

Western Alumni Magazine

Spring 2024



Alarm Call

What the birds are telling us about climate change

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Story by Megan Stacey
Photo by Steven Anderson

Visual arts professor Soheila Esfahani, MFA’10 (right), wants to expose her students to unexpected sculpture materials—not just clay or plaster, but wood and abandoned objects. It led her sculpture class to the wood shop in Western’s John Labatt Visual Arts Centre.

The assignment? Craft artwork from two eight-foot planks, no more and no less. “I always try to include a wood-based sculpture so students learn to use power tools. It is a little intimidating to come in cold,” Esfahani says. “Within a couple of classes, they are diving in.”

Dahlia Sullivan, a second-year bachelor of fine arts student (left), is creating a chain-style sculpture—sawing, sanding and connecting wooden shapes. “Students are ambitious in these courses. They tend to push the limits of what is possible,” says Esfahani.

They aren’t all studying visual arts. Some, like a medical sciences student, are taking the class as an elective. Those different backgrounds bring the class “alive,” Esfahani says.

No matter their major, students in her sculpture class walk away with new skills. “Soheila is so wise, so kind—just a really amazing professor,” Sullivan says. “She pushes us to get out of our comfort zone.”



Sculpture studio, John Labatt Visual Arts Centre, Western University, March 6, 2024



STEVEN ANDERSON



Last spring, Western and local community members planted hundreds of native shrubs along Medway Creek to help mitigate flooding and improve water quality. The live staking initiative is a partnership between Western, the Upper Thames River Conservation Area and local First Nations. Pictured here: Caitlin Oh, integrated science student.

Sustainability is about learning and action

One of the best things about universities is that they enable lifelong learning—whether it’s related to your discipline or gaining new perspectives on the world.

Take sustainability.

It’s an incredibly complex topic. Yes, it’s about recycling and reducing our reliance on fossil fuels. But sustainability involves every aspect of our existence and the elaborate interconnection of all life on Earth.

That’s how the United Nations sees it. The UN Sustainable Development Goals—better known as SDGs—cover issues that impact all forms of life: for example, poverty, education, clean water and sanitation, industry, innovation and infrastructure, and climate action.

The UN calls the SDGs “a shared blueprint for peace and prosperity for people and the planet, now and in the future.”

That’s how we see sustainability at Western, too.

We’ve made it a key pillar in our *Towards Western at 150* strategic plan and we’re getting noticed for this work.

In 2023, Western was the only Canadian institution to place in the top 10 for sustainability in both the QS and *Times Higher Education* international rankings, ahead of schools such as MIT and the University of Edinburgh.

These rankings are based on the tremendous work of Western scholars directly relating to the SDGs—from homelessness to clean energy to gender equality.

In 2024, our Ivey Business School was also ranked third in the world for its research aligning with the UN targets by the *Financial Times*’ Responsible Business Education report.

These rankings are significant, not only because they’re points of pride but because,

collectively, they represent a global recognition that sustainability is at the top of Western’s agenda.

Sustainability is the future. The next generations will move us ever closer to a sustainable global society.

That’s why Western has more than 2,700 courses focused in one way or another on sustainability, including a major in climate change in society, and Canada’s first multi-disciplinary climate risk graduate program.

And it’s why we offer a climate change action course free of charge to anyone, anywhere in the world, that combines traditional science with Indigenous ways of knowing.

Sustainability has become part of the global conversation. When I talk with students, alumni, faculty and staff, I hear it clearly: this is at the core of their passions. They want to learn, and they want to see we’re taking action.

That brings me to this issue of the *Western Alumni Magazine*. There is great reading throughout, with two features in particular—on birds and plastic—that speak directly to the brilliant scholarship and ingenuity of Western researchers on this crucially important topic.

I hope you enjoy this issue.



Alan Shepard
President & Vice-Chancellor

Western Alumni Magazine

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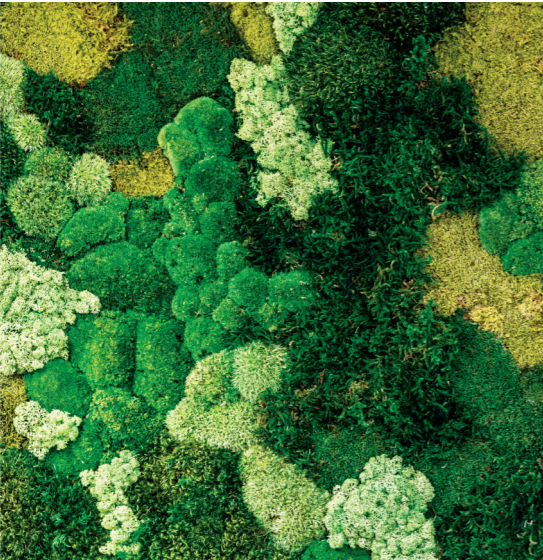
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Western University is located on the traditional lands of the Anishinaabek, Haudenosaunee, L  naap  ewak and Attawandaron peoples, on lands connected with the London Township and Sombra Treaties of 1796 and the Dish with One Spoon Covenant Wampum.

This land continues to be home to diverse Indigenous Peoples (First Nations, M  tis and Inuit) whom we recognize as contemporary stewards of the land and vital contributors of our society. Their distinct rights are an important part of our institutional responsibility to Reconciliation, and they are essential partners as we continue our commitment to increasing Indigenous voices and presence across all levels of community life, work, study and research.



↑
Moss wall detail in the Wampum Learning Lodge at Western. The wall serves as a poignant symbol of the Indigenous worldview that all of creation is connected.

PHOTO BY STEVEN ANDERSON

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Western Alumni Magazine is printed in a carbon neutral facility on materials certified by the Forest Stewardship Council   (FSC  ) using clean, renewable, emissions-free electricity provided by Bullfrog Power. Renewable electricity reduces traditional power usage and greenhouse gas emissions generated from the production process. Remaining emissions were offset through the purchase of carbon offsets certified by Carbonzero  .

As we continue our sustainability efforts, we encourage readers to consider opting for a digital issue instead of print.

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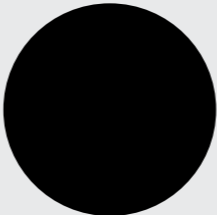
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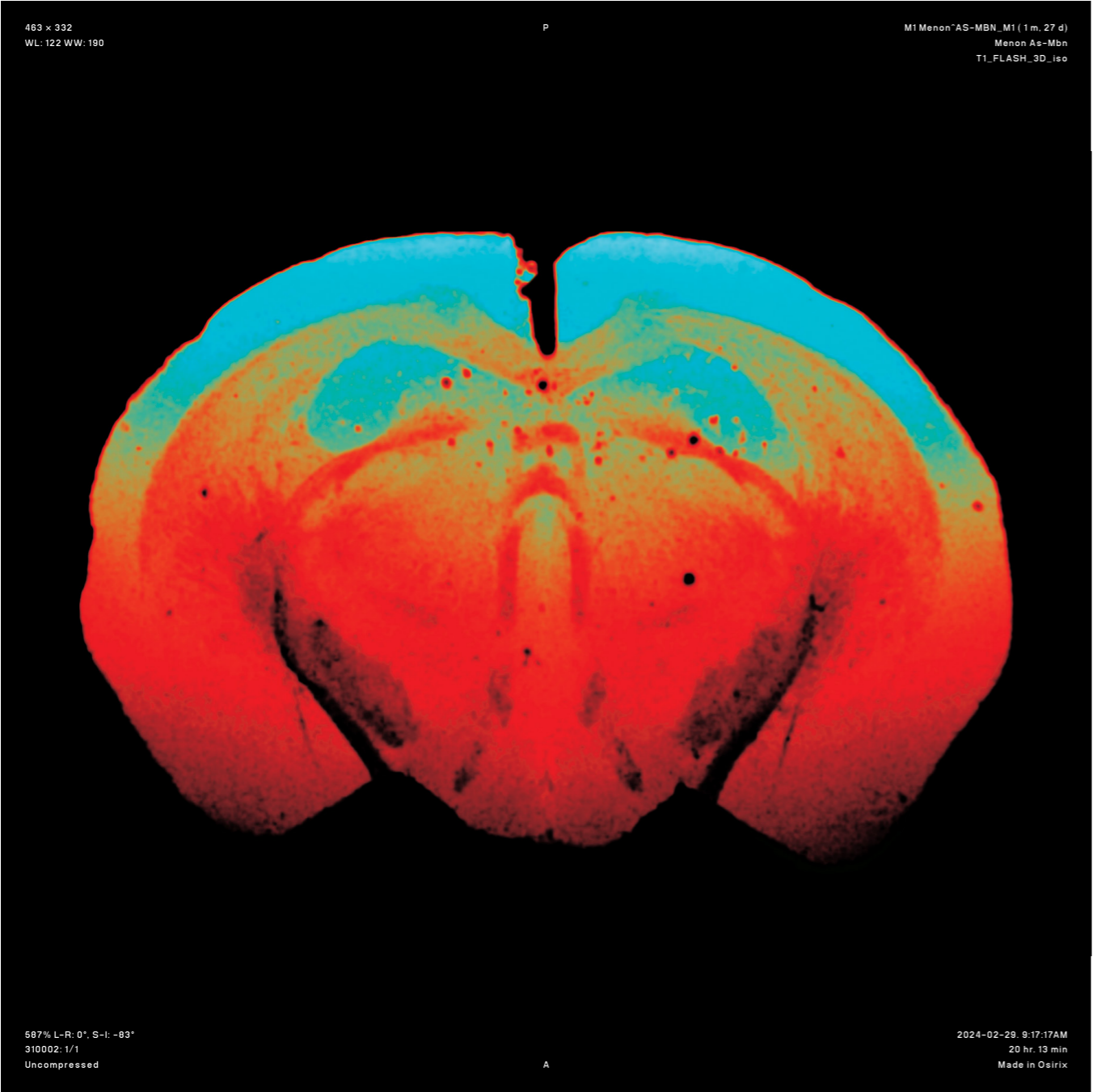
The future of AI ↗



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↖
From football to country music



Seeing Alzheimer’s disease

More on these stories online: magazine.westernu.ca

It’s a Bruker 15.2 Tesla. Not a car, but Canada’s most powerful magnetic resonance imaging—or MRI—system. Western’s new \$6-million pre-clinical scanner is one of just two in North America and only the sixth of its kind in the world. The machine will allow researchers to capture advanced images of the brain with unprecedented resolution. Interdisciplinary work will focus on assessing novel drug therapies for neurological conditions.

It’s situated in Western’s Centre for Functional and Metabolic Mapping, home to Canada’s only collection of high-field (3T human) and ultra-high field (7T human and 9.4T animal) MRI systems. ●

↑
The black spots in this mouse brain scan taken with the Bruker 15.2 Tesla are potential Alzheimer’s plaques, sticky clumps that prevent communication between brain cells, leading to memory loss and cognitive decline.



