of a nuclear conflict there have resulted in a reduced threat." And she sees North Korea as a wild card on a peninsula "fraught with tension."

To reduce the risk of a nuclear detonation – either planned or inadvertent – the major world powers must do more to safeguard existing nuclear stockpiles and prevent additional countries from obtaining them, says Stein. The U.S. and Russia, especially (as well as the other long-standing nuclear states, China, the U.K. and France), have a responsibility to reduce their stockpiles. "The position that 'the countries that don't have nuclear weapons can't get them, but the countries that do have them can keep them,' is not consistent with a non-proliferation regime that can survive," she says.

Governments must also invest in a more robust regime for controlling the global inventory of nuclear weapons and who inside each country has access to them, says Stein. She notes that this is particularly true in Pakistan, where there is an unstable relationship between the civilian government and the military and where low-level fighting among tribal groups is common. "Leakage is a real possibility," she says.

The Iran-Israel situation needs to be defused, though Stein admits it's difficult to see how this will happen. "If Iran is indeed on the road to nuclear weapons, we could see a preemptive strike by Israel – on the theory that 'I'm going to hit you before you have the capacity to hit me back.' That dynamic is already at work." A nuclear Iran would heighten the risk of further proliferation within the region, she adds.

Fifty years ago, the U.S. and Russia defused the Cuban Missile Crisis with a secret agreement to deactivate certain missiles and open a Moscow-Washington "hotline." One might ask what would happen if a similar situation arose today. The specific circumstances would be different, of course, but would our leaders -whether in Russia, the U.S., Israel or Iran - know when to step back from the precipice? - SA

Welcome to the "Apopalypse"



The Smashing Pumpkins are counting the ticks in the "doomsday clock." Duran Duran asks, "What you would do if you knew this was your last day on Earth?" Britney Spears will "keep on dancing till the world ends." Apocalyptic themes in popular culture are an ongoing trend – from representations of the Rapture to the recent outbreak of zombie stories. The fascination with end times can be found in music, literature, film and video games. Director Roland Emmerich's 2009 film about doomsday - appropriately titled 2012 - is one of the top 50 highest grossing movies of all time.

"As a creative act, imagining 'the end' through popular culture can actually help us deal with the uncertainties of the future," says Eric Cazdyn, a professor of East Asian studies who writes about how cultures respond to globalization. "That process can be very liberating." According to Cazdyn, stories of unavoidable termination are important

because they paradoxically allow for a fresh start. At the end of 2012, the survivors of the global flood sight land on the horizon.

In dystopian fiction, on the other hand, alternate scenarios seem impossible. No matter what the heroes try, there are still zombies waiting at every corner for their daily serving of brains, or cannibals salivating for human lasagna. But in a genuine apocalyptic story, the catastrophic ending "signifies the chance for renewal," says Cazdyn. "That's why they can be strangely hopeful and beautiful and, in a way, even utopian."

If the idea of wiping the slate clean is uplifting, then that might explain the popularity of "apocalypse party" music among today's youth. But if the sky doesn't actually "fall down" and cause the "end of the world as we know it," then we might still have a good reason for Jay Sean and Nicki Minaj to happily "party like it's 2012." - NADIA VAN



RISING SEAS

Many of the world's coastal cities face severe flooding - unless we stabilize our carbon emissions soon

DESTRUCTIVENESS:



IMMINENCE:



We humans love our ocean views - so much, in fact, that 100 million of us live within a metre of sea level. This may brighten our collective mood, but the uplift could be fleeting. Dick Peltier, a University Professor of physics and an expert on global warming, notes that the UN's Intergovernmental Panel on Climate Change has predicted that melting ice and warming oceans could raise sea levels by half a metre by the end of the century. But some scientists have suggested that, based on newer models, the rise could ultimately be more than triple that. Such a scenario would inundate many coastal cities and much of the Netherlands and southern Vietnam, and put hundreds of millions of people at risk.

As gloomy as this sounds, we just don't know how bad it will be. Accurate predictions are difficult because none of our current models take into account all of the effects that warmer temperatures are having throughout the ecosystem. "The models can estimate reasonably well how the oceans will expand as temperatures rise, and how much melting is taking place, but none take into account the effect of melting on the rate at which land ice is moving to the sea." This is important because sea levels rise when land glaciers break off into the ocean; ice that is already in water - such as Arctic sea ice - does not boost sea levels when it melts.

There are also important "feedback" effects that are

difficult to measure. As Arctic sea ice melts, says Scott Munro, a retired geography professor at U of T Mississauga who specialized in climate and glaciers, the amount of solar radiation being reflected back into space decreases, causing more ice to melt. "The less ice there is, the less likely it is to sustain itself." Just a few years ago, scientists were predicting an ice-free Arctic in the summer by mid-century; some now think it could happen by the end of this decade.

So yes, global warming is dangerous. But civilization-ending? That depends. The psychological burden of forced relocation on 100 million people is troubling; the estimated economic costs, staggering. According to a 2009 report by World Wide Fund For Nature/Allianz, just a half-metre rise in the oceans by 2050 – would put \$28 trillion in assets at risk in the world's 136 port mega-cities, including New York, Miami and Shanghai. (By comparison, Hurricane Katrina, the costliest natural disaster in American history, caused about \$110 billion in damage; Hurricane Sandy, \$60 billion.)

The one bright side, if it can be called that, is that it would take millennia of higher temperatures for Antarctica, with its vast ice sheets, to melt completely. That scenario would raise sea levels by about 60 metres and wipe entire countries off the map. More imminent - though still centuries away is a complete melting of the Greenland ice cap, which would raise sea levels by about seven metres.

What's most troubling about this "incremental apocalypse," says Munro, is that we know it's coming, but seem incapable of preventing it. And the longer we wait, the worse it gets (even if carbon emissions were stabilized now, the seas would continue to rise for some time). The solution is easy to state, stubbornly difficult to enact: "We have a carbon-based economy, and we have to decarbonize it," he says. "Our whole way of life has to change." - SA

OIL SCARCITY

The world's economy runs on fossil fuels. But an empty tank is not the chief of our worries

DESTRUCTIVENESS:

IMMINENCE:

INEVITABILITY:

Running out of oil is a problem for the world, but not in the way most people think, says John Kirton, a professor of international relations at the Munk School of Global Affairs. Oil scarcity doesn't make his short list of apocalyptic scenarios, but he acknowledges that it could hasten - or exacerbate - a war involving nuclear-armed combatants.

