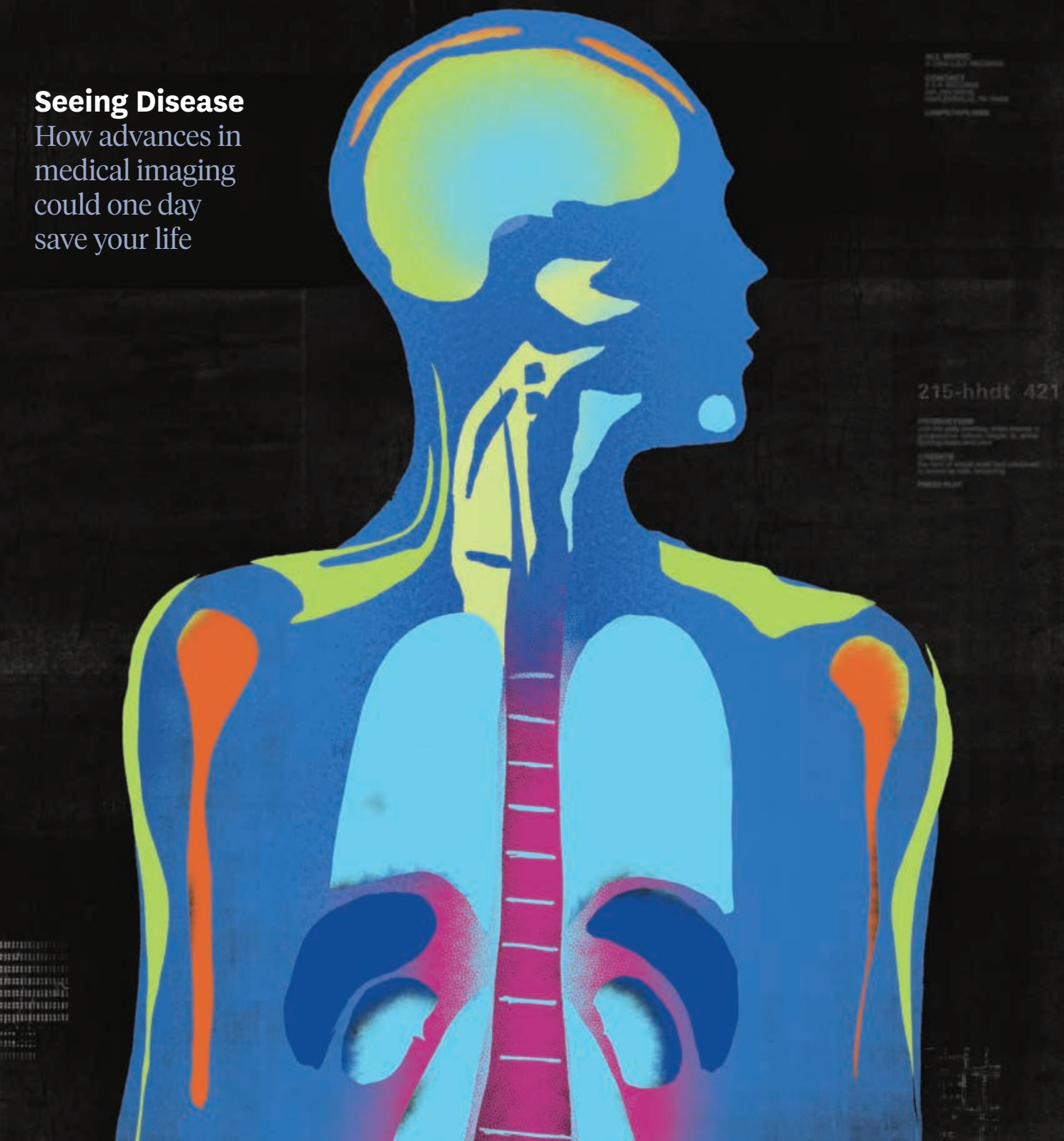
Planet Hunters Does life exist on other worlds? / **Money Votes** Politics and the 1% / **Class Struggle** Keeping kids in school
Frye's Anatomy Remembering a scholar / **Internet for All** The $50 tablet / **Power Plants** Blueprint for an artificial leaf

U of T Magazine

SPRING 2012



Seeing Disease

How advances in medical imaging could one day save your life

Our alumni are drawn to Kenya for all the little reasons.

Manulife Financial supplied the building materials. Free the Children organized the project. And last February, 25 alumni and friends of the University of Toronto helped build a school in rural Kenya.

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What are affinity products? Services like the personal insurance options offered by Manulife Financial. More than 100,000 alumni now take advantage of U of T affinity products. The revenue generated supports alumni and educational initiatives on campus and around the world.

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www.affinity.utoronto.ca

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Spring 2012

Volume 39, No. 3

Northrop Frye with his wife, Helen Kemp Frye

34 Frye's Anatomy

To his students, Northrop Frye was a master lecturer and intellectual god. One-on-one, though, he could be difficult to read

BY ALEC SCOTT

UofTMagazine

SPRING 2012 VOLUME 39 NO. 3

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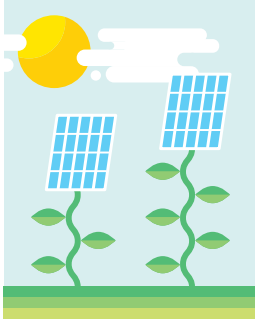
Departments

I think even today black students have to prove themselves by working harder

– Beverley Salmon, who, along with her family, created the Dr. J. Douglas Salmon Award for Black Medical Students, in honour of her late husband, p. 18



23 A blueprint for making an "artificial leaf"

49 Suneet Singh Tuli (BASc 1990) has engineered a $50 tablet computer for the developing world

15 As co-founder of the Nspire Innovation Network, fourth-year engineering student Yasmin Razavi helps young entrepreneurs start their own businesses

Letters

During 60 years of ordained ministry I have seldom seen the media treat a controversial faith issue fully and fairly.

REV. AL REIMERS
MEd 1971, WELLINGTON, ONTARIO

Re-examining Health Stats
I found "Saving Lives, One Death at a Time" (Winter 2012), about Dr. Prabhat Jha's research into public health in India, both profound and fascinating. Dr. Jha's research has important ethical, political, social and economic implications: it made me wonder what other official international public-health statistics need to be re-examined to ensure that health policy and funding are meeting a population's real health needs.

TAMARA MASSEY
BEd 2000, TORONTO

Understanding Violence
It is fortunate that enlightened researchers such as criminology PhD student Alexandra Lysova understand the concept of including all stakeholders in any process that involves divergent groups of people ("Always the Victim?" Autumn 2011). Seeing the police not as Big Brother but as an important element of the community shows that Lysova is thinking outside the proverbial us-them box. By understanding *all* the elements of domestic violence, police officers are able to make more educated judgments when called to the scene and are better equipped to eliminate or reduce future occurrences within that particular partnership.

LANCE NAISMITH
BA 1997 WOODSWORTH, OAKVILLE, ONTARIO

A Higher Source
I hope that one of the Munk School Fellowships in Global Journalism ("A Head Start for Global Journalists," Winter 2012) will go to someone who has a personal faith – and a deep knowledge of other people's faiths. During 60 years of ordained ministry, I have seldom seen the media treat a controversial faith issue fully and fairly. I think this happens partly because few editors consider religious differences important and partly because few reporters know history and theology well enough to understand why people feel strongly about their religion.

REV. AL REIMERS
MEd 1971, WELLINGTON, ONTARIO

Dedicated to Science
"Antarctica's Intrepid Explorer" (Winter 2012) draws our attention to the fact that U of T grad Sir Charles Seymour Wright was a member of Robert Scott's 1910–13 Antarctic expedition. Wright was not chosen as one of the members to push on to the South Pole – a decision for which he was no doubt grateful. Everyone knew that the polar team had perished, so grimly discovering their bodies several months later was no surprise. Finding that they, despite their predicament, had not abandoned the 35 pounds of important rock samples was mute testimony to their dedication to their other task: the scientific exploration of the continent. One hundred years later, their bodies remain there on the Great Ice Barrier.

GEOFF RYTELL
BEd 1975 OISE, TORONTO

Gazumped!
Regarding "Lingo" in Winter 2012: I was an unhappy victim of gazumping when buying a home in London in 1980. It cost me an unexpected 10,000 pounds. However, contrary to what the article states, this miserable practice is not found throughout the U.K. In Scotland, much like in Canada, a signed offer to purchase is final. Let's give due credit to the Scots!

PHELPS BELL
BA 1953 VICTORIA, MComm 1955, TORONTO

Endangered Discipline
I read with dismay "Literature Junkie" (Summer 2011), about English professor Nick Mount, "who connects English lit to pop culture."

When I was privileged to study at University College in the 1950s, students who matriculated in the arts were able to acquire something then called "culture" (not in today's broad sense) – a kind of literary-historical education with exposure to the great achievements of mankind. Today it is possible, even at reputable universities, to obtain a degree in literature without ever having read a word of the Bible, Virgil, Dante, Shakespeare or Goethe, by selecting useless "cinch courses."

The admission of such courses to North American universities has been devastating to serious historical disciplines, now an endangered species. The politically correct substitution of a justifiable canon of great books with ephemeral, worthless and even harmful

trivia is destroying the humanities under the pretext of "diversity" – dear to administrators, who wish to be all things to all people.

WARREN KIRKENDALE
BA 1955 UC, PROFESSOR EMERITUS,
UNIVERSITY OF REGENSBURG, ROME

Traumatic Delivery

I was distressed to read Brittan Coghlin's story "Delivered" (Summer 2011), which won *U of T Magazine*'s short story contest. The story takes considerably more license with the truth than many TV dramas!

First, the author failed to make any mention of anesthesia during labour or the caesarean section. I can only assume that neither the contest judges nor the author had ever experienced or attended such an operation. The anesthesiologist is vital to provide pain relief and resuscitation, and can even advise an inexperienced obstetrical surgeon. Certainly no "team" is going to "splay Serena out naked on the operating table, strapping her arms down as if laying her on a cross."

Second, I have never seen a white linoleum floor in any operating room or delivery room.

Third, after a traumatic delivery, the anesthesiologist is often needed to resuscitate and even ventilate the baby if the pediatrician hasn't yet arrived.

This story could scare any woman even thinking of pregnancy. I strongly advise every woman and her partner to attend free prenatal classes and discuss all possibilities with her nurses and doctors. Expectant parents can take comfort that Canadian maternal death rates are half what they are in the U.S. – mainly due to Canada's system of universal medicare.

DR. ELIZABETH OLIVER (MALONE)
MD 1957, NIAGARA-ON-THE-LAKE, ONTARIO

Brittan Coghlin responds: Readers may be interested to know that I am a registered nurse who has worked in labour and delivery. Though the events are representative of an emergency scenario, and are luckily uncommon, they do represent real, lived experiences. There was no mention of an anesthesiologist (I left out other medical details, too), because this did not serve the story of these two women. Ultimately I was writing fiction and not a medical text or public health announcement. This was a story that focused on the work of a nurse; all too frequently the limelight goes to others.

Distinctive Strength

Exciting, dynamic growth is happening at U of T's east and west campuses

SCARBOROUGH AND ERINDALE COLLEGES OPENED their doors in the mid-1960s as small extensions of the Faculty of Arts and Science. Over the decades, though, their transformation, like that of the Toronto region, has been truly remarkable. Even fairly recent graduates returning to the east and west campuses for Spring Reunion this year may be surprised to see how many impressive new buildings have sprung up and the variety of new programs being offered.

Today, with about 12,000 students each, and a mix of undergraduate and unique graduate programs, U of T Scarborough and U of T Mississauga have become mid-sized universities in their own right, and, within Ontario, are on track to rival Wilfrid Laurier and Queen's in total enrolment. Although they operate somewhat independently, U of T's three campuses together make up a single university, and therefore share important common ground: high academic standards; excellence in basic and applied research; unified graduate programs that ensure consistently strong scholarship; and a mission to provide undergraduates with an excellent academic experience that promotes personal initiative and open inquiry.

One can obtain a top-notch general arts education at UTM and UTSC, but the east and west campuses have also developed their own distinctive strengths in undergraduate programs that complement offerings at U of T St. George and offer unique resources to their local communities.

For example, many Canadian pharmaceutical and bio-tech companies have major operations in Mississauga. They work closely with UTM's researchers to generate and test innovative new medicines and train industry professionals. Opportunities for collaboration will grow with the opening, last fall, of UTM's new Terrence Donnelly Health Sciences Complex, which includes a new medical campus – one of just 18 in Canada.

Indeed, various knowledge-based industries in Mississauga draw on UTM's unique professional graduate programs. These programs offer students deep, sector-specific training in such areas as bio-technology, finance and accounting, sustainability and innovation management. The goal is to educate industry experts who are capable of guiding innovation and economic development for a variety of emerging fields.

Like its counterpart in the western Toronto region, U of T Scarborough is enhancing its graduate program offerings and enrolment in areas where it already shows strength – particularly in environmental sciences, conservation and climate change, as well as clinical psychology and brain imaging.

UTSC's long-standing involvement in co-operative education gives it another key advantage, differentiating it from its campus siblings – and from most other universities in Ontario. In today's tough economic conditions, many employers are looking for university graduates who bring to the table a strong intellectual foundation and valuable career experience. UTSC has been a leader in co-operative university education for three decades, offering students strategic placements in some 40 programs spanning the arts, social sciences, business and international development. At the same time, U of T Scarborough has developed innovative undergraduate programs in the humanities and social sciences that attract some of the best students from the region.

Both UTM and UTSC are making internationalism a key strategic direction. Building on several strong international programs already on offer, UTSC has recently launched new programs in Global Asia Studies and African Studies, and is increasing its co-operative education initiatives with international placements. Students at both campuses, meanwhile, are teaming up with professors in their area of specialty to conduct research abroad. Both campuses are also becoming hubs for arts and culture, with programs that build on the rich multicultural dynamic of the surrounding communities. Partly because of their cultural context, UTSC and UTM are also becoming magnets for international students, who now have three ways to enjoy a Canadian university experience in a truly cosmopolitan region while earning a globally reputable U of T degree.

As UTSC and UTM mature into institutions that are at once local and global, they are becoming key drivers of higher education, research, innovation and prosperity in the east and west GTA. And as part of a truly regional University of Toronto system, with three wonderfully distinct campuses – they will continue to be distinguished by their academic rigour, excellent faculty and staff, bright students and commitment to providing an outstanding university experience.

Sincerely,
David Naylor

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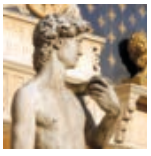

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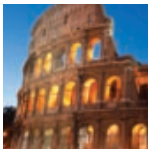

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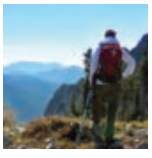

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Germany
Nov 23 – Dec 1
$4595 + AIR

Calendar

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

JUNE 7

U of T Sports Hall of Fame

U of T Sports Hall of Fame honours and preserves the great athletic traditions at the university. Each year, former individual athletes, teams and team builders are inducted based on their impact on competitive intercollegiate sport. To read about past and present inductees, visit www.varsityblues.ca and click on "hall of fame" under "traditions." Tickets: $30. $15 for children (12 and under). Reception: 6 p.m. Ceremony: 7:30 p.m. Hart House, 7 Hart House Circle.

For tickets, please call **416-978-8849** or visit **www.uofttix.ca**.

Alumni

April 15
Vancouver
Alumni Group of Vancouver. Sunday brunch and tour of VanDusen Botanical Garden. $41. 11 a.m. 5251 Oak St. (at West 37th Ave.) 416-978-2368, teo.salgado@utoronto.ca or www.alumni.utoronto.ca/regional.

April 18
Shamba Foundation
2012 Spring Biz Skule Networking Reception, sponsored by MBNA. $25 (includes one drink and hors d'oeuvres). 6–8 p.m. 48 Yonge St., Toronto. To register: 416-978-4274 or sonia@ecf.utoronto.ca.

April 18
Victoria College
VWA Annual Luncheon. Guest speaker: Wendy Cecil, chancellor of Victoria University. VWA welcomes everyone – not just Vic or university grads. Annual General Meeting follows. $26 (advance payment required). 11:45 for noon. Alumni Hall, Victoria College Building, 91 St. Charles St. W. To register, mail a cheque payable to the VWA (arrival before April 11) to: VWA, c/o Victoria Alumni Office, 91 Charles St. W., Toronto, ON, M5S 1K7. www.vicu.utoronto.ca/alumni/VWA.

April 27
Moncton, New Brunswick
Alumni and friends *cinq à sept,* followed by the Frye Festival panel discussion "Culture and the Critic." Balcony lounge, Capitol Theatre, 811 Main St., Moncton. Free. 8 p.m. Contact Teo Salgado at 416-978-2368 or teo.salgado@utoronto.ca, or visit www.alumni.utoronto.ca/regional. Frye Festival: www.frye.ca.

April 29
Washington
All-Canada University Alumni Event hosted by U of T. Speaker: Prof. Ray Jayawardhana, "Strange New Worlds: The Search for Alien Planets and Life Beyond Our Solar System." Four Seasons Hotel, 2800 Pennsylvania Ave. N.W., Washington. Free for U of T alumni and their guests. 4 p.m. 416-978-2368, teo.salgado@utoronto.ca or www.alumni.utoronto.ca/regional.

May 5
U of T Mississauga
Backpack to Briefcase for 2012 grads and recent alumni who are transitioning to the workforce. Speakers, alumni panels and networking. Lunch and conference package included. Begins at 11 a.m. with an Alumni Services Fair. Free, and free parking in Lot 9. Rm 150, Instructional Centre, 3359 Mississauga Rd. N. 905-569-4924, events.utm@utoronto.ca or my.alumni.utoronto.ca/b2b.

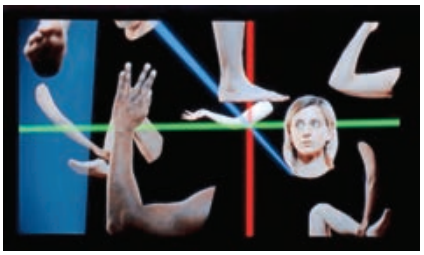
May 9
Lionhead Golf and Country Club
Annual U of T Mississauga Golf Tournament. Cost TBA. Shotgun start at 1 p.m. 8525 Mississauga Rd., Brampton. Contact Frank MacGrath at 905-726-4488 or fmacgrath@gtigolf.com, or visit my.alumni.utoronto.ca/utmgolf.

Spring Reunion

May 30 to June 3
Toronto
Spring Reunion 2012. If you graduated in a year ending in 7 or 2, visit the Spring Reunion 2012 website to learn about events hosted in your honour by your college, faculty or department, as well as U of T–wide events. While honoured alumni are special guests, all U of T alumni are welcome. Highlights of **central Spring Reunion events** are listed below. Contact 416-978-5881 or spring.reunion@utoronto.ca, or visit springreunion.utoronto.ca.

