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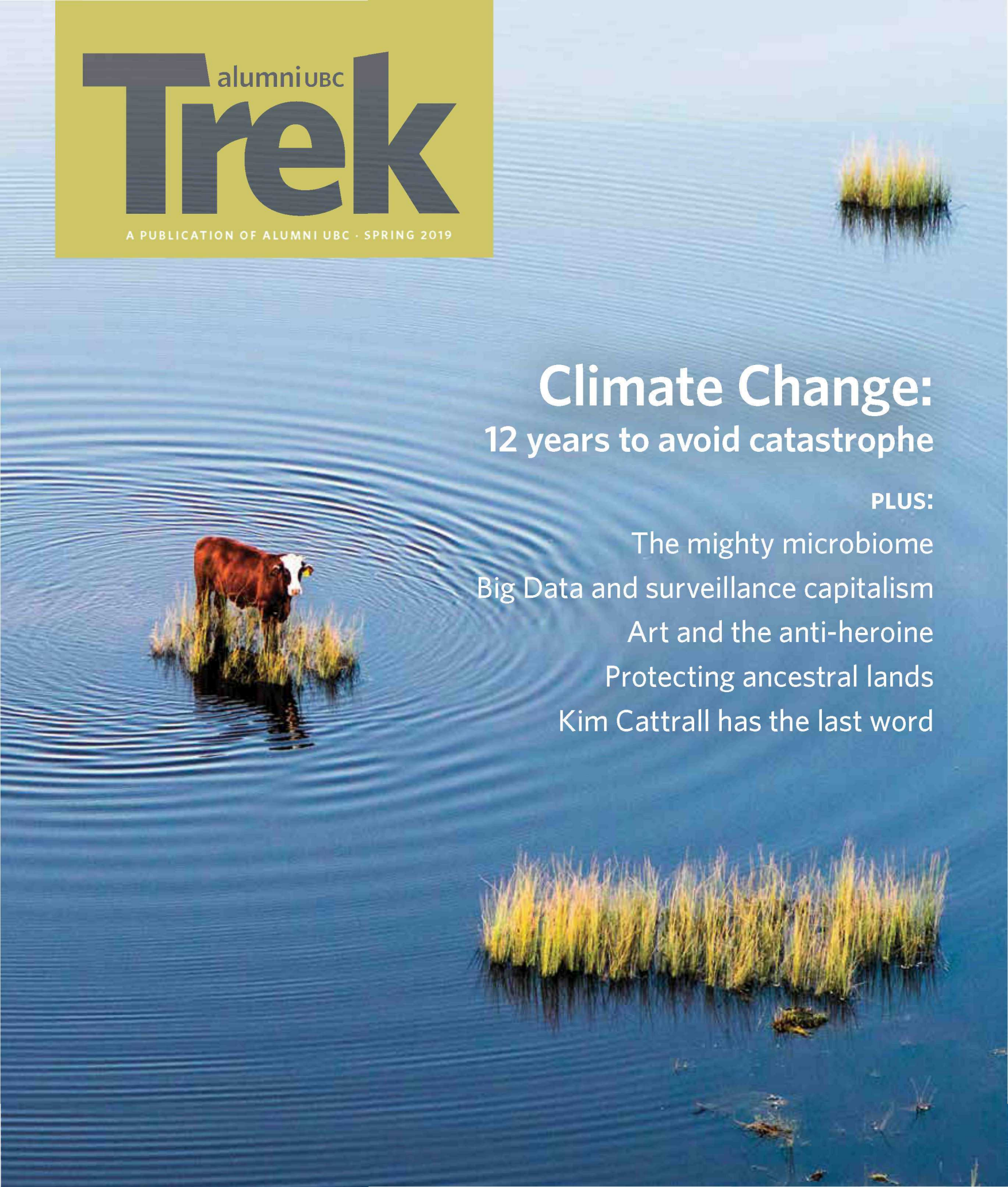
A PUBLICATION OF ALUMNI UBC · SPRING 2019



Climate Change:
12 years to avoid catastrophe

PLUS:

The mighty microbiome

Big Data and surveillance capitalism

Art and the anti-heroine

Protecting ancestral lands

Kim Cattrall has the last word

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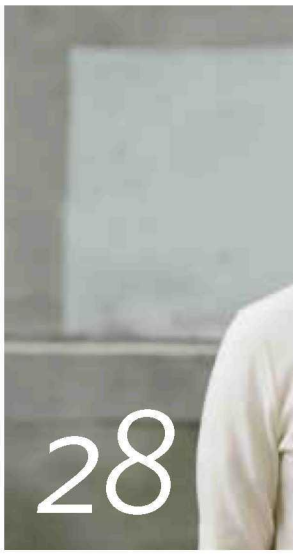
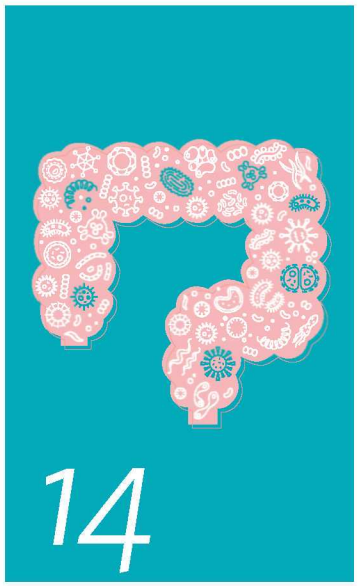
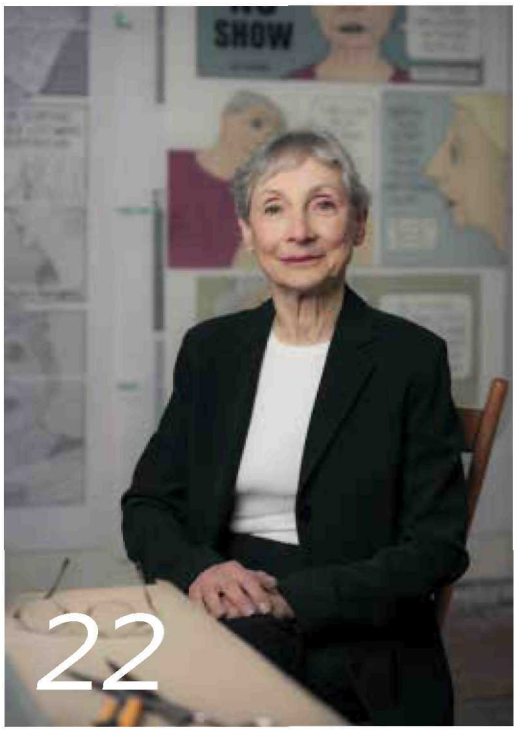