Global kudos for Weldon’s architecture

Photos by Scott Norsworthy

Weldon Library’s stunning new look earned accolades from designers around the world after the first phase of a massive revitalization.

Interior Design Magazine named the space “Best of Year” in the library category, an honour that placed Western ahead of public libraries in New York, San Francisco and Washington, D.C. The International Interior Design Association awarded Weldon a

Global Excellence Award and the Association of Registered Interior Designers of Ontario highlighted it as one of the most vibrant, innovative and inspiring educational spaces in the province.

The transformation at Weldon, a partnership with architects Perkins & Will, is an effort to reimagine a Western landmark for the 21st century, balancing its original brutalist design with new modern elements. ●



Grads bring
all-vegan eats
to campus

Illustration by Ryan Snook

A fast-growing vegan eatery chose Western for its first university location, a move James McInnes, BSc’02, co-founder and CEO of Odd Burger, called a “dream come true.” The new University Community Centre restaurant serves vegan burgers, sandwiches, loaded fries, salads and dairy-free milkshakes. It’s part of a broader shift toward more plant-based options at

Western, where forty per cent of residence dining hall menus are now vegan. McInnes and his wife Vasiliki, MScN’15, opened Canada’s first vegan fast-food restaurant and drive-thru in London, Ont. in 2017. They’ve since expanded across the country. The company also sells its own line of plant-based protein and dairy alternatives. ●

COURTESY OF LONDON BUSINESS SCHOOL



Ivey’s New Dean
Julian Birkinshaw, MBA’91, PhD’95, has analyzed the business world since he was a little boy. The new Dean of Western’s Ivey Business School remembers tracking his father’s financial portfolio, speculating on stocks’ rise and fall. Now an international business leader, author and scholar with expertise in digital disruption, the British academic will take the helm at Ivey on Aug. 1. Birkinshaw is vice-dean of London Business School in the U.K. He holds honorary degrees from Copenhagen Business School and the Stockholm School of Economics. The author of more than 15 books and 90 articles, including those featured in *Harvard Business Review* and *The Wall Street Journal*, Birkinshaw is regularly cited as an expert by CNN, BBC and *The Economist*. ●

Healing, online
Researchers from three Canadian universities, led by Western nursing professor Marilyn Ford-Gilboe, created the iHEAL app to connect women experiencing intimate partner violence with personalized strategies and support. The desktop or smartphone app is a resource to help women identify and address needs, from housing and health to community support and personal growth. Ford-Gilboe studies how digital spaces can improve health, safety and well-being for women experiencing intimate partner violence. She describes iHEAL as a way to reach more women “in ways that are meaningful for them.” The app offers health and risk assessments, grounding exercises and safety features. It encourages reflection and helps users navigate through personal priorities, next steps and available supports. ●

(IN) DETAIL
Western by the numbers

467 scholar-athletes
These students attained an 80% academic average while representing the university on a varsity sport or club team (2022–23).
45,213 apples served in campus dining halls in 2023.



Number of print books, e-books, journals, databases, archival records, maps (and more) in Western Libraries



Gordon “Oz” Osinski
Professor, Earth Sciences,
Faculty of Science

New appointment:
Co-investigator on NASA’s Artemis III
Mission Geology Team (the only individual
from a Canadian institution on the team)

What I do:
My research focuses on understanding
the geological processes that shape the
surface of the Earth, moon and Mars. As
part of the Artemis III geology team, I’m
excited to have the opportunity to share
my knowledge with the astronauts and
empower them to become field
geologists.

WHY I DO IT:
I have always been drawn to
exploring the most remote
parts of Earth, from the
Canadian Arctic to Antarctica.
While I would love to go to
the moon myself, training
and supporting the Artemis
astronauts is the next best
thing—and a significant
highlight of my career so far.

Nicole Redvers
Professor and Director,
Indigenous Planetary Health,
Schulich School of Medicine
& Dentistry

new appointment:
One of 13 members of the World Health
Organization’s Technical Advisory Group
on Embedding Ethics in Health and
Climate Change Policy

What I do:
I promote the inclusion of Indigenous
perspectives in human and planetary
health research and practice, ensuring
Indigenous voices are heard in policy
and research discussions. My goal is to
bridge gaps between Indigenous and
Western ways of knowing as it relates
to Indigenous health and well-being,
and the well-being of the planet.

WHY I DO IT:
I was born and raised in the
Northwest Territories and saw
health inequities in Indigenous
communities and how climate
affects our landscapes. I carry
a personal responsibility for
the health of our Indigenous
communities and for the lands
and waters on which our
health depends.

Dr. Robyn Klein
Professor, Microbiology &
Immunology, Schulich School
of Medicine & Dentistry

new appointment:
Canada Excellence Research Chair in
Neurovirology and Neuroimmunology

What I do:
I work to understand how emerging
viruses impact brain function, merging
neuroscience, immunology, and infectious
diseases. I study how memories are formed
and the impact of viruses on this process,
because many viruses, like SARS-CoV-2
(that causes COVID-19), affect memory.

WHY I DO IT:
I like scientific puzzles and the
surprises and creativity of science.
It’s exciting when someone does
an experiment, and the results are
the opposite of what we expected.
I’m also committed to challenging
the marginalization of women in
science and combating the notion
our contributions are somehow
less impactful. I want to improve
the experiences of women trainees,
so they have a more seamless
experience with more mentorship
and inclusion.

TERM

**Social
determinants
of health**

Our health is impacted by our family history,
genetics and lifestyle choices like diet, smoking
and exercise. But we must also consider non-
medical factors that impact health—the social
and societal systems that shape our daily lives.

These factors are what we call social determinants of health.
A few of many examples: income, employment, education, food
security, housing, gender and race. The World Health Organization
defines them as, “the important influences on health inequities—
the unfair and avoidable differences in health status seen within
and between countries.”

In health research, these are important factors to consider
when exploring the relationship between health behaviours and
outcomes. For instance, a researcher exploring the link between
immunity status and overall health has to account for where a
person lives, their income and socioeconomic status, to gain a
clear picture of their results.

Researchers who are focused on developing health inter-
ventions need to minimize health inequities and understanding
social determinants of health allows us to allocate resources more
equitably.

The impact of social determinants of health is not uniform
across, or even within countries. For example, income as a
social determinant of health might have a much greater influ-
ence in countries where there is no social welfare or universal
basic health care in comparison to countries that provide these
benefits.

What fascinates me is the intersection of social determinants
of health and digital determinants of health. It’s becoming increas-
ingly evident that factors such as internet access, smartphone
availability and other digital technologies profoundly influence an
individual’s health and well-being. In a digital age where artificial
intelligence continues to grow, it is critical for us to re-imagine
social determinants of health and their role in informing how
health systems aim to mitigate health inequities and foster a
healthier, more equitable world. ● **Dr. Tarun Katapally**

300



Dr. Tarun Katapally
is Canada Research
Chair in Digital
Health for Equity
and a professor
of health studies
and epidemiology
and biostatistics at
Western. As founder
and director of the
Digital Epidemiology
and Population
Health Laboratory,
he is working to
develop digital
solutions for existing
and emerging
population health
crises. A trained
physician who
previously worked
in emergency
medicine, he is also
a Lawson Health
Research Institute
scientist and an
adjunct professor
at Hirabai Cowasji
Jehangir Medical
Research Institute
in India.

Full circle: Resilience, reflection, relationships & residential schools



Story by Dr. Rebekah Jacques, a Métis forensic pathologist and assistant professor in pathology and laboratory medicine at Western’s Schulich School of Medicine & Dentistry

“Do you want to go visit an abandoned school?” my new childhood friend asked. Without hesitation, I responded, “Of course, where is it?” I had just started to develop my detective skills, but my curiosity was fully established by my first year of high school. Having already explored a number of abandoned buildings, I had yet to come across a school. Little did I know I was beginning a journey that would only reach full circle three decades later.

WARNING
This article includes information about residential schools, missing children and unmarked burials. The National Indian Residential School Crisis Line is available 24/7: 1-866-925-4419.

● **The symbol of a circle** reflects many Indigenous pedagogies. Circles are a sacred symbol of the interconnectedness and interdependence of all life on Earth, which is itself round, and is supported by the round sun and moon. A circle is our symbol for spirituality, family structures, our governance, our culture and our health. We hold our gatherings in a circle, our drums are round, our sweat lodge is round and the medicine wheel is round.

As we walked over to the abandoned school under the clear blue sky of northern Ontario, the air was filled with excitement and wonder.

What would we discover?

We arrived at the Spanish Indian Residential School, once the largest residential school in Ontario. It was located in the small town of Spanish halfway between Sudbury and Sault Ste. Marie. Closed in 1965, the school was a federally funded, church-run institution. It functioned as a set of single-sex Indian residential schools for generations of Indigenous children who were relocated from various territories across Turtle Island. The intent was to separate Indigenous children from their families, culture and language. The outcome was genocide.



(LEFT) COURTESY OF DR. REBEKAH JACQUES; (RIGHT) PHOTO BY NATION WONG

What remained of the school was the shell of a grey stone building. The glass windows were gone but a tree grew within the site. This building was known as the girl’s school. In contrast to the cheery sun overhead, the place seemed eerie. My friend told me it was probably because children had died at these types of schools and many of the children never returned home.

We walked back in silence along the gravel road. I was consumed with thoughts of what I had just witnessed. It was then that I decided what I wanted to be when I grew up. The textbooks in my local library had already inspired me to think about careers. I was debating between being an astronaut, a criminologist or a forensic pathologist. It was that experience at the Spanish Indian Residential School that inspired me to become a forensic pathologist. I hoped that one day I could help families bring the children home who had died in residential schools.

On National Indigenous Peoples Day, June 21, 2022, my full circle moment happened. After years of medical training, numerous examinations, countless hours of studying and determination to become a forensic pathologist, I was honoured to be invited to join the National Advisory Committee on Residential Schools Missing Children and Unmarked Burials.

Our first meeting was at the Canadian Museum for Human Rights in Winnipeg, where the Red and

Assiniboine rivers meet on Treaty One Land. Once I arrived, I felt I had come full circle from my first steps at the Spanish Residential School when I was a youth.

Our structure for the National Advisory Committee is a circle, composed predominantly of Indigenous people who have expertise in Indigenous laws and cultural protocols, forensics, archaeology, archival research, mental health and wellness, criminal investigations and communication. This circle of expertise is guided by the lived experience and resilience of a Circle of Survivors, which includes First Nations, Métis and Inuit.

Our work often reflects the circle paradigm, which is explicit in how we conduct our meetings but also implicit in how forensic disciplines could serve in this work. Specifically, the forensic framework incorporates teachings related to the circle, primarily the medicine wheel and its four dimensions within its circular structure. Together, we have worked tirelessly to be a trusted resource for families and communities looking for their children. The circle is a necessary part of this sacred work and offers a perspective needed to carry the heaviness of this labour. Western linear and hierarchical approaches may not be strong enough to do this work.