On the issue of scarcity itself, Kirton is unabashedly optimistic. He believes the world has already embarked on a gradual and manageable transition away from oil to a broader suite of fuels. These include natural gas and electric power (for vehicles), and nuclear power and renewables such as wind, solar, biomass and hydroelectric (for heating).

So are those who have been promoting the "peak oil" theory wrong? Yes and no. In Kirton's view, there's little doubt that the supply of relatively cheap high-quality crude oil that we've been using for the past century has peaked - or soon will. But he observes that, as oil prices have risen, new supplies have come on stream. The U.S. and France are undertaking major developments of shale gas and oil and Canada's tar sands have become the "Saudi Arabia for heavy oil." These additional supplies, he says, will help ease the transition to a less oil-dependent economy. He believes conservation will also play an important role as automakers build more fuel-efficient cars, including electric and hybrid models, in response to stricter American standards coming into effect by 2016.

A complete transition away from oil will take until at least mid-century, though, and in the meantime, oil dependency is real and could be a factor in geopolitical conflicts. As an example, Kirton conjures a scenario based on recent events in which China imposes a naval blockade of Japan over a territorial dispute that could eventually draw in Taiwan, the Koreas and Russia. Although the genesis of a war would probably be territorial, oil – or the lack of it in a blockaded Japan – could quickly escalate the conflict. "This would be the world's second- and third-largest economies going to war with nuclear weapons in the mix," says Kirton. "We have no recent historical experience about how to handle this." Alternatives to oil exist; the question, then, is how smoothly we can make the transition. - sA



To read about how solar flares could short out the world's electrical systems, and the relative scariness of a zombie versus vampire invasion, visit www.magazine. utoronto.ca or download the U of T Magazine iPad app

WORLD HUNGER

The green revolution has helped feed a ballooning global population. But industrial farming is not sustainable

DESTRUCTIVENESS:

IMMINENCE:

INEVITABILITY:

How many people can the planet feed? Thomas Malthus, the English economist, predicted in the late-18th century that a growing population would eventually outstrip the Earth's ability to support it. What he didn't predict was the green revolution of the last century that has kept agricultural yields mostly on pace with population growth. But today, the United Nations estimates that 870 million people in the world or about one in eight – go hungry. Are we finally reaching Malthus's dire tipping point?

Harriet Friedmann, a professor of geography, studies food policies and how food is produced and consumed around the world. She believes there are significant flaws with the West's industrial farming system, starting with government subsidies that make meat products artificially cheap, and which send the wrong signal to consumers and farmers. "Our entire food system has grown up around a mode of consumption that's not sustainable for our current world population, much less a population at mid-century that may be 30 to 40 per cent larger than today's," she says.

Friedmann rhymes off other reasons why industrial farming is unsustainable: it uses too much water, fuel and chemical fertilizers; it devotes an increasing amount of cropland to corn and soybeans for animal feed and fuel rather than crops for human consumption; and it eliminates the small farm in favour of huge food-producing areas, which become agricultural monocultures. "It may seem that higher yields are achieved when land is converted from pasture to crops and when animals eat industrial feed," says Friedmann. "But it makes crop farming more dependent on fossil energy used to make fertilizer – and pesticides, because monocultural fields are a banquet for pests."

Climate change is also a concern. According to a 2008 report, the International Assessment of Agricultural Knowledge, Science and Technology for Development, higher global temperatures risk disrupting our food supply on several fronts: more frequent and severe floods and droughts; shrinking areas of habitable land and freshwater; and a higher incidence of many human, animal and plant diseases.

Friedmann says we need to refocus on land policies that preserve smaller farms, while also rethinking all of our policies around food consumption, food waste, and the renewal of soil and water - and linking them together. She suggests redirecting scientific research to collaborate with farmers, drawing on their skills. "We need to make decisions about our food system in a holistic way," she says. There's a lot to digest. - sa

RED GIANT SUN

The sun won't live forever so neither will our planet

DESTRUCTIVENESS:

IMMINENCE:

INEVITABILITY:

If humans do survive the many problems of our own making, we will eventually face a naturally occurring doozy - a lifeending problem so big, we'll have no choice but to flee the planet. At some point in the distant future, our sun will become too hot for life on Earth.

This is not a new problem: the sun is already about 30 per cent brighter than it was when the Earth formed 4.5 billion years ago. And, according to Ray Jayawardhana, a professor in the department of astronomy and astrophysics, we have about another billion years before most of the surface water on our planet turns into steam.

Even then, our cosmic evolution won't be done. About six billion years in the future, the sun will finish converting the hydrogen in its core into helium and will start burning hydrogen in a shell around the core. Its outer layers will swell into a huge globe 100 to 200 times the sun's current size - a red giant star. "It's likely to engulf Mercury and Venus, and come pretty close to the Earth's orbit for a bit," says Jayawardhana. "It's likely any kind of life we could think of today wouldn't survive."

Once earth is crisped and the sun reaches the end of its red giant phase, our star's core will collapse into a white dwarf, an "incredibly dense stellar cinder," says Jayawardhana.



As it cools over another few billion years, so will our planet, until Earth is a frozen, rocky wasteland. The end.

"It's a pretty dismal future in the very long run!" laughs Jayawardhana. Or, it's simply a deadline: roughly a billion years to figure out interstellar travel! - JR

Fvil Robots

Could the machines we create one day destroy us?



Just last year, IBM's "Watson" computer won TV game show Jeopardy. But could creating software that smart be a dangerous game? What if the United States' defence computers, for example, suddenly decide they have a directive to wipe out humanity? It's a popular sci-fi conceit, but could it actually happen?

"Computers can be evil if programmed that way," says Graeme Hirst, a professor in the department of computer science and an expert in developing systems that can process human language. He points to viruses that can turn home computers into spambots. Or the Stuxnet worm, which crippled Iran's nuclear program in 2010 and is widely considered to have been launched with the support of the American and Israeli governments.

People, of course, are behind these nefarious programs. "We can certainly imagine some rogue hacker able to do something really evil," says Hirst, "probably nuclear." But rogue robots? "No," says Hirst. "A computer by definition is not able to take a decision outside its programming."