Cover Image

A lone cow stands in the middle of a flooded field in New South Wales, Australia.

Credit: Brooke Whatnall



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A Climate Of Change

From flat-Earthers to anti-vaxxers, there is no shortage of people who question the validity of scientific evidence – and the issue of climate change has certainly attracted its fair share of doubters. While there is broad consensus within the scientific community that human activity is contributing directly to catastrophic shifts in weather patterns, there are plenty of people – the president of the United States included – who confidently treat that science-based conclusion as merely an opinion, and not one to be believed.

For those who have faith in science, this reaction is the equivalent of nonchalantly lying down on a railway track. What is behind it? More importantly, what can be done to persuade enough people that, with a concerted and cooperative effort, global warming is something we could contain and even reverse? And it's not only climate-change skeptics who react in ways that seem oddly counterintuitive. Even among those who do not contest the science there is an inexplicable sense of business as usual, with attention on other priorities. Too many of us, if not actual deniers, are still – effectively – in denial.

Last fall's watershed UN report warns us we have a short window to avert irreversible climate change. We have reached an environmental tipping point that requires a counteractive social tipping point. Although recycling is becoming the norm, and plastic bags and disposable coffee cups are the focus of mounting social disapproval, such changes are just the tip of a melting iceberg in terms of what is required on a larger and more radical scale.

The physical sciences have identified an existential threat and provided us with a roadmap for avoiding it. Overcoming the challenges involved in implementing solutions, however, is the territory of social scientists. It is our psychologists, economists and political scientists who are best placed to understand human motivation and incentivize society to adopt essential new policies and behaviours. To read about what is happening on this front at UBC, see page 10. The four social scientists highlighted are part of a comprehensive interdisciplinary approach to climate change that recently earned UBC the ranking of #1 university in the world for taking action to combat it (*Times Higher Education* University Impact Rankings).

As climate warnings mount and more people are directly affected by extreme weather events, there has been a perceptible shift in opinion and a surge of activism that is driving home to mainstream politicians the fact that the green agenda is no longer the vote-risky terrain of fringe players. It's beyond rational doubt that the human species cannot afford to keep on doing what it's doing. Charles Darwin, himself a much refuted scientist in his day, developed a theory that suggested the key to species survival is the ability to adapt to a changing environment. Today, it would seem that the key to survival is to stop causing the change.

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Trek magazine is published two times a year in print by the UBC Alumni Association and distributed free of charge to UBC alumni and friends. Opinions expressed in the magazine do not necessarily reflect the views of the Alumni Association or the university. Address correspondence to:

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Volume 75, Number 1 | Printed in Canada
by Mitchell Press
Canadian Publications
Mail Agreement #40063528
Return undeliverable Canadian addresses to:

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UBC Development Office
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take NOTE

BEES HELP MONITOR POLLUTION

Honey from urban bees can tell us how clean a city is and help pinpoint the sources of environmental pollutants such as lead, UBC research has found. Scientists from UBC's Pacific Centre for Isotopic and Geochemical Research (PCIGR) analyzed honey from urban beehives in six Metro Vancouver neighbourhoods. They tested for minuscule levels of lead, zinc, copper and other elements and carried out lead isotope analyses – akin to fingerprinting – to identify where the lead came from.

"The good news is that the chemical composition of honey in Vancouver reflects its environment and is extremely clean," says Kate E. Smith, lead author of the study and PhD candidate at PCIGR. "We also found that the concentration of elements increased the closer you got to downtown Vancouver, and by fingerprinting the lead we can tell it largely comes from manmade sources."

Metro Vancouver honey is well below the worldwide average for heavy metals like lead, and an adult would have to consume more than 600 grams, or two cups, of honey every day to exceed tolerable levels.

The researchers found the concentration of elements increased closer to areas with heavy traffic, higher urban density and industrial activity such as shipping ports. Places like the city of Delta showed elevated levels of manganese, which could be a result of agricultural activity and pesticide use in the area.

In the first study of its kind in North America, the researchers also compared the lead fingerprints of the honey to those from other local environmental samples, such as lichen from around British Columbia, rock from the Garibaldi volcanic belt, sediment from the Fraser River and trees in Stanley Park.

They discovered that the lead fingerprints of the honey did not match any local, naturally-occurring lead. However, the trees in Stanley Park and the honeys from downtown displayed some striking similarities that pointed to potential manmade sources of lead.