PHOTO: CRAIG EAKINS

Watch Melanie Gilligan's video work "Popular Unrest" at the Justina M. Barnicke Gallery until April 8



May 30
Location TBA
LGBTQ Pride Kick-Off. Alumni and friends are invited to enjoy drinks, and get a head start on Pride, on the eve of Spring Reunion. Location TBA. Free. 6–9 p.m. alumni.utoronto.ca/alumni-groups/lgbtq.

May 31
AGO Baillie Court
SHAKER For Young Alumni. A networking event for professionals who graduated in 07, 02 or 97. Free. 7–10 p.m. alumni.utoronto.ca/events/shaker.

June 1
Convocation Hall
Chancellor's Circle Medal Ceremony for the graduating classes of 32, 37, 42, 47, 52 and 57. Chancellor David R. Peterson honours alumni celebrating their 55th to 80th anniversaries. Free. 9:30–11 a.m. 31 King's College Circle.

June 1
Convocation Hall
50th Anniversary Ceremony will honour all grads from 1962. Free. 3:30–6 p.m. 31 King's College Circle.

June 1 and 2
Sidney Smith Hall
Stress-Free Degree Lectures by U of T profs, grads and authors. Free. June 1: 1–3 p.m, June 2: 9:30 a.m.–12:30 p.m. 100 St. George St.

June 2
Front Campus
Spring Reunion and Pre-Annual General Meeting BBQ, sponsored by the U of T Alumni Association. Join us for lunch and take in the entertainment with other alumni. Free. 11:30 a.m.–2 p.m. Front campus, King's College Circle.

June 2
Convocation Hall
UTAA Annual General Meeting with Keynote Speaker Samantha Nutt. Get to know your alumni association. The brief business portion of the meeting will be followed by an address by Dr. Samantha Nutt, founder of War Child Canada. 2–4 p.m. 31 King's College Circle.

May 30 to June 3
Various Locations
Spring Reunion Divisional Events. Below are a few of the many events offered.

June 2
Sidney Smith Hall
Engineering Lectures. Lloyd A. McCoomb, president and CEO, Greater Toronto Airports Authority; Prof. Milica Radisic of biomaterials and biomedical engineering; Prof. Yu-Ling Cheng, director of the Centre for Global Engineering. Free. 10:30–11:30 a.m. 100 St. George St. Room TBA. 416-978-4941 or meganm@ecf.utoronto.ca.

June 2
Sidney Smith Hall
Engineering Departmental Lunches: All lunches run from 12–2 p.m. Free. For info on each departmental lunch, visit my.alumni.utoronto.ca/springreunion2012.

June 2
Galbraith Building
Skule Kids. Science and engineering workshops for children and grandchildren of engineering alumni. Grades 1 to 8. 10 a.m.–2 p.m. 35 St. George St. enrichment@ecf.utoronto.ca.

May 31 to June 2
Evening Engineering Receptions
May 31: Class of 07 Reception. $20 (includes 1 drink and appetizers). 7 p.m.–midnight. O'Grady's Tap and Grill, 171 College St. **June 1: Classes of 97 and 02 Reception.** $20 (includes 1 drink and appetizers). 7 p.m.–midnight. O'Grady's Tap and Grill, 171 College St. **June 1: Class of 92 Reception.** $30 includes hors d'oeuvres. 7 p.m.–midnight. Hart House, East Common Room. **June 2: Reception and Dinner for Classes of 37, 42, 47, 52, 57, 62, 67, 72, 77, 82, 87.** Hyatt Regency Toronto. $100 plus cash bar (wine with dinner). 6 p.m.–midnight. Individual class receptions: 6–7 p.m., Dinner, 7 p.m.–midnight. Hyatt Regency Toronto, 370 King St. W. Info: 416-978-4941 or meganm@ecf.utoronto.ca.

June 1
University College
The Women of Whitney Hall Reunion for all female former residents. High tea in the Whitney Hall Quad. Free. 1–3 p.m. 85 St. George St. (Rain location: U of T Art Centre Lounge.) 416-978-2968 or alana.clarke@utoronto.ca.

June 1
University College
The Men of Sir Dan's Pub. A reunion for the men who lived in Sir Daniel Wilson Residence. Enjoy scotch on the rocks, stand-up comedy and more. Free. 7–10 p.m. UC Junior Common Room. 15 King's College Circle. 416-978-2968 or alana.clarke@utoronto.ca.

June 2
University College
UC Lit Reunion Coffee House. A reunion for UC Literary and Athletic Society council members, past and present. $18.54. 7–10 p.m. UC Junior Common Room, 15 King's College Circle. 416-978-2968 or alana.clarke@utoronto.ca.

June 3
University College
UC Principal's Brunch. Enjoy a UC mimosa and brunch with Principal Donald Ainslie. All years. $18.53. 11 a.m.–1 p.m. UC Quad. (Rain location: Howard Ferguson Dining Hall.) 15 King's College Circle. 416-978-2968 or alana.clarke@utoronto.ca.

Exhibitions

To April 8
Justina M. Barnicke Gallery, Hart House
Melanie Gilligan: Crisis in the Credit System and Popular Unrest. The Toronto première of two major video works by artist-in-residence Melanie Gilligan. Free. 7 Hart House Circle. 416-978-8398 or www.jmbgallery.ca.

April 30 to September 14
Thomas Fisher Rare Book Library
How Does My Garden Grow: The Education of a Gardener. An exhibition of British and Canadian works on horticulture from the Thomas Fisher collections. Free. Mon. to Wed. and Fri., 9 a.m–5 p.m.; Thurs. 9 a.m.–8 p.m. (No Thursday evening hours from May to Sept.) 120 St. George St. 416-978-5285 or www.library.utoronto.ca/fisher/exhibitions/current.html.

Music

April 1
U of T Scarborough
Spring Awakening. Performances by the Concert Choir, the Concert Band and the String Ensemble. Free. 2–4 p.m. Academic Resource Centre, AC 223, 1265 Military Trail. 416-208-4769 or aep@utsc.utoronto.ca.

April 1
MacMillan Theatre
Opera Tea: La Fille du Régiment (The Daughter of the Regiment). An abridged version of Donizetti's delightful comedy of an orphan girl raised by a regiment of musical soldiers. Tickets: $30 (limited reserved seating). 2:30 p.m. Edward Johnson Building, 80 Queen's Park. TELUS Centre Box Office: 416-408-0208. Online order: www.music.utoronto.ca.

Special Events

May 12
St. George Campus
Science Rendezvous, an all-day science festival. Meet researchers, tour research labs, participate in experiments and watch demos. 10 a.m.–5 p.m. St. George Campus. www.sciencerendezvous.ca/2012.

PHOTO: COURTESY OF MELANIE GILLIGAN

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University of St.Gallen

Life on Campus

There's not many of us who escape the business of trauma

Lee Maracle, traditional teacher at First Nations House

p. 13

The new Faculty of Law building will be attached to Flavelle House

Building a Bright Legal Future

Faculty of Law launches a $53-million campaign

SINCE ITS ESTABLISHMENT IN 1949, the Faculty of Law has become Canada's top-ranked law school – and to ensure its bright future, the faculty recently launched a $53-million campaign.

More than 200 alumni and friends gathered at Flavelle House late last fall, where Dean Mayo Moran publicly launched the new building campaign. To date, $21 million in private donations have been raised. The private funds, combined with $18 million in support from U of T, have resulted in 70 per cent of the funds required to make the new building a reality.

In particular, the law-firm community has provided unprecedented support for the campaign. Osler, Hoskin and Harcourt LLP and Torys LLP gave gifts of more than $2 million each. The campaign has also received several individual alumni gifts of $1 million or more, including from former U of T chancellor Hal Jackman, financier John Schumacher and former CanWest executive David Asper.

"Nothing is as important to the future of this incredible institution as physical renewal," said Prof. Mayo Moran, dean of the Faculty of Law. "We are so grateful for the extraordinary generosity of the law firms and individuals who ›

PHOTO: HARIRI PONTARINI ARCHITECTS

How India Innovates

A new institute will study the country's successes

Prof. Dilip Soman

THE STUDY OF INNOVATION has taken on a richer international flavour at U of T, with the launch last fall of the India Innovation Institute – a joint venture of the Munk School of Global Affairs and the Rotman School of Management.

Janice Stein, director of the Munk School, says the new institute – which will be housed at Munk – is designed to be a hub for researchers across the university who are studying how India innovates. If the country's recent success continues, it is expected to become one of the world's largest economies by 2050.

The study of innovation, which attracts researchers in many disciplines, has tended to focus on the experiences of the developed world. The India Innovation Institute will help scholars learn from the innovative practices of organizations in developing countries, where resources are often in shorter supply or products must be priced lower to reach a mass audience. (Some companies engage in so-called "frugal innovation" – designing products specifically for low-income customers. Read our article on the UbiSlate, p. 49.) In addition to helping U of T researchers engage with colleagues in India and around the world, the India Innovation Institute will foster new multidisciplinary collaborations.

Stein says some research projects, including a study on biotech innovation in India and China, are already embedded in the institute.

She adds that additional international collaborations will be formed, not just with colleagues in India but also three-way partnerships where India is engaged with researchers in China and Canada. "This is an opportunity to learn from India, to work together with Indian colleagues and to think about innovation under conditions of constraint," says Stein.

Prof. Dilip Soman, the Corus Chair in Communications Strategy and a professor of marketing at Rotman, will be the institute's inaugural director. – **ANJUM NAYYAR**

EPHEMERA

When high school friends Alex Correa and Khaiam Dar reunited at U of T, they decided to take their secret hobby public and form a comic-book club called 22 Pages. "Comics are mainstream now – it's safe to like them," says Dar. The characters above, Andres (left) and Jameel are the protagonists in the comic *Grown Ups (or a Reasonable Facsimile)*, and are loosely based on the lives of Dar and Correa. Dar, who is working on a master's degree in pastoral studies in Islam, creates the artwork and Correa, in his second year of book and media studies, writes the stories.

Grown Ups runs in the *Woodsworth Howl* newspaper, and can be found at the 22 Pages website. New comics are produced every Tuesday and Thursday. The club is publishing an anthology called *22 Pages*, set for release later this year. – **SUZANNA CHANG**

have come forward so early in the campaign to support our aspirations."

The new structure, set to open in 2015, will be attached to Flavelle House – one of the faculty's heritage buildings. It will increase space by 50 per cent, to 66,000 square feet, and will have three distinct elements: a multi-storey wing on Queen's Park Crescent; an extensive interior renovation of the Bora Laskin Law Library; and a light renovation of Flavelle House. The expanded facilities will add much-needed teaching, learning, research and collaborative space for JD and graduate programs, professional and continuing-education courses, and new initiatives such as the global professional LLM and internationally trained lawyers program.

The design features new classroom, office and student service areas (such as a consolidated office for Career Services, Admissions and Financial Aid). The Laskin Library will be upgraded with current technology and research tools, and will include an information commons, quiet areas for reading and research, and group study rooms.

The constrained physical facilities have been limiting the Faculty of Law's potential as a research and leadership centre, nationally and internationally. Over the last 10 years, three external reviews – and critical student feedback – have identified the limitations as a serious issue.

Designed by Toronto firm Hariri Pontarini, the new structure continues an architectural renaissance along Philosopher's Walk and in the Avenue Road and Bloor Street quadrant, which includes the Royal Ontario Museum's Michael Lee-Chin Crystal and the Royal Conservatory's Telus Centre for Performance and Learning. – **LUCIANNA CICCOCIOPPO**

PHOTO: LEFT, CAZ ZYVATKAUSKAS; RIGHT, AMANDA KEENAN

One of Lee Maracle's grandfathers was Chief Dan George, who earned an Academy Award nomination for his role in *Little Big Man*

Wisdom of the Elder

After surviving a difficult childhood, teacher and writer Lee Maracle provides counsel to others at First Nations House

AS THE TRADITIONAL TEACHER at U of T's First Nations House, Lee Maracle doesn't stand up at the front of a classroom and lecture. She doesn't teach a course. Instead, she helps individual students – some of whom are struggling with the issues that can arise with moving from a reserve to a metropolitan city.

Maracle, who grew up on a reserve in North Vancouver, was one of the first native children to attend an off-reserve school. It was an onerous trail for a six-year-old to blaze. "At school I was a 'dirty little Indian'," she recalls. Maracle and her 22 siblings had lots of love in their family, but no electricity, no running water and little food.

When a childhood suicide attempt failed, Maracle began to believe her ancestors must have a plan for her. Her ancestors were right. In 1975, Maracle became one of the first Aboriginal authors in Canada to be published. She followed her memoir *Bobbi Lee: Indian Rebel* with six novels, a poetry collection and countless short stories. In her writings, she takes the reader inside Aboriginal family life for an intimate view of ancient native beliefs colliding head-on with Canada's dominant culture.

Maracle, who is a member of the Stó:Lō Nation, has made numerous contributions to the University of Toronto. She is an instructor in the Aboriginal Studies program, and has served as a visiting professor with U of T's Women's Studies program. And previous to her appointment as First Nations House's traditional teacher in 2008, she was its inaugural writer-in-residence.

The ability to communicate ideas in essay format is integral to success in most post-secondary education programs. Since Aboriginal stories are spoken or sung, as writer-in-residence Maracle encouraged the students to find their writing voice by asking them to first speak the story they want to set down in their essay.

In her current role, Maracle's office door is always open and students wander in to ask her advice about academic, traditional knowledge or personal problems. Sometimes, she performs an ancient smudging ceremony for students. "Smudging is one way we communicate with our higher power, our ancestors," explains Maracle. "The ceremony reminds us that we are magnificent in our near-relevance, but we're part of something huge."

Maracle is magnanimous with her counsel. "I'm willing to help anyone – native or non-native, student, staff, faculty," she says. "There's not many of us who escape the business of trauma." – **SUSAN PEDWELL**

PHOTO: TOP, ANTHONY CARTER; BOTTOM, HILL PEPPARD

A Home for High Performance Sport

Nearly 300 guests attended a ceremony at the Varsity Centre recently to help the Faculty of Kinesiology and Physical Education mark a milestone in its development: the groundbreaking for the Goldring Centre for High Performance Sport.

The facility will be located just south of the new Munk School on Devonshire Place, and will house international-level basketball and volleyball courts, an expanded David L. MacIntosh Sport Medicine Clinic, research labs, and a strength and fitness centre for U of T students. It creates a place where U of T's growing list of partners – including the Canadian Sport Centre Ontario, Swim Canada and the Ministry of Tourism, Culture and Sport – will support the region's top athletes.

"Researchers, grad students and sport medicine experts will connect with athletes, coaches and sport organizations to create a rich environment for studying, teaching, fostering and engaging in sport at the highest levels," says Dean Ira Jacobs.

The Goldring Centre is supported by a lead donation from the Goldring family; Ron Kimel, whose gift will create the Kimel Family Field House within the complex; the late Gord Stollery, who donated $1 million for the Frank Blackstock Stollery Atrium; and the province. It's scheduled to open in January 2015. – **ALTHEA BLACKBURN-EVANS**

SOUND BITES

Who would you like to see on a banner for U of T's Boundless campaign, and why?

Michelle French [of physiology]. An extremely dedicated and caring instructor – the best professor I had at U of T!
MyNameIsMena

Dr. Karl Kabasele [CBC-TV medical correspondent]. He's a talented alumnus who inspires Torontonians to take charge of their health.
Sally_O_Malley

Do you already have [pianist and alumna] Eve Egoyan? Boundless new music.
Stephen B. Wong

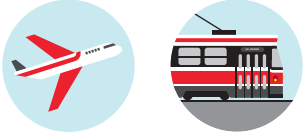
Tony Clement. As president of the Treasury Board, he's both successful and highly respected. Definitely a notable alumnus.
Bchang

Join the conversation at twitter.com/uoftmagazine.

Poll | Have you ever had an international experience connected with U of T? If you haven't, would you like to?

5% YES
95% NO

Have you had an international experience?



78% YES
17% NO

Would you like to?

A large majority of students polled are interested in U of T's work and study abroad opportunities – but only five per cent have had an international experience. Of those polled, many remarked that expense was a deterrent. However, Woodsworth College offers scholarships and bursaries through its Summer Abroad program – and the option of using OSAP or provincial grants to subsidize costs. The Centre for International Experience also offers similar opportunities.

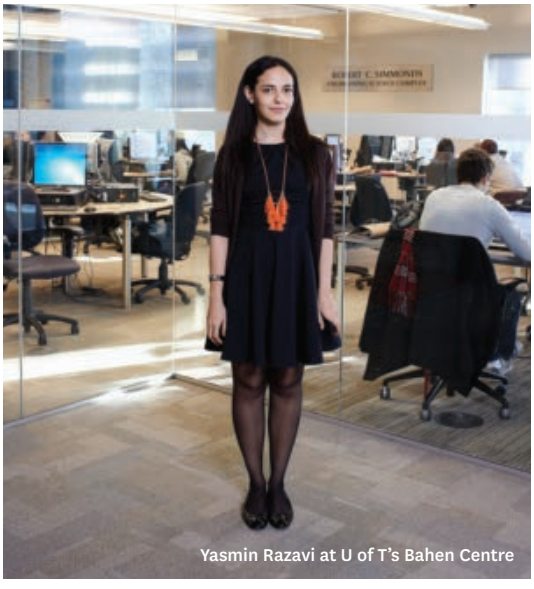
Laura Lynch, a second-year St. Mike's student, hopes to spend this summer studying criminology in England through the Woodsworth program, while Lina Tran, a third-year Innis student, is looking into an ecology and evolutionary biology class that focuses on fieldwork in Ecuador. – **SUZANNA CHANG**

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

PATKAU ARCHITECTS AND MACLENNAN JAUNKALNS MILLER ARCHITECTS

Mentoring Young Moguls

Yasmin Razavi helps students start their own businesses



Yasmin Razavi at U of T's Bahen Centre

MOST PEOPLE ARE STILL contemplating their future careers when they're 22, but Yasmin Razavi has already embarked on hers: the fourth-year industrial engineering student helps young entrepreneurs start their own businesses.

"Often students feel that their age is a disadvantage," she says. "But if you're really passionate about something and set big goals for yourself, you'd be surprised at how many people will actually support you."

A self-described math whiz, Razavi made her first foray into business three years ago, when she volunteered to sell tickets for the student-run National Business and Technology Conference. By 2011 she found herself chairing the conference, taking its reach beyond Canada and attracting aspiring executives from the U.S.

Her work with the conference led Razavi to co-found the Nspire Innovation Network; the organization helps young business leaders connect and grow through events such as the Discovery Series, which features talks by experienced visionaries. Razavi has also created the Toronto Finance Review organization and website to help students learn about all aspects of the finance industry, and she is planning an online TV channel.

The talented young innovator came to Canada from Iran a mere six years ago. Growing up in Tehran, she imagined herself entering the traditional family occupation: "Every female in my family is a doctor, so that's what my parents wanted me to be," she says. Razavi initially settled on engineering, and has since found that its quantitative lessons could be put to good use in the field of management consulting. With internships in Toronto and Singapore under her belt, Razavi plans to work for two years with global consulting giant McKinsey & Company. She will then enter Harvard Business School, where she's already been accepted to the class of 2016.

