FALL/WINTER 2024

A JUST TRANSITION

THE FUTURE OF MINERALS

PSYCHOLOGICAL INCENTIVES

The University of British Columbia

MAGAZINE

Power Shift: The Race Towards a Clean Energy Future

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Editor's Note

RUNNING TOWARDS THE FUTURE

Some people say that the world's greenhouse gas reduction goals are hopelessly out of reach, but UBC offers evidence to the contrary. Since 2007, the Vancouver campus has reduced emissions by more than a third, and it has achieved this despite floor space increasing by 28 per cent, and the student population by 43 per cent. In fact, the university's latest goal is to eliminate operational greenhouse gas emissions by 2035 – 15 years ahead of its original net-zero target of 2050.

On campus, the talk is still of exceeding Paris Agreement goals. Beyond campus, it's a different story. Although there has been progress in moving away from fossil fuels, with wind and solar in particular becoming economically viable and more widespread, it's not nearly enough. The Intergovernmental Panel on Climate Change reports countries falling behind their emissions targets, with current policies and pledges insufficient to avoid devastating temperature rises even if fulfilled.

Universities are, generally speaking, places of consensus and collaboration, of belief in science, of clear mandates and shared purpose. The off-campus world is a lot messier – too often characterized by division, competing interests, misinformation, and distractions. Fossil fuels are still deeply ingrained in infrastructures, systems, economies – even psyches.

The good news is we have most of the technological solutions for transitioning to low-carbon sources of energy. The biggest challenges to adopting them more widely and rapidly are social and political – from funding and investment, to international cooperation, to public support for far more ambitious policies.

These issues are the terrain of social scientists who study human motivation and incentive (see page 8) – and of lawyers, political scientists, economists, and commerce and policy experts. The more angles from which we study this problem the better. The consequences of climate change are here, and the world can expect to experience more – some people sooner and more severely than others. The talk is now of damage limitation and adaptation.

But fear and dread – especially in response to overwhelmingly complex problems – have never been great motivators, say the psychologists. To build public support for clean energy solutions, we must emphasize the benefits: less pollution, better health, affordable energy. Even the opportunity to build a fairer society and tackle related social issues (see page 14). In the words of climate scientist Simon Donner (see page 4), we need to paint the picture of the future we're running towards, not just what we're running away from.

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ENERGY TRANSITION

Clean Energy Revolution

The good news is we have most of the technological solutions for transitioning to low-carbon sources of energy. The biggest challenges to adopting them more widely and rapidly are social and political – from funding and investment, to international cooperation, to inspiring mass support for ambitious policies.

Cover Illustration: Gracia Lam
This page: Solar panels in Pudong, a district of Shanghai. *Photo: Yaorusheng / Momentvia Getty Images*

Net Zero: Go big or go home

A UBC climate scientist emphasizes the progress made in reducing emissions – but says we must be far bolder.

BY **JARED DOWNING**

DR. SIMON DONNER'S glass-half-full perspective on our impending climate apocalypse began with a beat-up Mazda Protegé.

He had racked up more than 250,000 miles on the car. The windsurfing board he kept strapped to the top had drilled holes clean through the roof. As a climate researcher at Princeton, Donner dreamed of swapping the clunker for an affordable electric car, and when he was offered a position at UBC he left the Mazda behind, vowing never to buy another car with a gasoline engine.

But this was 2008. "At the time there weren't many EVs on the market," Donner recalls.

Fast forward to 2024: Donner has become a thought leader in the green energy movement, especially in Canada, where he co-chairs the government's Net-Zero Advisory Body. He still doesn't own an electric car, but he drives them regularly through a local car co-op and rented one recently to drive to a conference. When he saw other EVs on the highway and charging stations at every rest stop, he realized the world of affordable electric cars had already arrived – and he hadn't even noticed.

"Just 16 years ago, I didn't know if that future was coming or not. And now it's completely normal," Donner says. "There are lots of good things happening when it comes to climate action. We just tend to not talk about them."

Despite endless headlines about worsening wildfires, droughts, rising seas, and squabbling governments, Donner chooses to focus on progress: For example, it is now 70 per cent cheaper to build wind turbines than it was 10 years ago, and 90 per cent cheaper to build solar panels. Governments and corporations are setting ever-bolder emissions reduction goals, and new advances in solar and wind, electric vehicles, and green hydrogen are making achieving those goals more plausible.

Thus, while the world has a lot of work to do, like Donner's vision of a highway full of electric cars, a net-zero future isn't as far off as it may seem.

"So much of the focus is about the horrors that we're trying to avoid," Donner says. "We need to paint the picture of the future we're running towards, not just what we're running away from."

So what, exactly, will that net-zero future entail? That's where things get tricky.

A LOW-CARBON CANADA

The Canadian Net-Zero Advisory Body was established in 2021 to help Canada reach its Paris Agreement targets, which include slashing its pre-2005 emissions by at least 40 per cent by 2030 – a goal the country has hitherto been on track to miss.

"There's modelling of what emissions might be in 2030, and it's not close enough," Donner says. "So they asked us, 'What else could we do?'"

Donner and his colleagues start with where the emissions are coming from.

In Canada, transportation accounts for around 25 per cent of emissions, while "stationary combustion sources" (which include power plants) account for around 40 per cent, according to government data. The US and other industrialized economies have roughly similar mixes.

Personally, Donner believes the best way to green-ify these sectors is to simply take fossil fuels out of the equation wherever possible. A first step would be to simply encourage people not to buy cars, perhaps by making cities more walkable/bikeable and investing in public transportation. "If you look at models for net zero, there is actually less personal vehicle ownership, not just electric cars."

Secondly, Donner believes we should make everything we possibly can run on electricity, from buses, to bulldozers, to home heating systems. "Electric vehicles are sexy, but nobody's figured out how to make a heat pump sexy. Yet the technology for an electric heat pump has been around for 100 years," he says.

Meanwhile, we should focus on generating that electricity with wind, solar, and hydro, which again, is more economical than ever and only getting cheaper. (As for nuclear power, Donner isn't against it in theory, but he doesn't believe it will be cost-effective any time soon.)

But not everyone agrees that we should go all-in on electricity. For example, some experts emphasize investing in combustion engines that run on clean-burning hydrogen fuel, which can theoretically be manufactured using clean electricity. Commercial vehicle giant Scania, for one, is investing heavily in hydrogen-powered trucks and buses.

And where Donner thinks Canada and other industrialized economies should shun coal and gas power plants whenever possible, a competing strategy involves outfitting these plants with carbon capture technology that can store their waste carbon safely in the ground. This approach could reduce emissions while allowing existing fossil plants to stay up and running. It could also allow more oil and gas workers to keep their jobs.

Some critics see hydrogen-powered vehicles as a lame half-measure between dirty combustion engines and clean electric ones. As for trying to make fossil power plants cleaner, some dismiss it as a mere excuse to prolong our toxic relationship with fossil fuels.

Donner is less dogmatic.

"We need a suite of policies and technology, a whole architecture that is carefully designed to incentivize transformational changes in a lot of different directions," he says.

When Donner got involved in government work, he found that politicians and their advisors often reached for "silver bullet" solutions and downplayed other strategies. A silver bullet may be a specific technology, like hydroelectric dams, or it may be a policy, like a national pricing system. Canada adopted its own carbon pricing scheme in 2019; it currently forces consumers and industry to pay $65 for every tonne of carbon dioxide they emit. Donner likes this policy. He says it has helped the current government "do more on climate change than any previous government, by miles."

Yet Donner has encountered policymakers who believe the carbon price isn't just *a* solution, but *the* solution for Canada's carbon reduction goals – the only carbon policy the country needs. "I think that's crazy," Donner says. "I worry that our governments get fixated on individual approaches, but this is a complex problem."

SIMON DONNER
Professor (Geography; Institute for Resources, Environment and Sustainability; Institute for the Oceans and Fisheries) and inaugural director of UBC's Climate Solutions Research Collective. Co-chair of Canada's Net-Zero Advisory Body.

RESEARCH FOCUS
Marine heatwaves and extreme climate events; pathways to a low-carbon future; the effects of climate change on small island states; and effective public engagement on climate change.

PUBLIC OUTREACH
Projects include Pacific Voices, a podcast about Pacific Islanders' experiences of climate change, and *Shifting Gears* – bite-sized video essays on climate change delivered while cycling to work.

CLIMATE COMPROMISES

Donner is the only climate scientist on the Net-Zero Advisory Body. The other seats are populated by industrialists, advocates, non-profit directors, and other stakeholders.

On some days, after long hours of, to put it tactfully, productive discussion, Donner longs for his research station on the island nation of Kiribati, where the water and coral he studies follow the laws of nature and problems can be solved with facts and data.

"I'm trained in physics and chemistry. I'm trying to look at scientific models. The problem is that when you try to predict the impacts of climate change, and how to change things, you inevitably need to make assumptions about people and society," Donner says.

"Somebody from the outside could say, 'Thirty percent of our emissions come from oil and gas. We need to cut production of oil,'" he continues. "But when you're giving advice to the government, you're supposed to be considering not just what would reduce emissions, but how to make sure that people can afford to live, that people are going to have jobs."

For example, Canada, with its abundance of rushing rivers and sweeping plains, has the perfect landscape for wind, solar, and hydropower. But at the same time, almost 150,000 Canadians work in oil and gas, according to the Canadian Energy Centre.

So should Canada invest, wholesale, in alternative energy and green jobs? Or should it preserve its fossil fuel sector? If so, to what extent?

Those are among the myriad questions Donner and his colleagues on the Net-Zero Advisory Body are working to answer. But one thing is certain: there will be no silver bullet – a clear solution for the tangle of competing interests, legal quagmires, budgeting constraints, and other unscientific obstacles one must navigate when one isn't out in the Pacific studying coral reefs.

BLACK DIAMOND SLOPES

In its latest round of suggestions, the advisory body urged the government to set its 2035 emissions reduction target – which it is required to submit by the end of the year – at 50 to 55 per cent below 2005 levels.

That target seems like a big ask, given that Canada has limped behind its peers in climate action and has only managed to slash its emissions by eight per cent since 2005. Meanwhile, Canada is already feeling the effects of hotter weather, including mass

drought. In Vancouver, worsening heat waves transform the poorest neighbourhoods into "heat islands."

"British Columbia has been the epicentre of a lot of this," says Donner.

Donner says even an eight per cent reduction is impressive, especially given Canada's steady population growth. On top of its carbon-pricing scheme, the government has also delivered measures to reduce methane, incentives for EV sales, and more robust fuel standards.

But, Donner says, when it comes to thwarting the climate apocalypse, it's time to go big or go home.

"To respond adequately to climate change, we need transformational action. We are doing things on climate change, but it's like we're on the bunny slopes. We're on the green run at the ski hill. We need to get onto a double black diamond. And that takes guts."

The benefits of stepping onto the proverbial black diamond slopes will go beyond stopping global warming, he argues. They may be small things, like quieter streets due to the rise of EVs, or the luxury of being able to "fill up" your car from a wall outlet in your own home.

Or, they may be bigger things, like new jobs and economic growth in clean tech and renewable power, or lower rates of allergies and lung disease with a decline in air pollution from coal and gas-fired power plants.

"I think the thing that Canadians are also waking up to, or I hope they will," says Donner, "is that we're not only seeing the negative impacts of climate change, but also seeing the positive impacts of our actions to counter it."

"I'm trained in physics and chemistry. I'm trying to look at scientific models. The problem is that when you try to predict the impacts of climate change, and how to change things, you inevitably need to make assumptions about people and society."
– *Simon Donner*

How to talk about climate change

Facts alone are not enough. If we want to engage everyone in climate action, we need psychological strategies.

BY **BRUCE GRIERSON** | ILLUSTRATION BY **GRACIA LAM**

THIS IS WHERE we are in the climate emergency. The data is in. The facts are incontrovertible. There's no denying that we're in a crisis of our own making. We (in the Global North particularly) consume too much and waste too much, and unless we pivot en masse to more sustainable energy choices – quickly, and definitively – our very survival as a species is on the line.

And yet knowing all this hasn't lit the needed fire under the majority of us. Rational argument may be the wrong tool for the job of solving this dilemma. Emotion is our best bet. But some emotions are more effective than others.

"Shame and guilt are the worst," says Jiaying Zhao, a UBC cognitive scientist and Canada Research Chair in Behavioural Sustainability. Indeed, those go-to psychological levers of the environmental movement may backfire. "Negative emotions don't motivate people to change. They just make us retreat further into ourselves."

There's a better way to make folks pivot green, Zhao discovered. Her "aha moment" came at the end of a faculty meeting, when her colleague, psychologist Elizabeth Dunn, approached her with the million-dollar question: "Can we make climate action feel happy instead of miserable?"

Zhao answered in a heartbeat: "Of course!" From behavioural science, she knew that people need to feel excited and empowered before they will willingly course-correct in any lasting way. But she'd never rigorously applied that insight in this domain.

Zhao – who likes to geek out on calculating how much carbon certain activities produce – drew a circle on a page. Inside it she listed the top things we can do to "substantially reduce greenhouse-gas emissions." Dunn did the same, only in her circle she wrote the actions with the largest happiness benefits (her bailiwick). The two researchers put their circles together. There, in the sweet spot in the middle, was the gold: actions that not only reduce emissions but make you feel happier at the same time.

They began to cook up interventions they could test.

Back at home, Zhao opened her refrigerator. She knew a key component of reducing emissions is reducing food waste. It occurred to her that out-of-sight-out-of-mind food is the first to rot. So she re-organized the fridge, with the perishables up front, and the more shelf-stable stuff in the back. "I feng-shui-ed my fridge!" she says. "I haven't wasted any food since!" Nor is she fishing icky moldy stuff out of the crispers. This makes her immoderately happy.

Dunn is a world expert in the benefits of "talking to strangers," so it's not surprising that a lot of the eco behaviours she thought of have a social dimension to them. Like getting people out of their cars and into the knack and smack of city life, on foot or on bicycles. Human connection goes up. And human connection makes us happy.

(This insight dovetails nicely with what UBC economist John Helliwell has found in his own work. Helliwell studies the degree to which urban design interventions that make cities greener also, in the bargain, tend to lift the spirits of city-dwellers by putting them in the path of one another. When it comes to what makes us happy with our life, "relationships with other people trump everything else – yes, even income," he says.)