"We found they both had fingerprints similar to aerosols, ores and coals from large Asian cities," says Dominique Weis, senior author and director of the institute. "Given that more than 70 per cent of cargo ships entering the Port of Vancouver originate from Asian ports, it's possible they are one source contributing to elevated lead levels in downtown Vancouver."

Honey is able to provide such localized "snapshots" of the environment because honey bees typically forage for pollen and nectar within a two- to three-kilometre radius of their hives.

"We now have four years of consistent data from Metro Vancouver, which provides a present-day baseline that will allow us to monitor even tiny changes in our environment very efficiently," says Weis.

The research was carried out in partnership with Hives for Humanity, a local non-profit that creates opportunities for people in Vancouver's Downtown Eastside to engage in urban beekeeping.

"One of the exciting parts of this study is that it bridges science with community interests," says Smith. "Honey sampling can easily be performed by citizen scientists in other urban centres, even if they lack other environmental monitoring capabilities."

The team will continue to study how honey analysis might complement traditional air and soil monitoring techniques and test the efficiency of honey as an environmental monitor in other cities.

LASER PROBE FOR MELANOMA

Melanoma, the deadliest form of skin cancer, is diagnosed in more than 130,000 people globally every year. Now, work is being done on a tool to help in its early detection: a simple, compact laser probe that can distinguish between harmless moles and cancerous ones in a matter of seconds.

"With skin cancer, there's a saying that if you can spot it, you can stop it – and that's exactly what this probe is designed to do," says researcher Daniel Louie, a PhD student who constructed the device as part of his studies in biomedical engineering. "We set out to develop this technology using inexpensive materials, so the final device would be easy to manufacture and widely used as a preliminary screening tool for skin cancer."

The probe works on the principle that light waves change as they pass through objects. The researchers aimed a laser into skin tissue from volunteer patients and studied the changes that occurred to this light beam.

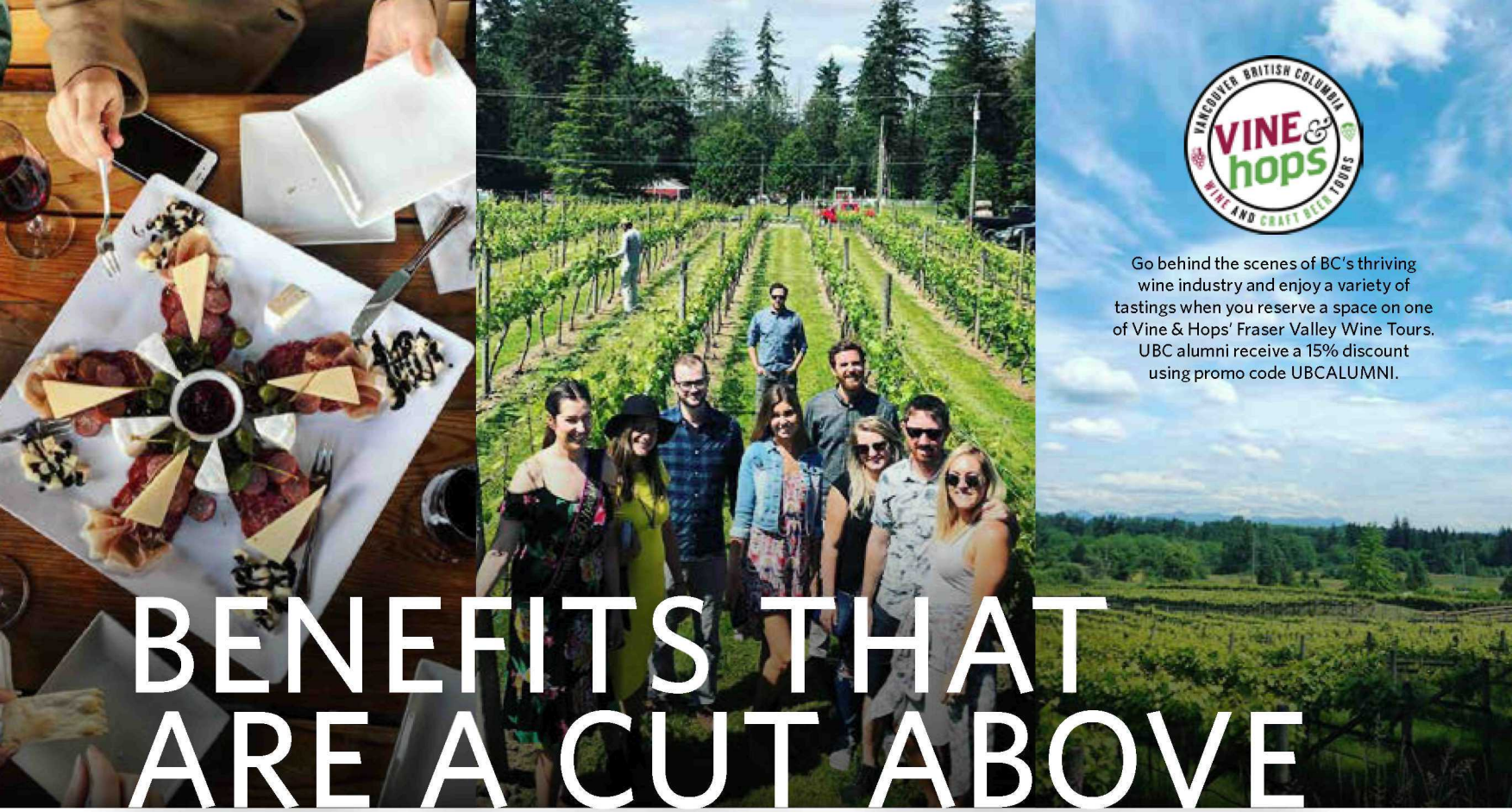
"Because cancer cells are denser, larger and more irregularly shaped than normal cells, they cause distinctive scattering in the light waves as they pass through," says Louie. "We were able to invent a novel way to interpret these patterns instantaneously."