Razavi claims to be most inspired by her peers; as she points out, the wealthy game-changers who exploited the Internet's possibilities to found sites such as Google and Facebook all did so in their twenties. And Razavi plans to start her own company. Its purpose remains as yet undefined, but the breadth of exposure she'll acquire at McKinsey and Harvard, along with what she's learned at U of T, will help her decide. "The beauty of working at McKinsey is that one project could involve a technology company, the next could be a retail company, the next an oil and gas company," she says.

"When I was growing up, I never dared to think I could take on large projects and make a difference," says Razavi. "But coming to U of T, and meeting people only two or three years older who were doing amazing things, really inspired me. I thought, if they could do it, maybe there's something I could learn from them." – **CYNTHIA MACDONALD**

PHOTO: CHRIS THOMAIDIS

People

Three University of Toronto faculty members and two U of T benefactors have been honoured with Order of Canada appointments, the country's highest civilian award. New officers include **Donald Fraser,** a professor emeritus of statistics who has contributed to the advancement of statistical sciences. **Seymour Schulich,** a prominent supporter of post-secondary education nationwide, is the benefactor behind U of T's Seymour Schulich Awards in Nursing.

Among new members of the order, two have ties to the Lawrence S. Bloomberg Faculty of Nursing, including its benefactor. **Lawrence Bloomberg** is recognized for his social engagement and philanthropy, notably in the areas of health care and education. **Prof. Mary Ferguson-Paré** has contributed to the nursing profession and improved quality of care for patients. **Dr. Bernard Zinman,** a professor of medicine and director of the Leadership Sinai Centre for Diabetes, is a leading diabetologist who has advanced knowledge of the disease and its complications.

Janice Gross Stein, a University Professor and Belzberg Professor of Conflict Management and Negotiation, has been reappointed to lead the Munk School of Global Affairs for a two-year term beginning July 1. She has served as founding director of the Munk School since 2008.

Dr. Howard Hu has been appointed as director of the Dalla Lana School of Public Health. Hu is currently a professor of environmental health, epidemiology and internal medicine – and the NSF International Department Chair in the department of environmental health sciences – at the University of Michigan.

Head coach and manager of football operations, **Greg Gary,** has been hired permanently in his role; the former interim coach will continue to lead the revitalization of the Blues football program.

In January, the Faculty of Physical Education and Health changed its name to the **Faculty of Kinesiology and Physical Education.**

Grace Under Pressure

A U of T grad student and alumnus created music for the launch of the Boundless campaign in just three weeks

YOUR UNIVERSITY CALLS AND WANTS YOU to compose a musical score for the launch of its fundraising campaign – a few weeks away. No pressure.

Well, at least not for Aaron Tsang and Kevin Lau.

Tsang, an alumnus of the Faculty of Music, and Lau, who recently defended his musical arts doctorate, were asked to compose music for the launch last fall of U of T's $2-billion fundraising campaign. The two musicians say the few weeks they had to prepare was actually generous compared to what's typical in the commercial sector. "They will tell you at 9 a.m. one day that they need it by 9 a.m. the next day."

Tsang, who knew at the age of 15 he wanted to score Hollywood films, wrote the opening and closing fanfare for the launch ceremony. Lau, the composer-in-residence for the Mississauga Symphony Orchestra, scored the music for the campaign video.

Because the launch of the campaign marked an important milestone in the university's history, Tsang and Lau felt their compositions should celebrate a storied past while looking toward a promising future. Tsang turned to the Olympics for inspiration, aiming to make listeners feel both solemn and proud. "I didn't want to play a big blasting fanfare; I wanted to prompt retrospection and nostalgia," he notes.

Tsang credits the conductor, Prof. Gillian MacKay of the Faculty of Music, for her work organizing the musicians and bringing his music to life. "None of this would have happened without her," he says.

Aaron Tsang (left), Kevin Lau and Prof. Gillian MacKay in Hart House's Music Room

For his part, Lau drew inspiration from video interviews he saw of U of T grads and donors – which he says revealed a kinship with alumni he didn't know he had. "As a composer you spend a lot of time by yourself; your creativity is fairly solitary. I didn't really feel a tactile connection to U of T until working on this video." – **KELLY RANKIN**

Odd Bedfellows

Rather than warning students away from Wikipedia, some professors are now embracing it

Wikipedia, long an academic bogeyman, is being invited into the classroom in an innovative new program that made its Canadian debut this school year at U of T.

Since its founding in 2001, Wikipedia's anyone-can-contribute ethos has fit awkwardly into the academic landscape. Many volunteer Wikipedia editors regard academia with suspicion; many profs aren't sold on the idea of an encyclopedia written by an army of amateurs. The Wikimedia Foundation's Global Education Program is an attempt to bridge that gap.

"Students are using Wikipedia, whether we like it or not," says Michael Dick, a teaching assistant currently assisting Prof. Rhonda McEwen's first-year course "The Rhetoric of Digital and Interactive Environments." To Dick, a PhD student in the Faculty of Information, the question becomes "how can we teach them how to use Wikipedia as an effective starting point, to find other resources that are more scholarly?"

Professors involved in the program incorporate Wikipedia into course assignments, with students analyzing Wikipedia articles and often making their own contributions and edits. Five U of T classes – from psychology to intellectual property law – currently participate. Through the partnership, Wikipedia improves its quality and students get a valuable lesson in what Dick calls "critical literacy."

For McEwen, who teaches at U of T Mississauga, it only makes sense to study Wikipedia's collaborative environment in a course about how people write and communicate on the web. Online, "there is the potential to be moderated by an audience you may never meet," she says. "It's very different from writing in other environments. I want students to get a feel for that kind of rhetoric." – **GRAHAM F. SCOTT**

PHOTO: LORNE BRIDGMAN

One of the first principals of New College was Donald Ivey, a physicist and the original host of *The Nature of Things*

Scholarship Honours Toronto Developer

Friends and family of the late Paul Oberman have created an award for architecture and urban design

Paul Oberman

A NEW AWARD in the Daniels Faculty of Architecture, Landscape, and Design, created to honour the memory of Toronto developer Paul Oberman, will provide opportunities for graduate students in architecture and urban design to conduct research in a city abroad.

The award, valued at approximately $12,000, will be given annually to two students so they can study first-hand how urban areas around the world are coping with rapid transformation. "In our field, the opportunity to actually visit, see and experience buildings and cities is essential," says Richard Sommer, dean of the Daniels Faculty.

In particular, cities in lower-income countries with large urban populations – such as India, China and Brazil – face vastly different challenges from what students would encounter in Toronto. "It's very difficult to understand architecture and landscape architecture in an isolated way," says Sommer. "To be able to see things as they play out in a particular geography and cultural place is important."

Oberman, the former CEO of Woodcliffe Corporation, was known throughout the architectural community for his commitment to heritage properties, and for his innovative approach to renovating and preserving them. Toronto's Summerhill train station, which was converted into an award-winning LCBO outlet, King James Place and the Gooderham Flatiron Building are three of his landmark achievements.

Eve Lewis (MScPl 1981), who was married to Oberman and collaborated with him on many projects, says he restored old buildings to their former grandeur, but added modern conveniences and a contemporary design to create greater value. "I don't think there's anyone else in the city who put the time, money and attention to detail into historic buildings," she says. "He had a design sense that very few people have, and proved that you can succeed financially as a heritage developer – and contribute to your community as well."

In the wake of his death, at age 53, in a plane crash last year, Oberman's family and friends in the architecture, design and heritage community garnered more than $200,000 in donations and provincial and faculty funding to create the Paul Oberman Graduate Student Endowment Fund. Oberman never attended university himself, but saw significant value in higher education. "He understood that most people need that education, that connection. He really believed in its importance," says Lewis.

Lewis adds that he would have been pleased that so many people provided support for the award, and gratified that "it gives students a chance to dream like he did – to become visionaries and leaders." – **SCOTT ANDERSON**

An Anniversary to Remember

New College celebrates a half-century with a new scholarship

New College turns 50 this year, and it will mark the milestone in a way that honours its strong community spirit and its tradition of equity and social justice – by creating a new scholarship.

The college launched its fundraising campaign in the fall, and as of early February has garnered more than 200 contributions from alumni, friends, faculty and staff. Called the New College 50th Anniversary Alumni and Friends Scholarship, it will be awarded annually starting in May to one or more undergraduates demonstrating financial need, academic merit and/or co-curricular involvement. The final amount of the scholarship is still to be determined, as donations are still being collected.

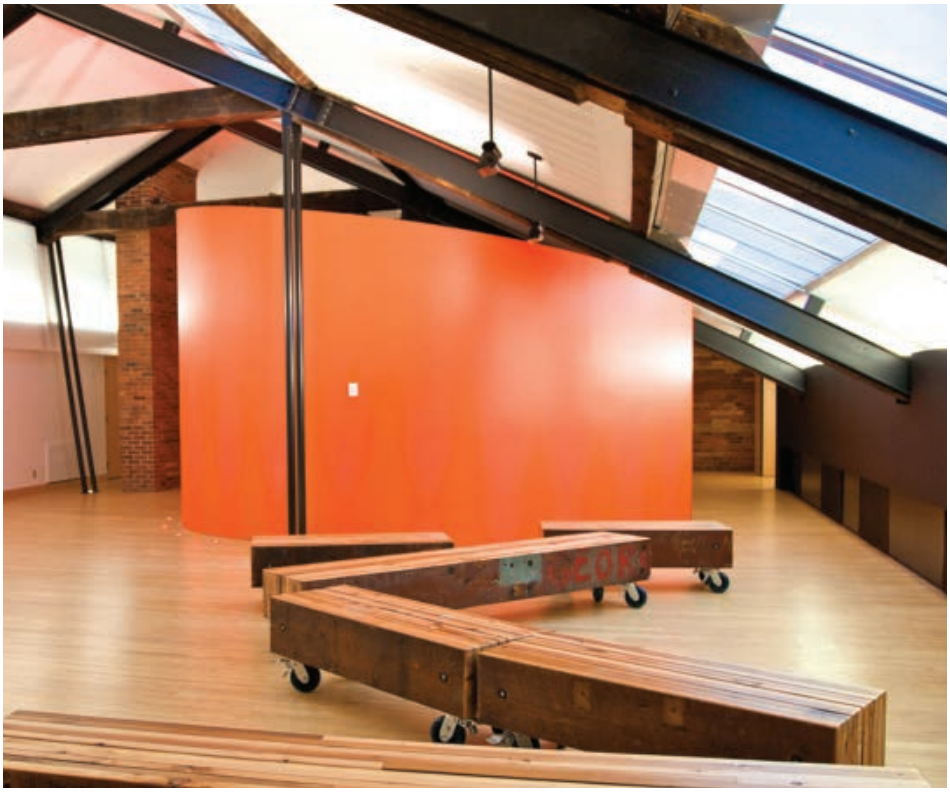
"We wanted to create a permanent legacy to recognize the philanthropy of New College family and friends. We're very much focused on community, social responsibility and service learning, so this approach really reflects our values," says Celeste Richards, senior development officer.

Since opening in 1962, New College has focused on offering social equality and cultural studies programs, which today include Equity Studies, African Studies, Caribbean Studies, and Buddhism, Psychology and Mental Health. In addition to undergraduate arts and sciences programs, the college residence is home to students in professional faculties such as engineering, kinesiology and physical education, pharmacy and music.

New College's half-century birthday celebrations will include a public lecture on April 4 by asteroseismologist Jaymie Mark Matthews (BSc 1979 NEW), entitled "The rocket science of sustainability: What alien worlds teach us about our own." At Spring Reunion (which begins in May), former dean of students Ann Yoeman will discuss the significance of the anniversary, and in October, humanitarian Stephen Lewis will speak at the year's closing ceremony.

– **SHARON ASCHAIEK**

PHOTO: COURTESY OF EVE LEWIS



Deep Innovation

The Lassonde Mining Building supports student learning and adds sustainable features

U OF T'S LASSONDE MINING BUILDING has reopened following renovations, with the century-old heritage building now sporting collaborative design studios and teaching spaces, and a rooftop meeting room.

The new fourth- and fifth-floor space, known as the Goldcorp Mining Innovation Suite, provides 100 workstations for mineral and civil engineering students to work on design projects. The building will also be the heart of the Lassonde Institute of Mining, an interdisciplinary research institute focused on mineral resource identification, mine planning and excavation, as well as extraction and processing. The suite will also host public seminars and lectures. New photovoltaic panels on the roof will power the suite's lights and computers, and improved insulation will keep the building warm in winter and cool in summer. Rainwater will be collected to keep the grounds green. An elevator has made the building more physically accessible.

The project was made possible by financial support from Pierre Lassonde, the chair of Franco-Nevada, a gold royalty and investment company; Goldcorp Inc.; as well as funding from the federal and provincial governments and the Faculty of Applied Science and Engineering. At a public dedication last November, the building was renamed in recognition of Lassonde's generous support of mining engineering and innovation. "What we do is always for the students," Lassonde said at the event. "There is no doubt that the student experience here will be absolutely incredible."

– LIAM MITCHELL

Why I Give

Beverley Salmon,
Diploma in Public Health 1954

With her family, Beverley created the Dr. J. Douglas Salmon Award for Black Medical Students in honour of her late husband. Douglas graduated from medicine at U of T in 1955, after earning a BA in 1951

Dr. J. Douglas Salmon

"Douglas was born in 1923, the youngest of six children. His mother and father both died when he was a child, and a widowed aunt took in all of the children. She had been trained as a nurse, but because of racism at that time was unable to work as one. They had very little money.

Douglas was channelled into "commercial" courses in high school. He graduated at the top of his class, but wanted to attend university – so he went back to high school for two years in the evenings to get the subjects he needed. He worked during the day.

At U of T, he was one of only four black students in his medical school class. He received a scholarship, but to cover his expenses he also worked part-time. In second year, he was voted class president.

His family and friends knew what a struggle it was for him to pay his way through university. We also knew how much he benefited from the scholarship he received: he went on to become a very successful surgeon. We wanted to extend the same opportunity to students today.

Douglas and the other black medical students in his class really had to assert themselves to get a good placement, even though they all graduated in the top third of their class. I think even today black students have to prove themselves by working harder."

As told to Scott Anderson

PHOTO: LEFT, RAJ GRAINGER; RIGHT, COURTESY OF BEVERLEY SALMON

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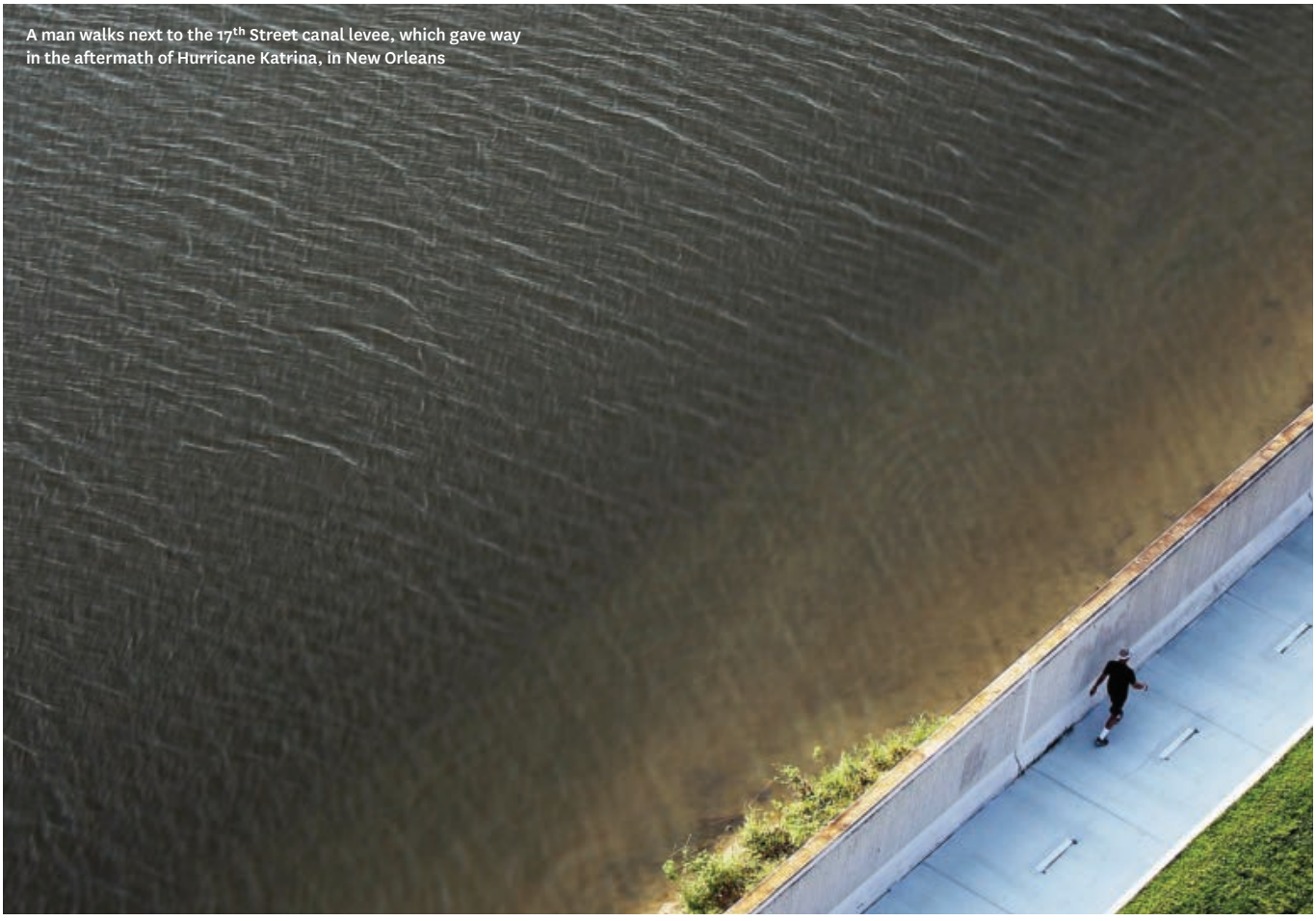
Leading Edge

Current solar cells are caveman technology compared to any biological system

Chemistry professor Greg Scholes, who has created a blueprint for an "artificial leaf"
p. 23



A man walks next to the 17th Street canal levee, which gave way in the aftermath of Hurricane Katrina, in New Orleans

Flood Control

As New Orleans rebuilds, U of T students are helping the city rethink its approach to water management

WHEN NEW ORLEANS BEGAN TO EXPAND into the cypress swamps near Lake Pontchartrain in the early 20th century, the city used mechanical pumps to reclaim the soggy terrain for urban development. But the removal of the water caused the city – and especially the so-called "back-of-town" neighbourhoods that would be so hard hit during Hurricane Katrina in 2005 – to begin sinking. State and federal agencies built levees around the city, and New Orleans residents just came to accept routine flooding from sewer backups as a fact of life.

Eighteen months after the Katrina disaster, Jane Wolff, director of the master of landscape architecture program in the John H. Daniels Faculty of Architecture, Landscape, and Design, started working with community groups in the devastated Louisiana city on what, she realized, was a completely neglected aspect of the massive urban reconstruction that was underway: water management. "When I started, the conversation was all about buildings," says Prof. Wolff, who has previously worked on water management in ›

PHOTO: MARIO TAMA/GETTY IMAGES

the Netherlands and California. "There was no public discussion of the city's future as a landscape problem."