It is an honour for me to do this work with the Circle of Survivors, Elders and other experts. It is humbling and I don’t take it lightly. Thinking back to that day when my friend and I saw the wreckage of that school, I see now that this is the work I was meant to do. ●

The military coup that toppled Chile's democratic socialist government and installed Augusto Pinochet 50 years ago has shaped much of Western professor Verónica Schild's life.

The 17-year dictatorship that followed was marked by executions, disappearances and torture of civilians—the scars of which are still seared across the fabric of the country.

WARNING
This story contains references to extreme violence that may be upsetting to readers.

Schild left Chile with her mother two years before then-president Salvador Allende was overthrown in September 1973. The coup still had a powerful impact. "I was deeply driven and shaped by the military coup in Chile," she says.

"My professional, intellectual and academic interests have been shaped by my need to understand what happened. That is the fundamental question—how was it possible?—that eventually drove me back."

Schild, today a political science professor emeritus, shares that question with millions of Chileans who survived Pinochet's rule, losing family and friends to the regime's violence.

Western alum Rector Rosa Devés, PhD'78, the first woman to lead the Universidad de Chile, or University of Chile, knows the fear that dominated those years. After receiving her biochemistry degree from the University of Chile, Devés and her husband, a doctor, left the country. Though they weren't compelled to leave Chile, the couple knew the risks of staying. They came to Canada in 1974, choosing Western to pursue further education.

Devés obtained a PhD in biochemistry at Western in 1978 before pursuing postdoctoral studies at the University of Southern California and later returning to Chile.

Back at home, the military had infiltrated the University of Chile, even appointing active members of the armed forces as rectors to helm the institution between 1973 and 1987. Pinochet targeted the university, Devés says. She witnessed assaults on campus buildings as heavily armed military troops threw tear gas bombs, violently arrested students and destroyed laboratory equipment.

"The dictatorship really tried to destroy the University of Chile. They wanted to reduce the intellectual power of the university because of its commitment to democracy and to the country.



↑

Above: Verónica Schild (centre) with friends in 1987, during her first trip back to Chile after fleeing the country as a teenager in 1971.

Left: The presidential palace in Santiago, Chile was bombed on Sept. 11, 1973 in a military coup led by General Augusto Pinochet

TRACING VICTIMS: NATIONAL HEALING 50 YEARS AFTER PINOCHET'S CHILEAN COUP

THE SEARCH PLAN AND HOPES FOR CLOSURE

Fifty years later, the current Chilean government—led by Gabriel Boric—has promised to dedicate resources to finding those killed and disappeared under Pinochet—announcing the Plan Nacional de Búsqueda, or national search plan—to offer closure and reparations for the families of the estimated 1,469 who have never been found. The University of Chile also threw its support behind the search when it was announced in August 2023, with Devés pledging to commit “all its academic capabilities relevant to the clarification of the truths that still remain hidden.”

The University of Chile has rallied under the theme of “Education for Democracy,” with a year-long commemoration to mark the five decades since Pinochet’s takeover ended democratic rule.

The plan is a huge milestone in Chile, where the state has never accepted responsibility for finding Pinochet’s victims, despite documentation in two separate national commission reports. Families of the missing and human rights organizations have taken matters into their own hands. “We value very much—and not just at the university, but in Chile—this public voice and commitment,” Devés says.

As for her institution, there was no question about whether to participate. “It is part of our ethos,” she says. The university is finalizing its collaboration agreement with the government, offering expertise in a variety of areas, from digitizing historical materials to designing human rights training courses.

Interdisciplinary knowledge across the university—from both faculty and students—will help develop Chile’s national search plan. That includes a referral agreement to provide psychological and dental care and occupational therapy for victims and their families, creating an internship program for social science students to analyze research documents and auditing the list of people who disappeared.

Remains of only 307 disappeared people have ever been found and returned to their families, despite 1,469 victims of forced disappearance recognized by the state. National reports identified 40,000 victims of other human rights abuses, such as political imprisonment and torture, during Pinochet’s reign.

Devés notes that decades of searching by grassroots organizations has laid a foundation for the work to come. She presented a new award, Medalla Derechos Humanos y Democracia (Human Rights and Democracy Medal) to Alicia Lira, president of Agrupación de Familiares de Ejecutados Políticos, the association representing families of politically executed persons, in an emotional ceremony last fall. “We wanted to make it very clear that the work the families have been doing all through these 50 years is extremely important. They haven’t got all the attention they deserved,” Devés says.

→

Left: Verónica Schild, Western political science professor emeritus

Right: Rosa Devés, PhD’78, Rector of the University of Chile

Bottom right: María Cristina López Stewart, victim of Pinochet’s dictatorship



THE DEVASTATION OF A BRUTAL REGIME

Schild recalled reading in the newspaper about the deaths of those she knew. “Some were horrendous, like the killing of my teacher Lumi Videla. I read in *The Washington Post* that a woman had been tortured to death and her body tossed into the Italian embassy,” Schild recalls. “I only learned much later that my friend Maria Isabel Beltrán was among the disappeared. I could only bring myself to visit her memorial at the former torture centre, Villa Grimaldi, years later in 2017.”

Lingering unanswered questions prompted Schild to return to Chile in 1986, the first of what would become many trips home, this time as a Canadian academic. She worked with low-income women’s groups and grassroots organizations serving poor neighbourhoods—research she describes as “discovering the other Chile,” compared to her comfortable middle-class upbringing before leaving as a teenager.

“Poor people experienced relentless forms of repression and brutality, as I would learn,” Schild says. But she stresses the women with whom she



the disappeared and coming to terms with what actually happened to offer some sense of closure to people. This is a fundamental move for a society,” Schild says.

THE FUTURE AND THE SHADOW OF REVISIONISM

Right-wing populist politics are on the rise, not just in Chile. There, it has made for a painful grappling with history. “We now have a peculiar resurgence worldwide, but also manifested in Chile, of an extreme right. In Chile it has led to minimizing and justifying what happened,” Schild says.

Some claim the coup and subsequent violence under Pinochet has been exaggerated, a stance that has infuriated victims’ families and many other Chileans. One far-right congresswoman has gone so far as to describe the widely documented use of sexual violence as a method of torture during the dictatorship as “urban legend.”

“We are now seeing some voices that somehow try to justify the coup in parliament, in congress,” Devés says. “This is quite new and worrying. It devalues democracy.”

Schild called for a rewriting of the history curriculum taught to Chilean students, noting no government has tackled that necessary step. “It is like our own gaps (in Canadian classrooms), the way in which we’ve minimized, until recently, the treatment of Indigenous peoples as part of the creation of the modern state. There has been an official silence about this.”

There are economic and institutional structures from the dictatorship that feed into today’s conflicts, she adds. “It was a political vehicle for the Chilean economic elite to impose their vision of a free, unregulated market society. And as we know today, in the context of the Cold War, they were widely supported by the United States and their allies. Newly declassified information reveals how even Nazi criminals were involved in training and executing the plans to rid Chile of the ‘internal enemy,’” Schild says. “The last three decades of democratic rule have left a totally privatized life untouched, from health to education, social security and including the most privatized water system in the world.”

Canadian investors are beneficiaries of privatized social goods, too, Schild noted, stressing their overwhelming and controversial presence in mining.

“As a Chilean-Canadian, after 50 years, I feel we have to come clean about Canada’s own situation and creeping privatizations. There are lessons here,” she says. She believes Devés’s public commitment provides a powerful example of the importance of universities in society.

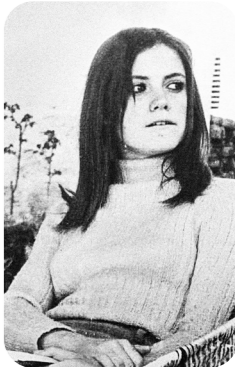
“Someone like Rosa Devés reminds us about the role of public universities, which is to contribute to the public good, and to the shaping and forming of critical citizens,” Schild says. The day Chile’s national search plan was announced, Devés concluded her speech by reciting a poem written by María Cristina López Stewart, a history student at the university, just before she disappeared in 1974.

It’s the stories of López and her classmates—and so many other innocent Chileans—that drive the work ahead, Devés says.

“In honour of María Cristina, her companions, their families, we will search for them and honour them, until we return the soul to our country, and fill the voids and silences with new hope.” ●

We leave traces
that erase the minutes,
witnesses are scarce
and no one finds us
We leave and no one notices.
The path we mark,
It stays there, no one moves it,
It dies as soon as we walk away
nobody touches it.
There are objects left, a pencil,
a note, a book, nothing more,
It seems that they also have died
your stillness is accentuated.
there are gaps, long silences,
abandonment in place
that a dead man lived
it seems that he took
the soul of things.

María Cristina López Stewart



(LEFT) PHOTO BY JACKLYN ATLAS. (RIGHT) PHOTOS COURTESY OF THE UNIVERSITY OF CHILE

Story by Paul Fraumeni
Photo by Alanna McArdle

Josh Ross rising: From football to country music

Josh Ross is on the road. On a January afternoon, he appears on the Zoom screen, logged in from his tour bus lounge. The driver needed a break, so Ross, his band and his dog Pax are parked in a hotel lot near Detroit. They journeyed here from Nashville en route to Montreal, where he'll continue his headlining tour of six Canadian cities. After that, he'll join a bigger tour, opening for hot American singer-songwriter Bailey Zimmerman with a slew of U.S. and U.K. dates throughout 2024.

It's all happening for Ross, a life young music artists dream about. He's signed with the mighty Universal Music Group. He lives in Nashville and works with top-flight musicians. He's got shows in fan-packed venues. He's even played the venerable Grand Ole Opry. He's got big hits like "Ain't Doin' Jack" and he's opened for Nickelback on a 52-city tour. In February, he was nominated for a Juno Fan Choice award. And in late March, he released an eight-song EP, *Complicated*.

He's worked hard to get here. But it was a football injury as a Western Mustang that kick-started his music career.

Ross, 27, grew up in Burlington, Ont., the son of Al and Julie, the youngest of three kids. His football talents caught the attention of the Mustangs and landed him a spot on the 2013–14 team.

But in 2016, he injured his ankle in a game and needed surgery. It had happened once before in high school.

"That's when I started to think, 'How many times can I go through this?'"

Ross, BA'17, had always been a writer, but in private, jotting down life experiences and stories in notebooks he kept hidden away. Now, with more time on his hands, he

turned his writing chops to song lyrics, and got serious about the guitar. Influenced by his parents, who loved rock that ran the gamut from Springsteen to U2 to Metallica, he found himself taking some new steps.

He paired with former Mustangs quarterback Will Finch, BA'16. They got gigs at The Spoke on campus. Ross leaned to country music, with Steve Earle as his idol. He entered an emerging artists showcase, began learning how to build a band, and played Boots and Hearts, Canada's largest country music festival. He met Canadian singer Aaron Goodvin, who'd moved to Nashville and encouraged Ross to do the same.