Imaging devices to assist cancer detection are not new, but this optical probe can extract measurements without needing expensive lenses or cameras, and it can provide a more easily interpreted numerical result, like those of a thermometer. Although the probe's components cost only a few hundred dollars, it is not envisioned to be a consumer product.

"A cancer screening tool should be administered by a trained health care professional who would know where the patient needs to go afterwards," says Tim Lee, an associate professor of skin science and dermatology at UBC and a senior scientist with project partners BC Cancer and the Vancouver Coastal Health Research Institute, who supervised the work. He thinks the device would be a good future addition to standard cancer screening methods, but not a replacement.

Noting that about 7,200 new cases of melanoma are reported every year in Canada, Lee believes the probe can promote early detection.

"We have so few dermatologists relative to the growing number of skin cancers that are occurring," says Lee. "If we can develop a device that can be integrated easily into other parts of the health care system, we can simplify the screening process and potentially save hundreds if not thousands of lives."



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NO CHEATING

The often embraced "cheat day" is a common theme in many diets, and the popular ketogenic diet is no exception. But new research from UBC's Okanagan campus says that just one 75-gram dose of glucose – the equivalent of a large bottle of soda or a plate of fries – while on a high fat, low carbohydrate diet can lead to damaged blood vessels.

"The ketogenic – or keto – diet has become very common for weight loss or to manage diseases like Type 2 diabetes," says Jonathan Little, associate professor in the School of Health and Exercise Sciences at UBCO and the study's senior author. "It consists of eating foods rich in fats, moderate in protein, but very low in carbohydrates, and it causes the body to go into a state called ketosis."

Little says the diet can be very effective, because once the body is in ketosis and starved for its preferred fuel, glucose, the body's chemistry changes and it begins to aggressively burn its fat stores. This leads to weight loss and can reverse the symptoms of diseases like Type 2 diabetes.

"We were interested in finding out what happens to the body's physiology once a dose of glucose is reintroduced," says Cody Durrer, doctoral student and the study's first author. "Since impaired glucose tolerance and spikes in blood sugar levels are known to be associated with an increased risk in cardiovascular disease, it made sense to look at what was happening in the blood vessels after a sugar hit."

For their test, the researchers recruited nine healthy young males and had them consume a 75-gram glucose drink before and after a seven-day high fat, low carbohydrate diet. The diet consisted of 70 per cent fat, 10 per cent carbohydrates and 20 per cent protein, similar to that of a modern ketogenic diet.

"We were originally looking for things like an inflammatory response or reduced tolerance to blood glucose," says Durrer. "What we found instead were biomarkers in the blood suggesting that vessel walls were being damaged by the sudden spike in glucose."

Little says the most likely culprit for the damage is the body's own metabolic response to excess blood sugar, which causes blood vessel cells to shed and possibly die.

"Even though these were otherwise healthy young males, when we looked at their blood vessel health after consuming the glucose drink, the results looked like they might have come from someone with poor cardiovascular health," adds Little. "It was somewhat alarming."

The researchers point out that with only nine individuals included in the study, more work is needed to verify their findings, but that the results should give those on a keto diet pause when considering a cheat day.

"My concern is that many of the people going on a keto diet – whether it's to lose weight, to treat Type 2 diabetes, or some other health reason – may be undoing some of the positive impacts on their blood vessels if they suddenly blast them with glucose," he says, "especially if these people are at a higher risk for cardiovascular disease in the first place."

"Our data suggests a ketogenic diet is not something you do for six days a week and take Saturday off."

THE ROBOT TOUCH

Researchers at UBC, BC Children's Hospital, BCIT, and BC Women's Hospital & Health Centre have designed a therapeutic robot that simulates human skin-to-skin contact, helping reduce pain for babies in the neonatal intensive care unit at BC Women's.

Premature babies admitted to the neonatal intensive care unit (NICU) often undergo medically necessary procedures, some of which can be uncomfortable. To help babies cope, health care providers recommend techniques like skin-to-skin holding or hand hugging.

Calmer, the therapeutic robot, was created with this in mind, helping mimic the parent's heartbeat sounds, breathing motion and the feel of human skin.

The researchers found that Calmer worked no differently for reducing pain-related indicators during blood collection in premature infants than hand hugging – a technique where a caregiver gently places their hands to contain the infant's head, arms and legs in a curled position.

"While there is no replacement for a parent holding their infant, our findings are exciting in that they open up the possibility of an additional tool for managing pain in preterm infants," says the study's lead author Liisa Holsti, the Canada Research Chair in Neonatal Health and Development, an associate professor in the Department of Occupational Science and Occupational Therapy at UBC, and an investigator at BC Children's Hospital and Women's Health Research Institute (WHRI).

The researchers collaborated with MAKE+ engineers at BCIT's Centre for Applied Research and Innovation to design and build Calmer, which is designed as a platform that fits inside a NICU incubator, replacing the standard mattress. Calmer's "heart" and "breathing" rate can be adjusted to mimic a parent's heart rate. The robot is also covered with a skin-like surface that moves up and down to simulate breathing.

The researchers conducted a randomized clinical trial with 49 premature infants admitted to the NICU at BC Women's. After obtaining informed consent from parents, the researchers randomly allocated infants to either the Calmer or human touch group while they had their blood drawn. Infants in both groups also received a soother.