Indeed, in the aftermath of the disaster, New Orleans officials appeared to be ignoring the water issue for political reasons. The Urban Land Institute had released a controversial map indicating which devastated neighbourhoods should not be rebuilt because they were too exposed to flooding risk. But the affected communities, Wolff says, were predominantly low-income and African-American, and the recommendation met with stiff resistance.

In response, Wolff and Prof. Elise Shelley joined Prof. Derek Hoeferlin of Washington University's School of Architecture to establish "Gutter to Gulf," a research and teaching project for master's students. The initiative is meant to generate landscape-based solutions to water management in New Orleans as an alternative to the traditional infrastructure (pumping stations, levees, etc.) that failed the city during the catastrophe. The students, Shelley says, are under strict instructions to generate ideas that are not only technically feasible, but also politically, socially and economically realistic – and which could compete with formal proposals that will eventually be submitted to the city by agencies such as the Army Corps of Engineers.

One proposal the students came up with is to plant groves of bald cypress trees on derelict lands. The species, native to the area, has tremendous absorptive capacity and the wood is desirable as a building material. The students are also advocating "hydrophilic agriculture" – using rice paddies, for example, as a means of soaking up surplus water, especially in the rainy season. Similarly, they have suggested planting water-absorbing native species over the top of the buried culverts that run down the medians on many of the city's broader boulevards.

Wolff and Shelley point out that their students' work has implications that extend well beyond the devastated precincts of New Orleans, because climate change and rising sea levels are forcing all coastal cities to change the way they deal with water. "It's only going to get worse," says Wolff. "That means water will become an increasingly intense force in cities."

– **JOHN LORINC**

Safer Births

Equipping health workers in Kenya with smartphones could bring better care to pregnant women and their infants

IT TAKES A VILLAGE – and maybe a few smartphones. A new initiative in Kenya aims to get more mothers and babies the help they need by co-ordinating their care and transport using mobile technology.

In parts of rural Kenya, one out of every 133 pregnant women dies as a direct result of carrying a child. (In Canada, that number is one in 12,500.) Sometimes it's because a family waits too long before they seek help. Other times, bad roads, bad weather or problems finding a vehicle can hamper getting to medical assistance. And even if a woman reaches a clinic, it may not have the drugs or expertise that she needs.

Dr. Astrid Christoffersen-Deb, a U of T obstetrician and gynecologist, is now testing whether a new strategy, dubbed the "mother-baby health network," can help turn the tide. She and her colleagues at Moi University in western Kenya have trained 389 community health workers on how to use smartphones to view educational videos, triage women in labour, access and update electronic health records, and alert a network of supporters.

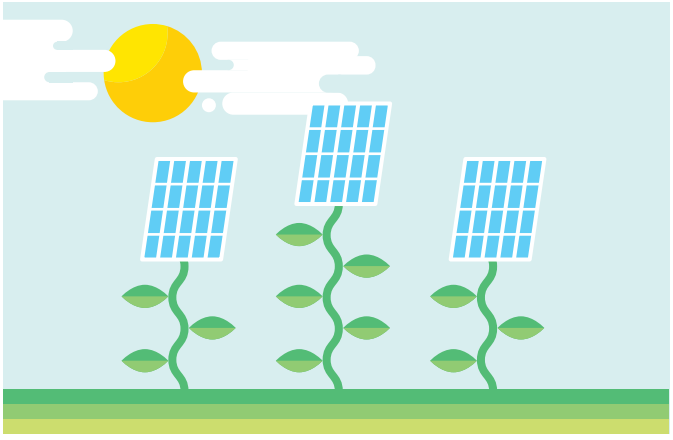
When a woman believes she is going into labour, her local health worker will act as first responder. The health worker will go to the woman's home and use a triage tool on the smartphone that prompts the worker with a series of questions to help assess whether the mother is in labour or having any complications. This assessment will be uploaded to the mother's electronic medical record and a recommendation will be made, given the circumstances, about where she should deliver. If a facility is recommended, it will be notified.

The plan also includes a fleet of "certified mother-baby taxis." In return for investing in a GPS-enabled phone and being trained to offer mother-friendly services, certain private cab drivers will be added to an emergency contact list. The woman's chosen support team – family, friends and community elders – will also be notified so that they can be around to help look after the other children or assist in raising money to cover the cost of the birth (including transportation if necessary).

One goal of the program is to get more mothers into medical facilities to give birth; currently, only 30 per cent of women give birth in such places. Another goal is to ensure that a health worker visits within 48 hours of birth. The phones will remind health workers to do this.

"The phone is the easy part," says Christoffersen-Deb. "But the main focus is not really the cellphone but peer support." – **ALISON MOTLUK**

The largest solar power plant in the world, in the Mojave Desert in California, covers 6.5 square kilometres and produces enough electricity to power 230,000 homes



THE BIG IDEA

Power Plants

A blueprint for an "artificial leaf" could lead to solar cells that generate a lot more power

SOLAR ENERGY IS CALLED "GREEN" FOR A REASON. Our planet is covered in a massive solar power system that is as verdant as it is versatile. Leaves, plants, algae and bacteria use photosynthesis to convert and store solar energy on a scale that dwarfs anything attempted by human beings. Greenery is at work on land and in the sea, near the poles and at the equator, in winter and summer, rain or shine.

Human-made solar technology could benefit from similar adaptability, says U of T chemistry professor Greg Scholes. "Current photovoltaic or solar cells are caveman technology compared to any biological system," he notes. Scholes works in the growing field of "quantum biology," which uses quantum mechanics to explain how biological systems work on a molecular level. His research is pointing the way toward new solar converters that better mimic biological systems.

Commercial solar cells are commonly rated as being able to convert 10 to 15 per cent of light energy into usable power.

"We're trying to get completely new insights for addressing challenges in solar fuel production"

But such ratings typically come from tests done under unrealistically ideal circumstances.

"How many hours a day are the conditions ideal?" asks Scholes. "An hour and a half at noon at the equator on a cloudless day?" Short days or cloud cover can greatly reduce solar cells' efficiency. Local flora, though, continually adjust their receptors to maintain ideal conversion rates even when light dims or the sun sinks lower in the sky.

"I would like to achieve a solar energy harvesting device that is not passive – that on a cloudy day would change how it works," Scholes says. "If we could do this, it would revolutionize solar harvesting." The goal would not be to achieve higher ideal energy conversion rates, but to operate at the ideal rate more of the time.

Plants convert light into usable energy through a multistage process that must be completed within a few billionths of a second, or the energy is lost. They also use molecular biofeedback circuits that continually sense and respond to even tiny variations in light intensity, angle, wavelength and other factors. Researchers can fully understand these processes only by studying the quantum behaviour of photons, electrons and other tiny particles.

Of course, understanding these processes is not the same as reproducing them. "We know a lot about how biological harvesting systems work," says Scholes, "but so what? When we first sat down to write a blueprint of how to design something that works like a leaf, we didn't really know how."

Recently, Scholes co-wrote a review article that laid out just such a blueprint. He is now confident that researchers will be able to demonstrate a synthetic leaf-like light harvester in the near term – possibly within five years.

Scholes sees his research as part of a continuum. The basic concepts he develops lay the groundwork for potentially transformative applications. "We're trying to get completely new insights for addressing challenges in solar fuel production. Our research is driven by what we need to achieve."

– PATCHEN BARSS

LINGO

Elderburbia

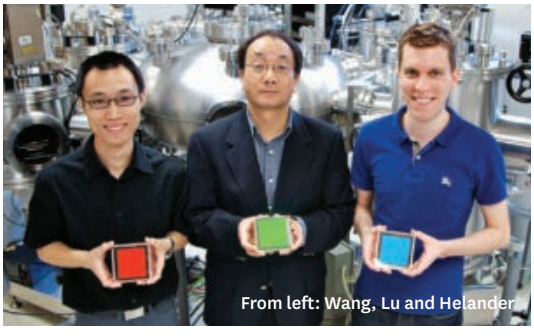
Don Mills, Canada's first planned community, was the place to be if you were young and starting a family in Toronto in the early 1960s: lots of three- and four-bedroom homes, plenty of schools and ample parkland. Fifty years later, the kids have moved away, schools have closed and those young parents are now all senior citizens. It's an increasingly common scenario that has significant implications for services such as schools, health care and snow removal, says geography professor Andre Sorensen. It also points up problems with old ways of planning. In the "new urbanism," which emerged in the 1980s, a wider range of housing types is encouraged – family homes, apartment buildings, townhouses and rental units – to attract mixed demographics. Of course, with the population aging, by 2040 much of Canada may be "elderburbia," no matter how communities are planned.

ILLUSTRATION: ISABEL FOO

PROTOTYPE

A Computer Screen You Can Fold

Thinner, more flexible displays could radically change how we use and experience computers



From left: Wang, Lu and Helander

U OF T RESEARCHERS have discovered a better way to make flat-panel displays that could one day lead to computer screens you roll up like a newspaper and wallpaper that lights your living room.

Michael Helander and Zhibin Wang, PhD candidates in the Faculty of Applied Science and Engineering, are members of a research team that has developed the world's most efficient organic light-emitting diodes (OLEDs) on flexible plastic. Good news for manufacturers and consumers alike, the discovery means a less costly, more efficient and environmentally friendly way to build brighter flat-panel displays on a thinner, more durable and flexible surface.

"It was a happy accident after years of work," says Helander. He and Wang have collaborated for four years in U of T's department of materials science and engineering under the supervision of Prof. Zheng-Hong Lu.

The students had been cleaning sheets of indium tin oxide – a material used in all flat-panel displays – when they noticed that devices built using their cleaned sheets had become much more efficient than expected, using less energy to achieve much higher brightness. After some investigation, they determined that this greater efficiency was the result of molecules of chlorine picked up from their cleaning solvent. With this surprising discovery, the two students engineered a prototype for a new kind of OLED device, which is both simpler in construction *and* more efficient.

Invented about 25 years ago, OLED technology uses organic compounds – molecules made of carbon, oxygen, nitrogen and hydrogen – to create colours. The organic dyes are then electrically stimulated to emit light of different colours. OLED displays are simpler and less toxic to make and require less energy than other kinds of displays. Over time, though, OLED devices became more complex – the original two layers of molecules became many layers, which raised manufacturing costs and failure rates.

"Basically, we went back to the original idea – and started again," says Wang. The team's findings were published, and in December, Helander and Wang, together with Lu and another U of T grad student, launched OTI Lumionics, a startup that will take the next steps toward commercializing the technology.

"The industry recognizes that devices are much too complicated now," says Helander, who adds the only way to make the manufacturing process cost-effective on a mass scale is to keep the design "simple, simple, simple."

OLED displays are simpler and less toxic to make and require less energy than other kinds of displays

While the roll-up screen and light-emitting wallpaper are still distant applications, Helander and Wang expect the discovery could soon lead to a sturdier smartphone that doesn't need to be recharged so often. Now *there's* something to light up your day.

– ALLYSON ROWLEY

Findings

Matthew or Samir?

If your name is Alison Johnson or Matthew Wilson, a U of T study suggests you could do better in the job market than if you go by Min Liu, Samir Sharma or Lukas Minsopoulos.

A survey of employers in Vancouver, Montreal and Toronto reveals that job applicants with English-sounding names have a much better chance of receiving a callback than if they have Chinese, Indian or Greek names.

The report is based on employers' response rates to thousands of online job applications. To test for possible discrimination, researchers sent resumés with randomly changed characteristics – in particular, the applicant's name – to hundreds of employers.

Philip Oreopoulos, a professor of economics, and Diane Decheif, a PhD student in sociology, found that resumés featuring English names were 35 per cent more likely to receive a callback than a resumé featuring Chinese, Indian or Greek names.

Based on their results and interviews with recruiters, the authors conclude that the ethnic discrimination observed may be unintentional. They suggest employers consider masking names on applications before making initial interview decisions. – **REPRINTED WITH PERMISSION OF POSTMEDIA NEWS**

The Remains of Quasars

An international team of astronomers has discovered two gigantic black holes in nearby galaxies with masses 10 billion times that of our sun. These black holes are 50 per cent more massive than any other black hole previously measured. Astronomers are now discussing how they accumulated so much mass. "They may be the dormant remains of quasars that were extremely luminous billions of years ago," says Prof. James Graham, director of U of T's Dunlap Institute and a founding member of the team behind the discovery. – **KIM LUKE**

PHOTO: MARK NEIL BALSON

OpenSecrets.org estimates that U.S. presidential candidates, senate and house candidates, political parties and independent interest groups spent $5.29 billion on the 2008 American election

Q&A

Politics and the One Per Cent

What effect will unlimited corporate spending have on the U.S. election?

In 2010, the U.S. Supreme Court struck down regulations limiting the amount of money corporations and unions could spend on political advertising. U of T law professor **YASMIN DAWOOD** has studied the implications of this decision for the electoral process. She spoke recently with *U of T Magazine* editor **SCOTT ANDERSON**.

What impact do you see this Supreme Court decision having? It allows corporations and unions for the first time to spend unlimited amounts on ads that support or oppose specific candidates. More important, though, it redefines the legal meaning of "corruption." Before this decision, corruption meant "undue political influence" leading to the actuality of – or the appearance of – corruption. The court has radically narrowed the understanding of corruption to mean only "quid pro quo" corruption: cash donations in exchange for legislative votes. This makes it much more difficult for the state to regulate political advertising. The decision also stated that independent spending (that is, not by political parties and candidates) is not "corrupting." This has led to the rise of "superPACs" – ostensibly independent organizations that can accept unlimited funds from corporations, unions and individuals and spend unlimited amounts on political messages. This has been a sea change. The original PACs, or "political action committees," had contribution limits of about $5,000. Also, superPACs technically are not permitted to co-ordinate with a candidate. But this is a fiction. The superPAC that's associated with Mitt Romney is run by his former campaign aide. Legally speaking, it's not part of his campaign. But most people would find it hard to imagine that it's completely separate from Romney's campaign.

Do you think the superPACs will affect who runs for office in the U.S., or who gets elected? I don't think superPACs will determine the outcome of the presidential election, but they might affect close congressional races and the primaries. They've certainly changed the tenor of this electoral process, with a lot more negative advertising, and they've raised the amount of funding that candidates need to be viable. What concerns me most about the superPACs, though, is that they're corrupting. If someone gives you $5 million when you're running for office, you'd probably do your best to vote for legislation they favour, or at least get it onto the agenda. The court has argued that such contributions are corrupting. Yet the superPACs are receiving massive donations and are very closely connected to the candidates. So the court's argument about the corrupting influence of large donations should apply to superPACs.

Do campaign financing rules mitigate the influence of the wealthy and the powerful? Any limit on contributions or spending will help level the playing field. That being said, campaign finance rules are non-democratizing in other ways: they protect incumbents, since contribution limits make it more difficult for challengers to raise the necessary money to go after incumbents, and spending limits make it more difficult for challengers to spread their message. Regulations are also negative in that they give a greater relative voice to other elites, such as media. The question becomes: What situation do you ideally want and how do you get there? You don't want people with extreme wealth to dominate the electoral process. But you *do* want challengers to be able to raise enough money to mount an effective campaign. You also want individuals or groups of citizens to be able to criticize the government. It's a complicated trade-off.

Any thoughts on what Occupy Wall Street is saying about money and politics? The movement has drawn attention to the fact that the one per cent is able to dictate the terms of the game, both in politics and the financial markets. It shows that people are becoming frustrated by the erosion of democracy – and that the process and outcome now appear to be skewed in favour of entrenched, privileged interests. Campaign financing is definitely a piece of that story.

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

PHOTO: ISTOCKPHOTO

Sam Whittingham, of British Columbia, holds the world record for the fastest speed on a bicycle, at 133.284 km/h

Land Speed Record

How fast can a cyclist go? A team of U of T engineering students is testing the limit with a two-wheeled vehicle that they designed and built themselves.

At a race last fall, Todd Reichert – a PhD student and one of the team's four drivers – reached a top speed of 116.9 km/h using only his legs for power. The result lifted the U of T group to a third-place finish in the World Human-Powered Speed Challenge in Battle Mountain, Nevada. The event, held annually, draws about a dozen teams from North America and Europe.

Aidan Muller, a second-year student in materials science and engineering, says the team computer-tested several designs to make the vehicle as aerodynamic as possible, and ended up with a carbon-fibre shell that looks a lot like the nose of an airplane. "Up to 80 per cent of the force you use is to cut into drag. Even minor flaws can slow you down," he says. Weight is also an issue, so the team conducted a lot of research into materials. Last year's vehicle tipped the scales at 27 kg, but the team aims to reduce that by a third or even half for this year's race.

– **SCOTT ANDERSON**

Roadside Harvest

Toxic elements in most city-grown vegetables are at acceptable levels, according to a new study. But be careful of the eggplant!

CAR EXHAUST MAY CAUSE PROBLEMS for city joggers and those with asthma, but toxic elements spewed out by Toronto's vehicle traffic are not being absorbed by most locally grown vegetables in amounts that could be considered dangerous for human consumption, according to a new U of T study.

For almost two years, Clare Wiseman, a professor at the Centre for Environment, has been researching the risk to human health of produce grown in urban gardens. She and her mostly volunteer team have grown a variety of herbs and vegetables in areas chosen specifically because they have either high or low volumes of traffic, such as close to the Gardiner Expressway and atop the Galbraith building on the St. George Campus. Wiseman measured the levels of potentially hazardous metals – such as cadmium and lead – absorbed by the soils and the produce, which included Swiss chard, beets, eggplants and oregano.

Wiseman found that despite some "hot spots," the amount of metals found in most of the herbs and vegetables were within acceptable limits (with the exception of lead levels in oregano and cadmium in eggplant grown close to traffic).

Although the study confirms that urban gardeners can safely consume most of what they grow, Wiseman also found that the so-called "organic triple mix soil" from a local garden supplier had higher levels of most trace metals, including cadmium, than the pre-existing soil it was intended to replace. She also found that the plants grown in the organic triple mix soil more readily took up available metals compared to plants cultivated in older soil. In light of this, Wiseman suggests that most gardeners save themselves money by simply planting in existing soils in their own backyards.

Ultimately, Wiseman's advice to urban gardeners is simple: "By all means continue, but maybe not at a roadside location." And, she says, always thoroughly wash your fruits and vegetables. – **ANDREW MITROVICA**

PHOTOS: TOP, COURTESY OF SAM WHITTINGHAM; MIDDLE, ADAM INCE; BOTTOM, ISTOCKPHOTO

Autism spectrum disorder is the most common serious developmental disorder in children, affecting one in 315 girls and one in 70 boys (see "Understanding Autism," Spring 2011)

An Apple for the Students

Autistic children develop better communication skills when using iPads, researcher finds

Prof. Rhonda McEwen (left), with children from Beverley Public School

HANDHELD TOUCH-SCREEN DEVICES such as iPads may offer a window into the previously incommunicado world of children with severe developmental challenges.