That doesn't mean a computer can't do something its programmer didn't intend. "If a computer is going to bring down the world, it's going to do it because of human error," says Hirst. Not only are there honest mistakes - he cites the software programming error partly responsible for the blackout of 2003 - but "the big problem is that it's impossible, sometimes, to really predict what a program is going to do." If the program was created for a complex situation -perhaps to monitor the weather and control the floodgates of a dam - it's relatively easy for its human creators to overlook a crucial factor or interaction.

"Talking about [machine] sentience is unhelpful here," says Hirst. What matters is programming. And while programming eversmarter computers brings risks and challenges, they're ultimately still challenges related to human failings. Our fears of a possible computer-generated or computer-enabled disaster (let alone an "implausible" Matrixstyle enslavement to machines) are "just extrapolations," says Hirst, "of the current decade's thoughts about cyber-warfare and the role of computers in terrorism in general." The ability to choose between good and evil remains a fundamentally human characteristic. - JANET ROWE





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By Jason McBride Photography by Cindy Blažević

ENTER STAGE LEFT

Jeremy Hutton takes Hart House Theatre in a new direction

ON THIS SATURDAY MORNING IN LATE SEPTEMBER, the "Ladies Parlour Room" at St. Luke's United Church in Toronto's east end feels less like a space for genteel, tea-sipping women than the set of a Judd Apatow movie. Four young male actors are rehearsing a scene in which they're supposed to be drunk. They giggle, bellow and cavort about the large, broadloomed room. The penis jokes fly, the homoerotic horseplay is non-stop. A choir is practising next door and occasionally someone pops their head in to see what the profane commotion is all about.

If the choir members had stuck around long enough, they would have realized that what they'd caught a glimpse of was a scene from Romeo and Juliet. One of the play's more ribald scenes, perhaps – and its director, Hart House Theatre artistic director Jeremy Hutton, is cheerfully amping up the bawdiness. It's the 20th time he's been involved in a production of the Shakespeare classic. This time around he's set the play in a contemporary Italian slum, striving for an authentic and relevant rendition. Hutton has frequently told his actors that Romeo and Juliet is a play of adolescent rebellion, and he's urged them to think with their bodies, not their heads. And he's also been grappling with some of the outdated sexual mores of the original text. At the moment, he's going with "the raunchier the better." Dressed in torn jeans, a black hoodie

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and white loafers, he constantly gets up from a large crushed-velvet armchair to interrupt the actors. A masturbatory gesture is permitted, even encouraged, while Hutton deems a formal bow too anachronistic. He returns to his directing chair. "Many people have the mistaken belief that Shakespeare's clean," Hutton says, smiling and stroking his stubbly chin. "OK, let's take it from after the humping."

utton, who is 33, became the theatre's artistic director in 2010. This wasn't Hutton's first job at Hart House; he'd been performing with and directing at the theatre, off and on, for almost a decade previously. The first show he directed there, *Othello*, in 2004, was only the third he'd directed anywhere.

Theatre was not his first love, however. In Kitchener-Waterloo, where Hutton grew up, he was a gifted trumpet player, and he enrolled in U of T's classical music training and performance program in 1998. In high school, he had also taken up acting (Shakespeare's been a constant – his first small role was in *Macbeth*), and he continued to do so while still studying music. At university, it became apparent to him that theatre offered something music could not. "The classical music career is limited," he says. "It's very hard to get a symphony job and even if you get a symphony job, you're still freelancing. If I had to play Pachelbel's *Canon* at somebody's wedding one more time, I would have shot myself in the face."

Hutton found theatre a more liberating art form, as well, and more encouraging of new and experimental work. And it didn't necessarily mean leaving music behind. At Trinity College, he directed his first play – a contemporary version of *The Merchant of Venice* – and realized that his musical training and skills, even his time spent in a marching band, allowed him to do much more than just direct actors. Through sound, music and design, he could conjure an entire world. "I spend a lot of time with the actors," he says, "but my brain really likes to work on how the sound and the lights and the set work together to tell a story."

Hutton subsequently joined small companies geared toward young performers and theatregoers, the Classical Theatre Project and Canopy Theatre Company – the latter run by Hart House Theatre's general manager Doug Floyd – before becoming artistic director at the fledgling Toronto

Youth Theatre in the city's west end. There, he began to direct musicals – "I'm one of the directors in town who can actually pick up a musical score and read it," he says with characteristic self-possession – eventually doing almost 20 productions, including *Into the Woods* and *Little Shop of Horrors*, over a span of five years. Paolo Santalucia, who's playing Romeo in the Hart House production, was just 15 when Hutton first directed him in *Jesus Christ Superstar* at the youth theatre. "He's always approached his work very energetically," Santalucia says. "At the end of the day he's trying to make something fun and watchable."

During his time at the Toronto Youth Theatre, Hutton became a certified fight director – "There's a lot of fighting in Shakespeare," he says, "and I figured out pretty early that I would be a lot safer if I knew what the hell I was doing in the fight department." In the summer of 2004, and again in 2005, he decamped for Halifax. There, at Shakespeare by the Sea, he worked as an "everything man" (he wrote lyrics, acted, did fight direction) and in 2011 starred in a remount of the company's "collective creation," *The Adventures of Robin Hood.* The *Chronicle Herald* included it in their top-11 plays of the year, and one fawning blogger compared the blond, rangy Hutton to the actor Bradley Cooper. (Stephen Dorff might be more accurate.)

When Hutton was hired in 2010, Hart House Theatre hadn't had an artistic director for 30 years. Reviving the position was part of an attempt, according to Floyd, to move the theatre "forward artistically while providing a more coherent and unified artistic voice." Hutton, who acknowledges that the theatre's offerings then could range from the fantastic to the "not-so-great," applied for, and got, the job. Richard Ouzounian, the *Toronto Star*'s chief theatre critic, met Hutton when he was just an "advising director" at Hart House and echoes Floyd's sentiment. "Jeremy's trying to bring a consistency to the level of quality," Ouzounian says. "And what I like, too, is he varies the shows. He directs Shakespeare, of course, and is terrific at it. But he also does shows you might not otherwise see in Toronto."

art House Theatre opened its doors in 1919. From the start it was an integral part of Hart House, diplomat and philanthropist Vincent Massey's grand vision of a student centre. At the time, there was no drama program at U of T, and precious little professional, made-in-Canada theatre. But from nearly the beginning, the 500-seat venue (now 450), built under Hart House's quadrangle, was considered one of the premier amateur theatres in the country. Many of Canada's most eminent actors, directors and theatre professionals began their careers on its boards, including Donald Sutherland and Norman Jewison (see p. 45). Robert Gill, who's credited with launching the country's postwar theatre scene, served as Hart House Theatre's director from 1946 to 1965. For 20 years after that, it was the home of the Graduate Centre for the Study of Drama.