A variety of measures were used to assess pain, such as the babies' heart rates, and their facial and hand movements. Both groups of infants experienced a reduction of two points on the pain scale, which is considered "clinically significant," says Holsti.

The findings are especially important, because previous research has found that early exposure to pain has a negative effect on premature babies' brain development. The researchers are now looking at the effects of Calmer for stress reduction in the NICU over longer periods.

Holsti says she hopes all incubators will be designed with this technology embedded in them in the future.

The study was co-authored by Karon MacLean at UBC's Department of Computer Science; Dr. Tim Oberlander and Dr. Anne Synnes, both at BC Children's, WHRI and UBC's Department of pediatrics; and Rollin Brant at BC Children's and UBC's Department of Statistics.

n=

UBC is ranked the number one university in the world for taking urgent action to combat climate change and its impacts, and number one in Canada for making cities inclusive, safe, resilient and sustainable, according to Times Higher Education (THE) University Impact Rankings. The THE University Impact Rankings, in which UBC ranks top three overall amongst 500 participating institutions across 75 countries and six continents, aims to measure universities' social and economic contributions through their success in delivering on the United Nations' Sustainable Development Goals (SDGs).

TOP 50
in 41 of 48

One of the world's most popular sources of comparative data about university performance, QS World University Rankings, has rated UBC in the top 50 for 41 of 48 subjects tracked, including best in the world for library and information management, fifth in the world for geography, ninth for mineral and mining engineering, 12th for earth and marine sciences, 15th for agriculture and forestry, and 16th for psychology.

A poll commissioned by UBC revealed that a vast majority of Metro Vancouver residents support extending the Millennium Line SkyTrain to UBC beyond Arbutus Street. Sixty per cent said it should be considered a regional priority. An extension would connect UBC, with no transfers, to Burnaby and Coquitlam, and to Surrey, New Westminster and Richmond with just one transfer, drastically reducing the travel time between these cities and the university campus.

In a recent UBC study involving a representative sample of about 2,000 Canadians aged 18-94, more than one in ten (12 per cent) reported that open relationships were their "ideal relationship type." The study's lead author was psychology prof Nichole Fairbrother.

Two surveys taken 11 years apart (2004 and 2015) show a 13 per cent decrease in the amount of fruit and veg being consumed by Canadians. These were the findings of research led by Claire Tugault-Lafleur, a postdoctoral fellow in UBC's Food, Nutrition and Health program.

q&a

By Erik Rolfsen

HIGH SOCIETY WANTS ITS FINE FOODS TO ALSO BE ETHICAL

Truffles and caviar have traditionally been delicacies of the upper class, but a study by UBC sociology professor Emily Huddart Kennedy and colleagues from the University of Toronto finds that free-range and fair-trade foods are becoming increasingly important among the elite. We asked Kennedy about the changing ways in which people signal status through food.

What was the aim of your study?

The sociology of taste looks at how people generate taste for consumer goods. There's been a general understanding for over 40 years that high-status people enjoy sophisticated things, like opera or French cuisine. Researchers have described that as aesthetic taste. I'm an environmental sociologist, and looking at the world around me – particularly in Vancouver but also in other places – I've seen a new sort of "green" cachet. We have a whole bunch of products where people will pay quite a bit more for the environmental benefits. So basically we were trying to find out whether the elite among us are interested in ethical foods.

How did you conduct the study?

My colleague Josée Johnston from the University of Toronto and her grad students stood outside grocery stores in Toronto – different types of grocery stores, at different times of day, on different days of the week – and asked more than 800 food consumers to fill out a survey.

How did you group those shoppers based on their answers?

The foodies are the people who love cooking, who know about the hottest new restaurants, who like exotic foods. The ethical eaters are trying to buy local, trying to buy organic, and they really feel like they can make an impact on the environment through their food choices. Then you have a group that considers themselves both foodies and ethical eaters, and a group who consider themselves neither. Ethical foodie and ethical were the most dominant groups, followed by "neither." It was a bit more rare to be a pure foodie.

How was people's socioeconomic status reflected in those four groups?

Status is complicated to measure. We used a fairly traditional method of combining income, education and occupation. We expected to see foodies come out as a really high-status category, just because that's what research has shown so far, but we were surprised that the highest status consumers, overwhelmingly, aren't just foodies but people who are being foodies in an ethical way. Roughly a quarter of the foodies earn over $100,000, but over 40 per cent of the "ethical foodies" do. And the same sort of patterns apply for occupation and education.

What does that tell you?

Our culture's understanding of what counts as elite taste has really overlooked this ethical element. And it's not just in food. Look at architecture. Increasingly, we want architecture to be using sustainable resources that are good for the environment. With clothing, there are more and more options where really expensive brands are reusing material or sourcing it from ethical manufacturers. So if you're saying, "Oh, I should go to this new hipster food truck or this new restaurant that opened up," that's not even enough anymore to signal that you're high-status. Now, it also has to have this additional layer of being good for people and good for the planet. Foie gras might be great, but if it's local, heritage-breed, pasture-raised foie gras from happy, free-range geese, then that's what high-status looks like now.

THE HORMONES THAT MAKE US CHOOSE LOVE OVER SEX

Looking for love and looking for sex are two different things, even at the level of human evolutionary biology. Alec Beall, a postdoctoral researcher in UBC's Department of Psychology, has studied the conflict between them. Now he is taking a closer look at the hormones involved.

Your research focuses on something people have called "the love hormone." What is that?