A visit in 2017 hooked him. He graduated from Western and got a job in construction through a family friend. But he was back and forth to Nashville. Frustrated with his frequent absences, his boss did him a tough-love favour.

"I told him I wanted to go to Nashville again. He said, 'As a friend, I think you should go, but as your boss, you're fired.' So I went, came back to no job, and that's what forced me to say, 'I need to move there.'"

In 2019, he did.

He realized he was old to be entering the music business and, this being Nashville, could see there was a ton of competition. So he got to work, learning from the pros he was meeting.

Now, he's having magical moments—like joining Nickelback on stage to perform Earle's "Copperhead Road," the song that grabbed Ross as a kid. And he loves connecting with his fans. "When you get messages from people, even if it's not the most popular song, but it touches somebody in such a special way, that's what makes it all worth it."

His advice for others who are looking to make a big turn in their careers?

"If you believe this is what you're meant to do, you're going to figure it out. I was in Nashville from 2019 until post-Covid and didn't have much going on. It was a lot of years that were very tough. But if you want it bad enough, you figure it out. You probably won't even realize you're doing that, but you are." ●

Josh Ross on stage at the Footprint Center, Phoenix, Arizona, July 12, 2023

Alarm Call

What the birds
are telling us about
climate change

Story by Kurt Kleiner
Illustrations by Melinda Josie



Students and faculty walking near University Hospital in London, Ont. in December 2023 were treated to an unusual sight—five out-of-season baby geese and their parents. Apparently confused by unseasonably warm weather, the adult geese had nested and bred months before the onset of spring.

It was a cute story, but with a bittersweet end. Three of the goslings quickly disappeared, apparently eaten by predators. The other two were taken into care by an animal sanctuary when it seemed likely they wouldn’t survive the winter. The story of the winter goslings is just one small example of the effects climate change is having on birds around the world. Even as they suffer from habitat destruction, pollution and other threats, they face increasing danger from changes caused by the climate crisis.

At Western University, researchers are tackling questions vital to the survival of birds. Their work ranges from understanding the basics of bird physiology to creating global radio networks to track birds as they migrate around the world. “You have to understand the fundamental biology, the physiology, the mechanisms. And then you can figure out when the environment changes, why the bird responds the way it does,” says Christopher Guglielmo, biology professor at Western and director of Western’s Centre for Animals on the Move. “We’re interested in the fundamentals. But we’re doing this because we care about birds,” he says.

WINGED WONDERS

Birds are some of the most successful animals on Earth. They evolved from small, meat-eating dinosaurs that existed more than 150 million years ago, gradually sprouting feathers, growing wings from forelegs, and developing a number of other adaptations that helped them to thrive as flying animals. Today there are 10,000 species of birds, ranging from the tiny two-gram bee hummingbird to the 140-kilogram ostrich. Birds have exquisitely tuned physiologies—from feathers to hollow bones, from powerful hearts to extra-efficient lungs—that they need to let them perform the implausible trick of heavier-than-air flight. Even today’s flightless birds are descended from birds that once flew. Birds range from seed-eating vegetarians to meat-eating predators; from forest dwellers who live in the same small range their entire lives to birds that fly between continents. The Arctic Tern, for instance, travels 90,000 kilometres every year as it chases summer from

the Antarctic to the Arctic and back. The tiny black-capped chickadee, on the other hand, stays put through the Alaskan winter, putting on fat every day and burning it to stay alive during the frigid 18-hour nights. But despite their success, today one in eight bird species is threatened with extinction, and most others are seeing their populations decline, according to the international conservation organization BirdLife. In North America alone, the total number of individual birds has declined by almost three billion since 1970, a 30 per cent drop.

WINDS OF CHANGE

Amidst these alarming statistics, Western stands as a beacon of hope and innovation in bird research, thanks in part to the Advanced Facility for Avian Research (AFAR). Opened in 2009, the facility houses labs, environmental chambers where light and temperature can be controlled, and sophisticated equipment such as a wind tunnel that researchers use to study birds in flight. The facility helps attract researchers and students to Western, and also helps keep them there. “It’s like, once you have a facility like this, where else are you going to go?” Guglielmo asks. For instance, the wind tunnel is one of few in the world that lets researchers control not only wind speed, but temperature, humidity and air pressure. It is a massive piece of machinery that takes up a good chunk of the building, can generate winds of up to 65 kilometres per hour and simulate air pressure of up to seven kilometres altitude. The working section is a small chamber about two metres long and a metre tall. Once the wind gets going, researchers release the birds, who will happily fly in place against the wind for hours at a time, like a swimmer in a stationary pool. The chamber is equipped with windows, cameras and measurement devices that allow researchers to study the mechanics of bird flight. The wind tunnel also lets them study the effects of flight on the bird’s body, and the impact of different foods and environmental conditions.



For instance, Guglielmo wondered what would happen to birds on long migrations as temperatures rise and the air becomes drier. “One of the big things birds face if they’re flying overnight for 12 hours is, unlike a marathon runner, they don’t stop to drink. So they generate all of their water internally from their metabolism.” They do that by using the water that is produced as they burn fat, organs and muscle for energy. Even under normal conditions, birds’ internal organs will shrink dramatically as they are burned for energy and water; the heart can shrink by 25 per cent, livers and intestines by half. Even flight muscles get smaller. When the humidity goes down, the researchers found the birds burn even more organs and muscles than they would otherwise. It turns out that burning these non-fat body components generates five times more water than burning fat does. It’s a useful adaptation, and better than dying of thirst. But as the world becomes hotter and drier, it could mean migrating birds show up at their destination even weaker and more exhausted than they normally would, making them less likely to survive and reproduce.

EXTERNAL RISK FACTORS

Other research at Western has shown the effects even small levels of pollutants can have on birds. After the 2010 Deepwater Horizon oil spill in the Gulf of Mexico, the U.S. Department of Justice sued the oil company BP, and wanted to establish how much damage might have been done. As part of that effort, they approached Guglielmo. He found even small traces of oil on the feathers could harm birds, increasing the energy it took to fly by an extra 25 to 40 per cent. “So it’s like flying around with a ball and chain. If you increase their flight cost by 25 or 40 per cent, they’re probably not going to make it to the breeding ground that year,” Guglielmo says. Similarly, Guglielmo and Scott MacDougall-Shackleton, psychologist and co-director of AFAR, have both done studies that show even small amounts of

mercury in the diet have harmful effects on birds. After just two weeks on a diet with trace amounts of mercury, for instance, their flight performance in the wind tunnel becomes unsteady and their manoeuvrability suffers. MacDougall-Shackleton is especially interested in the dramatic changes birds go through during different seasons. “Birds essentially go through puberty over and over. They respond to longer days and other cues in the spring so they can activate their reproductive system and breed. In late summer or fall they totally shut down their reproductive system so they can prepare to migrate or, in the case of non-migratory birds, prepare for winter. Testes shrink in males; ovaries shrink in females. They’re a totally different animal than in the breeding season.” MacDougall-Shackleton points out these seasonal changes extend beyond breeding hormones. Some species like goldfinches look very different in winter and summer, changing the colour of their feathers. Other species change their social system. Chickadees live in flocks in the winter, but mated pairs will aggressively defend their breeding territory from other chickadees in the spring. One of the changes that could make the most difference to birds is the shifting timing of the seasons, with winter starting later and spring coming earlier. It turns out that different birds detect the seasons in different ways, MacDougall-Shackleton says. “Some species are really locked into daylight, and they ignore everything else, like temperature and food availability. It’s only the long days that trigger them. Whereas other species, they respond to daylight, but in a much more flexible way.” This matters because birds often time their egg-laying so the chicks hatch when food will be most available. If the weather warms earlier, but they don’t change the time of their egg-laying, there will be less food and fewer chicks will survive. “Some species are really at risk, because they’re really specialized in a particular food, in a particular place, at a particular time. Those are the ones that are in the most trouble,” MacDougall-Shackleton says.

Birds are the most visible indicators of biodiversity and environmental quality



He conducted other research that showed how another likely effect of climate change—severe weather—can cause yet another problem for birds. He and PhD student Andrea Boyer put white-throated sparrows in the wind tunnel’s barometric chamber and lowered the air pressure in a way that mimicked what happens when a storm is coming. They found the sparrows could sense the pressure change. They responded by eating more and putting on fat, apparently preparing to sit out a storm that could prevent them from finding food.

As long as the “storm” came no more than once a week, the birds were able to put on fat and use it when they needed it. But if storms hit twice a week, their metabolisms couldn’t keep up—they would eat more, but they couldn’t store the fat they needed. It’s an example of how climate change is likely to affect birds in all sorts of ways we haven’t yet predicted.

“Climate change is not just an overall warming,” Guglielmo warns. “It’s also more variability in weather.” It has also meant more forest fires in some parts of the world, including North America. In recent years forest fires have raged across Canada and the United States during times birds are raising young and migrating. Smoke causes breathing and other health problems for humans, but could it impact bird populations?

“What I want to do is look at how forest fire smoke affects birds,” Guglielmo says. He and postdoctoral fellow Catherine Ivy, who specializes in bird respiration and high-altitude flight, are preparing to investigate it.

MONITORING MIGRATION

On the roof of the Western Interdisciplinary Research Building, a huge, motorized satellite dish antenna peers up into the sky. By the end of next year it should begin to receive signals from Western Skylark, a small satellite Western students are currently building under the supervision of engineering professor Jayshri Sabarinathan. When the satellite starts operating, it will collect information on bird movements from an existing network of ground-based radio towers and relay the information to researchers at the Western Institute for Earth & Space

Exploration. “It’s going to help us get access to the data more quickly than we can from remote areas that are difficult to access,” says Yolanda Morbey, Western biology professor and co-investigator on the project.

The existing network is called the Motus Wildlife Tracking System. The network (which includes Western) consists of more than 2,000 towers in 34 countries around the world. They receive signals from tiny radio transmitters that have been attached to thousands of birds, as well as bats and insects.

“If we can understand bird behaviour, and physiology, and their responses to the environment, we’ll be better able to predict what might happen under climate change or other habitat change, and identify places where some mitigation is required,” Morbey says.

When a tagged bird nears a tower within 15 kilometres, the antenna records its signal, which is then uploaded to the network through internet or cell phone connection. However, in remote areas without such connectivity, someone has to go to those towers and download the information manually.