Despite such renown, Hart House, like countless other small theatres, has endured its share of financial setbacks. Following the Graduate Centre's departure, the theatre barely subsisted on student revues, rentals and touring stage productions. And it long depended on the university to subsidize its operations (that subsidy ended a couple of years ago). In 2000, when it looked like the theatre could go permanently dark, Hart House took over its management and launched an endowment campaign to raise \$7 million. In 2001, original programming was revived and over the next several years the theatre successfully returned to its roots as one that produced its own work. In 2008-09, box office sales increased over the previous season by about 50 per cent. The majority of the theatre's revenue now comes from box office, occasional rentals and alumni gifts. The theatre underwent a large-scale renovation in 2008, under the guidance of managing director Paul Templin, adding a theatre history display, new box office and permanent bar. Attendance for the entire 2011–12 season was 33,000; that season's highlight was Cabaret, which was sold out for almost its entire run, a record for the theatre since 2001 - a testament to Hutton's guidance.

Even though the theatre is situated squarely within the U of T campus, at least half of its audience comes from outside the university, drawn by Hart House's singular position in Toronto's theatrical ecosystem. Rarely reviewed by non-student media, and far from the turmoil that constantly afflicts the city's theatre community – this year alone has seen internecine fighting at the Factory Theatre, the demise of Dancap and the proposed razing of the Princess of Wales Theatre – Hart House Theatre enjoys an isolation that arguably allows for greater risk-taking. Even more importantly, its actors and artistic teams (save Hutton and Floyd) are volunteers or are paid honorariums, permitting it to mount productions of a size that many professional theatres simply can't accommodate. Ouzounian directed a production of *Jerry Springer: The Opera* at Hart House in 2009, an experience he says he'd love to repeat. "No one else could afford to do it," he says, due to the 30-plus-member cast and large orchestra, "except maybe the Canadian Opera Company and they're not going to do it."

utton's hiring in 2010 signalled a new artistic maturity for the theatre – or at least a new era of stability. Under Templin, Hart House had created a compelling admixture of work, typically producing four plays per season, and always including Shakespeare, a musical, a modern classic and something offbeat such as David Henry Hwang's *Yellow Face*, which blends fact with fiction. Hutton was brought in to maintain that successful formula while still gently testing the theatre's – and its audiences' – limits. For the 2012-13 season, he added a fifth production, the provocative, and not exactly crowd-pleasing, one-woman show *My Name is Rachel Corrie*. Hutton felt so strongly about the work – based on the life of a 23-year-old American student killed at a protest in Gaza –

Star Power







Hart House Theatre has famously been the training ground, both onstage and backstage, for some of the country's foremost theatre, film and television personalities. Some notables:

Donald Sutherland (BA 1958 VIC), arguably the country's most renowned living actor and the star of films as diverse as MASH, Ordinary People and The Hunger Games, played, among other roles at Hart House, Stephano in The Tempest. Of that performance, the Globe and Mail noted that he "illumes the low comedy scenes with a benign, blurry glow."

Producer and founder of *Saturday Night Live*, **Lorne Michaels** (BA 1966 UC) got his start as the director of the UC Follies comedy and musical revue at Hart House. He's described his time in the theatre as his happiest time at U of T. The theatre's lobby is named after him in honour of his financial gifts.

In 1948, **Kate Reid** (LLD *Hon.* 1989) performed in two productions directed by Robert Gill at Hart House: *Crime and Punishment* and *The Seagull.* Her subsequent acting career included renowned performances at Stratford, the starring role in Tennessee Williams' *Slapstick Tragedy* and as Aunt Lil in *Dallas*.

Raymond Massey, younger brother of Vincent, was known as one of the finest classical stage and film actors of the day – born in 1896, he died in 1983. He played Abraham Lincoln in the Broadway production of *Abe Lincoln in Illinois*, and starred in *Seven Angry Men* and *East of Eden*.

Canada's annual theatre awards, the Doras, are named for **Dora Mavor Moore** (LLD *Hon.* 1970), the doyenne of Canadian drama. Born in Glasgow in 1888, she arrived in Toronto eight years later and was the founder of, among other theatre companies, the Hart House Touring Players.

Before becoming internationally known as the empathetic mind behind some of cinema's most beloved and inventive stage musical adaptations – *Fiddler on the Roof, Jesus Christ Superstar, Godspell* – and the founder of the Canadian Film Centre, **Norman Jewison** (BA 1949 VIC) cut his directorial teeth at the theatre. – **JASON MCBRIDE**

"You want to nudge your audience, see if you can get them interested in new things"

that he squeezed in a five-day run in mid-October. "You've got to be careful not to alienate your audience. You don't walk into this job and say, 'OK, we're no longer doing a musical, we're just going to do these South American plays this year.' But you do want to nudge your audience, see if you can get them interested in new things, a different type of theatre or thought process."

As befitting his comprehensive CV, Hutton has a hand, sometimes many, in every production. He programs the entire season, of course, and selects all the directors and artistic staff. On most shows, he does the fight direction and sound design (that's his mellifluous voice telling you to turn your phone off). Every season, he directs at least one play himself. He sits in on all auditions and then personally responds to every single actor who makes the effort, whether or not they got the part. (Anyone can audition for a Hart House production, not just U of T students or alumni.)

He also revived the Hart House Players, a student-runand-directed theatre group, in which he guides aspirants in theatre management and production. While Hart House is not affiliated with any of the university's drama departments, Hutton makes a considerable effort to provide opportunities for the entire student body - especially those outside the drama programs. "There are a lot of student groups who rent out the theatre," he says, "and we make it a policy to help them out with the basics of production. You just never know where the next person with theatre magic is going to come from."

unning an amateur theatre can present its own peculiar Challenges. A week into the Romeo and Juliet rehearsals, Hutton, ironically, still hasn't been able to get the two principals in the same room. This Saturday, Juliet has to work, and Romeo's not around. Mercutio, for his part, has just lost his job at Medieval Times because the dinner theatre wouldn't give him the necessary time off for the rehearsals. Darwin Lyons, the 24-year-old actor who's playing Juliet, says that one of Hutton's greatest assets as a director is his openness and flexibility. "If I was at a major league theatre, with my age and experience, I wouldn't be able to play Juliet," she says.