At Beverley Public School, a K-8 school for 89 special-needs kids in the heart of downtown Toronto, teachers and researchers were thrilled to see that touch-screen technology instantly engaged children in ways that laminated pictures and verbal instructions had not. The two-year study, which ended last December, found that within six weeks the devices boosted kids' attention spans, raised their ability to identify pictured objects by 45 to 60 per cent, and improved communication skills in these mostly nonverbal children by 20 per cent.

A surprising bonus: students who had never been sociable were suddenly requesting an iPad to initiate an activity with another student. "We were shocked by that," says lead researcher Rhonda McEwen, a professor at the Institute of Communication, Culture and Information Technology at U of T Mississauga, and the mother of a nonverbal eight-year-old daughter with autism spectrum disorder (ASD).

McEwen suggests that the devices' appeal may lie in their multisensory nature, with images and sound – and vibration (thanks to the addition of a downloadable app). She adds that the device's voice app, which is always calm and unemotional, appeals to those who thrive on consistency, including many children with ASD. One boy in kindergarten who had always ignored green "yes" and red "no" boxes on paper responded instantly to the identical boxes on the screen. Kindergarten teacher Stacie Carroll, who sourced a number of apps to record kids' responses for the study, says, "We discovered that many children had an understanding of vocabulary that didn't just exceed what we thought but blew it out of the water."

The study began with iPod Touches, then added iPads as soon as they became available in Canada. The iPad's larger screen is better suited to children with vision or fine-motor challenges, such as the blind six-year-old in a wheelchair who delights in moving his arm across the tablet to create his own music. The school now also owns two iPad 2s with cameras, which allow teachers to email students' artwork instantly to parents.

Within six weeks, the devices boosted kids' attention spans and raised their ability to identify pictured objects

"These kids, who are often marginalized in our school system, now have a profile," says principal Alana Grossman. "The devices have given teachers a sense of excitement, and parents a sense of hope and pride."

McEwen is now studying the devices in middle and high schools. – **MARCIA KAYE**

Findings

Aboriginal Ills

More than 60 per cent of Canada's Aboriginal population live in urban areas and are experiencing high rates of illness and poverty. They also have greater challenges with food and housing security, new research from U of T and St. Michael's Hospital shows.

The study, led by Prof. Janet Smylie, looked at First Nations people living in Hamilton, Ontario. It found that almost 80 per cent of the First Nations people there earn less than $20,000 annually, and 70 per cent live in the poorest neighbourhoods. Rates of diabetes are three times that found generally in Hamilton. First Nations people were also twice as likely to visit an emergency room and 25 times more likely to report living in crowded conditions. "There is a great health inequity here," says Smylie. "First Nations people have more health problems yet access to services and care is poorer." – **KATE HARDY**

Lab on a Chip

James Dou, a PhD candidate in electrical and computer engineering, and his supervisor, Prof. Stewart Aitchison, have developed an affordable, efficient lab-on-a-chip that could revolutionize HIV monitoring in developing countries. Currently an HIV blood-testing device called a flow cytometer can cost $100,000; Dou's patented lab-on-a-chip costs $5,000 to $10,000.

"Flow cytometers are concentrated in high-income countries," says Dou. "Many developing countries simply do not have the facilities or infrastructure to offer HIV monitoring." Dou's affordable invention eliminates the need for those affected by HIV to travel gruelling distances to a central facility.

With additional funding, Dou and Aitchison plan to shrink their current prototype from the size of a breadbox to a hand-held version. Their goal is to deploy 100 devices to organizations in Malawi and Thailand in 2012. – **LIZ DO**

PHOTO: ORLA GARRIQUES

Solar-Powered Flight

James DeLaurier, a professor emeritus at U of T's Institute for Aerospace Studies, has designed a new kind of aircraft that he expects will be able to travel 1,000 km carrying up to 1,000 kg of cargo, powered only by the sunlight that shines on its back. It will also be able to take off from – and land on – a spot no larger than a high-school soccer field.

Not quite an airship, not quite an airplane, the "solar ship" is a hybrid of both. The delta-shaped aircraft will be filled with helium, but slightly less than what's required to lift it off the ground. Solar panels across the top of its body, likely backed up by a lithium-ion battery system, will supply enough electricity to drive it forward and into the air.

DeLaurier worked on the design for a Toronto company called Solar Ship. Jay Godsall, the company's founder and chief executive, says the aircraft will be able to go where no roads are built, where landing locations are too small or have been destroyed, and where existing airplanes and helicopters can't reach on a single tank of fuel.

– **TYLER HAMILTON**

Peer Pressure

A nursing prof is using social networks to help reduce the spread of HIV-AIDS in Ghana

IN NORTH AMERICA, EDUCATIONAL CAMPAIGNS about the dangers of unprotected sex have helped significantly slow the spread of HIV and AIDS among gay men. But in Ghana, where about a quarter of men who have sex with men are infected with HIV, safer sex has proved a tougher sell. LaRon Nelson, an assistant professor of nursing, is investigating whether a different approach to HIV prevention, involving discreet social pressure, will succeed in the small west African country.

Nelson has previously worked in a North American sexual health clinic but he faces a very different situation in Ghana, where homosexuality is illegal and condoms are expensive. People are also less likely to listen to medical professionals than they are in North America. Nelson's solution is to take safer-sex education out of the clinic and into the community, using the people's real-life social networks as a vehicle for promoting healthy behaviour. "If we want to change an individual's behaviour or attitude, we have to change the attitudes of the people around him because he'll respond to that more than a nurse saying, 'You should do this'."

Nelson's first step will be to identify the networks and find out how they work. As part of an 18-month study scheduled to wrap up in December, he and his colleagues are investigating more than two dozen networks of sexually active men located in four different sites in Ghana. By the end of it, they hope to know more about the men's way of life – including drug use, sexual behaviour and whether the men are influenced within their group by leaders or peers. Assuming the study goes well, Nelson and his team will then try to diffuse information and service via the networks. Such services might include testing for syphilis and other common sexually transmitted infections and treating certain sexually active men with anti-HIV medication before they contract the virus, a technology that has been proven to reduce the spread of infection by 50 per cent or more. – **BRENT LEDGER**

PHOTO: COURTESY OF SOLAR SHIP

Photo: University of Toronto Archives - November 11, 1924

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THANK YOU

SEEING DISEASE

Researchers are developing better ways to detect serious illnesses before they become life-threatening – and while they're still treatable

By Marcia Kaye
Illustration by David Senior

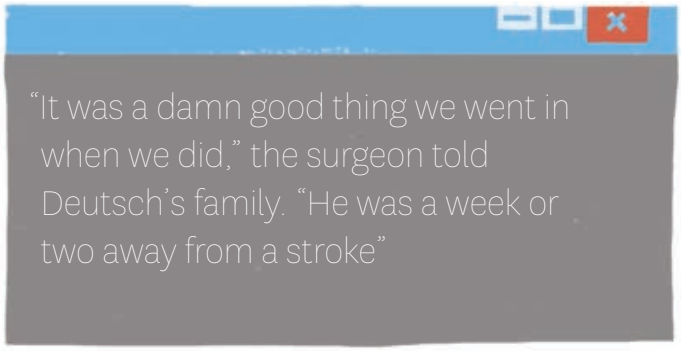
MEIER DEUTSCH THOUGHT HE WAS A HEALTHY MAN. The Toronto software sales executive ran six kilometres at least three mornings a week, could race up a couple of flights of stairs without feeling winded and sometimes walked the 15 km home from work. He'd lost some extra weight, his cholesterol levels were good and his high blood pressure was well managed through medication.

There were no outward signs at all that Deutsch's body was harbouring a cardiovascular time bomb.

But last October at his annual checkup, Deutsch's family doctor heard a subtle whooshing sound in his chest and recommended he see a vascular surgeon. That specialist ordered an ultrasound, the imaging technique that uses high-frequency sound waves to visualize soft tissue and internal organs. The results were concerning enough to lead a week later to 3-D magnetic resonance imaging, an advanced type of MRI that creates detailed digital three-dimensional images using a combination of magnetic field and radio waves. Results confirmed that Deutsch's left carotid artery, which supplies blood to the head, had a dangerous buildup of plaque that was threatening to rupture and lodge in his brain. In early December, Deutsch underwent a carotid endarterectomy, a surgical procedure to scrape out the plaque. "It was a damn good thing we went in when we did," the surgeon later told Deutsch's family. "He was a week or two away from a stroke."

Deutsch, who is 63 and back to his regular routine, is now part of a U of T–affiliated study at Toronto's Sunnybrook Health Sciences Centre that is using the latest imaging techniques to track his right carotid artery for changes. "Since I had none of the symptoms you would expect with artery disease, I'm proof positive that medical imaging works," he says.

Medical imaging has come a long way from the basic X-ray technique, invented more than a century ago, which showed only bones and foreign objects lodged inside the body. Today's imaging systems employ a variety of 3-D and digital technologies that can give detailed pictures of the inner workings of the body that previously couldn't be seen without cutting the patient open. This has led to quicker diagnoses of disease, earlier interventions, better-targeted therapies and less invasive surgeries. "What's guiding us today is no longer the X-ray film on the light box but the computers in the operating room," says Dr. Mark Henkelman, a U of T professor of medical biophysics and a world-renowned imaging researcher. "Canada, especially Ontario, has had a disproportionately high involvement on the international scene in imaging research and development." And U of T–affiliated researchers are having a particularly strong impact in the fields of cardiovascular disease, cancer and Alzheimer's.



We used to think of blood vessels as merely the passive pipes of the body, much like a house's plumbing system. It was believed that when the pipes became thick, thereby narrowing or even blocking the passageway, blood couldn't get through and a heart attack or stroke could result. Conventional imaging techniques such as angiograms, which are X-rays of blood vessels, can show this narrowing. But that's not the whole story, says Dr. Alan Moody, the newly appointed department chair of medical imaging at U of T. Sometimes patients whose angiograms look completely normal can have heart attacks and strokes. Other patients may show a narrowing, such as a 50 or 80 per cent blockage, but never have a cardiac event. "It suggested we were looking at the wrong thing," says Moody, who is also radiologist-in-chief at Sunnybrook Health Sciences Centre.

The new focus, Moody says, is no longer just the degree of narrowing, but the type of plaque in the vessel wall itself. "Blood vessels are very active organs," he says, "and the vessel walls themselves can become diseased." Plaques, made up of substances such as cholesterol, fats or sugars, can grow into the vessel wall. Like mini-tumours, they develop their own little complicated system of fragile blood vessels. These are prone to leaking blood, causing inflammation and rupturing. So even if the vessel isn't narrowed and the blood flow remains normal, the dislodged plaque can cause a blood clot that may move to a blood vessel near the heart or brain and cause a heart attack or stroke.

Moody helped develop an advanced type of MRI that uses high spatial resolution, multiple planes and a large number of images to visualize such a hemorrhage in a blood vessel wall. Called 3-D MRIPH, which stands for three-dimensional magnetic resonance of intraplaque hemorrhage, it shows the problem area as a bright white "hot spot" that jumps out from the grayscale image. "And with 3-D, we get a slab of imaging we can look at in any plane," Moody says.

The technique is non-invasive and takes only slightly longer than a regular MRI. For instance, it can produce images from the aorta up to the brain, on both sides, in eight minutes. If disease is present, there are three possible therapies to lower the risk of a heart attack or stroke. Surgery can remove the plaque; a metal or plastic stent can support the artery; and intensive drug therapy, such as statins, can reduce inflammation.

Every clinical case investigated for carotid disease that goes through Sunnybrook now receives the imaging. But Moody says, "There's evidence that there's a whole tidal wave of people who could benefit from this." One of Moody's research studies includes diabetics, many of whom have had traditional ultrasounds that misleadingly show only minimal carotid disease, while the new MRIPH technology is revealing much more. "We're already seeing really complicated disease in patients with no symptoms," he says.

Radiation therapy is a proven treatment for many types of cancer, used on about half of all cancer patients. But targeting the tumour while sparing the normal tissue around it has always been a huge technical challenge. "For a long time, methods to localize radiation were pretty crude and produced toxicity in healthy tissues, which prevented us from treating some tumours," says Dr. David Jaffray, a medical physicist, and professor and vice-chair in U of T's department of radiation oncology. Areas of the body to receive radiation were traditionally marked on the patient's skin, which ignored subtle changes that might be happening to the patient internally, both to the healthy tissue and to the tumour itself as the treatment proceeds. For instance, a bladder may fill, a lung inflate, a small bowel shift or a tumour alter, creating a moving target for the treatment.

Jaffray attacked this problem by integrating computerized tomography (CT) imaging into radiation therapy to give a more precise real-time picture. His technique, called cone-beam CT, uses cone-shaped beams to produce a more accurate picture of where the tumour is immediately before and during treatment. So the system, which emits radiation beams, at the same time is acquiring radiographs of the patient and feeding them into a computer. The generated images then determine how to precisely align the radiation beam for the most effective treatment for that patient for that particular day.

A treatment unit equipped with cone-beam CT is about 20 per cent more expensive than regular CT, but it delivers more precise X-ray radiation to the patient. "We've seen a reduction in toxicity with image-guided techniques," Jaffray says. "We're also hitting more targets that we wouldn't have otherwise, like prostate, lung and spinal cancers." First used on a patient in Canada in 2003, cone-beam CT is fast becoming standard, with more than 1,000 machines now in use worldwide. Jaffray's team is also in the process of building a $15-million research project that integrates state-of-the-art MRI and radiation therapy technology with a robotic system that moves the patient, to increase precision even more.

Jaffray says that in the near future, we'll see imaging techniques that will further personalize cancer medicine. His team is using a wide array of imaging technologies to measure the delivery of drugs and monitor how a cancer may change with therapy. For instance, if on the first day of treatment a tumour is short of oxygen – which makes it resistant to radiation – will it stay that way? "We're cracking open the old-style treatment, which was the same for everybody, and looking at, 'what is the best thing to do for this patient?'" Jaffray says. "The frontier is exciting."

Alzheimer's disease can be tricky to diagnose in the early stages, since many other conditions – low thyroid, depression, Lyme disease, vitamin B deficiency or a stroke – can cause symptoms such as memory loss and concentration problems that mimic those of early Alzheimer's. In a patient exhibiting signs of dementia, a conventional CT scan or MRI can show if the brain has atrophied and shrunk, which may suggest a diagnosis of Alzheimer's. But there's a problem with that, says Dr. Paul Fraser, a U of T professor of medical biophysics and the Jeno Diener Chair in Neurodegenerative Diseases. "By the time a brain is losing tissue, it's difficult to do much about it," he says, adding that current drug therapies at that point can only temporarily slow the progression, at best. "So a lot of the push is to get early detection, to pick up people before nerve cells start to die."

The disease may begin 10, 20 or even 40 years before a patient comes in with symptoms. Scientists believe that a protein called tau accumulates in the brain, and is involved in the death of nerve cells and the shrinkage of brain tissue. But long before that happens, it's thought that fragments of another protein called amyloid start accumulating and forming plaques between nerve cells instead of being cleared out, as in a healthy brain. Amyloid may be linked to the formation of tau. So if we could see when someone's brain is accumulating too much amyloid, we might be able to intervene before irreversible damage happens.

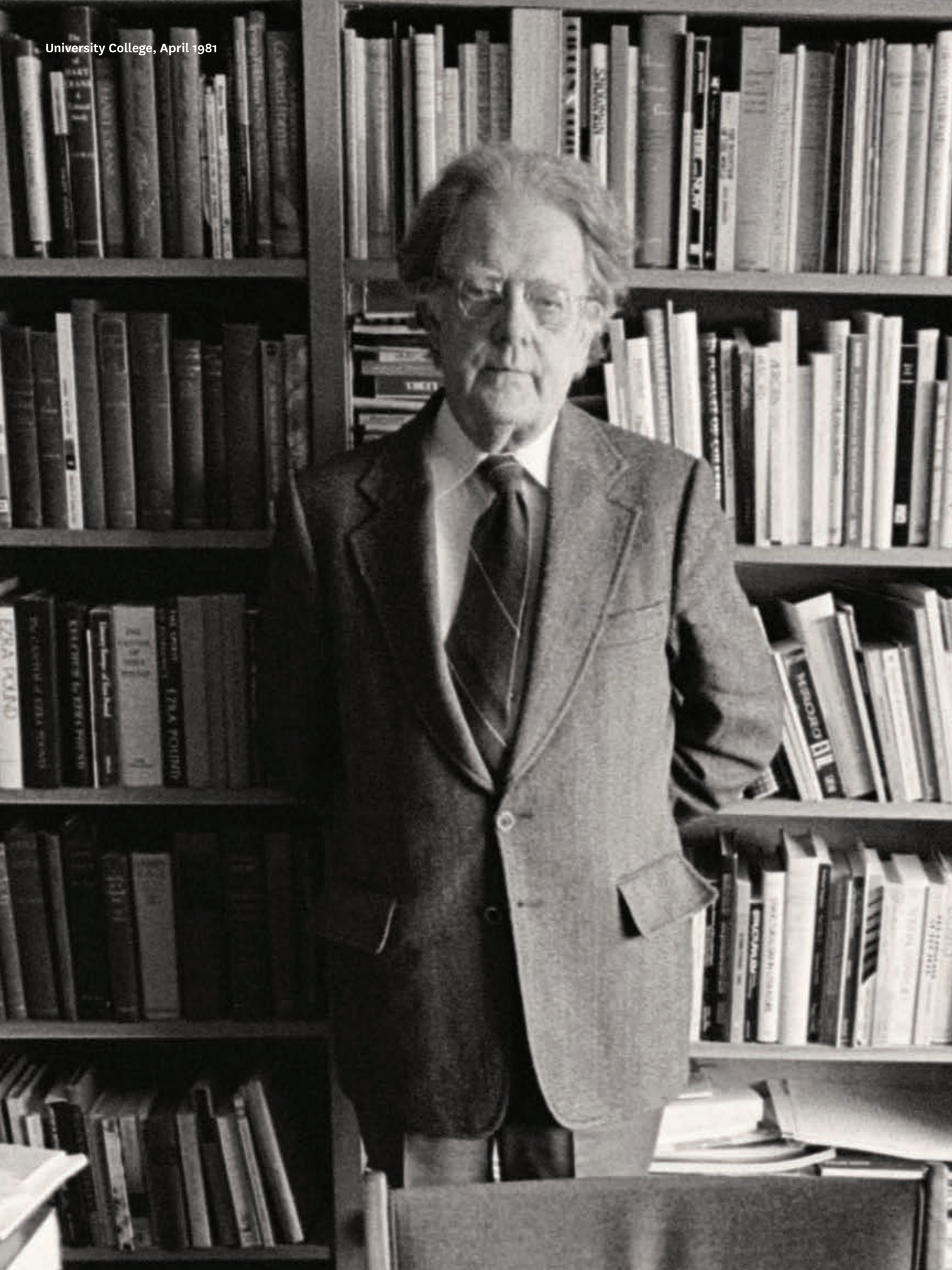
"The most important new development is that we can now do amyloid imaging," says Dr. Sandra Black, the Brill Chair in Neurology in U of T's department of medicine. Multimodal technology, which uses several different imaging techniques together, not only creates a pictorial map of the brain but can look at brain functioning, such as the way the brain accumulates amyloid or takes up glucose, the cells' fuel. Functional MRIs follow blood flow to measure brain activity. SPECT, which stands for single photon emission computerized tomography, is a nuclear medicine technique that involves injecting the patient with a radiotracer that emits gamma rays, producing 3-D images.