Parker Muzzerall, a PhD candidate in sociology, discovered there is one negative emotion that can be effectively leveraged for pro-environmental behavior change: worry. In one study, Muzzerall and colleagues found that the folks who were most concerned about the climate emergency were also most likely to support a transition to renewables. Anxiety is itself a kind of energy, you could say – a state of discomfort people are motivated to relieve by doing something. Deed makes creed.

It turns out that adopting energy-saving habits – like washing your clothes in cold water, or unplugging appliances when they aren't in use – often requires very little personal sacrifice. They're actually a net-positive because it feels good to be part of the solution. It's empowering to really grasp the idea that small changes

by individuals actually matter – a lot. For many, a natural next step is to dial up our city officials and make our voice heard.

"That's what they're there for," Zhao says. "We can tell them what we want. Like, we want EV chargers. We want more urban green space. We want more bike lanes. We can demand these things." Airing your dreams to the people in charge can have a ripple effect. "In my department we set up a climate action committee," Zhao says. "What happens is, you generate FOMO. Other departments want in on the party!" In some ways this is the key bridging personal and governmental responsibility: it's a call for individuals to march without letting governments off the hook.

Over at UBC's education faculty, Derek Gladwin has been doing his own work on mucking with human motivational machinery in the shadow of the climate emergency. An associate professor of language and literacy – and also a member of the Clean Energy Research Centre – Gladwin has a kind of magic ice-breaker he uses with his students and in workshops with educators. It's a question that beguiles and engages in a way that simply asking folks "What are you doing to fight climate change?" does not. The question is: "What's your energy story?" The beauty is that everyone has one.

"Here's mine," says Naoko Ellis, a professor of chemical engineering who with Gladwin co-runs the Systems Beings Lab at UBC. "When I became a mother, I started thinking about energy differently. Personal energy – we have a finite amount of that. So with a new child I had to ask, Where's my energy going now? The question is no longer What do I need? but What does this family need? What does this system need?" Our personal energy stories become entry points into the larger narrative of planetary sustainability. We can conclude that, despite what Hollywood insists – with its stories of heroism, of saviourism, triumphalism – this rodeo is not actually about me. It's a surprisingly empowering mental swerve. "I no longer feel like it's on me to show the way forward," Gladwin says. "It's on us." And that's a collective responsibility.

UBC sociologist Emily Huddart has found that many of the current eco messages are preaching to the choir. That is, they're reaching a group she calls The Eco-Engaged. These folks are one of the five personality types she has identified – along with The Optimist (who doubts the problem is as bad as all that), The Fatalist (we're done for, so why bother getting out of bed?), The Self-Effacing (who cares but doubts they can have much impact), and The Indifferent (kind of meh on the whole thing). The Engaged are already on board. The real work now is to persuade the other four to join the club.

If we're going to get out of this predicament alive, environmental groups need to make their pitch land with *everyone* – not just those who are half-way sold already.

If we're going to get out of this predicament alive, environmental groups need to make their pitch land with *everyone* – not just those who are half-way sold already. That means tailoring stories to the mindset of who you're trying to reach – by foregrounding the part of the message they're paying attention to (a phenomenon called "motivated attention").

In 2018, Zhao and colleagues published a study involving two groups of test subjects: liberals and conservatives. Each group was shown a graph of rising global temperatures – "the sturdiest piece of evidence for global climate change," Zhao says. By tracking people's eye movements as they viewed the graph, "we showed that liberals and conservatives pay attention to this temperature curve very differently, and that has consequences for how they behave." Liberals looked more at the steep hockey-stick uptick, but conservatives cast their eyes back along the timeline. Maybe this current spike is a fluke; it's not due to human activity at all, but just part of a natural cycle. For that story to be true, you just need to go back far enough. "We look for information that confirms our existing beliefs," Zhao says. Effective messaging for conservatives might anticipate their skepticism and address that off the hop.

The takeaway here is that everyone is looking at a slightly different part of the elephant, and thereby coming away with a different understanding of what the elephant is. The fix, then, is to spin the elephant. To expose people to a side they haven't seen... in a way that's non-threatening.

A few years ago the BBC hatched an ingenious documentary called "Human Power Station" (part of its *Bang Goes the Theory* series) to drive home just how much energy the average family uses in a day. What if we had to produce that energy ourselves? A guinea-pig family was recruited to occupy a house for one weekend and just, well ... do what they normally do. Unbeknownst to them, all the power to the house was being supplied by a couple dozen cyclists recruited from local gyms, churning away behind the wall, as required. ("Oh no, Mom's putting the roast back in the oven. Pedal harder!") An unforgettable "energy story" was loosed into the world. It's impossible to have seen it and continue to use energy at the same wastrel levels as before. The documentary does what writer Rainer Maria Rilke said all art must. It sends a message: "You must change your life."

Q.

COLLECTIVE WISDOM
One pressing question. Multiple expert perspectives.

What developments in the transition to clean energy make you most optimistic?

Indigenous Peoples are taking back power

TERRI-LYNN WILLIAMS-DAVIDSON, BSC'90, LLB'95, LLM'22
Citizen of and General Counsel to the Haida Nation; Co-Principal Investigator, Canada Climate Law Initiative

The engagement of Indigenous Peoples has transformed from a scenario of absent or token consultation, to inclusion as "stakeholders" in negotiations, to benefit- and revenue-sharing agreements, to finally recognition as authorities whose consent is required. Today, Indigenous Peoples are poised to be leaders in the transition to clean and renewable energy.

Indigenous energy projects are fundamentally about Indigenous sovereignty – literally, we are taking back power – and we are doing it according to our own values, principles, and laws. These just transitions will help overcome the challenges that have plagued much of industrial society, which has evolved as if nothing is connected. Indigenous Peoples know that everything is connected, and Indigenous laws reflect this worldview.

I therefore take encouragement from observing the resurgence of Indigenous law around the world. Only a holistic approach premised on relationships and responsibilities can support Indigenous-led renewable energy projects that foreground community wellness, heritage protection, ecological and spiritual health, community capacity, and Indigenous youth mentoring and leadership.

Opportunities exist (but must be seized)

KATHRYN HARRISON, PHD'93
Professor of Political Science; Brenda and David McLean Chair in Canadian Studies

Alas, I'm both optimistic and pessimistic. Let's start with the optimism. The good, indeed great, news is that the costs of generating electricity from wind and solar and battery storage have all dramatically declined over the last 10 to 15 years. That's especially important because as we transition from fossil fuels to clean electricity to power our industries, heat our homes, and charge our vehicles, we will need to at least double our electricity capacity. A major study by the Canadian Climate Institute projected that as we transition to clean electricity, the share of household budgets spent on energy will decline.

With all that good news, why am I also pessimistic? The cost-of-living crisis driven by the pandemic, the war in Ukraine, and housing prices has displaced voters' attention to the climate crisis. In response, fossil fuel interests and populist politicians have taken advantage of very real affordability concerns to pin the blame on climate action, undermining public support for climate policies. The opportunities are there, but we're not seizing them.

Clean energy is economically viable

XIAOTAO (TONY) BI
Professor of Chemical and Biological Engineering; Director, UBC Clean Energy Research Centre

Firstly, the cost for generating solar and wind power has fallen to a level comparable to or even lower than thermal power. Solar and wind have become viable and are deployed globally, including in developing countries.

Secondly, the price of electric vehicles made in China has become comparable to internal combustion engine vehicles, largely due to the drop in battery cost. As a result, most taxis in China are now EVs, making them affordable and accessible for low-income consumers.

And thirdly, the development and deployment of sustainable aviation fuel and low-carbon fuels (green methanol and renewable diesel) for aviation and marine transport show industry commitment and great potential for decarbonizing difficult-to-decarbonize sectors.

The remaining challenges in electrification are rapid market expansion and the supply of stable green electricity. With its abundant and renewable forest and agriculture resources – such as forest residues and rapeseeds – Canada could play a leading role in developing and implementing biofuel technologies and markets.

Students are committed to a different future

ZERRIFFI HISHAM
Professor of Forest Resources Management; Associate Dean, Equity, Diversity and Inclusion

The temptation is to talk about the amazing developments in technology over the last few years – and the decline in solar power costs or the expansion of electric vehicles as our power grids decarbonize do provide much to be optimistic about. But the primary cause for my optimism is actually an approach I take with my students that some call "hopeful alarm": being aware of the threat that climate change already poses and how it will be worse the higher we let temperatures increase ("alarm"). But also recognizing that we have many of the solutions we need ("hopeful").

Even more important is a commitment to making the deep changes needed to avoid the worst that climate change may bring, with the acknowledgement that those "solutions" are not just technological but also societal. We make the rules that determine our future, and so many of my students are deeply committed to a future that looks different. While that burden should not be only on their shoulders, it does give me hope to balance out the alarm.

FOR MORE RESPONSES, SEE:
magazine.alumni.ubc.ca/clean-energy

Illustrations: Rebecca Clarke

A JUST TRANSITION

BY **NAOMI KLEIN**

Photo: Tom Jamieson

MOST OF US have learned to think about political change in defined compartments: environment in one box; inequality in another; racial and gender justice in a couple more. Education over here. Health over there.

And within each compartment, there are thousands upon thousands of different groups and organizations, often competing with one another for credit, name recognition and, of course, resources. It's not all that different from corporate brands competing for market share. And that shouldn't be surprising: we are all working within the logic of the existing capitalist system.

This compartmentalization is often referred to as the problem of "silos." Silos are understandable – they carve up our complex world into manageable chunks. They help us feel less overwhelmed. The trouble is, they also train our brains to tune out when a true crisis needs our help and attention, as we tell ourselves, "That's someone else's issue." The deeper problem with silos is they keep us from seeing glaring connections between the various crises tearing apart our world, and they stop us from building the largest and most powerful movements possible.

In practice, what this has meant is that the people focused on the climate emergency rarely talk about war or military occupation – even though we know that the thirst for fossil fuels has long driven armed conflict. The mainstream environmental movement has become a little better at pointing out that the nations getting hit hardest by climate change are populated by Black and brown people. But when Black lives are treated as disposable in prisons, in schools, and on the streets, the connections are too rarely made.

Because we don't have a lot of practice working together across silos, the solutions coming out of various movements often seem disconnected from one another. Progressives have long lists of demands – things we all want to change. But what we often are still missing is a holistic picture of the world we're fighting for. What it looks like. What it feels like. And what its core values are.

Fortunately, there are all kinds of conversations and experiments going on to try to overcome these barriers and develop popular platforms that articulate a common vision. These platforms go by many names: the Leap; Green New Deal; the Black, Red and Green New Deal; and more.

What they all share is a recognition that the climate crisis is not the only crisis we share. We face so many overlapping and intersecting emergencies – from surging white supremacy, to gender-based violence, to gaping economic inequality – that we simply can't afford to fix them one at a time. We therefore need an integrated approach: policies designed to bring emissions down to zero while creating huge numbers of good unionized jobs and delivering meaningful justice to those who have been most abused and excluded under the current extractive economy. We need a *just transition*.

A just transition is about recognizing that the work of confronting the climate emergency at speed and scale opens up a window to build a society that is fairer on every front, and where everyone is valued.

I have been involved in various climate justice coalitions over the past decade and a half, and there is no one definition of a "just transition." But there are some core principles that movements have developed and which future work should build upon.

A just transition begins with recognizing that the bottomless quest for profits that forces so many to work upwards of 50 hours a week with no security, fuelling an epidemic of isolation and despair, is the same quest for bottomless profits that has pushed our planet into peril. Once we recognize that, it then becomes clear what we need to do: insist that, as we respond to the climate crisis, we create a broader culture of care-taking in which no one and nowhere is thrown away – in which the inherent value of every person and every ecosystem is foundational.

Science-based climate action means getting our energy, agriculture, and transportation systems off fossil fuels as rapidly as humanly possible. Justice-based climate action demands more. It demands that as we make these huge transformations we also build a more equal and democratic economy.

A good place to start is with energy ownership. Right now, a handful of fossil fuel corporations control the global supply and dominate most local markets. One of the great things about renewable power is that, unlike fossil fuels, it's available wherever the sun shines, the wind blows, and the water flows. That means we have a chance for more decentralized and diverse ownership structures: green energy co-ops, municipal energy, community-owned microgrids, and more. Under these structures, the profits and benefits of new green industries stay in communities to help pay for services rather than being siphoned off to corporate shareholders.

This just transition principle is often known as **energy democracy**.

NAOMI KLEIN

Associate professor in the Department of Geography, and founding co-director of the UBC Centre for Climate Justice.

RESEARCH FOCUS

She studies the way large-scale societal shocks, from terror attacks to natural disasters, can catalyze both regressive and progressive social change. At UBC, she focuses on how the climate emergency can and must activate sweeping, intersectional, justice-based transformation.

OF NOTE

She is the author of nine books, including the 2023 national bestseller *Doppelganger: A Trip into the Mirror World*. Her books have been translated into over 25 languages and have been used in more than 1,000 courses in over 200 North American universities and colleges.

A JUST TRANSITION IS ABOUT RECOGNIZING THAT THE WORK OF CONFRONTING THE CLIMATE EMERGENCY AT SPEED AND SCALE OPENS UP A WINDOW TO BUILD A SOCIETY THAT IS FAIRER ON EVERY FRONT, AND WHERE EVERYONE IS VALUED.

But true climate justice requires more than energy democracy – it requires energy justice, and even energy reparations. Because the way energy generation and other dirty industries have developed since the Industrial Revolution has systematically forced the poorest communities to bear a vastly disproportionate share of the environmental burdens while deriving few of the economic benefits.

In North America, where I live, the people who have been forced to bear these unjust burdens have overwhelmingly been in Black, Indigenous, and immigrant communities, often referred to as "front-line communities." That's why many just transition platforms call for front-line communities to play a leadership role in developing new green infrastructure, in controlling land rehabilitation programs, and in receiving funding for green job creation. Indigenous groups that have had their land rights systematically violated, and whose traditional ecological knowledge systems provide a living alternative to current ecocidal practices, are also calling for greater control over their ancestral territories as part of the response to the climate crisis.

This just transition principle is sometimes called **front lines first**, and it is a form of reparations for past and present harm.

One of the great benefits of climate action is that it will create millions of green jobs around the world – in renewables, in public transit, in efficiency, in retrofits, in cleaning up polluted land and water. A truly just transition means making sure that those jobs pay family-supporting wages and benefits and are protected, wherever possible, by trade unions. But there is another aspect to this too.