Running an amateur theatre can also be akin to coaching a minor league baseball team – every now and then, someone will get called to the big show. The young actor Tyrone Savage, to cite just one recent example, who was in the chorus of Jerry Springer, moved into the lead during its revival production, and then, this past season at Stratford, received acclaim as Claudio in Much Ado About Nothing and the Duke of Gloucester in *Henry V*. Hutton, who likes to describe Hart House Theatre as "a place for emerging and developing artists," loves nothing more than to see his talent move on to bigger and better things.

He'll likely do the same in a year or two. His contract ends in April 2013. When I ask him what he'd ideally like to do next, he ticks off a series of goals unsurprising for someone already so accomplished. He wants to write a couple more musicals (a Robin Hood based on the Shakespeare by the Sea version, with music by Hutton, will be staged at Hart House in January); get one of those musicals produced in Stratford or New York; direct at larger, professional theatres and become more involved in the Toronto indie scene; maybe even do a bit more acting again. "How's that for ambition?" he says.

Jason McBride is a Toronto writer, editor and cultural journalist, and a frequent contributor to, among other publications, Toronto Life, Maclean's, The Grid and Canadian Business. He is also the non-fiction editor at Coach House Books.



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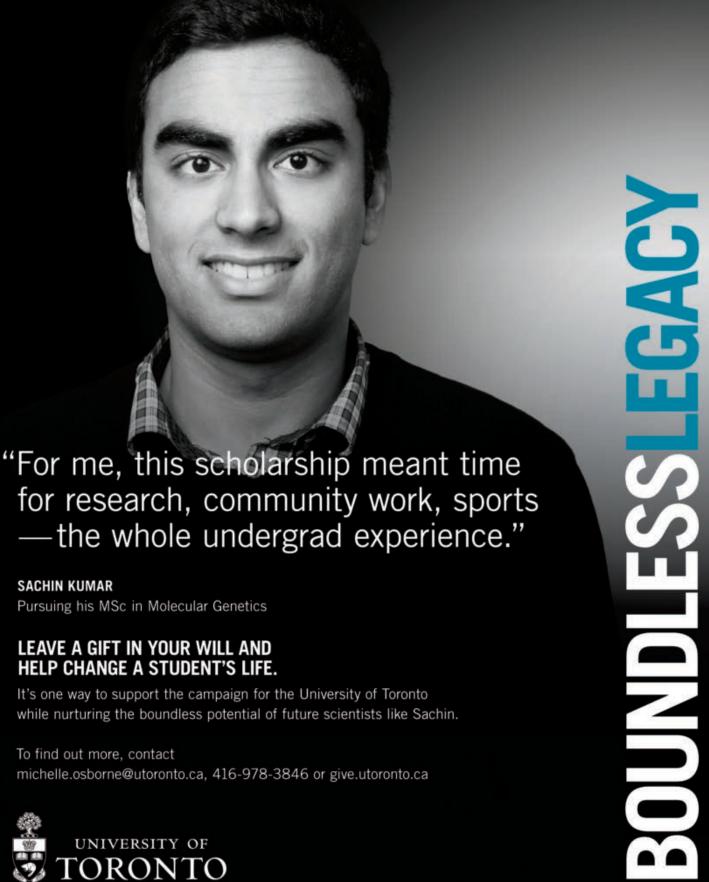
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We are grateful for the continued support of all our generous donors. We endeavour to make our lists as accurate as possible. For more information, or if you have questions about U of T's donor listing, please contact: Christine Concannon at (416) 946-5915 or christine.concannon@utoronto.ca.

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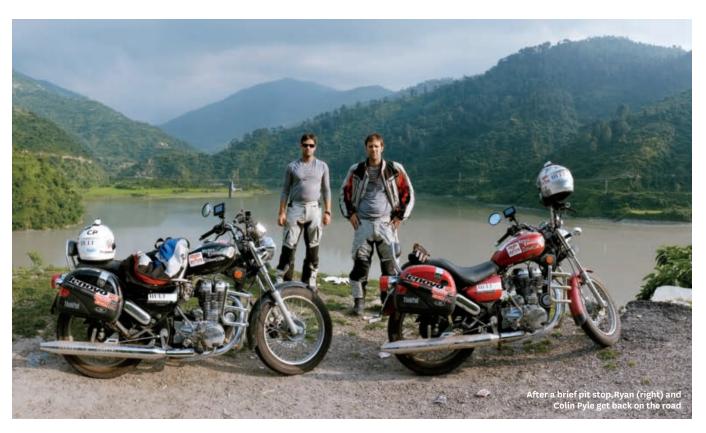
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All About Alumni

"It can be very emotional. I don't want to throw something at you, but I could be tempted"

Vass Bednar on shaking up public policy

p. 62



Eastern Riders

Ryan Pyle takes on India and China, with a thirst for adventure

JUMPING ON A MOTORCYCLE and roaring through a foreign landscape might not be everybody's idea of the best way to gain intimate knowledge of a country and its people, but Ryan Pyle (BA 2001 NEW) often takes the road less travelled.

"I don't think you can be a global citizen just because you have an Internet connection," he says, midway through an epic 14,000-kilometre ride, circumnavigating India with his brother Colin. "The world is a big and beautiful place... and if you really want to understand what's going on you have to go there."

But why by motorcycle? "You feel every bump in the road, you smell every smell," Pyle says.

The brothers made their first epic two-wheel journey around China, filming the ride for a TV series (still to air), produced through their own burgeoning production company. That 65-day trip earned them a Guinness World Record for endurance motorcycle riding (an accident, Pyle says, but a happy one) and opened his eyes to new and unexpected views of the rapidly changing country.

The hundreds of hours of footage of their India trip will also become a TV series. Besides chronicling the gruelling weather, dangerous roads, vehicle breakdowns and days-long traffic jams that have made the brothers closer, Pyle hopes to show the value of being "in front of something that you're trying to tell a story about." For example, he says, "I think the most powerful moment of the trip so far, for me, was at Amritsar and seeing the devotion of the people visiting the stunning Golden Temple."