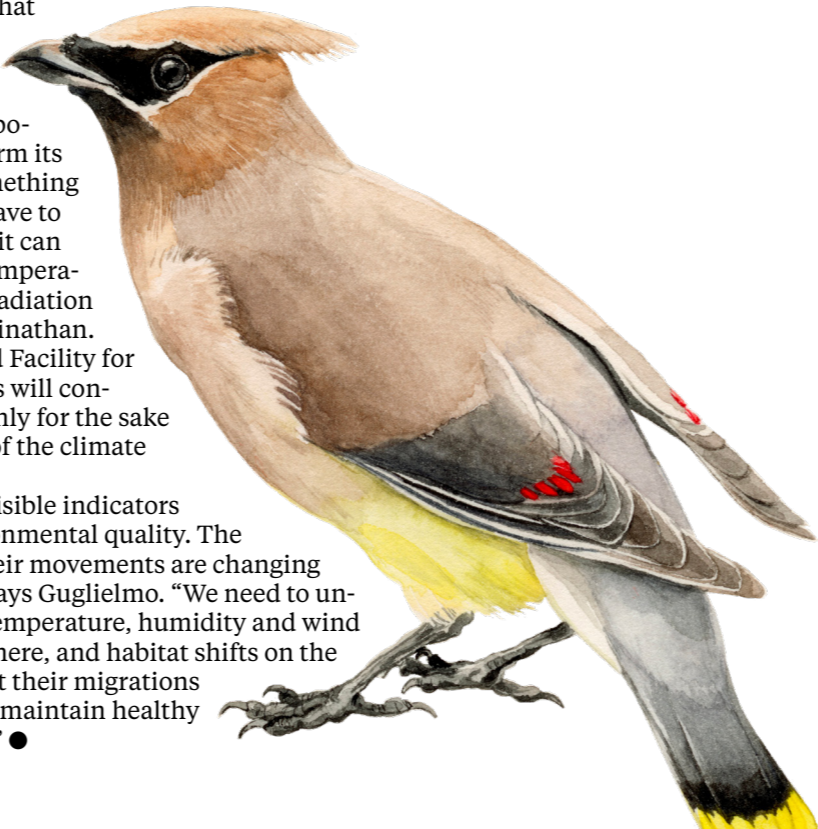
“When you’re talking about visiting a station that might be way, way up north or on an island somewhere, that can be quite a logistical challenge,” says Andrew Beauchamp, a PhD student working on the project.

Western Skylark will help solve that problem. Some of the remote towers will be fitted with transmitters that can send data up to the satellite, which will relay it to the satellite dish at Western. The satellite is being built as part of the CUBICS program funded by the Canadian Space Agency, intended to give students hands-on experience in space systems engineering while supporting science missions.

At the moment, the satellite, known as a CubeSat, is a modest 30-centimetre-long rectangular frame with a 10x10-centimetre base that students will need to pack with radio transmitters and receivers, solar cells and other components that will let it perform its mission. “If you want something to survive in space, you have to make sure you build it so it can stand up to vacuum, to temperature changes, and to the radiation environment,” says Sabarinathan.

Back at the Advanced Facility for Avian Research, scientists will continue to study birds not only for the sake of birds, but for the sake of the climate as well.

“Birds are the most visible indicators of biodiversity and environmental quality. The timing and patterns of their movements are changing along with the climate,” says Guglielmo. “We need to understand how changing temperature, humidity and wind conditions in the atmosphere, and habitat shifts on the ground, are going to affect their migrations so we can plan for how to maintain healthy ecosystems in the future.” ●



BIRDS

Opposite: Black-capped chickadee (top); Cedar waxwing (bottom)

Right: Barn swallow

Page 25: Black-burnian warbler

Page 27: Western sandpiper

Saving birds, one window at a time
Brendon Samuels
sees through the eyes
of a bird in flight

Navigating Western’s campus, biology PhD candidate Brendon Samuels looks beyond the buildings, walkways and greenery; he sees it through the eyes of a bird in flight.

Take windows, for example. To a human, the International and Graduate Affairs Building is easy to see—an attention-getting modernistic box made mostly of reflective glass. For birds flying between the Thames River and nearby woods, it might as well be invisible.

A few years ago, Samuels routinely collected birds that had died there after hitting windows they couldn’t see. He estimated at the time that the building killed 150 birds a year. “They just don’t understand what glass is. They never really encountered a reflection before in nature. Often their first encounter is a lethal one,” Samuels says.

In fact, collisions with windows are estimated to kill more than a billion birds every year in North America and are one of the most common human-made causes of bird deaths.

For his PhD, Samuels studies pre-collision behaviour and tested how birds perceive windows, and how to create the most effective window treatments to make windows visible to them.

It turns out the bird-shaped stickers many people place on windows to make them visible don’t really do much. “What we find is that if you put one or two stickers up on your window, a bird is just going to fly around the stickers and hit the glass,” he says.

On the other hand, patterns with spaces of no more than five centimetres will signal to even the smallest bird that there is no space to fit through.

Over the past few years, Samuels has worked with the university to identify problem

buildings and treat the windows with coatings the birds can see and avoid.

He says this has drastically reduced bird strikes, and the university has committed to making all new buildings bird-safe and is working towards retrofitting existing windows with the protective film.

It may be surprising that the grids of pencil-sized white dots make a difference. From a distance, it’s difficult for human eyes to detect them, and even up close they don’t stand out. But for birds the dots make all the difference.

Working with the City of London, Samuels is advocating for development planning bylaws to require bird-safe building design. And he has been working with the non-profit organization FLAP (Fatal Light Awareness Program) Canada to advocate for Bill 145, a policy that would incorporate bird-safe building design into the Ontario Building Code.

“Like a lot of issues in conservation, I actually think we have enough knowledge. We know what the solutions are. At least enough so we can take decisive action through policy and systems change to achieve the goals of conservation,” Samuels says. ●



Story by Kurt Kleiner
Illustration by Melinda Josie

PLASTIC

The good, the bad and the ugly



Story by Jeff Renaud
Photos by Paul Weeks

Single-use plastics are bad.

Plastic straws.
Plastic grocery bags.
Plastic cutlery.

Bad.

Bad.

Bad.

ALL THREE ITEMS, along with plastic takeout containers, stir sticks and six-pack rings, were banned by the federal government in 2023 for good reason (though a recent court ruling has opened the door to their reintroduction). They’re all devastating for the environment, oceans, wildlife and let’s just say it, the very survival of the human race.

That’s single-use plastics—the low-hanging fruit of plastic products. But there are thousands, if not millions, of uses for plastic that we can’t so easily do without. Automotive parts, cladding (coating/insulation for wiring), even sewer pipes are all made of plastic. Outlaw any of these precious plastics and transportation would grind to a halt, smartphones would be illegal, and let’s not even think about what would happen to our sewage systems.

So, for a minute, let’s dedicate a few (hundred) words to the positives of plastic. And why it’s so hard to walk away from them.

Elizabeth Gillies, Western chemistry professor and Canada Research Chair in polymeric biomaterials, understands the impasse. Since grad school she has been working with polymers (large molecules formed by linking up smaller repeating chemical units—used in everything from plastic water bottles to clothing and automobiles). Today, she spends a lot of time developing alternatives to conventional plastics. But she says for some things, you just can’t beat plastics. Yet.

“Yes, there are some alternatives now, but at the time plastics were developed, they were seen as replacements for materials like metal and glass,” says Gillies. “Plastics have great properties compared to those materials for many applications. They are lighter than metal, which make them much easier to transport, which uses less fuel, and they’re less breakable than glass.”

Joshua Pearce agrees. The John M. Thompson Chair in Information Technology and Innovation at the Thompson Centre for Engineering Leadership & Innovation at Western, Pearce has designed and delivered countless 3D-printed products (everything from operating beds to solar panel mounts) using plastic filament as a key component. And they’re all open source, meaning the designs are free to use, modify, improve and even profit from.

“Our lives would be materially less pleasant without plastics. That’s the good side,” says Pearce, who holds appointments at Western Engineering and Ivey Business School. “Unfortunately, plastics also threaten our environment and our health. They’re also very difficult to recycle economically because a lot of it is low density, meaning it can only be recycled a few times before losing its strength. That’s why we have the problem we have now. And it’s a big problem.”

→

Beautiful, but bad: The photos on these pages are samples of plastiglomerate, a fusion of plastic debris, natural beach sediment and organic debris. The term was first coined by Western geologist Patricia Corcoran and artist Kelly Jazvac, after they investigated the stones on Kamilo Beach in Hawaii in 2012.





Cucumber conundrum

A CLASSIC EXAMPLE of conceivably pointless—even preventable—plastic usage is food wrapping, like the sleeve enveloping nearly every English cucumber sold in Canada. “So many people, me included, get upset about why anyone wraps a cucumber, but I learned a cucumber actually lasts 10 days longer in plastic,” says Patricia Corcoran, Earth Sciences professor at Western and expert in sedimentary petrology, or more simply, the study of sedimentary grains (whether natural or plastic). “Food waste takes a huge toll on the environment and food security; so yes, prolonging shelf life is valuable. But it’s another deal with the devil. Another trade-off with plastic.”

In 2012, Corcoran coined the term plastiglomerate after witnessing a pervasive phenomenon at Kamilo Beach on the island of Hawaii with Montreal-based artist Kelly Jazvac, who at the time was a visual arts professor at Western. They described their discovery of a new “stone formed through the intermingling of melted plastic, beach sediment, basaltic lava fragments and organic debris” in a landmark 2014 study, co-authored by oceanographer and sea captain Charles Moore.

This ‘intermingling’ or entanglement is Corcoran’s primary concern: the relationship between rock and plastic has become symbiotic, even parasitic, with one now fused to the other, unable to breathe without its partner. And it’s not just rocks. Intermingling, most perilously through ingestion, happens with fish, turtles, birds, kelp and algae too. “We always see news coverage of plastic ingestion and entanglement when it comes to marine life, plant or animal, but that’s mostly larger items,” says Corcoran. “The dangers of large debris get all the press because it’s visual. But the smaller plastic, the microplastics, are far more dangerous.”

Microplastics come from a variety of sources, including larger plastic pieces that have broken apart, resin pellets used for plastic manufacturing, or in the form of microbeads, which are small, manufactured plastic beads used in products like facial scrubs and body wash. “It’s been shown that plastics travel up the food chain and humans are at the top of it,” says Corcoran. “So, while industry may not care about what’s ending up in our air, lakes and oceans, people will care when microplastics start showing up in our stool samples. In fact, it already has and that’s pretty scary.”

Corcoran and her team are investigating microplastic pollution in the Great Lakes watershed by analyzing sediment, soils, air, water and fish samples, as well as surveying shorelines. The wicked problem is that microplastics are abundant, but equally disturbing is that it is no longer only factory drainage, spills and runoff driving the spread of these tiny killers. The breakdown of plastics is happening naturally through wind, waves, currents and simple human motion. Stopping the spread of microplastics is a huge challenge because the proverbial genie is already out of the bottle. And the bottle’s made of plastic, too.

(Ele)mental health

PLASTIC POLLUTION isn’t just a water problem. Earth and air can be affected too, especially when the fourth element, fire, joins the fray.