Amyloid buildup alone doesn't signify the presence of Alzheimer's dementia, as 30 per cent of people with the biomarker don't show any cognitive loss. But Black explains, "We can now say the person [with amyloid buildup] has Alzheimer's pathology and *may* be at risk of getting dementia." She's also looking at the interaction between vascular disease – disease of the brain's blood vessels – and Alzheimer's. "The commonest cause of dementia is Alzheimer's and vascular disease together," she says.

As research director of the brain sciences program at Sunnybrook Research Institute, Black is leading a Canada-wide amyloid imaging project in people with Alzheimer's disease and cerebral small-vessel disease. Black shares her findings with her patients. "We show them the images of their brain, and that's often an incentive for patients to make changes," she says. Many are motivated to get their cholesterol or diabetes under control, quit smoking, stop drinking to excess and start exercising. "A minimum of half an hour of aerobic exercise three times a week has shown to be brain-protective," she says.

There may also be drug therapies available soon. The Toronto Dementia Research Alliance, a research collective, is following 7,000 patients a year in five U of T–affiliated hospitals that have memory clinics. "There have been a number of anti-amyloid therapies with thousands of patients in clinical trials, but it's thought they haven't worked because they've been started too late," says Dr. Barry Greenberg, the alliance's director of strategy and the director of neuroscience drug discovery and development at University Health Network. The therapies need to start sooner, he says, and that can happen now that imaging is able to pick up signs of Alzheimer's much earlier than before. "Some drugs may be on the shelf already and others are in development, so there's reason for optimism."

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



University College, April 1981

FRYE'S ANATOMY

To many of his English students,

NORTHROP FRYE,

the

BRILLIANT LITERARY CRITIC,

was an

INTELLECTUAL GOD

and

A MASTER LECTURER.

One-on-one, though, he could be difficult to read

TEXT BY
ALEC SCOTT

When Francesca Valente decided to come to Toronto from her native Italy in 1977 to do a master's degree in Canadian literature, her friends from university thought she'd lost her good sense, opting to voyage into what they thought of as a cultural wasteland. But Valente and her friends were in for a surprise: while at U of T, she got the chance to study under the globally renowned literary critic and theorist Northrop Frye, one of the 20th century's most quoted, most lionized thinkers.

Valente calls Frye "the Maestro" to this day, 21 years after his death. She says he inspired her to make culture – and especially literature – the centre of her varied post–U of T career. Over the years, she has arranged literary readings, art exhibits and academic conferences – and translated several of Frye's works into Italian. The latter endeavour she undertook purely out of love for his writing, she says, since for translation, "you get paid enough to buy a pair of stockings."

Valente was not alone in being inspired by Frye. He was one of those teachers who often altered the direction of individual students' lives. The longtime English professor (one of U of T's longest serving) overcame his natural shyness sufficiently to give Margaret Atwood some personal advice when she earned her BA in 1961 – "deflecting" her, she said recently, from her "bohemian plans" to run away to Europe. "He knew of my writerly ambitions, and gave it as his opinion that I would probably get more writing done at Harvard than by drudging away as a waitress in Paris or London, while drinking absinthe and smoking myself to death."

The advice gives a sense of how deeply Frye valued what the academy had to offer: discipline for the mind and fodder for the creative soul.

Certainly, he himself always flourished in academe – both as a student at U of T and at Oxford University during the Depression, and then as a professor. While teaching at U of T's Victoria College from 1939 to near his death in 1991, he published many books and scholarly articles about the literary greats, modern and antique, parsing the likes of Shakespeare, James Joyce, Emily Dickinson, Baldassare Castiglione, T.S. Eliot and William Blake. He didn't limit himself to a particular period, national literature or genre – he grandly took the whole of literature as his subject.

As if wrestling with the giants wasn't enough, he also sought to reform the whole project of literary criticism, wanting to turn it into a quasi-scientific discipline. For this, he was called – sometimes reverently, sometimes not – the Einstein of criticism. His 1957 work, *Anatomy of Criticism,* sought to show how every story ever told could be fit into four essential moulds. Further, the book analyzed literature in light of psychoanalyst Carl Jung's work with archetypes, arguing that certain common symbols and figures populate all of literature, from folktales and ancient myths to contemporary novels.

It sounds, perhaps, to the general-interest reader like difficult stuff – and it is – but Frye's writing is at least not opaque. He made a religion of clarity and turned out lucid, stylish sentence after lucid, stylish sentence. The complexity was always in the thought, not the prose. "In a way that some academics are not, Frye was a writer," says University Professor Emeritus Edward Chamberlin, a former grad student of Frye's. Valente agrees: "I had to try to live up to his beautiful sentences when I was translating them."

Perhaps partly on the strength of its eminently readable style, *Anatomy* sold well immediately, and for two decades became an inescapable text for English students, assigned by professors at universities around the world. Frye's influence reached its height in 1978, when only Plato, Marx, Aristotle, Shakespeare, Lenin, Freud and Roland Barthes were more frequently cited by fellow academics. They even used an adjective – "Frygian" – to describe arguments inspired by him or young scholars following his lead.

During the postmodernist wave that began to wash over North America in the 1980s, though, *Anatomy* fell out of style, and many hip, young literature profs took it off their reading lists. But, by then, the never-still Frye had moved on to the project that would absorb his last decade: showing how the Bible was the bedrock on which all Western literature sits.

While his international reputation rose and fell, his standing on campus remained relatively constant. For most of the last four decades (of the five) he taught at U of T, he was considered an intellectual beacon for the university – one of the profs (with his contemporary Marshall McLuhan) who'd put U of T on the global radar.

By all accounts, he wasn't a dramatic lecturer, but he could pack a lot of thought efficiently into a short time. "He'd leave the room, and there'd be a stunned hush, and then everyone would burst out chattering, bowled over at how much was covered," recalls former student Jean O'Grady (BA 1964 Victoria, PhD 1978). She's spent much of the last two decades as the associate editor of *The Collected Works of Northrop Frye* – the last of the 30 volumes is being released, appropriately enough, this year, the centenary of his birth.

The director of U of T's Centre for Comparative Literature, Professor Neil ten Kortenaar, is also a former student – and one of those organizing a conference at U of T this fall to mark Frye's centenary. He remembers taking a course on the Bible with Frye in the 1980s: "He'd just sit up there lecturing away, not looking much at his notes: totally, effortlessly coherent. Meanwhile, we'd be flipping madly through our Bibles, as he jumped all over. When I thought about becoming a professor, it was never with the thought that I could become him. He was just way beyond."

Frye's biographer John Ayre writes of how groups of students regaled each other with Frye anecdotes at Murray's, a cheap-and-cheerful student hangout of the 1950s. "What did God say today?" was a common question.

"Some of his students may have called him God," Chamberlin says. "I never did, though. He was a vast person, yes, but he was still very much a person."

PHOTO (PREVIOUS PAGE): U OF T ARCHIVES [811067-25]

FRYE AMBITIOUSLY SOUGHT

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FOR THIS, HE WAS CALLED

– sometimes reverently, sometimes not –

THE EINSTEIN

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His divinity also wasn't evident to his schoolmates in Sherbrooke, Quebec, and then Moncton, New Brunswick – where his family moved after the failure of his father's hardware business. Some of his classmates bullied the weedy, piano-playing youngster, with his easily damaged, wire-rimmed spectacles and his thatch of unruly blond hair reaching for the sky. (His vertical hair would become, in due course, something of a campus landmark.)

Later, the adult Frye would remember his boyish self, envying the physique that the giant Samson showed off in the illustrated Bible stories his staunchly Methodist mother read him. In addition to the failure of the family business, the tragedy that overshadowed Frye's upbringing was the death in the First World War of his much older brother, Howard. His mother often made it clear to the living boy that he was not, would never be, a patch on the dearly departed. (And, toward the end of her life, when her mind went, she'd address him by her dead son's name.)

Still, despite her occasional belittling, the boy Northrop had grand dreams for himself: a composer, a novelist – writing a cycle of books to set beside the leather-bound Sir Walter Scotts on the shelf. His prescient high school nickname: Professor.

Frye's ticket out of Moncton – and toward that nickname – came, oddly enough, through his prodigious ability to type. With his piano-strengthened fingers, he shone in a typing class at Moncton's Success Business College (where he went after high school). The college sent him to Toronto, twice, to compete in one of the Jazz Age rages, a typing competition – held each time in Massey Hall. Before the second trip, he secured admission to Victoria College. Frye competed desultorily in the type-a-thon, and then stayed to begin his life's work. He won whatever scholarships were necessary to take him through Vic (undergrad nickname: Buttercup, due to his hair colour), and then went on to Oxford, where the writer C.S. Lewis was, once, his examiner.

It was at Vic that he met his wife-to-be, Helen Kemp, another arts student. He was doing the lighting on a student production of *The Gondoliers*, and she was offstage giving line prompts. She was an artist's daughter, and as such had an entree into the Toronto cultural scene that Frye wanted desperately to join. She was also a great devotee of the piano – and could play every bit as well as he. Their letters when they were separated for long periods – when he studied literature at Oxford, or she art history at the Courtauld Institute of Art in London – reveal a relationship that was equal parts heart and mind. In one impassioned note, Frye wrote: "Every time I think of seeing you again my stomach feels as if it had electric wires in it."

He'd later dedicate his magnum opus – 1957's *Anatomy of Criticism* – to her (in Latin: *HELENAE UXORI)* and once commented, after her death, that he hoped to make his next book one worthy of "Helen and God" – in that order. After reviewing their warm and witty correspondence, one of the country's leading Frye enthusiasts, journalist Robert Fulford wrote: "Frye was that rare creature, a prodigy whose promise was entirely fulfilled….This came about through the love of a woman both good and wise, as in many old-fashioned tales."

Still, they shared a regret: they never bore any children together. She conceived once, but it was before they were married and settled, and they decided to arrange an abortion. She likely become pregnant a second time, but it is not clear what happened – only that she didn't have the child.

The outward facts of Frye's life, his interactions with others, however painful or pleasant, can ultimately explain but little about him. His friends, former students and colleagues, report that there was always something fugitive – something untouched and untouchable – about the man. "There was a part of him that was entirely his own, that was fundamentally solitary," says Robert Denham, a Frye scholar and professor emeritus of English at Roanoke College in Virginia and the editor of several volumes of Frye's *Collected Works*. What, then, of the life of his beautiful, cloistered mind?

Like many great and clear thinkers, Frye was fond of walking – he couldn't drive, instead taking the subway to work at U of T. Once (as a student) he walked the whole of Bloor Street in a day; after he was married and living uptown, he'd often pace, with Helen or not, up and down St. Clair Ave.

The thoughts travelled in two basic streams on his early walks – followed by a third in later ones. First, he engaged his intellect with the Western tradition's most challenging, canonical writers, especially those with a religious bent. His career really began with the book that put him on the literary criticism map: *Fearful Symmetry*, an analysis of William

Blake's difficult prophetic poems, published in 1947 by Princeton University Press. The American publishing house's acceptance was a coup for a then-obscure young academic from Canada. Books on Milton and Eliot would follow, and he'd produce dozens more in the course of his life. Essentially, Frye saw literature as soluble: with enough hard work, you could figure out what it meant – or a range of plausible meanings.

Second, he ambitiously developed a system for categorizing every story ever written or told, from cowboy westerns to whodunits, from futuristic sci-fi back to the myths of primitive societies, from comedies of manners to the bloodiest war fiction. "He wasn't someone who only paid attention to high literature," Chamberlin says. "He'd love to take a break to read a detective novel over a beer in a pub. If you mentioned one you'd read, he'd soon have bought it and read through it." He also liked crosswords, often polishing off one from *The Times* during a quiet half hour in Vic's senior common room.

In the keynote address at last year's Frye Festival in Moncton (see page 39), Atwood adeptly, and somewhat jokily, described the basic schema set out in *Anatomy of Criticism*: "[There are] four main types of story: the romance, in which the hero journeys on a quest, kills dragons and rescues maidens; the comedy, in which the hero and the maiden can't get together due to interference by censorious old fogies, but which, after complication, ends with marriage; the tragedy, in which the protagonist falls from a height and ends up dead or in exile; and irony, in which old fogies sit round a winter fire in a frozen world and tell tales."

Frye's schema, and his discussion of Jungian archetypes, bowled over the academic and general reading world upon *Anatomy*'s release in 1957. Many felt, as essayist Angus Fletcher had suggested, that Frye's work had done what Baron Haussmann's redesign of Paris had: opened up large boulevards through old, formerly clogged neighborhoods. For two decades, the book held sway and by the time Valente arrived at U of T from Italy in the late 1970s, Frye was considered by many the world's foremost literary scholar.

Then, in the 1980s, came the postmodern deluge – the first wave of deconstructionists, semioticians and post-structuralists. For the latter, Frye's structure was exactly what they were seeking to put behind them. Frye's carefully worked out categories, and subcategories, were increasingly derided as the "pigeonholes" of an overly anal mind; in the identity politics era, his engagement with the canon, the writings of all those dead white males, appeared retrograde. The miscellaneous thinkers lumped together under the banner of postmodernism dismissed Frye's belief that literature's meaning could be ascertained with some certainty – to them, words on the page were blank "signifiers" with absolutely no connection to the "signified" (the meaning).

Although Frye made some salty comments in his ever-present notebooks about the onslaught of deconstructionists ("[there is] a sentence from Julia Kristeva [that] I can no more understand than I could eat a lobster with its shell on"), he didn't express many public worries about his falling stock. Instead, he continued to shift gears, working on what would become his third intellectual contribution: showing how the Bible's stories underlay all of Western literature. He produced 1982's *The Great Code* – which made an original contribution both to biblical and literary scholarship. His notebooks also reveal a genuine interest in Buddhism and Islam – he had particular time for religions where God takes on human form. Most of the books and articles he turned out in the '80s tended to work this same religion-meets-literature vein.

This then was the third and final stream of his thought – one he undertook while his beloved and once pin-sharp Helen fell prey to the too-slow goodbye of Alzheimer's, passing away at last in 1986. He married again two years later, and worked until his death in 1991. In a sense, this scripture-centered work returned him full circle to those beautifully illustrated Bible stories his mother read to him when he was little. He hadn't become a physical Samson in the interim, but his mental powers were formidable.

A tall, symmetrical stone house – the quintessential Upper Canadian farmhouse – sits near Christie Lake in West Flamborough, a rustic village not far from Hamilton, Ontario. Its occupant Alvin Lee was a longtime English professor at McMaster and then its president. Over the last two decades, Lee has shepherded – with Jean O'Grady's able assistance – the posthumous publication of Frye's *Collected Works* in 30 volumes.

"Frye was never one to sit in his university roost," Lee says, over coffee. "He got involved in secondary education – working on high school texts. He sat on the CRTC. He spoke to school groups, did interviews. He was engaged politically." Indeed, he (and Helen) actively supported abortion rights and championed the precursor to the NDP. Unlike many literary bookworms, he had a nose and enthusiasm for politics – and a dislike of anti-democratic extremes. He disagreed hotly with those in his circle who expressed either fascist or communist sympathies in the Depression-polarized 1930s.

Frye was an early promoter of Canadian literature, dutifully doing a roundup of each year's poetry offerings in the 1950s, when it was still popular to disdain or ignore all local writing. As a poetry reviewer, he once got himself in trouble by declaring: "One can get as tired of buttocks in [Irving] Layton as of buttercups in the *Canadian Poetry Magazine*." This provoked the irrepressible Montreal poet to conduct a long public campaign against Frye.

In the decade or so before he died, Frye had the satisfaction of seeing CanLit grow from a field occupied by aesthetically minded amateurs to one filled with professional writers, most

notably his former student Atwood. In his quiet, detached way, he was something of a patriot – and several times turned down lucrative job offers from leading American universities.

Frye once wrote: "I have unconsciously arranged my life so that nothing has ever happened to me, and no biographer could possibly take the smallest interest in me." It is, to a certain extent, true. A scholar's life is notoriously hard to mark with clear external signposts. But in amongst the umpteen reverie-filled walks, there were certain high moments.

In the 1974–75 school year, Frye landed one of the academic world's bulliest pulpits, the Norton Professorship at Harvard University – other recipients have included Robert Frost, Leonard Bernstein, Jorge Luis Borges and e.e. cummings. He is reported to have impressed his audiences over the course of several packed lectures and overstuffed classes – they applauded at his first lecture when he drew his then-famous diagram of literature on the blackboard. A student newspaper joked: "His was the first oversubscribed Bible course since the 7th century."

There were, of course, the honorary doctorates – 38 in total. And the shy man must have been secretly pleased by the rowdy pageantry that greeted his appointment as principal of Victoria College in 1959, with students exuberantly throwing toilet-paper rolls around an all-college meeting in celebration, and one carrying a placard saying, "The Truth Shall Make You Frye" – altering the words carved on Old Vic.

Frye once said a critic's role was to play John the Baptist to the extraordinary writer's Jesus. To herald the greatness of another – it is a role with some dignity to it, but it also requires some selflessness.

Although he was generally humble before the works he identified as great or worthy of notice, he was not, in the end, unduly modest about his critical abilities. One day, when Denham was going through Frye's files, he came across a single piece of paper. On it was typed: "Statement for the Day of My Death." Below, it read: "The twentieth century saw an amazing development of scholarship and criticism in the humanities, carried out by people who were more intelligent, better trained, had more languages, had a better sense of proportion, and were infinitely more accurate scholars… than I. I had genius. No one else in the field known to me had quite that."

Will the centenary of his birth help return Frye to his once central role in literary criticism? Will posterity agree that he had genius? Chamberlin hopes so. "Reputations go up and down – that's what they do. But I think it will rest over the long haul on his writing about texts – the extraordinary, enlivening insights he has on the books he turns to. He was first and last a reader."

At the end of her Canadian adventure, following several years as director of the Italian Cultural Institute in Toronto, Valente gave everyone in her professional circle a bookmark to remember her by. On it she had printed some words from Frye – ones she says she's lived by. The bookmark read: "The fundamental job of the imagination in ordinary life, then, is to produce, out of the society we have to live in, a vision of the society we want to live in."

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

Celebrating Northrop

Moncton's annual Frye Festival attracts thousands, including many distinguished authors

As a rule, Dawn Arnold (BA 1989 New College) doesn't let naysaying hold her back. In 2000, the French and English lit grad and others came up with the idea of holding a literary festival to honour Northrop Frye in Moncton, New Brunswick, the town where the scholar spent much of his youth. "People said no one would come," Arnold says. So she felt justifiably proud when a respectable 3,000 people attended the first year, and when the crowds kept growing – to 17,000 last year. The bilingual festival has surprised skeptics also by drawing many distinguished Canadian and internationally known authors, such as Richard Ford, Alistair MacLeod and Ursula Hegi. "We've had winners of all the major national and international prizes," says Arnold.