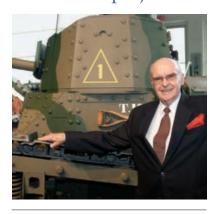
Driven by a thirst for adventure, Pyle, 34, left his hometown of Toronto more than a decade ago. His studies in international politics at U of T sparked his wanderlust.

PHOTO: CHAD INGRAHAM/G219 PRODUCTIONS WINTER 2013 57



To Serve and Restore

Richard Iorweth Thorman and the M1917 tank project



AT 83, RICHARD IORWETH THORMAN (BCom 1952 VIC) is too young to have served in the Second World War, but he believes strongly in educating young people about Canada's military history. No wonder he stepped up when he heard that the Canadian War Museum wanted to restore a tank that played an important role in the war. While he won't reveal the exact figure he donated, "It wasn't cheap!" he admits.

The six-ton M1917 tank is rare today - there are only two left in Canada and 19 in the world, says Thorman - but in 1917, it was the first tank to be mass-produced in the United States. It never saw combat, arriving in France after the armistice. But in 1940, the tanks had a revival when Canada bought 250 for troop training.

What's more, the M1917 set the pattern for today's 45-ton behemoths. "It was the very first tank that had the rotating turret at the top, the engine at the back and the people compartment in the front," says Thorman. "And that's exactly the way they build tanks today."

For years, Thorman's tank had been used to haul logs for a forestry company in Bracebridge, Ontario. The original transmission and turret were long since gone. Holes had been drilled to accommodate logging gear. Using the vehicle's original plans, the museum worked with a defence manufacturer in Ottawa to rebuild the missing parts, while staff and volunteers helped restore what had survived.

Thorman served as an Air Cadet at age 13 in 1942, and later, at U of T, earned his commission in the artillery through the Canadian Officer Training Corps. His academic classes included many war veterans. "I was definitely old enough to never forget those who had fought for Canada and the freedoms we believe in," he says.

And there are many ways to serve your country. Thorman's own philanthropic efforts, which have also included founding scholarships and bursaries at U of T, were rewarded in the fall with a Queen Elizabeth II Diamond Jubilee Medal. - JANET ROWE

OVERHEARD



Hearing 'it can't be done' is all it takes to get an engineer motivated.





Lacavera (BASc 1997) motivates 1,400 first-year engineering students at on September 6

He describes a second-year Introduction to Modern China class as getting him hooked on China; three years later he was living in Shanghai.

Based in China ever since, he's made a name for himself as a photographer – for the New York Times, Time, Newsweek and more. On-the-ground reporting is an increasing rarity in a news media that's slashed international coverage under the pressure of shrinking budgets, but for the self-taught photojournalist, "the idea that someone can report on some news or have an opinion about something without having actually been there just boggles my mind." For example, Pyle's image of a couple mourning at a backyard shrine they built for a son killed in a factory explosion is a vivid illustration of the costs of rapid industrialization.

He hopes his work will help fill in more of those gaps. He wants The India Ride, like The Middle Kingdom Ride before it, to present a more sustained view that short-term, drop-by news coverage just can't capture. He concedes the motorcycle-ride series are as much entertainment as they are educational, but as he develops his TV work he hopes to go deeper, as he's done in his still photography.

And other than the germ of an idea – to return and explore his own country by motorcycle - Pyle doesn't expect he'll ever come back to his quieter Canadian life. The plan instead is to keep exploring, and finding ways to tell the longer, bumpier story. - LISA BRYN RUNDLE

See Ryan Pyle's photography at ryanpyle.com.



According to Wedding Central Australia, it takes between 40 and 60 hours to sew a wedding



The Lives of Others

Learning to sew or wield a chainsaw is all in a day's work for writer Ian Williams

IAN WILLIAMS IS LEARNING TO SEW. But the poet and short story writer isn't planning a career as a tailor; he's developing the main character in his first novel. "The first part is about a woman who is sewing her own wedding dress," he explains. "And something really terrible happens..."

Diving into a character to the extent of learning her profession is a clue to how Williams creates the vivid characters and intimate, intense stories that won him, with Not Anyone's

Anything (2011), the Danuta Gleed Literary Award for a best first English-language short story collection. "When I attempt to venture beyond my imagination and ground the character in a real experience, I find that I can develop a more authentic, complex character."

For Not Anyone's Anything, he cut down trees in New Hampshire with a chainsaw and audited Korean classes at U of T. The resulting stories leave readers rattled and transformed, and garnered Williams not just the \$10,000 Gleed prize but inclusion on CBC's 2012 list of 10 Writers to Watch.

Williams (BSc 2000 VIC, MA 2001, PhD 2005) first planned to become a psychiatrist. But an English professor in his first year, Julia Reibetanz, inspired him so deeply that he changed his major to English, then went on to do his two graduate degrees in English. "She was almost mythical to me," he says. "When I read poems in my head the voice that I hear is often her voice." (Williams has also published two books of poetry, Personals and You Know Who You Are.)

Williams uses devices such as music and flashcards: one story comprises two different narratives, running parallel to each other across the pages. And indeed, he says, for him "50 per cent of writing is a technical challenge" – which includes plot and drama as well as creating a "fresh, 21stcentury form." But equally as important are characters with a "heart condition" – a quality of deep, intimate identity. "It's not just emotion; not just packing a story full of anger or happiness," Williams explains. "It's to replicate that quality you can sometimes experience when you're just falling asleep, when you're somewhere in between consciousnesses... completely set apart, the only person in the universe. I try to get that level of truest privacy in a character."

The search for that "truest privacy" is what, in the case of his novel-in-progress, sends Williams to the sewing machine. "I learned what a dart was a month ago." - KATHY ULLYOTT

Music from the Heart





In October, two U of T alumni made their debut performances with the Toronto Symphony Orchestra: Shalom Bard (who became the TSO's Royal Bank of Canada resident conductor in June) and baritone Jonathan Estabrooks, who soloed in "Some Enchanted Evening: The Music of Rodgers and Hammerstein."

Bard (BMusP 1996) began studying music with renowned clarinetist Joaquin Valdepeñas after moving to Canada from Israel in 1990, and continued his musical education at U of T, where Valdepeñas taught in the Faculty of Music. Part of Bard's role with the TSO will be conducting the Toronto Symphony Youth Orchestra, where he hopes to foster the same love for music that Valdepeñas inspired in him. "To guide young musicians on their musical

journeys and encourage them to play with their hearts all the time - that's all I want," he says.