Oxytocin is a hormone involved in social bonding, and in parent-infant bonding. Basically, when you look into the eyes of a child or a cute, vulnerable puppy, past research has shown that you release oxytocin naturally. If testosterone is the sex drive hormone, then oxytocin would be more of the nurturant hormone. My previous behavioural work suggests sex drive and nurturance are opposing motivations, so oxytocin and testosterone may regulate opposing motivations and behaviours.

Why have humans evolved to have separate hormones for sex and love?

You need to acquire a mate in order to successfully reproduce. But in order to successfully reproduce your genetic material, your child has to grow to reproductive age. Within evolutionary biology, the mating/parenting trade-off suggests that because we have limited bioenergetic resources, we cannot devote them to both parenting existing offspring, as well as producing a bunch of additional offspring. Our bodies make an unconscious decision: we either invest in mating, or we invest in parenting.

What has your past research revealed about this trade-off?

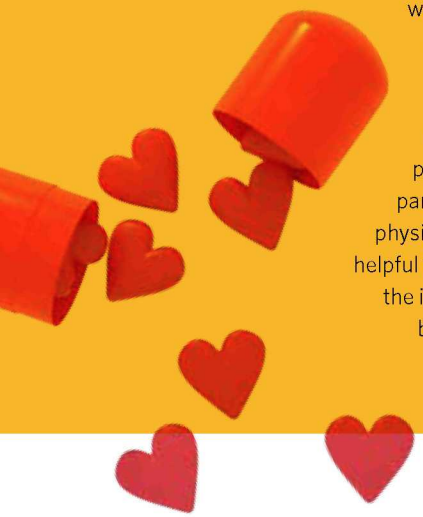
My dissertation research looked at priming people to feel tenderness, and seeing how it affected their short-term mating drive. I showed UBC undergraduates pictures of puppies and kittens, and had them think about what it would be like to take care of them. Then they took a survey that assessed their desire to sleep around. What I found was that when people were in this parental caring mindset, they were less likely to report a desire to sleep around. When we primed them with pictures and erotic scenarios to make them think about a short-term mating encounter, they reported lower tenderness responses to pictures of infants. All these motivations are driven by complex underlying physiological components, which is what drove me to the oxytocin study.

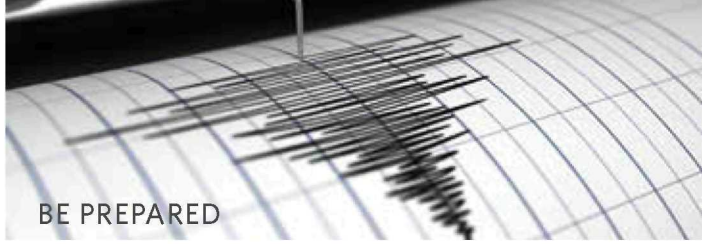
How are you conducting this study?

We're bringing 25 men and 25 women into the lab at two separate times. They'll receive a dose of intranasal oxytocin or a placebo, but they won't know which. What we're expecting is that people under oxytocin will exhibit a weakened desire to sleep around because the oxytocin temporarily boosts their desire to parent and nurture. We hope to capture this change in motivation using several methods. First, we'll use eye-tracking to note whether a participant's gaze is drawn more to attractive short-term sexual opportunities or to human infants, and to the bodies of attractive swimsuit models or to their faces. Next, we are using questionnaires to assess whether participants report a reduced attraction to short-term mating prospects. Finally, we are using saliva tests to determine how much testosterone participants produce in reaction to erotic stimuli. We're expecting that oxytocin will increase parenting motivation, and we're using a number of psychological, behavioural, and physiological measures to see what happens with the short-term mating drive.

What are the benefits of understanding all this better?

I don't want to extrapolate too far, but good parenting practices tend to follow from attentive, tender, and caring parents. If there's any way we can understand the underlying physiology behind what makes a good parent, it can only be helpful for at-risk children. It's possible that by understanding the interaction between these competing drives, we might be able to actually figure out ways to increase the parenting motivation.





BE PREPARED

A team of UBC staff, leading earthquake faculty experts, and engineering consultants has produced a study examining how to protect lives, research programs, infrastructure and assets on the university's Vancouver campus in the event of a catastrophic earthquake.

"We've actually been looking at seismic risk since the early 1990s and have already done a lot of work on our buildings and infrastructure through seismic upgrades in partnership with the province," says Jennifer Sanguinetti, mechanical engineer and managing director of infrastructure development at UBC. "Since 2016, we have approached our planning efforts through a 'resilience lens' – which means asking not only how we can withstand a disaster while reducing harm to people, but also how we can prevent unacceptable losses to property or interruptions to the university's core academic mission," she says. "It goes beyond getting people out alive. You have to develop an approach to seismic risk reduction, using leading international practices in planning and design, so people have something to go back to when the shaking stops."

The 20-year plan is conceptual at this stage, subject to the financial and logistical constraints of the university, and will need to be implemented within UBC's existing capital planning process. There's a lot more work to be done before a final cost or definitive timeline can be determined, Sanguinetti noted, but the detailed analysis in the report provides unique insights into possible structural impacts that allows UBC to consider "surgical interventions" before full building replacements.

Working with Carlos Ventura, professor in the Department of Civil Engineering and director of the Earthquake Engineering Research Facility, the team created three-dimensional structural models and assessed the material properties of 18 buildings classified as high-risk on the Vancouver campus.

The consultant team then tested those models under 11 ground-motion scenarios, reflecting a one-in-975-year seismic event, varying the epicenter distance from the campus and the type of earthquake possible at each of those locations (a large subduction earthquake off the coast of Vancouver Island, for example, the so called "Big One").