But for a long time, there was one conspicuous no-show. Every year, Arnold would invite Frye's former student Margaret Atwood (BA 1961 Victoria); every year, a polite refusal. In 2010, Arnold found herself next to the renowned author at a security checkpoint at Pearson Airport, both of them getting their hands swabbed for bomb residue. Arnold seized her opportunity, swiftly introducing herself and pressing her cause. Atwood was a good sport about being buttonholed: "I should never be allowed out in public," she later joked – and accepted the invitation to deliver last year's keynote address, serving up an irreverent talk about the brainy professor's impact on her and his other students.

This year's Frye Festival will run from April 23 to 29, and, in honour of the scholar's centenary, the festival has commissioned a life-sized bronze sculpture of Frye scheduled to be unveiled on what would be his 100th birthday, this Bastille Day.

In October, Frye's alma mater, Victoria College, will host its own international conference to mark the centenary, with themes ranging from "Canadian Literature in a Post-National Age" to "The Survival of the Literary Imagination in the Digital Age." University Professor Emeritus Edward Chamberlin will be among the speakers. "Frye's basic message – that the imagination shapes reality – continues to be relevant," Chamberlin says. "We still live through our stories." – **ALEC SCOTT**

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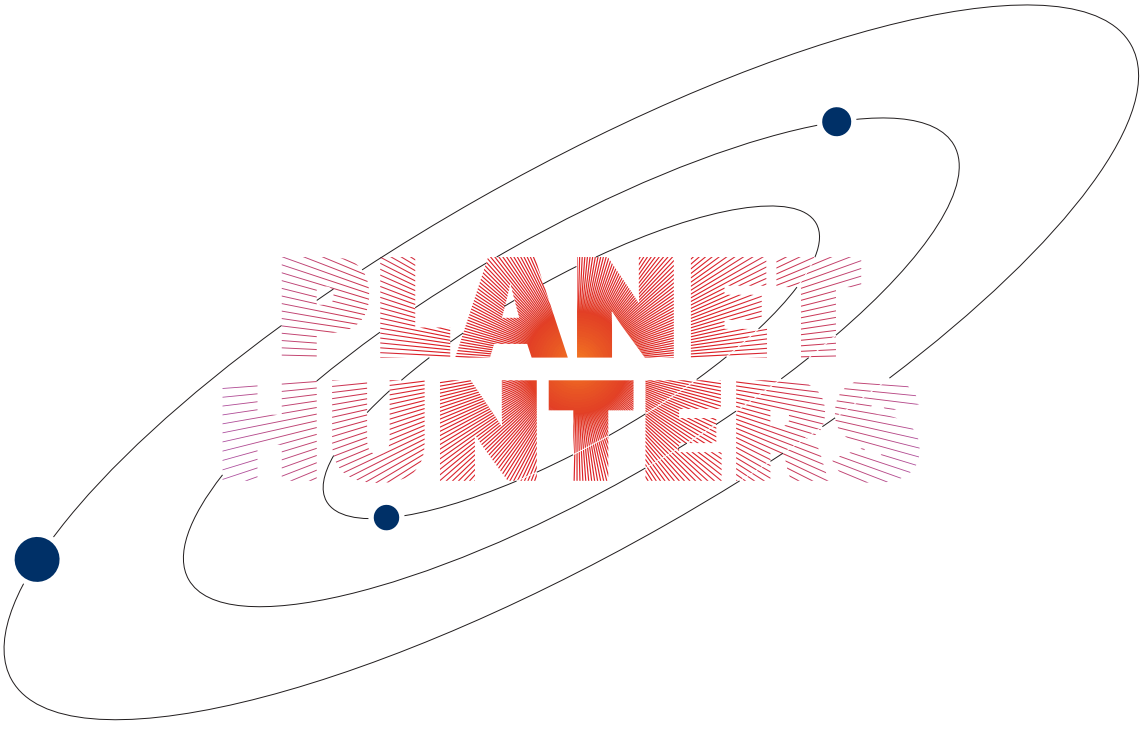
UNIVERSITY OF TORONTO
BOUNDLESS LEGACY

BY **PATCHEN BARSS**
ILLUSTRATION BY **SIMON PEMBERTON**



With the discovery of hundreds of worlds around other stars, will we find that Earth is not alone in bearing life?

THEY CALL IT "THE BLUE MARBLE." It's a photograph of planet Earth taken in 1972 by the Apollo 17 crew on their way to the moon. Snapped from a distance of 45,000 kilometres, it shows a world of continents and oceans, clouds and ice caps. A cyclone twists over the Indian Ocean, and vast patches of green hint at the abundance of life teeming on the planet's surface.

How common is a sight like this in the universe? Are there millions of Earths orbiting distant stars, or are the circumstances that conspire to make life possible so complex and improbable that ours is the only habitable planet in the cosmos?

Despite the discovery of hundreds of new worlds, scientists have yet to observe even one truly Earth-like planet. The planets they are finding, meanwhile, are forcing them to rethink how solar systems form and are bringing them closer to answering the question, "Is there life elsewhere in the universe?"

The pace of discovery has been breathtaking.

In 1991, scientists had discovered exactly zero planets orbiting stars other than our sun. Ten years later, they had found 62 such extrasolar planets, or "exoplanets." By the end of 2011, that number had climbed to 716, with thousands of other candidates under investigation.

In some ways, this flurry of discovery makes the Earth seem commonplace – planets abound in our galaxy. But the variety and oddity of so many exoplanets suggests that Earth might be anything but typical. It also hints that our solar system might have a stranger past than people once thought.

"Our view of planet formation is being turned on its head," says Ray Jayawardhana, a professor of astronomy and astrophysics. "It must be a much more dynamic process than previously thought, one that ends up hurling planets around, leaving them far from where they formed." Jayawardhana is the Canada Research Chair in Observational Astrophysics and the author of *Strange New Worlds: The Search for Alien Planets and Life Beyond Our Solar System* (HarperCollins Canada, 2011). He was part of a Toronto team that in 2008 captured the first direct image of an exoplanet orbiting a sun-like star.

Jayawardhana is one of many U of T–based planet hunters. Researchers in the astronomy department, the Dunlap Institute for Astronomy and Astrophysics, and the Canadian Institute for Theoretical Astrophysics (CITA) are all caught up in one of the most exciting explorations in physical science.

Quinn Konopacky, a post-doctoral fellow at U of T's Dunlap Institute recalls the thrill of planetary discovery when she was doing a previous post-doc at the Lawrence Livermore National Laboratory in California. In 2009, she was part of a team examining images of a star in the constellation Pegasus. This star was already known to have three gas giants sweeping around it. New images, though, revealed an additional "blob" closer to the star.

"I was very excited about the new planet candidate, but we had to make sure it showed up again to be certain it was real," she says. In 2010, the object reappeared in images from the Keck Observatory in Hawaii. Calculations showed that it was indeed a fourth planet. The team realized that, with four giant planets in wide orbits, the system was analogous to a scaled-up version of our own solar system. "This was pretty profound," says Konopacky. "I don't know of any other planetary systems that have such similarities to our own."

Astronomers are now searching for new models to describe what is out there. "The big story is the incredible diversity of worlds," says Jayawardhana. "It really does seem that nature is much more prolific and wondrous than our imagination – by a wide margin."

Until recently, theories of planetary genesis were necessarily based on our own relatively orderly solar system, where large planets orbit far from the sun, smaller rocky planets circle in closer, all planets travel in the same direction in nearly perfect circles and their paths fall almost in one plane.

Now astronomers have found exoplanets smaller than Earth, many times larger than Jupiter and all sizes in between. Some planets orbit in one direction while their star spins in another. Some follow oval-shaped paths, swooping in close to their stars and then flying back out into cold, distant regions. Still others orbit at strange angles, far out of alignment with the original dust disks. Each new surprise changes theories of planetary system architecture, and also raises new questions about how common life-supporting planets might be.

Another big surprise has been a multitude of huge gaseous planets that orbit much closer to their stars than anything in our own system. These so-called "hot Jupiters" speak to new theories of chaotic and complicated planetary evolution.

"The observers love it because they're making the theorists look like fools," says CITA director Norman Murray. "When you see these discoveries, you say, 'How could this happen? Everything we know is wrong.'"

In actuality, theorists such as Murray had predicted some of these phenomena. But the flood of new information is changing the established story.

It's widely believed that every planetary system begins with a cloud of gas measuring about a light year in diameter. Over millions of years, the cloud spins and compresses under its own gravity and momentum into a whirling disk of material with a central bulge. The centre collapses into a star, while the rest of the disk provides raw material for planets.

What happens next is a matter of debate.

One long-standing but still contested theory suggests that dust particles in the cloud stick together, gradually accreting into pebbles, boulders and larger bodies called "planetesimals." Eventually, they become massive enough that their gravity starts attracting even more material. Ultimately, these objects become protoplanets and then full-fledged planets.

There are problems with this "core accretion" theory, though. The forces that bind tiny particles together are different from those that hold a planet together. Theorists can't fully explain how objects make the jump from chemically bound to gravitationally bound bodies. Also, core accretion is slow. It could take millions of years to grow a gas giant this way, but the stellar disks out of which planets form don't last nearly that long.

A second theory involves "disk instability." This theory suggests that turbulence in the dust cloud creates globs of matter that simply collapse into planets under their own gravity.

Neither theory is completely accepted, nor are they mutually exclusive. There is some evidence that smaller planets may form via core accretion, and giants via disk instability. Recent discoveries now show that, however planets first come together, their origin story doesn't end there. "It's not as though all these systems form the same way," says Murray. "The hot Jupiter systems didn't form the same way as other systems."

Hot Jupiters are mysterious because a star and large planet that form so close to one another should theoretically fuse into a single object. This has led to new theories suggesting that planets may be much more mobile than previously thought.

A hot Jupiter may form far from its star, "migrating" over time, sweeping up gas and other planetary bodies, growing larger and larger as it edges closer to its system's centre. The migration theory, though, can't explain yet another surprising type of exoplanet – smaller gas giants known as "hot Neptunes." If hot Neptunes migrated toward their stars the way scientists' models project, they should have picked up more material along the way and ended up much larger.

In addition to gradual processes such as migration, astronomers now think more dramatic forces may also be at play in planetary system formation. Some strange architectures may result from planets crashing into one another, objects whipping planetary neighbours into new orbits and other volatile behaviour that researchers are only beginning to contemplate. Each new system seems to demand new explanations.

As varied as planetary systems have turned out to be, planets themselves have become indisputably common. In fact, it is possible that every star has planets. "Before 1996, you could have argued that planetary systems might be very rare, but today we know that planet and star formation work hand in hand," says James Graham, director of the Dunlap Institute.

Graham is a project scientist for the Gemini Planet Imager, a cutting-edge camera that relies on a technology called "adaptive optics" to compensate for image distortions caused by the Earth's atmosphere. When the Imager sees first light in early 2013, it will be able to pick out a planet that is one ten-millionth as bright as its companion star.

The big story is the incredible diversity of worlds. It really does seem that nature is much more prolific and wondrous than our imagination

Direct imaging is just one planet-detection method; most planets are identified via indirect measurements only. For example, if a star periodically dims, it can indicate that a planet is "transiting" in front of it. A planet's gravity can also create a telltale wobble in the motion of its star.

Despite these and other detection methods, an authoritative planetary census still faces technological limitations. In general, larger planets in younger systems are easier to detect. Direct observation works best for planets far out from their stars, while many other methods are only practical for planets in tight orbits. Small Earth-like planets are often a major challenge.

Step by step, though, new tools reveal an ever-greater diversity of planets, orbits and systems. One of the major quests in the field is to find Earth-sized planets orbiting their stars at a "Goldilocks" distance, where it's neither too hot nor too cold for liquid water. Such planets would be the most likely candidates for finding extraterrestrial life.

In addition to ground-based observatories, planet hunters also have access to tools such as NASA's Kepler Space Telescope, which has a mission to find planets similar to our own.

Kepler reveals variations in light intensity for thousands of stars. A single dip could have many causes, so researchers look for at least three periodic indicators before they draw publishable conclusions about the existence of a planet.

Because Kepler scientists monitor Earth-like orbits, three dips takes about three years. Kepler launched in 2009, so many people expect major announcements this year or next.

"I've heard people connected to Kepler hint that there are Earth-sized planets in Earth-sized orbits," says Murray. "It hasn't been announced yet, but I suspect they know."

Even with current limitations, there exists an astounding depth of information about exoplanets. Scientists can calculate their diameter, orbital distance and, in some cases, whether a planet is rocky or gaseous. They can measure temperature, atmospheric composition and other surprising details. They can provide weather reports for planets hundreds of light years distant – a hot Jupiter forecast might call for temperatures in the high 700s with winds gusting up to 9,000 km/h.

Of course, not all exoplanets have such extreme environments. And with so much new information, researchers are getting closer to answering a fundamental question: Is there life on other planets?

Murray cautions that the apparent abundance of planets doesn't necessarily mean life abounds in the universe. "There are probably a lot of stars with Earth-like planets – on average there could be at least one per star," he says. "But astronomers and biologists lack imagination. We don't understand how life can form without liquid water and carbon." Many other conditions may also be necessary for life and we still don't know exactly how precise and rare they might be. Consider the other "Earth-like" planet in our own solar system. Venus is similar in size and composition to our world, but minor differences make it completely inhospitable to life as we know it. (Mars, with a mass about one-tenth of our planet, is arguably too small to qualify as "Earth-like.")

Still, Murray says, even if only one in 10 or one in 100 stars have planets suitable for life, "That's still a lot of stars." (Astronomers estimate there are at least 100 billion stars in our galaxy alone.)

The James Webb Space Telescope, scheduled for launch in 2018, may help scientists detect the building blocks of life – oxygen, ozone, water and carbon dioxide – on extrasolar planets. But researchers caution that there are still a lot of challenges to overcome to fully understand these new worlds. "We're just at the beginning," says Konopacky.

The existence of exoplanets went from questionable to commonplace in the space of two decades. The discovery of extraterrestrial life could happen just as suddenly – it is more likely than ever that our blue marble will turn out to be merely one of dozens spinning through the firmament. "That dramatic moment is no longer a remote possibility," says Jayawardhana. "It may well occur in our lifetime, if not during the next decade."

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

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Friday, June 1

1 p.m.

- What's New About 21st Century Spying? – Wesley Wark
- Transition Towns: A Global Social Movement Builds Community Resilience in the Face of Climate Change and Peak Oil – Blake Poland
- The Tumultuous World of King James VI and I: Celebrating 400 Years of the King James Bible – Stuart MacDonald

2 p.m.

- Has the World Gone Mad? – Joseph Heath
- Nutrition and Brain Function – Carol Greenwood
- The Art of Play – Mark Kingwell

Saturday, June 2

9:30 a.m.

- Marshall McLuhan: The Man and His Message – Donald Gillies

10:30 a.m.

- Engineering Today – with Yu-Ling Cheng, Lloyd A. McCoomb, and Milica Radisic
- How to Look for Love: A Refreshing New Take on Men, Women, and Romance – Mari Ruti
- Bringing Hunger Out Of Hiding – Valerie Tarasuk

11:30 a.m.

- Nurturing Excellence: How Canada Became a Leader in Stem Cell Science – Joe Sornberger
- Technologies for Aging Gracefully – Ronald Baecker
- A Healing Bridge – Izzeldin Abuelaish

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Saturday, June 2
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Samantha Nutt

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Saturday, June 2, 2012

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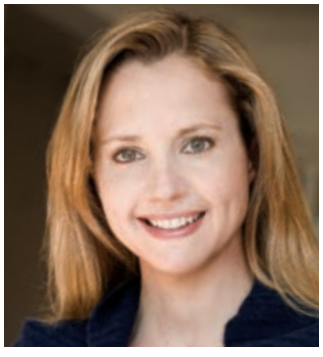
Featuring Keynote Speaker:
Dr. Samantha Nutt



- Founder of War Child Canada, an international humanitarian organization, and author of *Damned Nations*, a bracing account of her work in some of the world's most devastated regions
- One of the most influential voices in the humanitarian arena; named one of 25 Transformational Canadians by the *Globe and Mail*, and one of Canada's Five Leading Activists by *Time Magazine*
- Staff physician at Women's College Hospital and assistant professor of medicine at U of T
- Appointed to the Orders of Canada and Ontario and a recipient of several honorary doctorates

Dr. Nutt will be signing copies of her book following the UTAA AGM. For more information on War Child go to www.warchild.ca

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UNIVERSITY OF TORONTO ALUMNI ASSOCIATION

All About Alumni

I'd ask how many of them believed in government conspiracies. Every hand went up

X-Files actor William B. Davis, on his fan base
p. 54

Suneet Singh Tuli in Hyderabad, India

Bringing the Internet to Millions

Suneet Singh Tuli has engineered an affordable tablet computer for the developing world

WHEN APPLE FAMOUSLY UNVEILED THE IPAD in January 2010, the late CEO Steve Jobs proclaimed it "a magical and revolutionary device at an unbelievable price" at US$499. U of T engineering grad Suneet Singh Tuli hopes to bring the same brand of magic to the developing world – offering a tablet computer at an even lower price tag. How low? Try 50 bucks.

"The whole intent is to make Internet access affordable enough for the next tier of customers," says Tuli, who founded the company Datawind with his brother, Raja. Currently, about two billion people worldwide enjoy Internet access; but another four billion use low-cost mobile phones without Internet access. "We believe that four-billion-person market is ready to be tapped," says Tuli (BASc 1990). As of late February, Datawind had launched a pilot model and delivered 10,000 tablets to the Government of India. They will vie with other companies for a contract to build an additional 1 million tablets.

Building a touch-screen Internet tablet computer for peanuts involves, to say the least, some serious engineering hurdles. "A lot of the challenge was the decision-making process," says Tuli – deciding what absolutely had to be included, and what was expendable. As a result, features that North Americans take for granted, such as Bluetooth, are ›

PHOTO: DARYL VISSCHER/REDUX

Leave No One Behind

Avis Glaze fights for the kids who struggle in class

IN LESS THAN A DECADE, Ontario's public education system has dramatically lowered the high-school dropout rate, and improved student equity and outcomes. The mastermind behind the transformation is Avis Glaze, who became the province's first Chief Student Achievement Officer and founding CEO of the Literacy and Numeracy Secretariat in 2004. Soon after, her battle cry – "Every child must reach their potential, there can be no throwaway kids" – echoed through the corridors of the most troubled schools.

To fight for the kids at the bottom of the class, Glaze inspired teachers with accounts of what other educators had done to raise the reading level of faltering students. She asserted that academic success hinges on the ability to read, and to read well.

Growing up in Jamaica, Glaze was a voracious reader. Her favourite books chronicled injustices around the globe – from apartheid in South Africa, to the plight of Aboriginal Peoples in North America. As a teacher, she came to believe that democracy depends on an effective public school system. In 1974, Glaze enrolled at OISE and by 1980 she had completed two master's programs and earned a doctorate in education.

As Glaze rose from teacher to such roles as superintendent and director of education in Peterborough, she created a unique program to impart the values – such as respect, integrity and hope – that students need to become responsible citizens. "Values are taught and modelled," says Glaze. "You don't absorb them through osmosis." In 2007, her character education program caught the eye of Premier Dalton McGuinty and began to be implemented in all Ontario public schools – from JK to Grade 12.