Dubbed by the New York Times as a "robust baritone," Estabrooks (BMusP 2006) participated in theatre groups and the local opera company in Ottawa prior to attending U of T's voice program. He and his brother, Bryan (BMusP 2002), both received classical music training - together, they form the Estabrooks Brothers, a duo that fuses elements of pop, soul, big band, brass and vocals. "It's a lovehate relationship with the two of us," Estabrooks jokes. "But it's just amazing because our work is our passion - we live and breathe music every day." - NADIA VAN

Listen to Estabrooks sing at magazine.utoronto.ca.



The U of T Libraries catalogue returns more than 1,400 hits for "love letters," including Dearest Émilie: the Love-Letters of Sir Wilfrid Laurier to Madame Lavergne

THE TWO OF US

Pauline Chan and Keith Thomas

Friendship came first for Pauline Chan (BA 1987 TRIN), a CTV news anchor, and Keith Thomas (BASc 1987, MA 1989), CEO of Vive Nano and a member of U of T's Governing Council.





PAULINE: I first laid eyes on Keith during a rehearsal for *The Bob*, Victoria College's theatre review. He was playing a character named "Slime," but he didn't live up to the name. We became friends. After graduation, he worked overseas and then came

back to Toronto. He saw me on TV and called to say hi. I had tickets to a contemporary ballet, and he told me he loves dance. I was immediately suspicious about a man so eager to attend the ballet but I invited him anyway! That night, I was late arriving and so we barely talked for the first few hours of what turned out to be our first date. But once we did start talking, we had a great time, and I was reminded that he was always a really nice guy. We have similar values and senses of humour. Which isn't to say that we don't have squabbles – but differing tastes in food and men's ties are minor things.

KEITH: We've been together for 20 years, and married for 15. Some people date first and are friends second, but I really, really liked Pauline first. She has a great way of dealing with people and there are so many ways we just clicked. We're both kind of nerds. We both love *The X-Files* and *Star Trek*. We both grew up in Toronto, and even though her background is Filipino-Chinese and mine is Irish, there were a lot of similarities in the way we grew up. Our parents had the same dining room table, the same dishware, even the same cookie jar. We really enjoy travelling together, and our most memorable trip was our honeymoon in South Africa, shortly after the end of apartheid. We toured Robbin Island, visited the ghettos in Soweto and rode on ostriches. It was tough during the years when we worked different schedules, but we now have the evenings for quality time with our two kids.



She Loves You

Lindsay Zier-Vogel (BA 2005 VIC, MA 2007) has written 1,100 love letters - and has left every one for a stranger to find. It all began in 2004 when the U of T student, writer and artist tried a poem-writing exercise in the park with a friend and, on a whim, decided to leave the results behind. "We hid them in phone booths, and in magazines, and in a bin of cherries. It was so much fun," she says. The next year, she wrote odes to books and hid them in Robarts Library. (A PhD student turned one up this year.) Last summer, with a \$1,000 grant from the Awesome Foundation, she set up booths across the city, inviting people to share what they love about Toronto on paper - and secretly, with strangers.

Zier-Vogel left her latest poem at Victoria University in late September, but she won't check to see if it was found; she never does. "Potential excites me like nothing else," she says. "Of what might happen or who might find it. I love that 'who knows?' aspect."

- JANET ROWE

Read Zier-Vogel's love poem to the staircase at Old Vic at magazine.utoronto.ca.

All About Alumni



FIRST PERSON

Nightmare in Nanking

Diana Tso has written a play to draw attention to an atrocity against the Chinese people – and deliver a message of reconciliation

ON DECEMBER 13, 1937, THE JAPANESE IMPERIAL ARMY captured the Chinese city of Nanking (now Nanjing). Within six weeks, the soldiers slaughtered an estimated 300,000 Chinese civilians and raped as many as 80,000 girls and women. These horrific atrocities became known as the Rape of Nanking.

I was born in Canada to Chinese parents. From elementary school through university I learned about the Second World War, but only about events in Europe. It was at home that my parents told me about the war in Asia. My mother remembered sitting on her father's shoulders as people rallied in Hong Kong to raise money to defend against the Japanese army. My father said he had been chased and kicked by Japanese soldiers in Shanghai every time he and his mother left

I decided to write a play as a way of giving a voice to those who could not - or would not - speak for themselves the protected French Quarter to buy rice. They spoke about the cruelty of the invading soldiers but never of the Rape of Nanking. Only in 1998, after stumbling upon Nancy Tong's documentary *In the Name of the Emperor*, and meeting Iris Chang, who wrote *The Rape of Nanking*, did I learn about the depths

of what had happened to my ancestors during the Second World War. I was shocked and angry that so little had been said about this "forgotten Holocaust" and that there had been no compensation for the victims of Nanjing from the Japanese government, which long denied responsibility.

I decided to write a play as a way of giving a voice to those who could not - or would not - speak for themselves. However, my Chinese and Japanese acquaintances were not prepared to share their stories; there seemed to be a collective amnesia when it came to the topic of Nanjing. My parents cautioned me that the Chinese community would not come to see a play like mine because those who had suffered through the war did not want to relive it. Yet I persisted – in the belief that there can't be healing or reconciliation without discussion. Slowly, my family began to open up. During the Japanese occupation of Hong Kong, students at my mother's school had been segregated. One day, my mother said, she crossed the white chalk line in the playground that divided the Chinese and Japanese students in order to help a Japanese girl who had fallen and hurt her knee. I included this scene in my play to shine a light on how compassion can conquer the hatred bred by war.

In January 2008, I visited Nanjing for the first time and met Chang Zhiqiang, a Nanjing survivor. Mr. Chang, then almost 80, was 10 years old when he witnessed a soldier stab his mother with a bayonet. Before she died, she motioned to Chang to find his baby brother, whom she could hear crying. Chang found the infant crawling on a patch of snow stained with blood and brought him back to his mother. This haunting image became the title for my play, *Red Snow*. Later, Mr. Chang took me to Swallow Cliff, one of the sites of the massacre. This was where the citizens of Nanjing were taken and told they would be set free. Instead the soldiers forced thousands to plunge to their deaths in the Yangtze River. I looked down into the water, remembering the photos I'd seen of bodies washed up on the banks below. I thanked and hugged Mr. Chang and got on the bus. As I headed back to my hotel, I broke down in tears and resolved to finish my play.