A just transition also calls for reimagining what a "green job" is. Environmentalists don't usually mention it, but teaching and caring for kids doesn't burn a lot of carbon. Nor does caring for the sick. Making art is pretty low-carbon, too. In a just transition, we would recognize this labour as green and prioritize it because it makes our lives better and our communities stronger. As we reduce our reliance on jobs that are based on encouraging wasteful consumption and dangerous extraction, we can invest in more care-sector jobs and make sure that they pay a living wage.

This just transition principle is sometimes called **care work is climate work**, and it will help ensure that women's labour is fully recognized and appreciated in the next economy.

As we make these changes, we must also recognize that there are people who are stuck – through no fault of their own – in regions where polluting industries are virtually the only employer in town. Many of these workers have sacrificed their health in coal mines and oil refineries so that the rest of us can keep the lights on.

These workers, facing the prospect of large-scale job losses as oil and coal infrastructure is decommissioned, cannot be expected to bear the burden of climate action.

That's why a just transition calls for massive investments in retraining workers for the post-carbon economy, with workers serving as full and democratic participants in the design of these programs. A key measure is guaranteeing the income of workers during these periods – all too often, when industries go through massive change, working-class livelihoods and communities have been sacrificed on the altar of "change" and "progress." A just transition would do things differently. It would also create huge numbers of jobs rehabilitating and restoring the lands that have been harmed from extraction by, for instance, capping the countless abandoned oil and gas wells around the world that are currently leaking toxins into the environment. Many workers currently working in high carbon sectors are already trained for this work. These kinds of programs and policies are how we make sure that everyone benefits from the transitions required to radically and rapidly lower emissions.

This just transition principle is often called **no worker left behind**.

Of course, creating a new low-carbon economy is going to cost money. Lots of it. Governments can create some of it, as they did during the COVID-19 pandemic, in the aftermath of the 2008 financial crisis, and as they do during wars. But we live in a time of unprecedented private wealth, and the transition should also be funded by the polluters and overconsumers. The idea that we are too broke to afford to save our one and only home is simply untrue. The money needed for this transition is out there, we just need governments to have the courage to go after it – to cut and redirect fossil fuel subsidies, to increase taxes on the rich, to reduce spending on policing, prisons, and wars, and to close down tax havens.

This principle of a just transition is known as **polluter pays**, and it's based on a simple idea: the people and institutions that have profited most from pollution should pay the most to repair the harm it has done.

This principle includes not just corporations and wealthy individuals, but also the nations of the Global North: we have been putting carbon into the atmosphere for a couple of hundred years, and we did the most to create this crisis, while many of the nations that are most vulnerable to its effects contributed the least. So, as financing is raised for a just transition, there needs to be a transfer of wealth from north to south to help poorer nations leapfrog over fossil fuels and go straight to renewables. Climate justice also demands far greater support for migrants displaced from their lands by oil wars, bad trade deals, drought and other worsening impacts of climate change, as well as the poisoning of their lands by mining companies, many headquartered in wealthy countries.

The bottom line is this: as we get clean, we have to get fair. More than that, as we get clean, we must begin to redress the founding crimes of our nations. Land theft. Genocide. Slavery. Imperialism. Yes, the hardest stuff. Because we haven't just been procrastinating about climate action all these years. We've been procrastinating and delaying the most basic demands of justice and reparation. And the reckoning is here on every front.

Some find these kinds of connections daunting. Lowering emissions is hard enough, we are told – why weigh it down by trying to fix so much else at the same time? It's a strange question. If we are going to repair our relationship to the land by shifting away from endless resource extraction, why wouldn't we begin to repair our relationship with one another in the process? For a very long time, we have been offered policies that amputate the ecological crises from the economic and social systems that are driving them, searching endlessly for purely technocratic fixes. That is precisely the model that has failed to yield results.

Holistic transformations, on the other hand, have never been tried in the face of the climate crisis. And there is good reason to think that they might yield breakthroughs where technocratic climate policies have failed. The hard truth is that environmentalists can't win the emission reduction fight on our own. It's not a slight against anyone – the load is just too heavy. The transformation that scientists have told us we need represents a revolution in how we live, work, and consume.

Winning that kind of change will take powerful alliances with every arm of the progressive coalition: trade unions, migrant rights, Indigenous rights, housing rights, teachers, nurses, doctors, artists. And to build these alliances, our movement needs to hold out the promise of making daily life better by meeting pressing needs that all too often go unmet – for affordable housing, for clean water, for healthy food, for land, for health care, for good public transportation, for time with family and loved ones. For justice. Not as an afterthought, but as an animating principle.

I have laid out five planks for a just transition. Energy democracy; front lines first; care work is climate work; no worker left behind; and polluter pays. This only scratches the surface. Climate justice also requires new kinds of trade deals that move us away from ever-growing levels of consumption; a robust debate on a guaranteed annual income; full rights for immigrant workers; getting corporate money out of politics and fossil fuel companies out of climate negotiations; the right to repair our broken products rather than replace them – and more.

Though the specific responses to the climate crisis will vary from place to place, there is an underlying ethic which connects all this work. As we change our economies and societies to get off fossil fuels, we have a responsibility, and an historic opportunity, to repair many of the injustices and inequalities that scar our world today. The great strength of a just transition framework is that it does not pit important social movements against one another or ask anyone suffering from injustice in the here and now to wait their turn. Instead, it offers integrated and intersecting solutions grounded in a clear and compelling vision of our future – one that is ecologically safe, economically fair, and socially just.

This essay was first published as a chapter in The Climate Book *(2022, Penguin Random House), created by Greta Thunberg.*

CLEAN ENERGY'S CATCH-22

Critical minerals are the backbone of clean energy technologies, but finding them is hard, and mining them can be a dirty and often unethical business. A UBC initiative is taking on the challenges.

BY **RICHARD LITTLEMORE** | PHOTOGRAPHY BY **EDWARD BURTYNSKY**

AN ANNOYING FEATURE of complex systems is that the solution to any problem is likely to generate a new problem – sometimes not as bad, sometimes worse, but often equally intractable. Just as there is a law of conservation of energy – in which energy, even if transformed, is always conserved over time – there appears to be another law: the conservation of trouble.

Such is the case with the challenge of switching to renewable energy from the climate change scourge of fossil fuels. It's not easy to capture wind, hydro, or solar power and pour them into the tank of your car, but the feedstock is free. Even counting the cost of infrastructure, an improbably enthusiastic report in *The New York Times* recently proclaimed that the price of solar installations is falling so quickly that, by 2030, "solar power will be absolutely and reliably free during the sunny parts of the day for much of the year."

But, as Department of Earth, Oceans and Atmospheric Sciences (EOAS) head Dr. Philippe Tortell noticed when he began considering this issue, there's a catch. "All of those new renewable energy sources required a fundamentally non-renewable resource; minerals and metals needed for batteries, circuit boards, wiring, and other components of the digital, carbon-neutral economy."

This is no small problem. Humankind's appetite for metals and minerals is voracious and, as with fossil fuels, the easy sources have largely been tapped. Take copper for example: EOAS professor of geological engineering Erik Eberhardt reports that global copper production rose from half a million tonnes a year in 1900 to 25 million tonnes today, and demand is expected to double by 2035. Given a paucity of new sources under development – and the fact that new mines often take 10 to 15 years to get through consultation, planning, permitting, financing, and construction – we're facing a copper shortage (a supply gap) expected to hit 10 million tonnes a year by 2030. On top of this, the demand for other critical minerals such as lithium, graphite, cobalt, nickel, and Rare Earth Elements (REEs) could increase 10- to 40-fold.

Raw supply, however, is not even the most difficult problem. Beyond mining's scientific or technical challenges, Tortell notes the complicated tangle of environmental, legal, economic, social, and political issues, as well as the question of the historically abrogated Indigenous rights and title.

Perversely, as we're accelerating our search for minerals to reduce the environmental threat of climate change, mining itself is often environmentally catastrophic. In their dominant form, massive modern mines can devastate the landscape and leave large, even more dangerous scars. Think about the Mount Polley mine in central BC, which in 2014 spilled an estimated 25 million cubic meters of toxic tailings into nearby lakes and creeks – a calamity for local drinking water and spawning salmon. Consider the 2019 breach in the Brumadinho mine's tailings pond in Brazil, which inundated a local community and killed 270 people. Or the collapsing heap at the Faro mine in Yukon, which closed in 1998, but left behind 70 million tonnes of toxic tailings, 320 million tonnes of waste rock, and an unclaimed clean-up bill of more than $2 billion.

PREVIOUS PAGE:
Uralkali Potash Mine #4
Berezniki, Russia, 2017

Photos © Edward Burtynsky, courtesy Paul Kuhn Gallery, Calgary / Nicholas Metivier Gallery, Toronto

Lithium Mines #1
Salt Flats, Atacama Desert, Chile, 2017

Dr. Roger Beckie, a hydrologist, engineer, and a professor in EAOS, has written that the mine tailings generated worldwide since the eighteenth century would cover the state of Connecticut 10 metres deep, while waste rock would add 10 times that amount. Mining, Beckie says, is primarily a waste management business. And we're not managing well. Dr. Allison Macfarlane, director of the UBC School of Public Policy and Global Affairs, points out that, after generations of trying, there isn't a single safe repository for high-level nuclear waste operating anywhere in the world.

Mining is also a curse on water. Dr. Nadja Kunz, Canada Research Chair in Mine Water Management and Stewardship, says, "No matter where you are in the world, there is always a water problem," often tied to resource extraction. Mining, Kunz says, withdraws six to eight trillion litres of water a year, enough to sustain 12 per cent of the world's population. And clean-energy ores are exacerbating the problem. It takes 1.9 million liters of water to produce each tonne of lithium – a particular problem when the largest known lithium deposit is in Chile's Atacama Desert, the driest place on earth.

Perhaps unsurprisingly, mining is also a geopolitical booby trap. Dr. Carol Liao, associate professor at the Peter A. Allard School of Law and the Distinguished Fellow at the Peter P. Dhillon Centre for Business Ethics, UBC Sauder School of Business, points out that China has been "buying up mines like properties in a game of *Monopoly*" and now controls about 60 per cent of worldwide critical mineral production, as well as 85 per cent of the processing capacity. So, even resource-rich jurisdictions like Canada are beholden to China to refine ore into the minerals and metals we need. Liao says, "Some are calling the future of critical minerals 'the New Cold War'."

Clearly – and fortunately – Tortell is not alone in his concern about these issues. Canada is home to more than 75 per cent of the world's mining and mineral resource companies, and UBC has long been the intellectual and research backbone of that mining community. Looking around UBC in early 2022, Tortell found a variety of mining-related research that was "inspired and impressive." But, he says, "Much of it was running on parallel tracks, with relatively little cross-fertilization between academic silos." So, he convened a "Future Minerals Working Group," a diverse collection of experts, including everything from engineers and geologists to economists, lawyers, and policy specialists, mostly from UBC, but including Indigenous and industry leaders, and academic and creative contacts from around the world. And he challenged them – with no promise of funding or publishing options – to start brainstorming solutions that would work across their myriad disciplines, to forge a better understanding of the issues, to call public

Sishen Iron Ore Mine #2
Overburden, Kathu, South Africa, 2018

attention to the implications and, perhaps, to push the mining and policy worlds in a more sustainable direction. Or, as Tortell puts it, to "make an impact that was a little more transcendent."

The first challenge, common in interdisciplinary settings, was learning to speak to one another. Dr. Werner Antweiler, an associate professor in the Sauder School of Business, joined the group to find that, "We were all speaking different languages and relying on different ways of approaching the subject matter." Tortell also noted the effort needed for specialists to understand other people's work and to shuck off disciplinary jargon and explain their own subject areas. But Antweiler reports that the work paid off: "I really enjoyed having these different voices. It taught me a lot."

The second challenge – and a high priority – was finding a way to communicate more broadly. For the major outreach exercise, 35 contributors, including a range of academics and Indigenous elders, as well as eight composers and a photographer, collaborated on a book, a musical suite, and a photo collection. Published this year, the book is *Heavy Metal: Earth's Minerals and the Future of Sustainable Societies*, and is freely available to read online via Open Book Publishers. As editor, Tortell says the contributors sought "to make complex ideas both accessible and engaging." Indeed, the collection is readable, informative, charming in its vision and hopefulness, but often unsettling. As photographer Edward Burtynsky writes, introducing his beautiful, sometimes devastating images of the disruption that mining has caused, "The problem is that we have expanded well beyond the limits of what the planet can sustain, and we're waking up to that fact a bit late in the game."

You could sort the academic contributors to *Heavy Metal* (including all those quoted above) into three groups – Doers, Dreamers, and Worriers – although the categories frequently overlap. The Doers are led by Dr. Shaun Barker, associate professor and director of the EOAS Mineral Deposit Research Unit, whose matter-of-fact chapter, "Where We Find Metals," describes how and why large mineral deposits form on Earth; it's a guide to where to look. But Doing turns quickly to Dreaming as other specialists look to ore bodies in more complicated locales. Dr. John Wiltshire, an emeritus professor at the University of Hawaii, describes mining on the sea floor, where manganese nodules "simply sit on the seabed waiting to be harvested; there is no tunneling, blasting or digging – simply collecting." Of course, the law of the conservation of trouble applies. "The heavy machinery used to collect manganese nodules moves across the seabed like a steamroller, destroying all non-motile organisms in its path." Perhaps a dream and a nightmare.

Even farther afield, Dr. Sara Russell, a researcher in planetary sciences at the Natural History Museum in London, and Riz Mokal, a former chair of Law and Legal Theory at University College London, write about "Mines in the Sky," noting that while there are only about eight million tonnes of cobalt on earth, "a single metal asteroid with a mass of around three billion metric tons could supply thirty million (tonnes)." Of course, mining in space remains a distant dream, but Russell and Mokal note that prognosticators from Texas Senator Ted Cruise to astrophysicist Neil deGrasse Tyson "agree that the first trillionaire will be an entrepreneur in the asteroid mining sector." And Elon Musk and company are doing more than sniffing around.

There are other chapters on exploration and recovery, speculating on mining under the melting ice in Greenland or Antarctica, and on the potential of mining at a small scale. Mining engineers Dr. Marcello Veiga from UBC, and Dr. Alejandro Delgado-Jimenez from the Colorado School of Mines, point out that the medium-to-large companies that dominate global mining employ four million people and claim annual revenues of US $3 trillion. But artisanal mining – informal, easier to start and stop, and often with a much lighter environmental footprint – employs 45 million, pointing to one promising area where we could pick up the pace of innovation and implementation. Small-scale, often unregulated mining, however, also includes a distressing number of desperate people, including children, facing a whole different set of risks. Yet more trouble.