Glaze's equity work is now centre stage, and she travels the world working with educators. She also recently co-wrote the book, *Breaking Barriers*. – **SUSAN PEDWELL**

OVERHEARD

> The most important [business] decision that we ever made was to absolutely commit to staying made in Canada – definitively, forever. A Canada Goose jacket is like a Swiss watch. You can't make a Swiss watch in China, and you can't make a Canada Goose jacket in China either.

Dani Reiss (BA 1997 WOODS), CEO of Canada Goose Inc. and winner of the Ernst & Young Entrepreneur of the Year Award, in a video interview with the *Globe and Mail*, posted online Nov. 25

out. The UbiSlate's touch field is not as sensitive as one in a new North American tablet, its processor is slower and its battery life is shorter. However, a slot accepting USB flash drives – a cheap and low-tech way to share files, already common amongst target users – is included. Test users have noted the drawbacks, which has led to governmental concerns – and a request for other companies to get involved.

The hardware wasn't Datawind's only hurdle. "How do you deliver the Internet on the kind of networks that exist in the developing world?" says Tuli. The company developed compression software that delivers the web over low-bandwidth networks built for mobile phones. (And yes, it's patented.)

Ubislate's potential to provide a window on the world for people living in rural areas of the developing world is not lost on Tuli. The experience of immigrating from Punjab, India, to Tehran, Iran, in 1976 and then to Edmonton in 1979 gave the Tuli brothers a global perspective that informs their business today. "There weren't many Sikhs around at the time," Tuli says of both Tehran and Edmonton, "so it was a great learning experience both ways…Having lived in different parts of the world, you carry a unique appreciation for how broad it is."

No one knows exactly what the effects of connecting a few billion more people in the developing world to the Internet will be: "We've already seen the value of Twitter and Facebook on something like the Arab Spring," says Tuli. "We think that the web offers a level of empowerment that wasn't imagined before." – **GRAHAM F. SCOTT**

PHOTO: LEFT, SUSAN BENOIT, DIFFUSION PHOTOGRAPHICS; RIGHT, DANIEL EHRENWORTH

According to Nobel Prize-winner Amartya Sen, people starve because they don't have the land to grow their own food or the money to buy it – not because of lack of food

Thinking Outside the Package

Canadians need to push back against the processed-food industry, says author Jeannie Marshall

WHEN JEANNIE MARSHALL MOVED TO ROME IN 2002, she was lured in part by the sensuousness of Italian cuisine – from classic pasta dishes such as *carbonara* to a simple chicken stew of *pollo alla romana*. But she also wanted to immerse herself in Italy's cohesive food culture, which embodies history, place, health and community. She began to think about how different Canada's "industrial food environment" was – with its heavy emphasis on prepackaged, processed food. When Marshall became pregnant two years later, she realized how crucial it was to establish food traditions and wholesome eating habits in childhood: it is in this early stage, she argues, that entire food cultures are built or broken. This is the basis of her book, *Outside the Box: Why Our Children Need Real Food, Not Food Products* (Random House Canada).

"Of course fresh food has vitamins, too, but they're not listed on a stalk of broccoli"

Marshall (BA 1993 WOODS) excels at explaining how much control the packaged-food industry has over us. She highlights the industry's genius for manipulating and marketing science, noting it defines its products through the vitamins and nutrients that have been pumped into them, to convince parents that these are superior to the traditional diet of whole fresh fare. ("Of course fresh food has vitamins, too, but they're not listed on a stalk of broccoli," she writes.) Even the children's items that are marketed as healthy – specialty yogurts and bars, and other snacks – are often heavily processed and may contain a large number of chemicals and preservatives.

Marshall traces the industry's journey across the globe, as it peddles junk food overseas. To her chagrin, it also markets artificially fortified products to poor countries as *the* way of relieving malnutrition. "It would be so much easier, not to mention profitable, to simply give the world a Pepsi fortified with vitamins and minerals than it would be to ensure that people in poor countries have access to real food." She believes one solution lies in putting the power in the hands of the disenfranchised – such as helping them cultivate the fresh foods that could be grown in their environment.

Abroad and at home, Marshall asserts, we need communities – not just individuals – to remake food cultures. This will help ensure that children's rights to wholesome fare take priority over the food industry's concerns. – **STACEY GIBSON**

Alive and Awake

Singer Amy Sky returns with a message

Amy Sky's music can hit a nerve. When one of her songs comes on the car radio, you may need to pull over, rest your head on the steering wheel and weep. "A lot of people have told me they've done just that," says Sky, a three-time Juno nominee. "'I Will Take Care of You,' especially, seems to have that effect."

After putting her career on the back burner to raise her two children, Sky (BMus 1982) is releasing *Alive and Awake* – her first album of all-new material since 2001 – in early April. She is also publishing a memoir under the same name that will come out around Mother's Day.

This time around, Sky says she's using her music to help remove the stigma of having a mood disorder by addressing it in some of her lyrics. "There's help for depression, and there's no shame in asking for it. The brain is just a body part," she says.

Sky's awakening came in 1991 when she had severe postpartum depression complete with hallucinations. Later, she realized she had been struggling with anxiety and depression since childhood. In 2006 Sky became the poster child for depression in a Centre for Addiction and Mental Health campaign. She now speaks as passionately about mood disorders as she writes about everlasting love.

– **SUSAN PEDWELL**

PHOTO: TOP, JANE ROSS; BOTTOM, KORBY BANNER

THE TWO OF US

Ben Land and Trish De Luca

They flirted during undergrad, but the stars didn't align and they eventually lost touch. Then along came Facebook.

BEN: I first laid eyes on Trish during the chaos of Frosh Week at U of T Scarborough in 1995. I felt an immediate attraction, but was disappointed to learn that she had a boyfriend. I had a crush on her for two years, and then received a "dean's vacation" – otherwise known as an academic suspension. By the time I returned, a year later, Trish had finished school and was working in the film industry in Toronto and Los Angeles. File under "university crushes" and think no further, right? Then along came something called Facebook. In March 2007, I typed "Trish De Luca" into the search box and sent her a message. She responded. Two years later we got married, and our daughter, Gemma, was born last year.

I love Trish's open-minded enthusiasm. After we reconnected, I suggested going camping in Algonquin Park. Her friends wondered how I was going to get her out of stilettos and into hiking boots. At the campsite, I set up the tent and went to get firewood. While I was gone, Trish cleaned the "kitchen" area and set up the camping stove, which she had never used before. And I thought, "This is my life partner."

TRISH: Every time I went to a U of T pub night, there was Ben, right next to me, busting a move. I was always on the dance floor by myself because I was dating the DJ. But I thought Ben was cute and I told my girlfriends that if I wasn't dating anyone, I would go for Ben. He was my secret crush. I never told him, although he was very public about his crush on me.

Nine years later, I got a message on Facebook from a Ben. I glanced over it and responded, assuming it was another Ben, a friend of mine. When I found out it was actually Ben Land, I was very excited. I had just gotten out of a relationship. Three days later we met for dinner. The minute I saw him all those old feelings came bubbling back. Ben is very positive; he loves life. That quality is hard to find in people. Everything to him is worth celebrating, even simple things like eating a hotdog or going tobogganing. And nobody makes me laugh like he does.

Ben and Trish now live in Vancouver, where Ben guides corporate teams on humanitarian trips and Trish runs DAREarts, a program that uses the arts to foster courage, confidence and leadership in young people.

HOLDING COURT

In November, two U of T alumni became part of the legal world's most esteemed community: **Andromache Karakatsanis** and **Michael Moldaver** were named judges of the Supreme Court of Canada in a ceremony in Ottawa.

Karakatsanis (BA 1978 VIC) started out in a private practice that focused on criminal and civil litigation, but she is primarily known for her work in civil service. She was the first woman to head the Liquor Licence Board of Ontario. She also served as Deputy Attorney General, and was the most senior public servant in Ontario (Secretary of the Cabinet). Prior to her newest role, Karakatsanis was a judge of the Court of Appeal for Ontario. She is the first Greek-Canadian serving on the Supreme Court.

Moldaver (BA 1968 UC, LLB 1971) specialized in criminal law during his many years of practice. He was one of the youngest judges to serve on the Supreme Court of Ontario (he was appointed in 1990 at age 42), and, prior to his latest appointment, was a judge of the Court of Appeal for Ontario. He has worked on many high-profile cases: in 2007, he helped acquit Steven Truscott of murder after he served almost 50 years in jail. In 2004, he helped set aside the murder conviction for Robert Baltovitch. At the Faculty of Law, Moldaver co-taught criminal law courses from 1978 until 1995.

PHOTO: TOP, COURTESY OF TRISH DE LUCA AND BEN LAND; BOTTOM, BLAIR GABLE PHOTOGRAPHY

The Japanese earthquake of 2011 was the fourth worst in the history of the world – right behind the Great Sumatra earthquake of 2004

FIRST PERSON

A Year in the Quake Zone

John P. Racine reflects on how his life has changed since the earthquake in Japan

ON MARCH 11, I was in my ninth-floor office at Dokkyo University just outside of Tokyo. I watched in shock as enormously heavy filing cabinets shook like half-empty matchboxes, and bookshelves emptied all around me. When the tremors subsided to the point where my colleagues and I could walk, we filed ashen-faced down the still-shaking stairwells. We emerged to safety but were shocked once again to hear that we had only received a glancing blow. Further north they had experienced the full force of the Magnitude 9 temblor.

On the day of the quake my only concern was my wife. I began frantically calling, texting and emailing. It would be hours of agony before I could confirm her safety at her office close to our home. (Our house in Hitachinaka City, Ibaraki Prefecture, is 120 kms north of my office – halfway between Tokyo and some of the worst hit areas.)

We no longer drink tap water for fear of radiation poisoning

One year later, my friends and family who live outside of Japan are stunned to hear that aftershocks continue daily. More than 6,000 tremors were recorded in Japan between last March and December – seven times the usual number. Indeed, they are so commonplace that some days we wouldn't even notice them if it weren't for the neighbour's dog reacting to the rattling of their sliding doors. Continual quakes are the new normal where we live.

In fact, the earth remains both unsettled and unsettling. Seismologists tell us these aftershocks are symptomatic of the 70 per cent likelihood of another major quake within the next four years. My wife refuses to drain the bathtub after bathing. If the next aftershock turns out to be the next *big one*, at least we will be able to flush our toilets this time.

But our fears are not limited to only the possibilities of another earthquake. As it turned out, shutting down the quake- and tsunami-addled Daiichi Nuclear Power Plant would not be an easy task. The past year has seen endless reports of raised radiation levels; then news of the subsequent bans on produce, milk, meat and more.

Sensationalism about these stories – in the Western press, in particular – added insult and worry to injury. Much of the reporting was tinged with political bias when we craved only the truth. One nuclear spokesperson insisted on reminding people of the wonders of modern X-ray technology while radiation of a completely different variety was blowing across the countryside. Just as bad: anti-nuclear bloggers were exploiting our hardship to take shots at the government.

Finally, in December, it was reported that the situation in Fukushima had been "brought under control." We were also informed that the bill for the cleanup would run to 12 trillion yen (Cdn$160 billion) and that our electricity bills would be raised significantly to help cover it.

The immediate impact of the crisis is readily witnessed in our wallets and in local industry, but our fears today continue to revolve around the unseen and the unpredictable. If my wife or I should take ill many years from now, would we have reason to blame the government? Or would we blame ourselves for spending the past year in the fallout while so many others have fled?

We – along with most of our neighbours – no longer drink tap water for fear of radiation poisoning. The nearest Costco (yes, we have them here, too) clears a Niagara Falls – load of bottled water weekly.

Health concerns are magnified now as my wife and I are expecting the arrival of our first child this summer. I'm told it's normal for all first-time parents to fear the worst, but if things don't go according to plan, will we blame ourselves for not moving?

John P. Racine (BSc 1988 UTSC) is a lecturer in the Interdepartmental English Language Program at Dokkyo University.

PHOTO: YOKO NAKAZAWA

60 SECONDS WITH

William B. Davis

X-Files Icon

For most of his life, **WILLIAM B. DAVIS** (BA 1959 UC) was best known as an accomplished theatre director and acting teacher. Then he became the mysterious and taciturn Cigarette Smoking Man on TV's *The X-Files*. In his recent memoir, *Where There's Smoke…*, Davis dishes about his time as the show's main villain, his theatre career (he still directs and acts in films) and more. **LISA BRYN RUNDLE** investigates.

Do people meeting you ever expect you to be a bit ominous, like the Cigarette Smoking Man? Well, my wife – whom I only recently married – was attracted to the dark side of the character, but I think fell in love with me because I was actually quite a lot nicer.

What is the key to embodying a character who speaks very few lines? The mind has to be active. You have to be *thinking*. Curiously, it doesn't necessarily matter what you are thinking…

What would you think about? I put myself into the imagined situation. Although I confess, being an acting teacher, I may have had occasional thoughts about how the other actors were doing.

You've worked in theatre with greats like Maggie Smith and Donald Sutherland. Do any memories stand out? I worked with Donald Sutherland at U of T. The first play we did together – *Dark Side of the Moon* – we were both doing stage crew. We rattled the thunder sheet together.

When I was directing *Two for the Seesaw* in Chesterfield, England, we cast Donald and we had a marvellous time working on that play. And we also cast Jackie Burroughs, so it was a little Canadian production in the middle of the Midlands.

Does theatre feel ephemeral compared to TV, and does that bother you? I remember asking one of the *X-Files* writers if he wanted to write for the theatre and he said no, because it doesn't last. And I was shocked. Because, to me, it's the other way around. Shakespeare, Congreve, Molière, we still know them.

Your *X-Files* character was almost a Forrest Gump of evil, the embodiment of every conspiracy theory. Did playing him ever make you paranoid? No, not at all. What worried me far more was how paranoid the rest of the world was. I'd talk with groups of fans and ask how many of them thought there were aliens among us. And maybe 40 or 50 per cent of the hands would go up. And then I would ask how many of them believed in government conspiracies. Every hand went up. Every single hand. And this was during the Monica Lewinsky years when Clinton couldn't keep private meetings with an intern secret.

So I take it you are more Scully than Mulder. Yes, yes. Totally.

Milestones

Nine alumni have been honoured with Order of Canada appointments, Canada's highest civilian award. Former prime minister **Paul Martin** (BA 1961 St. Mike's, JD 1964) was named companion – the most esteemed title within the order. Martin was recognized for his contributions to Canadian politics and for promoting opportunities for Aboriginal Canadians.

New officers of the order include **Gordon Guyatt** (BSc 1974 VIC), a physician and professor at McMaster University who has contributed to evidence-based medicine and its teaching. **P. Thomas Jenkins** (MASc 1985), executive chairman and chief strategy officer for Open Text Corporation, has helped develop the high-tech industry in Canada. **Bruce Kuwabara** (BArch 1972) is a partner at Kuwabara, Payne, McKenna, Blumberg Architects and the architect behind the Rotman School of Management's expansion project. Artist **Charles Pachter** (BA 1964 UC) was cited for his contributions to the arts community and for his charitable activities. **Catherine Robbin** (BA 1977 WOODS) is a premier mezzo-soprano and a professor of classical voice performance at York University. **Jeffrey Skoll** (BASc 1987), former president of eBay, was cited for his commitment to social causes and for his philanthropy.

New members of the order include **Ana P. Lopes** (BA 1981 WOODS), a volunteer and philanthropist to various arts and health-care organizations, and **Maïr Verthuy** (MA 1965), a professor emerita at Concordia University who has advanced Francophone literature and feminist causes.

The American Bar Association recently honoured **Elena Park** (BA 1994 UC) with its Pro Bono Publico Award for her work with immigrants. Park devotes more than 200 hours of pro bono time a year helping undocumented aliens, the indigent and individuals suffering from persecution in their homelands.

Charlie Foran (BA 1983 St. Mike's) received the 2011 Governor-General's Literary Award for Non-Fiction for his biography of author Mordecai Richler, *Mordecai: The Life & Times*.

PHOTO: COURTESY WILLIAM B. DAVIS

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Give It a Shot!

SHAKESPEAREAN SIMPLETON

March 1957

Donald Sutherland performs in Hart House Theatre's *The Tempest*

While Donald Sutherland is starring in *The Hunger Games* as President Snow, the nefarious ruler of Panem, one of his first roles was far less foreboding: In Shakespeare's *The Tempest*, he played Stephano (centre), the drunken, buffoonish butler who, along with Caliban (left) and court jester Trinculo, ineptly schemes to murder the usurped Duke of Milan.

The play, staged in March 1957 with a ticket price of $1.50, was Sutherland's fifth Hart House Theatre production. The critical reaction was enthusiastic: a *Globe and Mail* review noted that the 21-year-old Sutherland "illumes the low comedy scenes with a benign, blurry glow" while the *Star* lauded his "extremely humorous portrayal of a drunk" (although quibbled that there was "a bit too much lisping").

Sutherland (BA 1958 VIC) wasn't the only well-known actor to emerge from Hart House Theatre in this golden era: others included William Hutt, David Gardner, Charmion King and Kate Reid. A creative force named Robert Gill had served as artistic director of the theatre from 1946 to 1966, and was revered for encouraging and developing young talent.

Today, the theatre itself is undergoing a renaissance, both creatively (it hired its first artistic director in more than 30 years, Jeremy Hutton, in 2010) and physically (renovations are ongoing). Hutton is carrying on the Hart House tradition of nurturing a love of acting in students. In a *Globe and Mail* interview in 1993, Sutherland remembered the thrill of being a young student actor in front of an audience for the first time: "When I walked on stage, everybody laughed. And when I left the stage, they applauded. That immediate response, vindication or vilification…nothing is more stimulating."

– STACEY GIBSON

PHOTO: U OF T ARCHIVES A1975-0009/003P

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Spring Reunion takes place this year from May 30 to June 3. If you graduated in a year ending in a 7 or a 2, then this is a reunion year for you!

Friday, June 1

1 p.m.

What's New about 21st-Century Spying?
Prof. Wesley Wark

Transition Towns: A Global Social Movement Builds Community Resilience in the Face of Climate Change and Peak Oil
Prof. Blake Poland

Celebrating 400 Years of the King James Bible
Prof. Stuart MacDonald

2 p.m.

Has the World Gone Mad?
Prof. Joseph Heath

Nutrition and Brain Function
Prof. Carol Greenwood

The Art of Play
Prof. Mark Kingwell

Saturday, June 2

9:30 a.m.

Marshall McLuhan: The Man and His Message
Prof. Don Gilles

10:30 a.m.

Engineering Today
Prof. Yu-Ling Cheng, Prof. Lloyd A. McCoomb and Prof. Milica Radisic

How to Look for Love: A Refreshing New Take on Men, Women and Romance
Prof. Mari Ruti

Bringing Hunger Out of Hiding
Prof. Valerie Tarasuk

11:30 a.m.

Nurturing Excellence: How Canada Became a Leader in Stem Cell Science
Joe Sornberger

Technologies for Aging Gracefully
Prof. Ronald Baecker

A Healing Bridge
Dr. Izzeldin Abuelaish