Just last year, a freight train carrying nearly 400,000 litres of hazardous chemicals derailed and burned in East Palestine, Ohio. Much of the train’s freight was polyvinyl chloride (PVC), which is used to make plastics for a wide range of household and industrial products, from raincoats and shower curtains to flooring and indoor plumbing. While the chemical analysis assessment of the Ohio train disaster is ongoing, recent results show there

The dangers of large debris get all the press because it’s visual. But microplastics are far more dangerous.

was no danger to the community. However, many scientists including Gillies, say it may be too early to make that judgement and the long-term impact still needs to be investigated. “Plastics are generally made from petrochemicals, the chemical byproducts of petroleum refining, and the whole process of generating monomers and the chemical manufacturing of plastics in general, isn’t great for the environment,” says Gillies.

“Vinyl chloride, which is a monomer, is incredibly toxic. It’s so pervasive worldwide, it’s going to be very difficult to turn back the clock. But we need to find something fast before it’s too late.” To that end, Gillies and her collaborators, including Western Engineering professor Aaron Price, worked with industry partner CTK Bio Canada to develop a new biodegradable, hemp-based material that could serve as a sustainable substitute for plastic.

Hemp is an agricultural crop that requires minimal resources to grow. It’s also a waste product of Canada’s ever-growing cannabis industry, making it a free resource that would



otherwise be destined for a compost heap or landfill. Using hemp as a filler would allow for far less actual plastic ending up in products. This would also make composting plastic, or at least parts of it, a possibility. “Depending on the form, hemp can have a fibrous structure, which acts perfectly as a reinforcement for materials,” says Gillies. “Basically, hemp can make materials stronger than many other biomaterials.”

The goal of the project with CTK Bio was to find a proxy for widely used industrial plastics such as high-density polyethylene pellets, which could be fed directly into the same manufacturing process currently used to produce plastic packaging. Gillies and her collaborators used ground hemp stalk powder as filler during packaging production. Although the new biomaterial may not perfectly mimic the strength and malleability of current packaging plastics, it does come close depending on the specific application. And it does exhibit degradability, which is key for sustainability.

While biomaterials are currently more expensive to produce than plastic, companies are working to optimize and reduce pricing, so costs are expected to fall in the coming years as technologies improve. “It seems obvious that an easy solution to all of this is to recycle more effectively, but we know that just doesn’t happen,” says Gillies. “The alternative is to create biodegradable plastics and use bio-based starting materials to eliminate the environmentally problematic components that go into making the plastics. This is a huge area of growth in polymer science right now.”

And while there may be some sustainable companies that see plastic as a moral, ethical and environmental concern when it comes to best business practices, don’t think that’s the only reason for the change of heart. For some in the plastics industry it’s simply about the almighty dollar. “Companies are actually starting to invest in this type of research and development,” says Gillies. “It’s a major challenge because you have to meet the cost and property requirements (of plastic), but I think companies do see this as a solution, especially for some areas where you really can’t even collect the polymers to recycle them.” Many jurisdictions, including Ontario, are trending towards implementing rules that will force manufacturers to take on the full costs of recycling their own products or even more radically, being held responsible for recouping their waste and dealing with it themselves.

Easy enough when it’s household appliances, automotive parts, TVs and computers, but what about microbeads, less than one millimetre in diameter, that are non-degradable, don’t dissolve in water and can be found in everything from soap to, sadly, sharks. “This is a rapidly growing area and there are lots of smart people working on it, so there is hope,” says Gillies. “Let’s start with doing a better job recycling but there is far more to do as a society, and it starts with plastic manufacturers.”

The onus, Corcoran says, is on producers and distributors. “Producers need to stop making non-recyclable packaging just to make things look pretty or food more tempting,” she says. “And distributors, don’t use Styrofoam for packaging meats in your grocery store. I can’t believe some stores still do this.”

Every community will have the option to recycle their own plastic waste.

Recycle plastic, not ideas

AS A SOCIETY, despite more than 50 years of blue boxes and the synonymous symbol of three chasing arrows, we still don’t really recycle. At least not enough to make a dent. “Globally, historically, if you add up all the plastic we’ve ever made, we’ve only recycled nine per cent of it. And even then, most of what we recycle usually ends up back in the landfill anyway. It’s a disaster. And a failure,” says Pearce. “And the reason is poor economics.”

Unlike high-value materials like aluminum, recycling low-density plastic (the most common kind) usually costs more than it’s worth. So, public and private waste management sites end up having to spend extra money to recycle it, if it’s even recycled at all. “It’s embarrassing when you actually add up all the costs of plastic. We have a big challenge in that our economic system currently doesn’t include all the costs when it sets the price of plastic,” says Pearce. “Plastic is seemingly cheap and easy to shape into whatever you need it to be. But if you include all the costs—the cost of production, the cost of collection, the cost of recycling—it is no longer cheap. Until we include all the costs and all the benefits for every business decision we’re making, it’s all just a fairy tale so we can’t leverage the power of economics to help us make the right decisions.”

Pearce is a strong proponent for building a circular economy manufactured on the back of plastic. A circular economy is a model of production and consumption, which involves sharing, leasing, reusing, repairing, refurbishing and recycling existing materials and products as long as possible. In this way, the life cycle of products, like plastic, is extended. “A great example of building a circular economy is Precious Plastic, a non-profit group that started in Europe. They developed several open-source designs for different tools like shredders and recyclebots (waste plastic extruders). Their whole idea is that we should be treating plastic like a precious resource and recycle it locally for profit,” says Pearce.

Shredders cut plastic into small flakes that can be easily washed and run through a recyclebot, which heats and presses the flakes to create a line of plastic ‘spaghetti’

that can be 3D-printed into any shape. “If you have these tools (shredders, presses, recyclebots and 3D printers) available to you, at home or maybe in a community centre or a school, you can start to develop products of high value, like medical devices, scientific equipment, plastic lumber and even toys with recycled plastic,” says Pearce.

In Canada, despite our adherence to the metric system like most countries in the world (save the U.S., Liberia and Myanmar), imperial units are commonly used in our construction and trades. So, all those open-source designs created in Europe don’t work here, because the inner workings of complicated machines, especially those that chew up and spit out recycled plastic, can’t be reconfigured with simple measurement conversions. “There are no manufacturers of these designs in Canada, so now we’re working on a North American solution,” says Pearce.

Pearce and his Free Appropriate Sustainable Technology (FAST) lab collaborated with a research team led by Western alum Jennifer Ewans, BEng, ’96, at Fanshawe College in London, Ont., who designed and developed a plastic shredder using imperial measurements. The shredder, now operational, is already recycling plastic bottles and Pearce and his team use the shredded materials in their open-source hot presses and recyclebots for use in their lab’s 3D printers. Then they make everything from auto injectors and assistive mobility aids like walkers to scientific tools for their own lab. “We’re going to have a Canadian version of this whole line of equipment, so every community has the option to recycle their own plastic waste,” says Pearce. “I’m confident we’ll get there. And when we do, it will be amazing.”

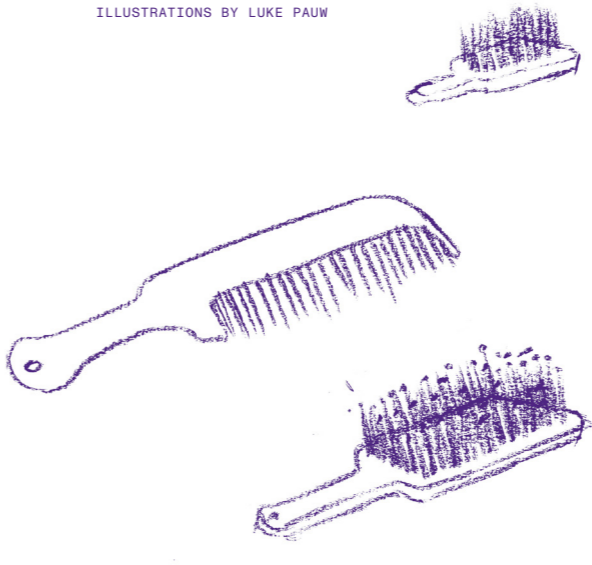
Can’t change without change

WHILE PEARCE AND GILLIES look for alternative and circular solutions, Corcoran continues to record the distribution, abundance and types of plastic contaminating our planet like an infectious disease. Or, more closely, a full-blown synthetic zombie apocalypse. She is often out sampling and studying the Great Lakes region in search of plastics big and small, but sometimes the plastic comes directly to her. “I just ordered a bunch of supplies from Amazon for sampling in the field. Things like cable cutters, wire scissors, a battery-powered screwdriver. When it arrived, everything was wrapped in plastic and none of it was recyclable. There was no resin identification code. Nothing. Everything just ended up in the trash. The simplest, most basic thing a company could do at this point is make sure the plastic they’re using for packaging is recyclable.”

But most companies aren’t doing it. And that’s the problem with plastic. Not unlike plastiglomerate, the planet and plastic have become too intermingled, and the result is a monster only Frankenstein could love. Science brought that creature to life and compassion and understanding saved it. Mary Shelley may have been on to something. ●

Stories from our community

ILLUSTRATIONS BY LUKE PAUW



It was a stranger, frantically asking if I had any hair oil

It was my first Saturday night in New York City as a newly admitted NYU dental student. Pari, a friend of mine from Western, told me her roommate who had also just graduated from Western was, coincidentally, also starting at NYU dental. I figured I’d meet her when I started classes.

As I was preparing for a housewarming party at my apartment, I heard a knock. Assuming it was one of my guests, I opened the door. It was a stranger, frantically asking if I had any hair oil.

Before she could even tell me her name, we sprinted to my room. As I start fixing her hair, I realized she looked familiar. Then I figured it out. It was Nicki, Pari’s roommate from Western. What are the odds? Our parallel paths from Western had converged.

Now, eight months later, we’ve become inseparable study buddies, NYC adventurers, and airport companions on our visits back home. A “small world” story that’s turned into a lovely friendship.

Jordyn Cohen
BSc’23

All thanks to Trudeau—and a rogue umbrella

Prime Minister Justin Trudeau came to campus on Jan. 18, 2018, to speak at Alumni Hall. I had decided not to go as it was cold and gloomy and I knew there would be long lines outside. But a friend asked if I’d stand in line and save her a spot, as I got out of class earlier.

When I saw it was raining, I took the tunnels to the University Community Centre and bought an umbrella. As I walked to Alumni Hall, the wind caught my umbrella and hit a woman square in the face. I apologized profusely, snapped my umbrella back into shape and carried on.

As I found my place in line, it suddenly struck me: the woman ahead of me was the same person who had been hit by my umbrella. I chatted with her and her friends and we added each other on Facebook right then and there. Since it was so cold, I ordered pizza to the line to warm us up. As we shared pizza, laughter and stories, a bond formed. Seven years later, that woman, Makayla, is my closest friend—all thanks to Trudeau and a rogue umbrella.