As Tortell envisioned, these complex issues require not just technical innovation, but real creativity. Which, he says, inspired the working group to commission eight international composers to collaborate on a *Heavy Metal Suite*, "to help people to be more expansive in their thinking." Notwithstanding the "heavy metal" reference, the suite, which can be heard in a recording of the Chicago-based quintet Axiom

Brass in an April 22, 2024, *CBC Ideas* episode, is more classical and considered. Less rage, more yearning.

Now, having done his part as "a convenor of talent," Tortell is passing the torch, first to Kunz and to Sara Ghebremusse, the Cassels Chair in Mining Law and Finance at the Western University Faculty of Law. (Ghebremusse's dreamy chapter contemplates an "Afrofuturist vision," using the fantastical Marvel world of Wakanda as a model for how mining might be managed within the mandate of the United Nations Declaration on the Rights of Indigenous Peoples). Kunz and Ghebremusse are co-principal investigators in a New Frontiers in Research Fund study tapping expertise and methods in earth sciences, engineering, law, economics, and public policy, to reimagine the technical, social, environmental, and human rights dimensions of mining in the context of resurgent Indigenous sovereignty.

In which regard, the last word goes to the lead authors in *Heavy Metal*, Allen Edzerza, an Elder of the Tahltan Nation, and Dave Porter, an Elder of the Kaska Nation and CEO of the BC First Nations Energy and Mining Council. Their opening essay is a thoughtful, bruising look at the history and continuing injustices of colonialism and mining, concluding:

"Together, we can (and must) transform the global mining industry, through new technologies and methods, but also through a fundamental culture shift towards collaboration and mutual respect between Indigenous and non-Indigenous people. As we seek to address the existential threat of climate change, we must consider what we will leave behind for future generations. Yes, we must supply critical minerals for renewable energy, but we must also protect our lands, waters, air and wildlife. It is a sacred responsibility that the Creator has placed upon us. The Elders tell us that the Creator is speaking to us. We must stop and listen."

TOP:
Densified Oil Filters #1
Hamilton, Ontario, 1997

BOTTOM:
Phosphor Tailings Pond #4
Near Lakeland, Florida, USA, 2012

OPINION

Why nuclear energy is not the solution to the climate crisis

DESPITE ABOUT 20 COUNTRIES declaring plans to triple nuclear energy by 2050 and the backing of billionaires like Bill Gates, we should not support expanding nuclear power.

That's according to a new book, *Nuclear is Not the Solution: The Folly of Atomic Power in the Age of Climate Change*, by professor M.V. Ramana, who is the Simons Chair in Global Disarmament and Human Security at UBC's School of Public Policy and Global Affairs.

In this Q&A, Ramana shares key insights from the book on why nuclear power does not help mitigate climate change. ~ ***Sachi Wickramasinghe, BA'11, MJ'14, and Erik Rolfsen, BA'92.***

Photo: Micha Pawlitzki / Corbis Documentary via Getty Images

WHAT MOTIVATED YOU TO WRITE THIS BOOK?

Just 20 or 30 years ago, talking about nuclear energy as an environmentally friendly source of electricity would probably get you laughed out of the room.

But in the last decade, advocates of nuclear energy – from energy companies to governments and tech billionaires – have advertised the technology as a clean source of electricity that is vital to solving climate change.

Their arguments make no sense given what we know about the history and the technical characteristics of nuclear energy, so one motivation for this book is to lay out those arguments yet again, because they seem to have been forgotten.

HOW DO YOU RESPOND TO CLAIMS THAT NUCLEAR ENERGY'S LOW CARBON FOOTPRINT MAKES IT NECESSARY FOR MEETING OUR CARBON REDUCTION GOALS?

Many technologies have low carbon footprints but we need to consider two other important factors: cost and deployment time – and nuclear power fails on both metrics.

Nuclear energy is one of the most expensive ways to generate electricity. Investing in cheaper low-carbon sources of energy will provide more emission reductions per dollar.

Second, it takes about a decade to build a nuclear plant. If you add the time needed for all the necessary preparatory steps – obtaining environmental and safety clearances, getting consent from a community that has to live near a hazardous facility for decades, and raising the huge amounts of funding necessary – you're looking at 15 to 20 years. This timeline is incompatible with the urgent demands of climate science.

DOES THE DEVELOPMENT OF SMALL MODULAR REACTORS (SMRS) ADDRESS THESE ISSUES?

Small modular reactors are designed to generate lower amounts of power, which means less revenue for the owner. But the cost of construction is not proportionately smaller. Therefore, electricity from SMRs will be more expensive than power from large nuclear plants, and these large plants are themselves not competitive with renewables.

WHAT RISKS ASSOCIATED WITH NUCLEAR ENERGY ARE MOST OVERLOOKED BY ITS PROPONENTS?

First, nuclear reactors – whether large or small – are susceptible to catastrophic releases of energy and radioactivity; we've seen that happen with Fukushima and Chernobyl. It's impossible to guarantee severe accidents won't happen again.

Second, all activities linked to the nuclear fuel chain – from mining uranium to dealing with the radioactive wastes produced – have significant health and environmental impacts. Some radioactive materials remain hazardous for hundreds of thousands of years. There is no demonstrated solution to managing these wastes.

Third, the technology to generate nuclear power is closely tied to the one to make nuclear weapons. Expanding nuclear energy will increase the potential for nuclear weapons proliferation.

Proponents downplay all these risks as problems of the past. But as I explain in my book, they will afflict new nuclear reactors too.

MEANWHILE, MANY COUNTRIES ARE INVESTING IN NEW REACTORS, AND IN MARCH THE WORLD'S FIRST NUCLEAR ENERGY SUMMIT WAS HELD IN BRUSSELS. HOW DO YOU EXPLAIN THIS "NUCLEAR RENAISSANCE"?

The term "nuclear renaissance" was actually bandied about in the first decade of this century, especially after the Bush administration's 2005 Energy Policy Act offered numerous incentives to promote nuclear power in the United States. US electricity companies proposed building more than 30 reactors, many of them expected to start operating by 2021. In the end, only four of these reactors proceeded to actual construction, of which two, in the state of South Carolina, were abandoned after $9 billion had already been spent because of massive cost increases and time delays. Efforts in other countries, like Canada, France, and the United Kingdom, that went under the label nuclear renaissance also fizzled out.

The nuclear industry has a huge problem in that it is not expanding. Most of the world's power plants were constructed before the 1980s, and the share of the world's electricity produced from them has been declining consistently since the mid-1990s. The main reason for this trend is that nuclear plants are very expensive. The nuclear industry is desperate for public money so it can stay in business.

As a result, it periodically mounts media and political campaigns to gain the support of citizens and governments. This is the context for what happened in Brussels.

WHAT RENEWABLE ENERGY SOURCES ARE MOST PROMISING, AND HOW CAN WE ACCELERATE THEIR ADOPTION?

Solar energy has become the cheapest power source in the past decade, with solar and wind now leading new-electricity generation. These renewables are not a panacea – they are not without their own environmental footprint – but they seem to be the best option.

One challenge with solar and wind energy is that their outputs depend on the sun shining and the wind blowing. However, over the last couple of decades we have learned a lot about how to manage grids with high proportions of renewable sources. To balance their variable output, we must invest in a mix of renewable energy technologies across various regions, finding ways to shape electricity demand to more closely match supply, and in battery and other storage technologies to store excess energy. There is a lot of innovation in this area, and it's where governments should be investing.

Addressing climate change isn't just about technology. The climate crisis is a symptom of a deeper problem. Our economic system relies on unending growth with continuously increasing material and energy resource use. But we live on a finite planet. If we are to confront climate change, as well as the multiple cascading ecological crises that are also related to our economic system, we should start making social and political changes. Nuclear power is incompatible with the kind of social and political transformations needed to address climate change.

Making petrochemicals... without the “petro”

A UBC engineer is devoted to making our dirtiest chemicals clean.

BY **JARED DOWNING** | ILLUSTRATION BY **ANDREA D’AQUINO**

WHAT DO YOU see when you think of a fossil fuel-free society? Perhaps thousands of blue-grey solar panels, sprawled out among the corn and wheat fields? This postcard-worthy scene also springs to mind for Alexandra Tavasoli, assistant professor of mechanical engineering at UBC. But she thinks of a few other things, too: the massive amounts of coal used to make the silicon for the solar panels, and the tanker-loads of petroleum used in the adhesives that hold them together. Even those fields of corn and wheat were probably grown with ammonia fertilizer – one of the most carbon-intensive chemicals on the planet.

“Many of the chemicals that we currently make from fossil fuels – we actually need those chemicals to build renewable energy technologies,” explains Tavasoli. Even though generating electricity using renewable sources will significantly reduce CO2 emissions, simply investing in green power and driving electric cars “is not really a holistic picture of a truly sustainable economy,” she says. Countless cleaning products, soap and cosmetics, apparel, medicines, lubricants, solvents, and other products we rely on every day, either directly or indirectly, involve fossil fuel components and release vast amounts of carbon when they’re made. And if that knowledge makes you want a drink, we have more bad news: alcohol, too, has a massive fossil-fuel footprint.

But Tavasoli has devoted her research to making the world’s dirtiest chemicals cleaner. Before she joined UBC, she was a postdoctoral associate at MIT and founded a startup that develops technology to manufacture chemicals using solar energy and carbon dioxide, instead of fossil fuels. Now, she leads UBC’s Laboratory of Future Industry (LoFI), where she and her team not only develop clean chemical manufacturing techniques, but also explore strategies for introducing those techniques into our existing economies and communities.

At LoFI, the team’s small-scale reactors – festooned with tubes, electrical wires, and gauges – look more like they belong in the International Space Station than a commercial chemical plant. Yet these reactors can use the power of sunlight to convert CO2 and non-petroleum waste materials – including food waste, leftover wood from forestry, and even landfill garbage – into a huge variety of chemicals, including ethanol, hydrogen fuel, and ethylene for plastics. Theoretically, the reactors could be the key to low-carbon chemical manufacturing.

... Theoretically. Making petroleum-free chemicals in a lab is one thing, but incorporating that technology into our existing economy is another problem entirely. Tavasoli explains that when it comes to heating our homes and powering our cities, there are well-established, economically viable sources of clean energy that can be produced at scale (for example, the aforementioned sprawling solar farm). But the same can’t be said for many chemicals. “The path to commercialization isn't clear,” Tavasoli says. “You can't really take advantage of economies of scale the way a big, centralized petrochemical plant could.... There are just physical features of how the technology works that make it inherently uncompetitive against the fossil fuel status quo.”

One challenge is that the aforementioned alternative fuels, or “feedstocks,” are more distributed and vary in quality. Making chemicals using leftover twigs and branches from a nearby logging operation will never be as efficient as simply buying fossil fuels to use as a feedstock. “Even if you’re using all of the garbage at your region’s central landfill, the scale still pales in comparison to what fossil fuel facilities reach,” Tavasoli says. But clean chemical manufacturing doesn’t have to totally replace the traditional, dirty industry to make a difference. For example, a drugmaker could use clean technology to supplement its alcohol manufacturing. Or a farming community may use solar-powered reactors to supplement its fertilizer production or serve as a backup if supply chains are disrupted.

LoFI’s ultimate goal is to write “how-to” guides to help communities discover opportunities to supplement fossil-fuel industries with clean alternatives using local waste materials or other resources that are already at their disposal.

Outside UBC, Tavasoli serves as board chair for Iron & Earth, a nonprofit established in 2016 by fossil fuel workers that encourages communities to free themselves from fossil fuels. Iron & Earth helps residents, businesspeople, and politicians explore ways to make their economies and infrastructure more sustainable and create job opportunities in green industries. Tavasoli and her colleagues may, for example, help local manufacturing plants source clean chemicals or advise city planners on adopting more efficient infrastructure.

But it will be a while before LoFI solar chemical reactors make it out of the lab. First, because Tavasoli has been at UBC for less than a year, and getting technology from the ivory halls of academia and into real-world markets is a slow process. And, second, because society itself has some changing to do. Policymakers, businesspeople, and ordinary voters need to get used to the idea of a fossil-free economy in ways that go beyond installing solar panels and buying a Tesla. Tavasoli says that even if we could produce clean chemicals cheaply at scale, manufacturers would need to learn to incorporate new, clean adhesives into their products, or car companies would need to invest in hydrogen fuel cells. “The fossil supply chain is well organized and deeply ingrained in our economy, so to build out the green economy, you really need to build out the entire supply chain all at once,” Tavasoli said.

Yet parts of the supply chain are starting to change, here and there. More companies are adopting fossil-free chemicals, if only at the margins. One distillery, The Air Company, has even started selling carbon-negative vodka made from water and CO2. Perhaps one day we will manage to create a society free of fossil fuels. And perhaps, the journey to that society has already begun, in Tavasoli’s lab.

INSIDE

» **A Haida canoe is suspended in an atrium at the Forest Sciences Centre. It is a fibreglass replica of the famous "Lootas" (or "wave-eater"), a traditional Haida canoe carved by the late Bill Reid and a team of Haida carvers from a single red cedar log.**

Photo: Paulo Ramos

Photo: THE CANADIAN PRESS/Darryl Dyck

Friba Rezayee, BA'16

«

Founder and executive director of Women Leaders of Tomorrow

«

Next challenge: To continue providing as many educational opportunities for Afghan women and girls as possible.

GROUNDWORK TECHNIQUES

Driven from her own country for excelling at judo, this trail-blazing Olympian is helping other Afghan women participate in sport and secure an education.

BY **RACHEL GLASSMAN, BA'18, MA'20**

FRIBA REZAYEE STARTED practicing judo in her native Afghanistan in the early 2000s. "It was a new Afghanistan," she recalls, "but a very broken Afghanistan – damaged by the Taliban, then the American war." Amid the confusion and energy of a country rebuilding, Rezayee appreciated the outlet martial arts offered. "I liked throwing people," she says with a sweet smile.

Judo had practical benefits, too: it was relatively inexpensive, and the modest uniforms suited a traditional culture. And judo was practiced indoors, making it safer for athletes facing gender-based violence. The objections and threats from some in her community only made Rezayee train harder: "I wanted to prove it that women are equal to men, and girls are as strong as boys."