"That allowed us to look at how the ground would actually move in those scenarios and what would happen, what the impact would be, on those 18 buildings," said Ventura. "We are talking about reducing risk. This is a professional way to not only understand risk, but look at how to manage it."

Research of this kind is both "an art and a science," he says.

"You have a higher risk of being in a fatal car accident on your way to campus than being injured in an earthquake. You know the risk of driving, you accept the risk and you take precautions. The same is true for earthquakes," he said. "I'm really glad that UBC is taking the lead. We don't want any surprises."

UBC researchers have built a more durable valve that enables the heart to adapt faster and more seamlessly after a transplant.

FIRST NANOCOMPOSITE HEART VALVE

Researchers at UBC have created the first-ever nanocomposite biomaterial heart valve developed to reduce or eliminate complications related to heart transplants. By using a newly developed technique, they were able to build a more durable valve that enables the heart to adapt faster and more seamlessly.

Assistant Professor Hadi Mohammadi runs the Heart Valve Performance Laboratory (HVPL) through UBC Okanagan's School of Engineering. Lead author on the study, he says the newly developed valve is an example of a transcatheter heart valve, a promising new branch of cardiology. These valves are unique because they can be inserted into a patient through small incisions rather than opening a patient's chest – a procedure that is generally safer and much less invasive.

"Existing transcatheter heart valves are made of animal tissues, most often the pericardium membrane from a cow's heart, and have had only moderate success to date," explains Mohammadi. "The problem is that they face significant implantation risks and can lead to coronary obstruction and acute kidney injury."

The new valve solves that problem by using naturally derived nanocomposites – a material assembled with a variety of very small components – including gels, vinyl and cellulose. The combination of their new material with the non-invasive nature of transcatheter heart valves makes this new design very promising for use with high-risk patients, according to Mohammadi.

"Not only is the material important but the design and construction of our valve means that it lowers stress on the valve by as much as 40 per cent compared to valves currently available," says Dylan Goode, a graduate researcher at the HVPL. "It is uniquely manufactured in one continuous form, so it gains strength and flexibility to withstand the circulatory complications that can arise following transplantation."

Working with researchers from Kelowna General Hospital and Western University, the valve will now undergo rigorous testing to perfect its material composition and design. The testing will include human heart simulators and large animal in-vivo studies. If successful, the valve will then proceed to clinical patient testing.

"This has the potential to become the new standard in heart valve replacement and to provide a safer, longer-term solution for many patients."

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quote UNQUOTE

"For centuries in the West, powerful medico-moral discourses have defined 'queerness' as a sickness, a sin, and a crime. As a result, LGBTQ2S peoples have lived with secrecy, silence, shame, misrepresentation, and fear for far too long. Therefore, stories told by and for LGBTQ2S folks about past lives, loves, achievements, struggles, and triumphs symbolize oxygen, or necessary fuel, for people long denied access to full, substantive inclusion and citizenship."

*Professor **Becki Ross** of UBC's Department of Sociology and Social Justice Institute, commenting on an online archive offering an expansive look at LGBTQ history, now accessible to UBC Library users* (UBC Library News, *Sept. 17, 2018).*

"Regardless of what wine was in the glass, if somebody identified with the label they thought the wine tasted better. People want to be able to relate to the labels so that it can represent who they are and the image they want to convey."

*Research by UBC masters student **Darcen Esau** has revealed that people enjoy wine more if the label matches their personal identity* (CBC News, *March 17).*

"We spotted four polar bears but luckily there were no close encounters."

***Philippe Belley**, a recent PhD graduate who went to Baffin Island to study how rare gems are formed* (UBC News, *April 4).*

"We need to uncouple the package deal that links home cooking and family dinners with being a good mother. If you're feeling overwhelmed, put a frozen pizza in the oven or, if you have the resources, go out for a meal. While food is important for health, it isn't the only thing that matters. Stress also plays a role. So keep food in perspective and realize that it's not the only thing that matters for your family's well-being."

*Home cooking from scratch is healthiest for our families, we're told, but that's not always easy. UBC sociologist **Sinikka Elliott's** new book,* Pressure Cooker: Why Home Cooking Won't Solve Our Problems and What We Can Do About It, *tells the stories of nine women who know how complicated it is to feed a family in 2019* (UBC News, *March 11).*

"People will eventually start buying more fuel-efficient vehicles as a result of high fuel taxes – whether it's a carbon tax or any other fuel tax."

*Professor **Werner Antweiler** commenting on record gas prices in BC, thought to be due in part to the recent increase in carbon tax* (CBC News, *April 12).*

"[The US has] become one of the most unequal societies in the world in terms of access to health, education, even disposable incomes, a situation where people are less trusting of people than they were in the past."

*Professor emeritus of economics **John Helliwell**, co-editor of the 2019 UN Happiness Report* (Yahoo New Zealand, *March 30).*

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TWELVE YEARS TO AVOID CATASTR

How do we incentivize people to adopt the policies and behaviours urgently required to tackle climate change?

BY **MADELEINE DE TRENQUALYE,** *BA'07*

Patrick Baylis, *Economist*

How will the economy and society adapt to a warmer, more variable world? What can governments do to put a price on the true cost of pollution and assign a value to natural resources like forests and biodiversity? These are questions driving Patrick Baylis' work. An environmental economist at the Vancouver School of Economics, Baylis has dedicated his career to uncovering the economic costs of climate change.

And to better understand the impact that climate change is having on society, Baylis has worked on a series of studies harnessing massive amounts of demographic and social media data. Together, these studies paint a fascinating and troubling picture of how humankind is responding to global warming.