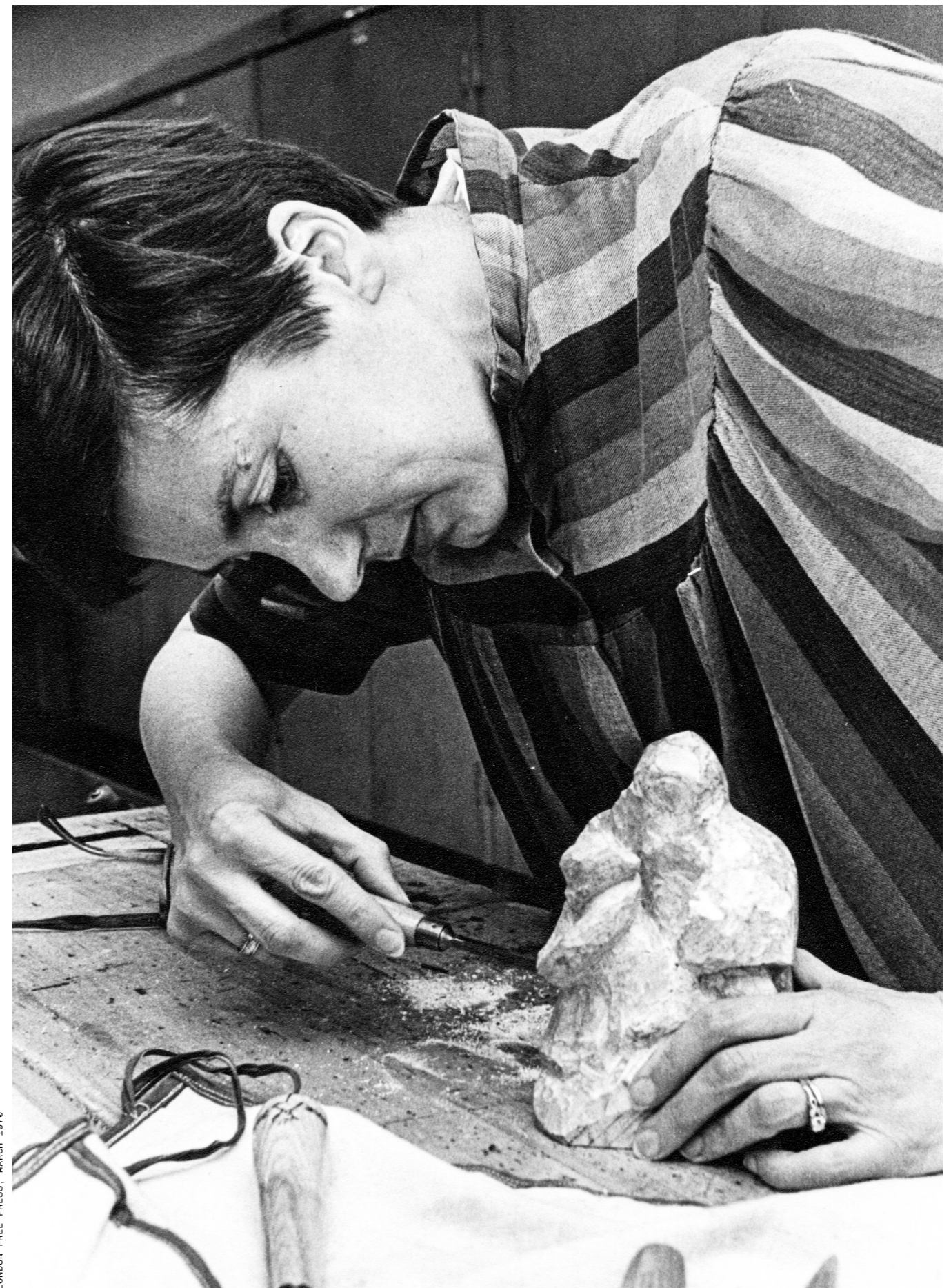
Dimple Nakhwal
BA’21 (FIMS)



A woman ahead of her time— The remarkable journey of Halina Robinson

In 2023 Western Libraries received the largest gift in its history—a \$2-million bequest from Halina and James Russell (Rus) Robinson, building on a fund the couple started in 1979. *But the story really began in 1944.*

Story by Keri Ferguson



LONDON FREE PRESS, MARCH 1970

←
Overleaf: Halina Robinson had a longstanding interest in the arts. Here, she chisels a piece of soapstone in a night school class.

As the train pulled into the Auschwitz-Birkenau concentration camp in 1944, 17-year-old Halina Czajkowska felt an enormous sensation of stillness, resigned to accept her fate. She and her mother had arrived there, vulnerable to persecution because of her father’s position in the Polish army. By this point, Halina had seen her home bombed and witnessed horrific atrocities before she and her mother were arrested during the failed Warsaw Uprising against German occupation.

Despite grave illnesses brought on by deplorable conditions at Auschwitz and later at Bergen-Belsen, the pair miraculously survived, overjoyed to finally reunite with Halina’s father in 1948. In her 2020 memoir, *Heaven, Hell and Purgatory*, Halina wrote of the many strangers who ensured her survival. There was the defiant “little old babuszka (granny),” who dressed down a soldier with ill intent, saving Halina from rape or a terrible death. And a compassionate Belgian doctor whom Halina later credited for inspiring the “hard work to make something of myself as repayment to him for his kindness and effort.” She did so with abundance over the next seven decades.

From artist to medical innovator

An artist as a child, the war forced Halina to push her creative passions aside, as did economic realities once it ended. Freed from Bergen-Belsen concentration camp in 1945 and sent to Sweden with her mother, Halina declined an art scholarship, instead choosing chemical engineering, which she felt was more likely to lead to a viable career.

After graduating with high marks in 1950 from the Stockholms Tekniska Institut, Halina joined the famed Karolinska Institutet to work in the lab of pioneering cancer researchers Drs. George and Eva Klein. There she mastered white blood cell counting techniques used to assess chemotherapy drugs.

When the Korean War broke out, Halina, weary from past horrors, emigrated to Canada. She was intent on resuming her engineering career, but in 1951, London, Ont., like most of North America, was not yet accepting female engineers. (Adding insult to injury, having

sponsored her parents to come to Canada, Halina tried to buy them a house, only to learn that as a woman she’d need the mortgage co-signed by a man.)

Halina eventually landed a role as a laboratory technologist in the lab of former Western Faculty of Medicine dean James Bertram (J.B.) Collip, who, along with Frederick Banting, Charles Best and John Macleod, co-discovered and purified insulin at the University of Toronto. She worked under the supervision of Robert Noble, who was exploring leaves from the vinca plant (better known as periwinkle) as an oral source of insulin. He asked Halina to measure glucose levels in the blood of rats who received oral extracts from the plant.

What happened next caught the attention of Dr. Jacalyn Duffin, 40 years later. “Halina was petrified of losing all the skills she had developed in Sweden. So, instead of just measuring the blood sugar, she measured absolutely everything else, including red cells, white cells and platelets,” says Duffin, editor of Halina’s memoir, and Hannah Professor Emerita in the History of Medicine at Queen’s University in Kingston, Ont. When the experiment moved to injections in 1952, the rats died, but their sugars didn’t budge. Halina observed a decline in white blood cell counts. Recognizing the significance this could have in treating childhood leukemia, she repeated her tests, confirming her results by 1953.

Halina’s observation led Noble to reconsider the vinca leaves for cancer treatment. Joined by chemist Charles Beer, who devised a method to isolate and purify an active compound in the plant, the team announced the groundbreaking discovery of the anti-cancer drug Vinblastine in 1958. Vinblastine was the first major Canadian breakthrough in cancer chemotherapy, with Beer and Noble (posthumously) inducted into the Canadian Medical Hall of Fame in 1997.

Halina received little acknowledgment for her contributions until Duffin outlined them in a research paper years later. “She confessed to doing something that she hadn’t been asked to do and that took courage,” says Duffin. “These drugs are still used today for treating leukemia and lymphoma and other cancers.”



↑
Above: Halina and Rus Robinson at a Chemical Institute of Canada (CIC) ball patrons’ party, when Halina served as chair of the London section of the CIC.

A love story is born

It wasn’t all work for Halina at Western. She also found love.

After being severely injured in the Second World War, Flight Lieutenant James Russell (Rus) Robinson came home to Canada and enrolled at Western as a post-graduate chemistry student. Halina caught Rus’s eye one day in a cafeteria. He eventually asked her out. Romance blossomed and on Aug. 1, 1953, shortly after Rus became Western’s first PhD graduate in chemistry, he and Halina married. Rus stayed on at Western, teaching, and working for Agriculture Canada until 1985, at its site on campus.

In 1956, Halina became “chemist-in-charge” of the paediatric research lab at Victoria Hospital (now part of London Health Sciences Centre). She continued to make important contributions, developing micro-chemical and analytical methods suitable for treating newborn patients.

Art leads to powerful legacy

In 1976, Halina retired and rediscovered her passion for fine arts. She enjoyed painting, wood carving and volunteering at Museum London. She took art courses and taught watercolour techniques at Western and exhibited in a number of regional shows.

Halina told *The Ingersoll Times* in 1983 that with all the suffering in the world, she wanted her art to “bring a smile to a person’s face.”

“I want my work to outlive me. I want it to be around when I am gone.”

True to her nature, Halina made good on that plan. Upon her death in 2021 at 94, she left behind an unexpected treasure trove of more than 700 of her original works, some of which were displayed in an exhibit at London’s Satellite Project Space in August 2023.

Rus had been a donor to Western Libraries for years before his death in 2010 with Halina continuing this support. The Robinsons’ \$2-million bequest to Western Libraries will fund materials in history and social science, offering undergraduate

and graduate students unparalleled access to the most important literature in military history—a subject of great interest to Rus.

Collections and content strategies librarian Elizabeth Mantz is overwhelmed by the generosity of Halina and Rus, whom she grew to know over the years as a gentle and unassuming couple. “This wonderful gift continues their legacy of doing remarkable things for people they’ve never met. It speaks to the lives they lived and a power they had within.”

And then there is the remarkable Halina herself—remembered by Mary Thuss for her determination to move forward.

“Halina was a woman ahead of her time,” says Thuss, BHSc’05, MScN’14, the daughter of one of Halina’s long-time friends. “She knew what she wanted when she wanted it and how she wanted it to be. She fought all the time for her status, which was likely born from being in the concentration camps, fighting her way to get wherever she needed to be.” ●

M A R K

Interview by
Patchen Barss and Keri Ferguson

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Interview

When ChatGPT was launched in 2022, suddenly, “artificial intelligence” jumped from what most of us knew as a weird Hollywood sci-fi thing to a freaky new reality.

As a mathematician and computer scientist, **Mark Daley** was always interested in theories of neural computation. During a sabbatical in 2012, he went back to school to complete a master's degree in neuroscience to better understand the biological aspects of intelligence and learning.

He then moved into academic research administration, working as vice-president, research at the Canadian Institute for Advanced Research (CIFAR). That group oversees the Pan-Canadian Artificial Intelligence Strategy, and also runs a research program called Learning in Machines and Brain, which, at the time, was co-directed by Yann LeCun, the head of AI at Meta, and Yoshua Bengio of the University of Montreal.

“What a privilege it was to be a fly on that wall,” I thought Daley says.