Rezayee's commitment quickly brought her success. By 2004, at 18 years old, she was participating in the Athens Olympic Games, where she and another female athlete were the first women to represent Afghanistan at the Olympics. Rezayee recalls: "To me it felt like, *I'm going to the moon. I'm going to space.* It was that important."

Rezayee came back from the moon with legions of new admirers and enemies. Her pioneering presence at the Olympics inspired hundreds of Afghan girls to enroll in sports. But her new visibility resulted in threats to her life, grave enough that she entered Canada as a refugee in 2011.

Rezayee wasn't done charting new paths. Enrolling at UBC to study political science, she became the first woman in her family to receive a university education. "The first day I sat down in a lecture, a whole new world opened to me," she says. "It was like I was in outer space, and stars were flying past me."

By now, Rezayee felt as though she had travelled to space twice over. But being the first woman in these new worlds weighed on her as both an honour and an outrage. Why weren't other women given the same chances? Inspired by this question, Rezayee founded Women Leaders of Tomorrow, an organization leveraging over $3 million in scholarships to help women and girls from Afghanistan pursue sports training and education across the US and Canada. "I want to help a new generation of confident and competent leaders," Rezayee says, "so they can go back to Afghanistan and lead."

Her cause is more urgent than ever; with the Taliban's return to power, girls' access to education and sports is increasingly tenuous. There is plenty of work to do, and Rezayee's eyes are on the stars.

HUNTING, FISHING... AND LAWYERING

The Dene lawyer devoted to securing self-determination for First Nations.

BY **ROBERTA STALEY**

EIGHTY KILOMETRES ABOVE the Arctic Circle in the Northwest Territories sits the tiny outpost of Colville Lake. Here, about 150 Dene members of the Behdzi Ahda" First Nation live a traditional lifestyle, hunting, trapping, and fishing.

It's where Jennifer Duncan spent her childhood summers, gambolling about in handmade beaded moccasins and setting nets to catch white fish and trout. During winter visits, Duncan's friend Margaret would hitch up a dog team, and the pair would mush to the lake, chiselling down through ice to reach their nets.

"It was instilled in me that it's important to have those skills, to not have to rely on anyone else to survive or get your food," Duncan says today from her eponymous law office in West Vancouver. If they were still and quiet, she and her cousins were permitted to attend meetings between the community's hunters and trappers, who along with the elders and women would decide harvest matters. "We'd be there and soak it all in," remembers Duncan.

The conversations would often turn to Treaty 11, an agreement signed in 1921 that articulates northern First Nations' land rights and right to self-government. "The Canadian government was not living up to the promises that they made to us," says Duncan, whose sense of injustice led her to pursue a law degree at UBC. She has since devoted her career to helping Indigenous governments achieve self-governance and assert land claims and control over natural resources like caribou.

Duncan's latest battle is with the Correctional Service of Canada (CSC). While Indigenous people make up only five per cent of the general population, Indigenous men and women respectively make up a shocking 32 and 50 per cent of federal prison populations. The prison system is seen as an extension of the residential school system, and First Nations endure not only harsher penalties but also vicious treatment at the hands of racist guards. "There's so much injustice happening, and I'm honoured to advance the voices of those who are incarcerated, and who are dying and being tortured in prisons," says Duncan, who earlier this year spoke about these issues before the UN Human Rights Council in Geneva.

She strongly supports implementation of section 81 of the Corrections and Conditional Services Act, which allows for the creation of alternatives to incarceration based on Indigenous legal traditions. "I want to see Canada commit to funding and opening up more Indigenous-led healing lodges," says Duncan. "That will immediately bring down those incarceration numbers."

Going up against huge, seemingly impenetrable bodies like CSC can be exhausting. To regain her grounding, Duncan still spends the fall season up north, sometimes going on the annual caribou hunt, other times fishing. "I have that experience of being out on the water, back on the lake checking the nets, harvesting fish. I look forward to being there – being with family."

Photo: Jana Ahhalt

Jennifer Duncan, LLB'04

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Barrister and solicitor specializing in Indigenous law

Former director of UBC Indigenous Legal Studies program

«

Next challenge: Ensuring Canada fulfills recommendations from the UNHRC to end the mass incarceration of Indigenous Peoples.

The Intellectual Stunts Committee

Meet the mischief-makers who declared war on apathy

BY **RACHEL GLASSMAN, BA'18, MA'20**

IN 1961, AN AMS General Meeting devolved in spectacular fashion: a Sherman tank, a jeep, and 50 pranksters crashed the proceedings, momentarily kidnapped the current and incoming AMS presidents, dunked the student leaders in water, and declared "a new order based on chastity and virtue." The group were notorious campus clowns calling themselves the Intellectual Stunts Committee (ISC). Their aim? To use goofy spectacles, a spokesperson told *The Ubyssey*, "to dispel apathy." Take, for instance, an attempt to paddle bathtubs from the North Shore to Spanish Banks (the goal: to prove that anything is faster than sitting in bridge traffic). Or consider their revision to club parliamentary proceedings, demanding that all speakers balance on their left foot (the goal: to ensure brevity of speech). The tubs sank, the speakers soon stood normally. But no one could fail to smile.

The ISC aimed to organize pranks that "do not hurt anyone's feelings," a spokesperson told *The Ubyssey*. Still, their stunts sometimes got out of hand. A 1961 mock crowning of a "King of the Universe" fell into chaos when a competing "King of the World" announced his wish to crown himself. *The Ubyssey* reported that 4,000 students gathered to witness the coronations; alarmed at the unexpected mob, the ISC tried to withdraw their king, but the crowd grew testy. A "king was hit behind the ear with an orange,"

The "Big Push" was a group effort to roll a hospital bed from the Peace Arch to the Point Grey campus. Photo: 1962 Totem yearbook, courtesy of the AMS.

the paper reported, and some doors and windows were damaged.

Minor riots aside, usually the ISC succeeded in marshalling goofy energy for worthy ends. Consider the 1962 initiative Ugly Week, inviting the men of UBC to compete for the title of ugliest man on campus. Students gamely launched campaigns, and proceeds supported the Tibetan Relief Fund. Best remembered, perhaps, is the ISC's 1962 "Big Push" – a group effort to roll a hospital bed from the Peace Arch to the Point Grey campus. Why, you ask? The stunt aimed to encourage donations to a textbook drive for developing nations. Organizers had hoped to collect 500 books but ended up with over 7,000.

A commitment to the ludicrous runs deep: Not to be outdone, schools across the country rallied to the ISC's call. McGill pushed a bed from Quebec to Montreal; University of Western Ontario held the speed record; and Queens reigned supreme for distance with 1,000 miles of bed-pushing (in laps, after police banned their bed from highways). It was a nationwide victory for absurdity over apathy – courtesy of the ISC.

Preparing for the next pandemic

UBC is a central player in Canada's medical biotech boom

BY **CHRIS PETTY, MFA'86**

DESPITE BEING HOME to some of the best medical research talent in the world, Canada was caught flat-footed when the COVID-19 pandemic hit. UBC, for example, made outsized research contributions to the development of a vaccine and effective treatments, yet a lack of production facilities meant that Canadians had to depend on supplies from abroad.

As a result, the federal government has committed to strengthening Canada's biomanufacturing and life sciences sector. It has established five research hubs across the county, including Canada's Immuno-Engineering and Biomanufacturing Hub (CIEBH), which is led by UBC.

"The Hub represents a coalition of many partners across the country," says Dr. Michelle Wong, executive director of CIEBH and senior director of Research for the Faculty of Medicine. "It includes academia, industry, health authorities, not-for-profits, and research agencies, all geared toward speeding up research, development, and production. All these entities have a lens of biomanufacturing, but CIEBH's focus is on immuno-engineering: how we can use our own immune systems to prevent, treat, and cure priority pathogens and other health threats."

The primary goal of CIEBH is to establish a drug development strategy that can respond to future pandemics in fewer than 100 days. To that end, the Hub will focus on building infrastructure to support homegrown vaccines and therapeutics. It will also develop cutting-edge treatments for a range of human diseases.

In May, the federal government announced $574 million in funding, $140 million of which is supporting four major CIEBH projects (see sidebar) – including the creation of a new Advanced Therapeutics Manufacturing Facility on UBC's Vancouver campus.

Another important part of the strategy is to encourage a more pervasive culture of entrepreneurism among academics in order to speed up the translation of research into treatments. UBC already has a long history of R&D when it comes to biotech and immuno-engineering. More than 20 years ago, QLT and Angiotech Pharmaceuticals, both spun off from UBC research, opened up the biotech industry in the province – only to succumb to a malaise that often affects Canadian startups: lack of local investment and the siren song of bigger and better opportunities in the US. Canada has a history of producing groundbreaking therapies – insulin, for example – only to have their commercialization left to American companies.

However, much has gone on in British Columbia since the QLT years. Most significant is the work by UBC professor and alum Pieter Cullis, who developed a method to deliver nanoparticle materials to human cells, which was essential to the effectiveness of the Pfizer/BioNTech COVID-19 vaccine that has been credited with saving an estimated 6 million lives in 2021 alone. His spin-off company, Acuitas Therapeutics, commercialized the findings and put UBC and British Columbia on the biotech map again. Another standout is AbCellera, which was founded by UBC professor and alum Carl Hansen, whose work helped produce an antibody therapy for COVID-19 patients.

In fact, Vancouver has become Canada's fastest growing biotech centre, with nearly 20,000 people employed in the sector. The synergy that's happening among institutions, private companies, university spin-offs, and entrepreneurs has produced an atmosphere of cooperation that promises to expand the sector even further. "There is global interest in headquartering in Vancouver," says Wong. "We are like San Francisco and Boston were at the beginning of the biotech revolution." A major part of CIEBH's role is to support this momentum.

Still, there are challenges to building a dominant industry in Canada. Attracting entrepreneurs and their investment dollars is an ongoing obstacle, as is the shortage of adequate laboratory space and (until the new campus facility is completed) the ability to locally manufacture pharmaceutical products quickly and in enough quantity for testing.

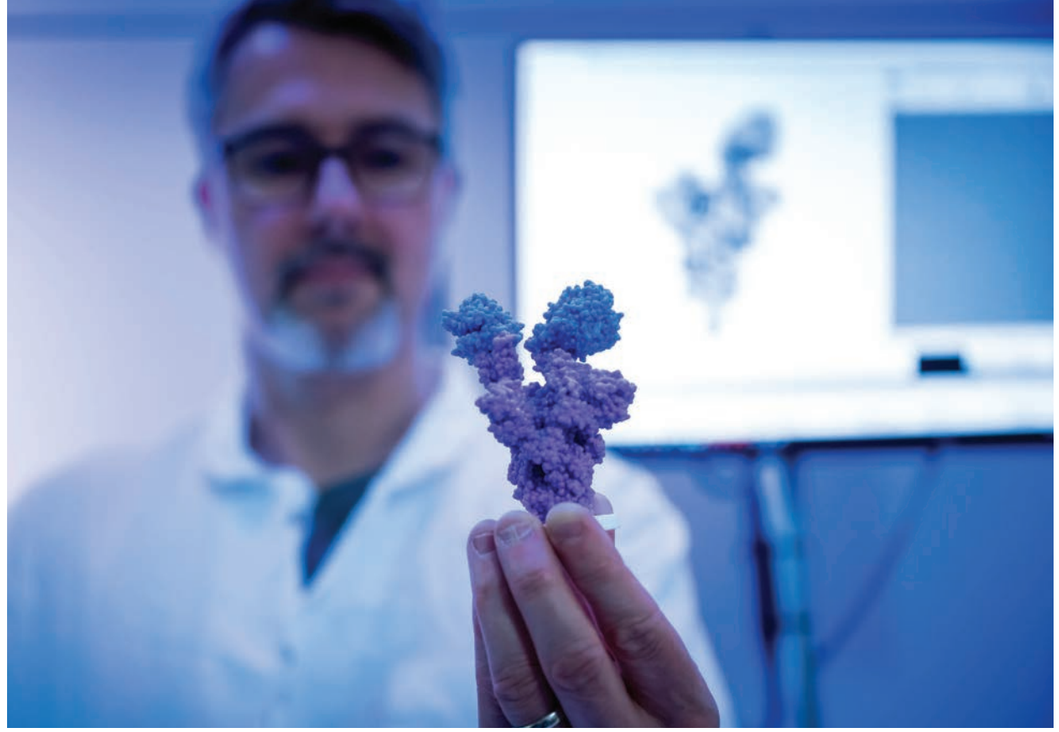
The bright spot is that these challenges are being actively taken on by companies – CIEBH partners – already up and running. AbCellera is constructing laboratory and manufacturing facilities in the Mount Pleasant area, while Cullis's Acuitas Therapeutics has built a large facility on UBC's Vancouver campus, funded by revenues from its COVID-19 developments.

Other companies, like Xenon Pharmaceuticals, Zymeworks, Aspect Biosystems (which prints synthetic tissue for human implants), Alpha-9 Oncology, and several device producers including StemCell Technologies (which manufactures tools for drug development), are thriving. They are attracting management talent and entrepreneurial dollars, building facilities, and are determined to keep the sector alive and well in Canada.

These companies, and several others in BC, can claim UBC as their parent; all began with discoveries made by UBC researchers. In fact, UBC discoveries have formed the basis of more than 260 spin-off companies.

By acting as a coordinating agency, CIEBH is creating a national network of researchers and entrepreneurs that can pool information, address gaps in the development of specific drugs, and build management, manufacturing, and commercial aspects of the production process.

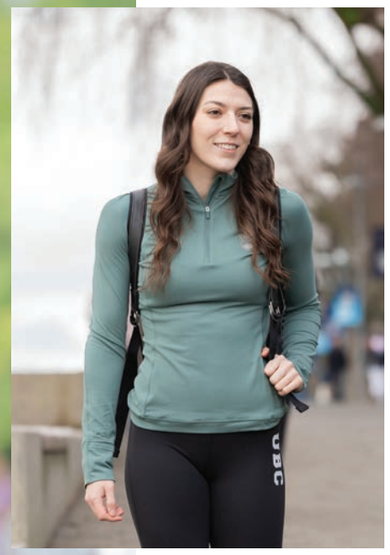
"The goal of the Hub is to bring the technology and the people from academia, the private sector, and government together to mobilize a combined effort and create a common agenda to achieve our goals," says Wong. "We can be the leaders in immuno-engineering globally. We need to keep attracting the talent, and the investment, for the next generation."