Red Snow premiered in Toronto last January and in Shanghai in November, and I hope to take it to other parts of the world as well. The play has been submitted to theatre festivals in Turkey, a country where those aware of the challenges of facing up to the Armenian genocide may find a meaningful affinity in Red Snow's message of truth and reconciliation. I hope my story will open dialogue between communities, inspire others to break the silence, give back voices to those who were silenced and contribute to our much-needed collective healing.

Diana Tso (BA 1990 NEW) is the playwright and producer of Red Snow.

PHOTO: ALEX FELIPE WINTER 2013 6



Public policy idea proposed by Vass Bednar on her blog, vicariousass.com: co-ordinate door-knocking activities by paying Girl Guides, trick-or-treaters or cancer canvassers to collect census data

60 SECONDS WITH

Vass Bednar

Agent of change



If Vass Bednar (MPP 2010) has her way, the decision-making that affects us all – about, say, health or education policy or public safety - will be a lot more accessible and a lot more fun. Bednar, currently manager of engagement at U of T's School of Public Policy and Governance, is also a fellow in the Action Canada leadership program. She's launching a career in public policy (a field that encompasses all the rules and regulations that govern our public lives), and you get the feeling when she's in charge, things are going to change. Here, Vass Bednar encourages interviewer Lisa Bryn Rundle to speak up.

How can a person adore public policy? For me public policy is medicine for the state; it's how we make things better together. And that's very compelling to me.

Did you have a defining public-policy moment growing up? There was a time I was bike-riding as a six- or seven-year-old kid, and I was concerned because there was a ravine with just one small safety rail. And I was like, "Mom, we have to do something. Kids could fall in this river." My mom helped me write to the mayor. And he put up two extra rails.

Such early success! If you could change one thing about how policies are devised, what would it be? I'd like to see more pie-in-the-sky thinking. Because when we're fantasizing we get to our ideal scenarios and we can use policy to help realize some of those.

So, what's one of your public-policy fantasies? It would be that you're in a grocery store. And all of a sudden there are lights flashing and it's like – "This is a policy emergency!" And for the next three hours, you and everyone else in that grocery store are workshopping a solution to a public problem.

I love that - but I've got things to do. OK, you do just an hour of power. With snacks. You're working on a board game called WONX. How do you play? One person's the federation and other people are provinces. It's competitive but also co-operative. As a province you have private goals that may be incompatible with the public goals, and it's up to you whether you're going to disclose them.

How do you win? I don't know yet. There's no "end game" in federalism.

You blog. Should more policy-makers engage the public in informal ways? There's this idea that everything around public policy has to be serious and devoid of emotion, and I'm not into that. I want to scrap with you. I want to tear up. I don't want to throw something at you, but I could be tempted. Why are we always trying to take out the emotion in public policy? It can be very emotional.

Watch for WONX on Kickstarter.com next year.

Milestones



Canadians cheered as **Rosie MacLennan** (BEd 2011) bounced into the world spotlight in August, picking up Canada's only gold medal of the 2012 Olympic Games, in trampoline. The champion is currently back on campus, studying for her master's degree.

Former U of T chancellor **Henry**"Hal" Jackman (BA 1953 VIC, LLB 1956) donated \$10 million to the Faculty of Law Building Campaign in October, the largest gift ever made to the law school. "A great city such as Toronto deserves a great university," says Jackman, "and we have it."

For work on designing a low-cost toilet for the developing world and proposing a theory of schizophrenia, respectively, **Sami Khan** (BASC 2012) and **Erin Ramsperger** (BSC 2012 TRIN) won 2012 Undergraduate Awards, given to recent grads, in Ireland, in November.

In September, President David Naylor presented the 2012 Arbor Awards, which recognize outstanding volunteer work by alumni and friends of U of T. OISE's Danielle Lobo (BPHE 2009, MEd 2012) was honoured for promoting and fundraising for the Black Students' Association and the Faculty of Kinesiology and Physical Education's Namibia Scholarship Program. Jian-Feng Shi (MASc 2004) won an award for teaching at U of T's engineering summer camps for international high school students and developing a bursary program. George Butterfield (BA 1961 TRIN) was lauded for spearheading the installation of solar panels on the roof of the Gerald Larkin Building. The panels are so efficient Trinity College saves \$22,000 each year - and directs the money to student aid.

Read about all 91 Arbor Award winners at www.alumni.utoronto.ca/arbor.

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Time Capsule



March 1947

Practising courtroom skills was a lot more fun in the days of student pranks In 1947 two law students named Pat Teney and Babs Flint staged a mock fight outside the law school to provide evidence for a moot court, a simulated trial. The student press covered the event with avidity, devoting no fewer than eight articles to the story, and climaxing with a true tabloid teaser: "Law Babes Brawl...Ousted Queen, Bitten and Scratched By Blonde Spitfire."

These days moots are much more serious business. They give students an opportunity to practise their oral advocacy skills in front of a discerning audience that sometimes includes judges from Canada's highest courts. Every law student participates, and especially enthusiastic mooters often compete at the national and international levels.

But Teney and Flint may have had more fun. It all started after Teney won a popularity contest – "The Girl We Would Most Like To Be Called To The Bar With" – and Flint, who came second, pretended to be outraged. She told a *Varsity* reporter Teney had packed the poll with her friends and

called her a "cheap chorus girl" and an "insignificant freshie." Within days, the two former friends were punching, scratching and pulling hair in front of the law building (then on St. George Street).

Accusations flew and the two women agreed to settle their differences in a moot court held March 5, 1947, in the Junior Common Room of University College. They were each represented by two student lawyers.

These days, mooters are judged on performance and a verdict isn't always given. But in 1947, the court handed down a swift and somewhat surprising bit of justice. After deliberating for 14½ minutes and hearing from at least eight witnesses including a "pseudo-psychoanalyst" and actress Charmion King (BA 1947 UC), the jury acquitted Flint of libel and slander, but convicted Teney of assault. Her punishment? The purchase of two tickets to the law school's 60^{th} -anniversary banquet at a cost of \$2.50 each.

- BRENT LEDGER

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