A Western professor since 2004 (and a double Western degree holder: BSc'99, PhD'03) he was appointed chief digital information officer in September 2022. When the university took the historic step of creating an AI-focused role within its senior executive team, Daley was the obvious choice. In October 2023, he began a five-year stint as chief AI officer, believed to be the first such position at any North American university. Daley spoke with Patchen Barss and Keri Ferguson about how quickly things are moving.



In your conversations with faculty, students and staff, how do you find people are reacting to these transformative tools? Well, let me say this first. Even though I've been involved in neural computation research for most of my career, I didn't imagine AI getting to the point it is at right now within my lifetime, or I thought it maybe would happen after I retired. We are way further ahead than I thought we would be. So I'm sympathetic to people who aren't researchers in this area who feel this came out of nowhere. There is a lot of fear and doom generated in the media, but I'm an optimist. I do feel a sense of obligation, because this is an important moment in history and we—all of us—have an opportunity to help push toward making good decisions for humanity.

In terms of my interactions with people, I've seen a huge range of responses. Some people are so excited. "Finally, I can talk to my computer!" Others find it all a bit creepy, especially with something as sophisticated as GPT. People say it's kind of gross that the machine's pretending to be a human. Some people have a deeper, existential response: "What does it mean that this tool can simulate a human that well? Maybe I'm less special than I thought I was." These are good questions we as humanity are going to be grappling with in a very serious way.

VIDEOS AND PHOTOS AS TRUTHFUL

What is your read on “The Terminator Problem”—the idea that we might not only lose control of AI, but that it might someday control us?

Right now, the idea of killer robots taking over is speculative. We should take this idea seriously and have those conversations. But the existential threats are not real or manifest—they are only possibilities.

Interview

I'm more interested in immediate realities. I realize there's a whole extra field of study out there you didn't even know existed. Recently, [AI research laboratory and Google subsidiary] DeepMind announced they had discovered a new class of antibiotics that could save tens of thousands of lives. I don't see AI replacing people. I see AI augmenting what people do. In the history of human technological innovation, every time

At the same time, we have deep-fakes that are good enough to disrupt elections. A fake Joe Biden YouTube video told New Hampshire voters not to vote in the primary. People who are accustomed to accepting videos and photos as truthful have to learn to treat them with the same skepticism they would with written text. These are real, immediate, non-speculative public goods and harms.

How do you see these goods and harms shaping Western's approach to AI? There's no standardized playbook for generative AI like ChatGPT, which can create original writing, visual images and other content. How to best use it varies hugely across disciplines. We can't say, "Here are the five things Western's going to do in AI." We want a huge bottom-up component, starting with individual experimentation. People need to be empowered and given time and space to experiment with these tools and see how it affects their day-to-day. A music history professor will use it differently than their colleagues in research finance for example.

Aside from threats, and aside from creating a "force multiplier" for existing roles, what do you imagine we can do with AI that is truly new? There are already multiple instances of research papers primarily written by generative AI. It is accelerating research. On the learning side, we have a personalized tutor that's good and getting better. It doesn't replace professors or TAs, but augments them by being available 24/7, and by having infinite time and patience. A student can ask it the same question 20 times or ask it to try teaching another way and it will do it. This transforms how we deliver education.

Our students are going to be living and competing in a world where everyone knows how to use these tools to maximize their personal impact. They have this force multiplier now that might allow them to do 10 times what they could before. Our students want to learn how to use these tools intelligently and ethically. We're already seeing curriculum change at the level of the individual instructors to reflect these new opportunities for students.

Can you elaborate on the idea of AI as a force multiplier?

Some companies are doing major layoffs, thinking they're going to replace humans with AI. I think that's a mistake. That day might come, but this is not that day.

Other companies are going to keep their human cohort and have them collaborate with AI in everything they do. Humans still do all the things they excel at, and now they're augmented by technology. AI reduces or eliminates intellectual drudgery, automating repetitive correspondence and bureaucratic requirements, and frees people to focus on other challenges.

A lot of people are surprised how creative AI can be as a brainstorming partner. It knows things you don't. You get into a brainstorming session with it, pull on a couple of threads and

AI is going to be everywhere. Right now, a big organization like Western needs someone to help coordinate that transformation and guide the adoption process. But ultimately, adoption is happening on the front lines. Once the transformation is done, then I can go back to teaching and research full time.

But right now, we need to be taking a leadership role in AI. This technology is going to transform society in ways other technologies haven't. It's being compared to the internet and the steam engine. Those are legitimate comparisons, but I think this is even bigger. I think this is more like the discovery of fire.

Interview has been edited for length and clarity. Visit [magazine.western.ca](https://www.magazine.western.ca) for more with Mark Daley.



Interview by Alice Taylor
Illustration by Melinda Josie

From Western to Washington

Ambitious, stylish and politely tenacious, Katie Simpson, BA'06, brings a unique flair to Canadian journalism. Alice Taylor caught up with the Washington-based CBC foreign correspondent in February at a D.C. hair salon—with a full head of foil (a long story involving a botched dye job—"nine different colours!")—and again in March for a candid and wide-ranging conversation on everything from January 6th to presidential politics to why Western was a happy surprise.

Six months out from an epic election, CBC's Katie Simpson gives us a behind-the-camera look at the wild world of U.S. politics.

Thanks for making the time to chat with us. Especially on your day off.

My pleasure. Anything for Western! But I am going to turn my camera off now.

Your dance card is very full these days. What do your days look like?

It's intense. The days are long, but they're exciting. I start my day from home with a call to my assignment editor around 8 a.m. We chat through options and come to an agreement on the story we want to do. She pitches it and off we go. On a good night, I'm home around eight. But when we go live to *The National*, maybe I get home around 11 p.m.

I scanned *The Washington Post* politics section this morning and was struck by how eclectic the coverage is. Has this been your experience too?

Definitely. It's the wildest range. Looking back at the stories I covered this week: Sunday was about the killing of three U.S. soldiers. Monday was the follow-up story on possible U.S. retaliation. Tuesday was funding pauses for UNRWA (United Nations Relief and Works Agency). Wednesday was tech CEOs testifying before Congress and their inability to keep children safe on social media platforms. Thursday was about Taylor Swift/Travis Kelce conspiracy theories. When I think about it—that's just nuts.

You were in D.C. on January 6th. What was that like?

We were prepared for something to happen — though we weren't expecting any violence during daylight hours. Many of the people there truly believed the election was stolen. They believed the lies about election fraud, and they were angry. We saw people starting to climb scaffolding they'd put up for inauguration and, while I couldn't see it from my vantage point, shortly after people started breaking windows and rushing the Capitol building. I don't know how to describe it other than surreal. Inside that building were lawmakers who have a duty to oversee the peaceful transfer of power after a free and fair election and there was a violent effort to stop that. If this can happen in the most powerful country in the world, then, I don't know.

Right now, my immediate future is focusing on this massively huge, consequential election

What is the vibe you're getting now in the run-up to the election?
It's clear there's frustration over the options at the top of the ticket. In a country of over 360 million people, one thing we're hearing is: How are these the candidates we've ended up with? When it comes to Joe Biden, there has been a lot of talk about his age and his ability to continue to serve in one of the hardest jobs on the planet and function at a high level. Another concern, particularly among younger and progressive voters, is Biden's response to the war in the Middle East. And Trump, well, he's a super polarizing figure who has been indicted four times and is accused of trying to overturn the results of the last election. His supporters remain enthusiastic and energetic. There's real motivation there. But there's also a limit to his appeal outside his base.

You go into these tense, polarized situations, put a microphone in a voter's face and ask them hard questions. How do you steel yourself for interviews like this?
The thing is, it's not usually voters that you have the difficult conversation with. The most difficult conversation is with someone in a position of power, and it's an accountability interview. In this context, the most important thing journalists can do is to be polite but keep pushing until they answer the question you're actually asking them, not the question they want to answer. It's all about treating people with respect.

We're seeing all these media layoffs at places like the L.A. Times, Time Magazine, NBC News. Journalism has been a high-risk profession for decades now. What made you go into it?
The entire time I've been in journalism, everybody has told me the industry is crumbling, and you won't be able to maintain a successful career. And they're not wrong. I've seen a lot of peers lose their jobs and it is so difficult to watch. But I firmly believe democracy depends on having a free and fair press. And for that reason, I keep going.

Who are the journalists you admire?
Adrienne Arseneault (BA'90, MA'91, LLD'13). Full stop. She can see things the rest of us can't. And no one works harder than Adrienne. She puts incredible effort into everything she does. There's a reason CBC chose to make her chief correspondent and co-anchor of *The National*. And, you know what else? She's incredibly supportive of younger journalists too.

And a fellow Western grad to boot. Speaking of, why did you go to Western?
So, we moved to London when I was 13. And I don't know if I want to say this, but I really wanted to go to Ryerson, now TMU. But I ended up at Western, and it was such a great experience. I was a guinea pig in the first year of the media, information and technoculture program. I'm so glad I was. I learned a lot at Western. Being there expanded my horizons. I think my education sent me into the world knowing how to think and ask the right questions. And that's what I do for a living, right?

What do you still want to do?
I'm in D.C. for another two years, at least. I do think my sweet spot is political coverage. And right now, my immediate future is focusing on this massively huge, consequential election. Where I go from here, I don't know. I just want more. ●

Interview has been edited for length and clarity.

Katie's reporting on U.S. politics can be seen regularly on CBC News: *The National* and CBC News Network. You can follow her on X/Twitter @Katie__Simpson



Our alumni inspire us— and each other
Josh Barr and Amar Gupta founded brüst—a ready-to-drink protein coffee. The Ivey Business alumni (MBA'17) recently received three offers before closing a deal with Arlene Dickinson on CBC's *Dragons' Den*. You can find brüst nationwide at Costco.

Find out what alumni have been up to by visiting our new online Class Notes. The page is searchable by faculty, decade and news category at alumni.westernu.ca/class-notes
Also, be sure to follow our social media accounts where we regularly share alumni Class Notes:

Instagram: @WesternUAlumni
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Homecoming Parade October 16, 1966

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Homecoming at Western means something different to everyone. It's parades of student-made floats like this one in 1966. It's faculty mixers, formal galas and Mustang football games played in the cool, crisp autumn air.

But the essence of Homecoming transcends mere events. It's a celebration of campus and city, a chance to reconnect and reminisce with old friends and re-telling the "Remember the time when..." stories.

As Western prepares to mark the 75th anniversary of Homecoming this fall, that enduring purple pride awaits. Whether joining in person or in spirit, share your Homecoming memories and photos with us at magazine@uwo.ca.

Birds are the most visible indicators of biodiversity and environmental quality. The timing and patterns of their movements are changing along with the climate.

Cover: Western sandpiper
illustration by Melinda Josie



Christopher Guglielmo,
Biology professor and
Director of Western's Centre
for Animals on the Move



From **Alarm Call**, starting
on page 24 of this issue

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