Research associate Dr. Gethin Owen holds a molecular model of the COVID-19 Omicron variant's spike protein, which the Subramaniam lab was the first to produce using cryo-electron microscopy. The lab is building a suite of ready-to-deploy antibody treatments – one of four initiatives to receive major funding as part of the Canadian Immuno-Engineering and Biomanufacturing Hub. *Photo: Paul H. Joseph / UBC Brand & Marketing*

$140 MILLION IN GOVERNMENT FUNDING WILL SUPPORT THESE FOUR CIEBH PROJECTS:

- The creation of a new **Advanced Therapeutics Manufacturing Facility** on UBC's Vancouver Campus. Equipped with state-of-the-art bioreactors and quality control labs, the 25,000-square-foot facility will enable academic researchers and biotech startups to develop innovative cell- and gene-based therapies and bring them into early-stage clinical trials for Canadians. The project is led by UBC professors and alumni Megan Levings and Robert Holt, who is also a professor at SFU.
- **AVENGER**, an end-to-end drug development platform for RNA vaccines, based at UBC. The AVENGER team will create a library of vaccine formulations that can be custom-designed and rapidly deployed against pandemic pathogens and other diseases. The project is led by renowned UBC scientist Dr. Pieter Cullis, who developed the drug delivery technology that underpins COVID-19 mRNA vaccines, as well as UBC professor Anna Blakney.
- **PROGENITER**, a development pipeline for antibody therapies, based at UBC. The PROGENITER team will leverage advanced cryo-electron microscopy and AI-enabled drug discovery to build a suite of ready-to-deploy antibody treatments for pathogens with high pandemic potential, such as H5N1 influenza (bird flu). The project is led by UBC professor Sriram Subramaniam.
- The **Bridge Research Consortium** (formerly Social Sciences and Humanities Consortium), based at SFU, brings together an interdisciplinary research team to better understand public perspectives around biomanufacturing and immune-based therapies, while developing strategies to build public trust and promote equitable access to new medicines. The project is led by SFU professor Kelley Lee and Université Laval adjunct professor Ève Dubé.



CONTINUE YOUR PASSION FOR LEARNING

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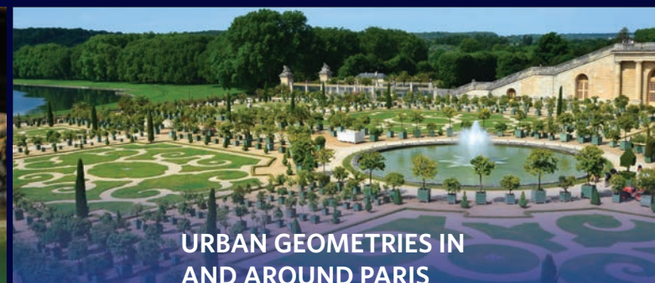
With naturalist Catherine Jardine

Sep. 20 – 27, 2025

Sail wilderness waterways beneath towering mountains on the lookout for whales and bears.



URBAN GEOMETRIES IN AND AROUND PARIS

With urbanist Larry Beasley

Sep. 21 – 29, 2025

An insider's look at public spaces and sustainable urban development in the post-Olympics City of Light.

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With host Shakeela Begum

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PRESIDENT'S MESSAGE

Photo: Paul Joseph / UBC Brand & Marketing

More than a place of learning

Dr. Benoit-Antoine Bacon
UBC President and Vice-Chancellor

AS I WRAP up my first year as UBC's president, I might not be "the new guy" anymore, but I still remember the excitement of stepping onto campus for the first time. That feeling of starting a new adventure is one I share with the thousands of students who arrived in Vancouver and the Okanagan this September, ready to start their own journeys.

I hope their first year at this dynamic, world-class university will be as incredible as mine has been. They will find so much to explore both inside and outside the classroom – opportunities that will help them grow and shine both professionally and personally.

They'll benefit from extraordinary courses and programs, which they can supplement with hands-on projects in the local community or overseas. They can take in a culture that encourages healthy and respectful exchange of ideas and debate. They'll find spaces and networks to test out their entrepreneurial inclinations, as well as an incredible range of student clubs and initiatives.

Alumni who look back fondly on their student years might be forgiven for feeling a slight tinge of envy. But we also know that the challenges facing students today are more pronounced than even a decade ago. This includes the housing and affordability crisis, climate change, geopolitical instability, and the accelerating pace of technological change. UBC takes these challenges very seriously, with a focus on offering students a safe and inclusive environment and providing a broad array of services to support success.

In the context of the housing crisis, for example, UBC is the largest provider of student housing in Canada, with more than 15,000 below-market-rate student residence spaces. The recently announced $300 million investment from the BC government will help create 1,500 more on the Vancouver campus. Planning is also underway for the next phase of student housing on the Okanagan campus.

Students today have also grown up with climate change as a pressing and persistent concern. By choosing UBC, they've joined a community that is fully committed to sustainability through research and action. In 2023, our Vancouver campus emitted 35 per cent fewer greenhouse gas emissions than it did in 2007 – despite a 28 per cent growth in building floor space and a 43 per cent increase in student population.

We are aiming to reduce campus operations emissions by 85 per cent by 2030, as part of the Climate Action Plan, and we will seize any opportunity to accelerate this work. For example, UBC Okanagan is installing a next-generation heat pump for its district energy system, which will allow the campus to meet Paris Accord targets ahead of schedule.

We actively welcome our students' involvement in these efforts. In fact, I invite them to dive into all that our campuses have to offer to gain new experiences, encounter perspectives that differ from their own, and develop lifelong passions. Because university is not just a place of learning; it's also a place to grow and thrive.

UBC alum Dave Lim posing in front of some street art. According to Dave, "COVID lockdowns unleashed the creativity and social commentary of our street artists." *Photo courtesy of Dave Lim.*

Melbourne, Australia

Insider travel tips from alumni around the world.

Dave Lim (BA'92) is an *alumni UBC* Global Alumni Ambassador who has been living in Melbourne since 2019. He is a "polymath, provocateur, and possibilist" who works in innovation, investment, curation, and education, and has been a TEDx pioneer and organizer since 2009.

WHAT THREE WORDS BEST DESCRIBE MELBOURNE?
Coffee. Culture. Creativity. (Correlation or causation? :))

WHAT DO YOU LIKE MOST ABOUT LIVING THERE?
How much Melbourne and Vancouver are alike as cities. We're surrounded by nature and greenery, friendly and helpful people abound... and we get lots of rain during winter. Melbourne has also evolved over the years to become one of the most diverse and cosmopolitan cities in Australia. It is one of the top 10 most livable cities in many rankings and was named the "happiest city in the world" in 2018. We have parks, lakes, beaches, rivers, and forests, and city life is filled with cafés and restaurants featuring food from all over the world. There's an abundance of theatres, multicultural music, film, and creative festivals, plus numerous sports, including the Australian Open tennis tournament.

DESCRIBE YOUR FAVOURITE NEIGHBOURHOOD.
Collingwood. It's home to Smith Street – named the "coolest street in the world" in 2021 – and is filled with eclectic shops that blend the old and new: From trendy designer shops and funky galleries to vintage and factory outlets. From old bars and pubs to cool and quirky restaurants. From artisanal ice cream to beer and wine bars, live music at night, and street festivals throughout the year. On Easey Street, a crazy imaginative restaurant entrepreneur hoisted three decommissioned train cars atop the roof of a five-storey building, converted them into a burger and drink bar, and invited street and graffiti artists to spray paint all the walls and carriages.

IF YOU COULD CHANGE ONE THING ABOUT MELBOURNE, WHAT WOULD IT BE?
More Melburnians drinking tea!

WHAT MIGHT SURPRISE A VISITOR ABOUT MELBOURNE?
Here are three fun facts:
One of the founders was named John Batman, and the city was almost named Batmania. To this day we have Batman Park, Batman Avenue, and Batman Hill. (There might even be a Batcave somewhere – but its location would need to be kept secret, right?)
The gold rush in Victoria, Australia, boomed around the same time as San Francisco's in the 1850s, making Melbourne one of the richest cities in the world. The gold from Victoria paid off the debt of the entire British Empire!
We easily get four seasons within a day. One day, within hours, it went from a breezy-cool 21 degrees Celsius to a sauna-hot 42 degrees Celsius. Even when it's a bright, blue, cloudless sky when you leave home, always bring along your umbrella or raincoat. Wet weather and winds from Antarctica can come up any moment.

BEST TIME OF YEAR TO VISIT
Spring, summer, and autumn (i.e., September to May here "down undah"!).

BEST PLACE TO STAY
Hotel No. Picture six vintage Airstream stainless steel caravans converted into boutique hotel rooms and situated on the roof of a building in the middle of the city.

BEST VIEW
From a hot air balloon! Hop into one near the city centre, drift by skyscrapers, and land near the beach.

COOLEST STREET
There's Smith Street, of course. But also Guildford Lane, a small brick lane filled with lush greenery, flowers, birdsong, and bohemian cafes.

MARKS OUT OF 10 FOR TRANSIT
10. Trams throughout the city are completely free – just hop on and off!

WHAT ARE YOUR FAVOURITE HIDDEN GEMS OR ACTIVITIES THAT ONLY LOCALS KNOW ABOUT?
Underground bars, restaurants, and jazz bars hidden away in the laneways and many behind nondescript doors and enigmatic entrances.
Also, in virtually every neighbourhood, there are independently operated bookshops, many lovingly curated and decorated.

WHAT'S THE MOST OVERRATED TOURIST HOTSPOT?
Tourists take an entire day to drive down the Great Ocean Road to see the 12 Apostles rock formation off the coast, but along the way bypass beautiful waterfalls, fern gullies, and rainforest trails.

HOW EASY IS IT TO MEET NEW PEOPLE?
It's very easy! Melbourne is the most diverse city in Australia, with its residents born in 146 countries. I once boarded a tram and simultaneously heard four conversations going on: in Indonesian, French, Spanish, and Nepali.

WHAT IS ONE LOCAL CUSTOM THAT EVERY VISITOR SHOULD KNOW ABOUT?
It's a hard toss-up between drinking flat whites and wearing black, mate! Above all, knowing some Aussie slang is pretty useful, such as knowing the difference between "Barbie" and "barbie" (the latter meaning BBQ).

Alumni volunteers host fun My Town Meetups in locations around the world. Check out our Meetups page to see if there's a gathering near you – or sign up to host one in your location.

alumni.ubc.ca/my-town-meetups

alumni UBC 2024 *Achievement Awards*

PRESENTED BY boyden

UBC alumni are committed to an exceptional UBC and a better world. This November, at the annual *alumni UBC* Achievement Awards, presented by Boyden, we honoured eight inspiring members of the UBC community who, through their extraordinary endeavours, have demonstrated this vision.

Congratulations to This Year's Recipients

ALUMNI AWARD OF DISTINCTION
Dr. Carol Lee
CM, OBC, BCom'81, LLD'19

Carol Lee co-founded the Vancouver Chinatown Foundation, and her community-driven approach is reimagining one of Canada's most iconic neighbourhoods. This business and community leader also has long-standing ties with UBC, and she was recently appointed chair of UBC Properties Trust.

YOUNG ALUMNI AWARD
Marina Melanidis
BSc(Nat Res Cons)'18, MSc'22

Marina Melanidis is a Canadian Climate Champion, Top 25 Environmentalist Under 25, and Nature-based Solutions trail-blazer who centres youth and Indigenous voices in her advocacy. She launched Youth4Nature, has led youth delegations to high-level climate conferences, and serves on the board of Global Witness.

ENTREPRENEURSHIP AWARD
Dr. Paul Sanberg
MSc'79

Pre-eminent neuroscientist Dr. Paul Sanberg has raised the profile of academic invention and related economic stimulation by founding the National Academy of Inventors to honour researchers who patent their discoveries. He holds over 160 patents himself and is the founder of two companies.

RESEARCH AND INNOVATION AWARD
Dr. William Cheung
PhD'07

Dr. William Cheung studies the impact of climate change on oceans, significantly advancing global insights into their future. A Canada Research Chair, UBC Institute for the Oceans and Fisheries director, and Nereus Program leader, his findings have shaped policy discussions at the United Nations.

GLOBAL CITIZENSHIP AWARD
Dr. Jan Christilaw
CM, MHSc'03

Dr. Jan Christilaw is a highly respected advocate for women's healthcare and currently directs Women's Health for the Canadian Network of International Surgeons. She helped found International Physicians for the Prevention of Nuclear War, an organization that won the Nobel Peace Prize.

FACULTY COMMUNITY SERVICE AWARD
laxlaxtkʷ Dr. Jeannette Armstrong
OC, LLD'06

laxlaxtkʷ Dr. Jeannette Armstrong is an author, artist, educator, and elder who advocates for Indigenous peoples, languages, and cultures. A UBC associate professor and former Canada Research Chair, she led the creation of UBCO's Bachelors of Nsyilxcn, Nɬəʔkepmx, and Stʼatʼimc Language Fluency programs.

VOLUNTEER LEADERSHIP AWARD
John Montalbano
BCom'88

Demonstrating steadfast commitment to community service, business leader John Montalbano founded the UBC Sauder Philanthropy Program, co-founded the Take a Hike Foundation for at-risk youth, and is a former chair of the UBC Board of Governors, St. Paul's Foundation, and Vancouver Police Foundation.

HONORARY ALUMNI AWARD
The Honourable Lois Mitchell
CM, AOE

Lois Mitchell is a powerhouse advocate for amateur sport. She and late husband Doug funded endowments for UBC athletes and helped establish an ice rink for the Thunderbirds. Mitchell is president of the Royal Canadian Geographical Society and former lieutenant-governor of Alberta.

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alumni UBC 2025 *Achievement Awards*

CALL FOR NOMINATIONS

The next award recipients won't raise their own hands. That's why we need you! Do you know a graduate, student, faculty member, or friend of UBC who deserves to be recognized as a leader, advocate, artist, or visionary? This is your chance to bring them into the limelight.

To nominate online, visit **alumni.ubc.ca/nominate** | NOMINATION DEADLINE: **Friday, February 14, 2025**

Seasonal change can affect people's moods — and their moral values

BY **IAN HOHM,** PhD student, Psychology
MARK SCHALLER, Professor, Psychology

MORAL VALUES ARE the principles that guide a person's perceptions of good and bad, and right and wrong. They shape our prejudices, political ideologies, and many other consequential attitudes and actions.

It's tempting to assume that a person's moral values are stable across time and circumstances, and to some extent they are – but not entirely. Moral values are malleable and can sometimes change depending on the specific thoughts, feelings, and motivations that arise in different situations.

Our research examined whether moral values might change with the seasons, too.

CHANGING VALUES

Seasons are characterized not just by changes in the weather, but also by many additional changes in our surroundings and the rhythms of our lives. These may include spring cleaning, spending more time with family in summer, back-to-school shopping in the autumn, or preparing for winter holidays.

Consequently, changes in the seasons lead to changes in the things that people think, feel, and do. Most people know that seasonal changes in the weather have effects on people's moods, but that's just the tip of the iceberg. Psychological research has revealed seasonal effects on attention and memory, generosity, colour preferences, and many other things.

And so, in our recent research, we investigated whether there might also be seasonal cycles in the moral values that people endorse.

We examined five core principles that previous research has identified as fundamental moral values. Two of these principles – don't hurt other people and treat all people fairly – pertain to individual rights and are referred to as "individualizing" values.

Three other principles – be loyal to one's group, respect authority, and maintain group traditions – promote group cohesion and are referred to as "binding" values.

Most people endorse all these values, but people differ in the extent to which they prioritize them, and these priorities have important implications. People who prioritize individualizing values are more politically liberal, whereas people who prioritize binding values are more conservative, more punitive, and express stronger prejudices against out-groups.

SEASONAL CYCLES

Do the seasons affect the extent to which people endorse these core moral values? To find out, we obtained data from YourMorals, a research website that uses online survey methods to assess people's self-reported endorsement of all five of these core moral values.

Our analyses focused on the values reported by 232,975 respondents in the United States across a decade (2011-20) of data. The results revealed no apparent seasonal cycle in Americans' endorsement of individualizing values, but there was clear and consistent seasonal cycle in Americans' endorsement of all three binding moral values.

This seasonal cycle was bimodal, with two peaks and two valleys each year: Americans endorsed binding moral values (valuing loyalty, authority, and group traditions) most strongly in the spring and autumn, and least strongly in midsummer and midwinter. This bimodal seasonal cycle in binding moral values showed up again and again in the data, year after year.

This seasonal cycle in binding moral values wasn't unique to the US either. Additional analyses on data from Canada and Australia revealed similar patterns: Canadians and Australians also endorsed binding moral values most strongly in the spring and autumn, and least strongly in midsummer and midwinter.

ANXIETY PATTERNS

What might explain this seasonal cycle in people's endorsement of binding moral values? One possibility is that it has something to do with the perception of threat, which encourages people to close ranks within a group. Previous research has linked this to increased endorsement of binding moral values.

To test this idea, we analyzed data on an emotion associated with threat perception: anxiety. Results revealed that Americans' self-reported anxiety showed the same bimodal seasonal cycle, and so did 10 years of data on Americans' Google searches for anxiety-related words. This seasonal cycle in anxiety helps to explain the seasonal cycle in binding values.

This explanation raises a new question: what might explain the seasonal cycle in anxiety? Although we can only speculate, our analyses on moral values revealed an intriguing clue. The summertime dip in Americans' endorsement of binding moral values was bigger in places with more extreme seasonal changes in the temperature. There was no such effect on the size of the midwinter dip.

Perhaps something similar might be going on with anxiety: maybe that summertime decrease is the result of pleasant weather, whereas the midwinter decrease is more of a holiday effect.

DOUBLE-EDGED SWORD

Regardless of the cause, seasonal cycles in binding moral values could have consequences that affect people's lives, for better or worse. Binding moral values promote cohesion, conformity and cooperation within groups, which can be beneficial, especially when coping with crises.

The implication is that groups might cope better with crises that emerge in the spring and autumn, compared to those that occur in the summer and winter.

But binding moral values also promote distrust of people who fail to adhere to group norms and traditions. The implication is that there may also be seasonal cycles in prejudices against immigrants, racial minorities, LGBTQ+ individuals, and anybody else who is perceived to be different.

People who more strongly endorse binding moral values are also more punitive, so there could be seasonal effects on judicial decision-making in the millions of legal cases that occur every year.

And given the link between binding moral values and conservative attitudes, there are potential implications for politics. One intriguing possibility: the timing of political elections (whether they are scheduled for summer or autumn, for instance) might have some subtle effect on some votes – which, for an election that is especially tight, might even influence its outcome.

This article was originally published in The Conversation:
https://theconversation.com/seasonal-change-can-affect-peoples-moods-and-their-moral-values-236626

THE CONVERSATION

Mayhem, Marathons, and Melodies

1. UBC ALUM JEFF TOYNE COMPOSED THE SCORE FOR WHICH OF THE FOLLOWING SHOWS:

a. *Palm Royale*
b. *Sweet Tooth*
c. *Scavengers Reign*
d. *The Righteous Gemstones*

2. HOW MUCH DID GETTING A HAIRCUT COST AT THE BROCK HALL BARBER SHOP IN 1945?

a. 25 cents
b. 50 cents
c. 1 dollar
d. 5 dollars

3. ON JUNE 17, 2024, UBC MUSIC THEORY LECTURER DR. ROBERT KOMANIECKI RELEASED HIS RANKINGS OF 115 DISNEY SONGS IN A VIRAL X THREAD. HIS TOP SONG WAS "MOTHER KNOWS BEST" (*TANGLED*). WHAT WAS THE LOWEST-RANKED SONG?

a. "This is the Thanks I Get" (*Wish*)
b. "Bibbidi-Bobbidi-Boo" (*Cinderella*)
c. "All is Found" (*Frozen 2*)
d. "The Siamese Cat Song" (*Lady and the Tramp*)

4. EVAN DUNFEE (BKIN'14) AND KINESIOLOGY STUDENT OLIVIA LUNDMAN COMPETED IN WHICH EVENT IN THE 2024 SUMMER OLYMPICS?

a. Marathon swimming
b. Race walking
c. Canoe slalom
d. Diving

5. WHAT PAST UBC EVENT RESULTED IN 51 BROKEN PANES OF GLASS IN CAMPUS WINDOWS, DAMAGES OF $200 (AROUND $4,355 IN TODAY'S DOLLARS), AND THE ATTENTION OF THE DOWNTOWN PRESS?

a. Battles of the Lily Pond
b. A snowball fight in 1936
c. The Snake Parade
d. A post-hockey game riot (The Thunderbirds lost)

6. IN WHICH YEAR DID THE FIRST WOMAN WIN THE AMS PRESIDENTIAL ELECTION?

a. 1917
b. 1934
c. 1970
d. 1980

1. a. *Toyne used a full live orchestra to record the score for Apple TV+'s* Palm Royale*, with the aim of augmenting the series' themes of opulence and maximalism. He has been nominated for two Emmy awards for this work.*
2. b. *50 cents in 1945 is the equivalent of about $8 today. The barbershop kept its doors open into the '60s.*
3. d. *Using a scale of zero to 500, Dr. Komaniecki scored songs based on their lyrics, music, vocals, and plot integration, as well as his own subjective enjoyment. While all four songs were in the bottom 20, "The Siamese Cat Song" took the seat of dishonour for its racist lyrics and caricature of Asians as buck-toothed cats who sing in broken English.*
4. b. *Dunfee and Lundman competed in the mixed team relay, which requires one male and one female athlete to complete the marathon distance (42.195 km) in four stages. UBC is the only Canadian university that includes race walking in its varsity track and field team.*
5. b. *The snowball fight took place in February, pitting Engineering against Arts;* The Ubyssey *lambasted participants as "pampered and ungrateful students." Battles of the Lily Pond entailed students trying to toss each other into a campus pond. The Snake Parade was a freshman initiation ritual in which crowds of students stampeded through downtown Vancouver.*
6. a. *Norah Coy was the first woman to become an AMS president but would be the last to hold that position until the 1950s (despite multiple women running for the role in the years between).*

NEWS FLASH

VANCOUVER

GIOVANNI MANU SELECTED BY THE DETROIT LIONS IN THE NFL DRAFT

Giovanni Manu has made history as the first UBC Thunderbird ever selected in the NFL Draft. A two-time All-Canadian, Manu was taken by the Detroit Lions in the fourth round as the 126th overall selection. Born in Tonga, Manu moved to Pitt Meadows, BC, before playing football for UBC. The 6'8", 352-lb left tackle has started every game for the T-birds since his 2019 rookie season. Manu will have the chance to join the ranks of other Thunderbirds who have appeared in NFL games, including Bill Crawford (New York Giants), Brant Bengen (Seattle Seahawks), and Dakoda Shepley (Dallas Cowboys).

$5.4M GIFT FROM STONE FOUNDATION

A $5.4 million gift from the James M. and Cathleen D. Stone Foundation will fund Canada's first Stone Centre on Wealth and Income Inequality at UBC's Vancouver School of Economics. The Stone Foundation has established 11 other centres in leading institutions, including Harvard, UC Berkeley, and Brown. UBC's Stone Centre will work with Statistics Canada to study income inequality across Canada.

OKANAGAN

UBCO STUDENTS BUILD AUTOBOT TO SNIFF OUT "ZOMBIE" FIRES

Driven by last summer's wildfires that forced them to evacuate Kelowna, a group of UBCO and Okanagan College students designed an autobot that can detect "zombie" fires – subterranean fires that smoulder through winter and flare to life in spring. Equipped with a thermal camera, smoke sensor, temperature probe, and AI-based software, the Ember Mitigation Bot Responder (EMBR) can autonomously traverse terrain and report the precise location of underground fires. EMBR won the Audience Choice Award at Boston's world-class MassRobotics Form & Function Robotics Challenge, outperforming competitors from MIT, Stanford, Carnegie, and Harvard.

PARALYMPIC GLORY FOR UBCO ALUM

Jenn Oakes, an alum of UBCO Heat, made history this summer as the first Heat athlete to earn an Olympic or Paralympic medal. She played on the Canadian women's sitting volleyball team that won bronze at the Paris Paralympics – Canada's first-ever Paralympic medal in the sport. During the game, Oakes scored 12 points and added eight blocks (the second-most on the team).

Illustrations: Raymond Beisinger

4th

UBC's position in the 2024 QS World University Rankings' list for the world's most sustainable universities.

10,526 / 1,984

Number of students who graduated from UBC's Vancouver and Okanagan campuses respectively, forming the largest spring graduating class in UBC history. The ceremony was especially meaningful for many students who graduated from high school under pandemic restrictions.

13

Number of original banners made by UBCO artists that have been installed along Kelowna's Rotary Centre for the Arts Commons and Cultural District Art Walk.

21

Number of UBC athletes who participated in the 2024 Summer Olympic and Paralympic Games: three men's wheelchair rugby players, seven swimmers, two rugby sevens players, three rowers, four track & field athletes, one volleyball player, and one field hockey player.

JUDY ROGERS

Judy Rogers (BRE'71) has recently taken up her role as UBC's 20th Chancellor. As UBC's ceremonial head, she will officiate at major convocations and ceremonies. Rogers possesses an extensive background in governance and community development, having formerly served as Vancouver's City Manager; a board member of the Vancouver Organizing Committee for the 2010 Olympic and Paralympic Winter Games; and chair of *alumni UBC*. She has also received two UN public service awards for leading the Downtown Eastside Community Development Project.

MIRANDA LAM

Miranda Lam (LLB'02) has been appointed chair of the UBC Board of Governors. Previously, Lam chaired the boards of the Vancouver Foundation, Vantage Point, and *alumni UBC*. Currently, she is chair of the BC Cancer Foundation and Chief Legal Officer and VP, Business Development, at Acuitas Therapeutics, Inc. Lam has been recognised as a Leading Lawyer in Commercial Litigation by various publications and named in *Vancouver Magazine's* Power 50 List of the City's Most Influential People.

The benefits of basic income

A UBC study finds that providing it to all adults could solve global poverty and stop environmental destruction.

Photo: Mansent Photography / Momentvia Getty Images

THE RESEARCH:
Researchers conducted an analysis of 186 countries to determine the feasibility of issuing basic income to adults, as well as the potential socio-economic and environmental benefits of doing so.

THE BOTTOM LINE:
Their study found that providing basic income to all individuals worldwide could increase global GDP by about 130 per cent (USD163 trillion) and alleviate poverty. Furthermore, financing basic income through carbon taxes could reduce environmental degradation.

Researchers calculated the economic costs and benefits of providing basic income (BI) to different subsets of the global population. For example, they estimated that providing BI to all people living below the poverty line would cost around USD7 trillion and provide a USD49 trillion boost to global GDP. Providing BI to everyone regardless of income level would cost approximately USD42 trillion and provide a USD163 trillion GDP boost.

For Canada, the net benefit of providing all citizens with BI could equal around $541 billion. "About 10 per cent of the Canadian population live below the poverty line. Thus, this is a global problem," said senior study author Dr. Rashid Sumaila, a professor in the UBC Institute for the Oceans and Fisheries (IOF) and the School of Public Policy and Global Affairs.

To address BI's high implementation cost, the team proposed that carbon taxes, pollution taxes, and the redirection of environmentally damaging subsidies could finance BI programs. For instance, a flat tax of $50-$100 per ton of carbon released through fossil fuel use could fully fund BI for people living in poverty across North America, Europe, and Asia.

"Environmental damage and poverty both pose huge risks to society," says Sumaila. "By requiring that major polluters pay to clean up their own messes, or the 'Polluter Pay Principle,' you have a creative approach to address both issues by de-incentivizing environmental pollution through taxation and the removal of existing environmentally harmful subsidies, and using those funds to support a basic income."

Another barrier to BI is the perception that BI programs may weaken people's motivation to work, save, and invest. Evidence from existing BI schemes, however, suggests otherwise. Alaska's Permanent Fund Dividend, which has been providing cash dividends to residents since 1982, led to a 17 per cent increase in part-time work. Iran's national cash transfer program did not result in a reduction of labour force participation or hours worked. Furthermore, a BI initiative in Indonesia contributed to a decrease in deforestation.

The study's authors argue that, given BI's substantial potential to bolster social resilience and reduce environmental degradation, governments should view BI as a viable and proactive economic strategy to end extreme poverty, produce a universal societal safety net, and shape a more sustainable global landscape.

DRUG-DRIVING

THE RESEARCH:
Researchers performed toxicology testing on blood samples from around 10,300 anonymized drivers across Canada who visited an emergency department after a motor vehicle collision.

THE BOTTOM LINE:
Cannabis has pulled ahead of alcohol as the most common single impairing substance found in blood samples from injured drivers. Despite this new finding, drink driving remains the greater problem because of alcohol's higher crash risk.

Although alcohol's effect on driving and road safety has been well-studied, the risk of crashing for cannabis-impaired drivers is not as thoroughly understood. An ongoing National Drug Driving Study is addressing these limitations by studying drug use in drivers who visit a hospital following a motor vehicle collision.

Legalized across Canada in 2018, cannabis contains the psychoactive compound THC (delta-9-tetrahydrocannabinol), which is primarily responsible for the drug's impairing effects. Cannabis intoxication can lead to attention deficits and slower reaction times, increasing the risk of a crash.

The new study found that nearly 54 per cent of injured drivers tested positive for more than one impairing substance, with 16.6 per cent testing positive for THC and 16 per cent for alcohol. While this is a new development (more drivers are testing positive for THC since legalization), in most cases the cannabis level was not high enough to indicate impairment and increase crash risk. Drink driving remains a bigger problem in road safety and public health, says the study's lead author Jeff Brubacher, an associate professor with UBC's Department of Emergency Medicine.

In most cases the cannabis level was not high enough to indicate impairment and increase crash risk. Drink-driving remains a bigger problem in road safety and public health.

As well as cannabis and alcohol, one in eight drivers (12.1 per cent) tested positive for recreational drugs (cocaine, amphetamines) and one in four (26.9 per cent) tested positive for sedating medications, such as antihistamine. Testing positive for multiple substances is an emerging trend the researchers are monitoring.

The overarching goal of the national study is to provide relevant data to inform and evaluate policies and programs designed to prevent people from driving after using drugs.

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Watch & Listen

PODCASTS

From Here Forward shares stories and ideas about amazing things UBC and its alumni are doing around the world. It covers people and places, truths, science, art, and accomplishments with the view that sharing better inspires better. Join hosts Carol Eugene Park (MJ'20) and Jeevan Sangha (BA'22) in exploring solutions for the negative stuff out there — focussing on the good for a change, from here forward.

magazine.alumni.ubc.ca/podcasts/here-forward

THE HIDDEN BENEFITS OF A DAILY DOSE OF PHYSICAL ACTIVITY

Jordyn Rice and Sarah Heath from UBC's Aging, Mobility, and Cognitive Health Lab talk about the impacts of exercise in preventing cognitive decline and loss of mobility. They discuss common barriers to exercise, the value of health coaching, and emphasize the point that even a little bit of physical activity is better than none.

BEHIND NEW YORK CITY'S VISION FOR RACIAL JUSTICE

UBC alum and lawyer Melanie Ash (LLB'96) talks about her path into the legal profession; her work to support a framework of racial justice and equity for New York City's government; and some of the differences in the legal and social justice landscape between Canada and the United States.

QUEER NIGHTLIFE AND THE PURSUIT OF JOY »

In this special Pride episode, the hosts talk to Dr. Amin Ghaziani, a professor of sociology and Canada Research Chair in Urban Sexualities at UBC, about his new book *Long Live Queer Nightlife: How the Closing of Gay Bars Sparked a Revolution*. They speak about the evolution of queer nightlife, the nuances of intersectional belonging, and the importance of intentional allyship.

© Amin Ghaziani

WEBCASTS

Learn from the experts.

magazine.alumni.ubc.ca/webcasts

URBAN TREE TROUBLE: INSIGHTS FROM STANLEY PARK

The urban foresters who manage green spaces in our communities are seeing increased demand for it as the population grows. However, water scarcity and extreme heat are adding layers of complexity to urban landscape management. Vancouver's iconic Stanley Park, for example, recently captured headlines following plans to remove trees killed by looper moths.

An engaging panel of experts discuss green space as a valuable community resource, sharing present and emerging best practices in urban forestry and the role residents can play in decisions surrounding the living infrastructure in their neighbourhoods.

INTEGRATING HUMAN RIGHTS WITH THE AI ERA «

Are you excited about the rise of artificial intelligence? Or are you worried about AI taking over? Dive into the moral and ethical aspects of AI featuring UBC Okanagan professor Wendy H. Wong, a political scientist examining how disruptive technology is affecting global issues. As the author of *We, the Data: Human Rights in the Digital Age*, Wong shares her insights about personal data collection and explains why it's important to ensure AI integration harmonizes with our values.

CAREER WEBCASTS

ANCHOR YOUR LEADERSHIP IN ADAPTABILITY »

Being a leader involves facing numerous challenges, including disruptions, stress, and burnout. In order to thrive amidst change, leaders must reorient, stabilize, and take care of themselves. That's why the practice of anchoring, or finding ways to steady ourselves amid demanding and unpredictable situations, is essential. In this webinar, Adel Gamar – co-founder and CEO of GLG Ltd. and adjunct professor at the UBC Sauder School of Business – explores practical and daily routines that you can use to fortify your leadership as you empower your organization to reach its full potential.

ACTUALIZE YOUR DREAM CAREER ABROAD

Are you wondering about working in another country? From cross-cultural adventures to unexpected career opportunities, there are tantalizing reasons for making that leap. But what are the honest truths about relocating, adapting, and working abroad? Watch this webcast to hear individuals from the UBC community offer some real talk about the benefits and challenges they experienced as expatriates.

NEGOTIATE YOUR SALARY WITH CONFIDENCE

How comfortable do you feel about discussing your salary with your employers? Learning how to negotiate salary effectively is a crucial career skill, yet it's also one that many professionals lack. Salary negotiation goes beyond money – it's about asserting the values you bring to the table. UBC Career Educator Danielle Barkley shares tips and strategies on how to speak up about what you're worth.

CAMPUS SEEN

Tucked away in UBC's Earth and Ocean Sciences building, just off the bustle of Main Mall, is a 75-million-year-old *Lambeosaurus* named George. A long-term resident of the Pacific Museum of Earth (PME) – UBC's first museum – George is a "duck-billed" Hadrosaurid dinosaur. His distinguished cranial crest likely had social functions, such as noisemaking. Millions of years ago, George and his kind roamed North America in grazing herds avoiding carnivorous dinosaurs like Tyrannosaurus Rex – until they were all wiped out by the unavoidable threat of the mass Cretaceous-Tertiary extinction. In 1913, poor George's fossilized remains were unearthed in Red Deer Valley, Alberta, and eventually mounted at UBC by paleontologist Charles M. Sternberg in the 1970s. Visit the PME to meet this elderly gentleman or experience the museum's other exhibits, which include a gem gallery, a touchable *Hypacrosaurus* femur, a cast of a *T. rex* ancestor, and skulls of our (very) distant relatives. ***~ Audrey Wahking***

IN MEMORIAM

Obituaries are published in full on the magazine's website at ***magazine.alumni.ubc.ca/in-memoriam****, with listings included in our spring and fall print issues. Please submit obituaries at* ***magazine.alumni.ubc.ca/memoriam-submissions****.*

Gordon Hugo Wolfram, BASc'48
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James Craigen, MEd'75
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James Scott Beesley, BSc'86, MA'94
James Campbell, BSW'87, MSW'91
Sidney Bramwell Effer, Professor Emeritus
Earl Raye Winkler, Professor

James Lindsay Gordon, BA'73, MBA'76, LLD'23
UBC Chancellor Emeritus Lindsay Gordon passed away on August 26, 2024. He was a loving family man, an experienced business and community leader, and a tireless champion of UBC.

Lindsay was chancellor from 2014 to 2020 and an active participant of the UBC Board of Governors, UBC Senates, and the *alumni UBC* Board of Directors. As co-chair of UBC's *start an evolution* campaign, and most recently as a member of the volunteer leadership circle of FORWARD, the campaign for UBC, Lindsay advocated for those who have experienced barriers to education and healthcare. With his wife Liz, whom he met at UBC, he provided foundational gifts for the Centre for Excellence in Indigenous Health and established Centennial Indigenous Scholars' Awards. He was also a strong advocate for UBC's Indigenous Strategic plan and its commitment to the UN's Declaration on the Rights of Indigenous Peoples. Last year, he was awarded an honorary degree and an *alumni UBC* Volunteer Leadership Award.

It was partly UBC that drew Lindsey to Canada as a young man. Born in the Shetland Islands, and growing up in Devon and Berkshire, he immigrated to Canada in 1970 to start his degree in economics. After graduating, he later returned to earn a Master of Business Administration to further his burgeoning career in finance.

Lindsay enjoyed an accomplished career at Export Development Canada and then HSBC Bank Canada, where he served as CEO for a decade until his retirement in 2013. During his tenure at HSBC, the bank became a philanthropic leader by increasing access to education through scholarships and supporting the environment and community causes.

Lindsay's vast contributions extended into the broader community as a dedicated volunteer with the United Way and numerous professional and civic boards. He co-founded CH.I.L.D. (Children with Intestinal and Liver Disorders Foundation) in 1995 for the purpose of raising research funds to find cures for pediatric Crohn's Disease, Ulcerative Colitis, and liver disorders. He received the B'nai Brith Award of Merit for Outstanding Canadians and a Queen Elizabeth II Diamond Jubilee Medal.

He was a remarkable person who will be sadly missed by the UBC community and beyond.

Gurdev Singh Gill, MD'57, DSc'96
Dr. Gurdev Singh Gill was the first Indo-Canadian to earn a medical degree from UBC and to practice medicine in Canada, which he continued to do for 40 years in New Westminster, BC.

When Dr. Gill arrived in Canada, South Asians were not treated as equal members of society. He continued to experience this treatment after becoming a citizen in 1954, and witnessed human rights issues faced by other immigrants and new Canadians of colour. In response, he co-founded the East Indian Welfare Society and lobbied the Canadian government to improve conditions for his community.

He was instrumental in family reunification, enabling women in India to come to Canada and join their families. Immigration increased, and he helped newcomers integrate. He also lobbied to ensure people with education and skills from foreign jurisdictions were recognized and could get a job in their chosen profession in Canada. He was very active within the Sikh community, serving as president of the Khalsa Diwan Society in Vancouver and raising funds for the building of Ross Street Gurdwara in 1970.

Remarkably, all this was done on top of his day job as a physician – one whose office was more like a community hall than a traditional doctor's office; Indo-Canadians all across Metro Vancouver came not only for treatment, but also for guidance and help.

Dr. Gill retired in 1995, but his work was only beginning. Through the Indo-Canadian Friendship Society, which he founded, he improved the lives of millions through village projects in Punjab that provided greater access to drinking water; computers and technology for local schools; and assistance in the construction of waste-water treatment plants, sewage disposal systems, paved concrete roads, and solar street lighting.

Dr. Gill has received significant recognition throughout the years, including the Order of BC, a Global Citizenship Award from *alumni UBC*, and the Wallace Wilson Leadership Award from the UBC Medical Alumni Association. It's often said that a rising tide lifts all boats. For so many people in both Canada and India, Dr. Gill was that rising tide.


Photo: Grant Harder

Meeru Dhalwala
LLD'16

Senses alive, kitchen thrives

WHO WAS YOUR CHILDHOOD HERO?
Jeannie from *I Dream of Jeannie*.

DESCRIBE THE PLACE YOU MOST LIKE TO SPEND TIME.
My dining table.

WHAT WAS THE LAST THING YOU READ?
The Heart Is a Lonely Hunter by Carson McCullers. Extraordinary.

WHAT OR WHO MAKES YOU LAUGH OUT LOUD?
My husband, Steven Taylor. The beauty of a relationship is you can be privately obnoxious.

IF YOU COULD INVENT SOMETHING, WHAT WOULD IT BE?
A universal sound of beauty, and the clever means to play this sound throughout the world as a shared experience.

CLAIM TO FAME
Award-winning chef, entrepreneur, and cookbook author. Co-founded Vancouver restaurant Vij's, running the kitchen for 30 years. Co-founder (this year) of Lila, a modern Indian pescatarian restaurant.

UBC CONNECTION
Serves on the UBC Faculty Advisory Board for Land and Food Systems. Created Joy of Feeding, an international food festival and fund-raiser for UBC Farm. Recipient of a UBC honorary degree.

PASSION PROJECT
An advocate for women in business, food sustainability, and human rights, her pandemic project was piloting My Bambiri Foods, an organic baby food company. She sold products via a three-tiered honour system, where parents choose their price according to their income.

More Q&As with Meeru Dhalwala at ***magazine.alumni.ubc.ca/meeru-dhalwala***

WHAT IS THE MOST IMPORTANT LESSON YOU EVER LEARNED?
I don't compete with others and focus that energy on myself.

WHAT WAS YOUR NICKNAME AT SCHOOL?
I was teased for being Indian and my clothes smelling like cumin: "Meeru-Pe-ew"

WHAT IS YOUR MOST PRIZED POSSESSION?
A half-bottle of my (deceased) mom's Creed perfume. I don't wear perfume, but when I am stressed or sad, I take a whiff of this.

WHAT WOULD BE THE TITLE OF YOUR BIOGRAPHY?
The World in Her Bowl.

WHAT ITEM HAVE YOU OWNED FOR THE LONGEST TIME?
My grade one school photo. My hair looks good.

WHOM DO YOU MOST ADMIRE (LIVING OR DEAD) AND WHY?
George Eliot. She wrote *Middlemarch* and was socially brave.

IN WHICH ERA WOULD YOU MOST LIKE TO HAVE LIVED, AND WHY?
To be in my 20s during the 1970s New York music scene.

WHAT ARE YOU AFRAID OF?
Us vs Them / Me vs You type of intransigence.

WHAT IS YOUR LATEST PURCHASE?
A pair of beautiful (and durable) Sister x Soeur boots to wear in my Lila kitchen.

NAME THE SKILL OR TALENT YOU WOULD MOST LIKE TO HAVE.
To be a master chef of traditional and modern Korean cuisine.

IF YOU COULD ONLY EVER LISTEN TO THREE PIECES OF MUSIC, WHAT WOULD THEY BE?
"Svefn-G-Englar" by Sigur Ros, "Nature Boy" by Nick Cave, "The Emperor's New Clothes" by Sinead O'Connor.

WHAT IS YOUR PET PEEVE?
When citizens don't vote.

WHAT ARE YOUR UBC HIGHLIGHTS?
The Joy of Feeding at UBC Farm, receiving my honorary degree, and organizing many cool events with former LFS Dean Rickey Yada – including our Physics in a Yurt dinner, where guests ate samosas, drank wine, and learned about nuclear fusion as a potential solution to the world's energy problems.

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