The Human Cost of Climate Change

In a 2018 study, Baylis and his colleagues analyzed the link between extreme weather and human well-being through the lens of 3.5 billion Facebook and Twitter posts shared between 2009 and 2016. Using sentiment analysis tools, they counted the number of positive and negative words contained in each post, then compared this to meteorological data from each location. They found that negative sentiment increased significantly during extreme weather (weather that was too hot, cold, wet, or humid).

It was the biggest ever study quantifying the link between bad weather and emotional state, and it prompted another question: Will people simply get used to more challenging weather patterns and adjust their happiness?

To understand this, Baylis and colleagues followed up with a 2019 study that analyzed more than 2 billion geolocated tweets between 2014 and 2016. This time, they wanted to know if people would continue to notice extreme weather after repeated exposure, as well as if it continued to impact their moods.

They found that the likelihood of remarking on extreme weather declined rapidly if people had already experienced similar temperatures in recent years, even if that weather was extreme in the context of a larger time frame (they compared it to a baseline of the 1981-1990 average temperatures for those areas). Their findings suggest that people had normalized extreme weather in as little as two years.

Significantly, even though people were no longer remarking on the weather after repeated exposure to historically unusual temperatures, they were still expressing negative sentiments. They had stopped talking about the bad weather, but it was still making them unhappy.

This is concerning for two reasons. If people stop registering extreme weather as extreme, they may underestimate the impact of climate change and be less likely to support climate change solutions. (Baylis and his team noted this was a classic case of the boiling frog metaphor.) Secondly, even though people are not necessarily attributing their negative feelings to extreme weather, they're still worse off.

Higher Temperatures Increase Suicide Rates

This decline in well-being was dramatically underscored in a third study co-authored by Baylis that indicated a rise in suicides due to global warming. Using comprehensive data from multiple decades, Baylis and coauthors found that when the average monthly temperature increased by 1 degree Celsius, the suicide rate rose by 0.7 per cent in the US and by 2.1 per cent in Mexico. Those margins are comparable to the estimated increase in suicide rates linked to economic recessions, and to the decrease in rates attributed to suicide prevention programs and gun restriction laws.

Additionally, the effect had not diminished over time, suggesting limited human adaptation to hotter weather. The authors predicted that the rise in suicides would only increase in a rapidly warming world, with as many as 40,000 additional suicides by 2050 in the United States and Mexico. "This is another really tragic cost of climate change," says Baylis.

His current work tries to measure how people are incentivized to make climate-friendly decisions. Specifically, he is looking at how government-funded fire suppression in the US implicitly subsidizes construction in remote, less-dense areas with high fire risk. If people choose to build their homes in areas with a high fire risk, should they pay more to offset the cost of public-funded fire suppression? If there is no additional cost, they are essentially getting an implicit subsidy to live there, Baylis says. He wants to calculate the value of that implicit subsidy. "This is important because climate change is already contributing to increasingly dangerous and costly fire seasons," he says. "A better understanding of how these public expenditures change homeowner incentives will help us better mitigate these impacts."

Why is climate change an area you've devoted your career to?
I think it's because environmental economics gets at two big fascinations of mine: how people make decisions in the face of scarcity (that's the economics part) and how we value our public resources like good air quality, healthy ecosystems, and access to the outdoors (those are the environmental parts).
What's the one thing you'd like people to take away from your work?
One concept that I hope students who take my class walk away with is that pricing externalities [e.g. putting a price on pollution] is complicated and difficult but also incredibly important. We're not precisely certain what the exact social cost of carbon is (and we may never be), but at this point it's very clear that it's substantially greater than zero. As Canadian residents, we are lucky to live in one of the few countries in the world with a price on carbon emissions – as global citizens, we should be interested in the whole world moving in that direction.

Kathryn Harrison, *Political Scientist*

Why does carbon pricing remain politically contentious, despite an abundance of evidence that carbon taxes reduce emissions without negatively impacting the economy?

As the Trudeau government launches its federal carbon tax, political scientist Kathryn Harrison is paying close attention. An expert on environmental policy, Harrison has been studying the politics of carbon taxes for a decade.

"Carbon taxes are particularly intriguing, because there's agreement among policy experts that it's a great approach for addressing climate change, but also lots of evidence that adoption of a carbon tax is politically hazardous," says Harrison. "Carbon taxes are 'good policy' but 'bad politics.' But if that's the case, why does any government ever propose a carbon tax, and how do at least some of those proposals get implemented and survive?"

Harrison is attempting to answer this by analyzing carbon tax debates in four countries: Canada, Australia, France and Ireland. She's found that in each of these countries, political opponents have played on voters' fears and misunderstanding of how carbon taxes work to mobilize opposition, resulting in some ugly political debates. In many instances, that strategy has worked and the people campaigning for robust climate policies have lost elections.

But not always. Harrison has been dissecting the examples in which carbon tax policy has been successful to understand what went well. What conditions or strategies allow pro-environmental policy to prevail? "Sometimes that's been through multi-party collaboration, sometimes by leading with benefits to the economy rather than the environment, and sometimes, to be honest, it's just been luck," she says.

Harrison says it's an exciting topic in Canada right now, given the launch of the federal carbon tax in four provinces. She's noticed opponents using the same arguments and tactics from previous debates in Canada and elsewhere. "Most of what's being said is either selective (for instance, ignoring that tax rebates will leave most families in provinces subject to the federal carbon tax better off), misleading in pretending that we can meet our targets by focusing only on big industrial polluters, or just wrong in stating that carbon taxes don't work."

But Harrison is watching to see if Canada's carbon tax rebates will make a difference, noting that most taxpayers will get more money back than they will pay. "Will voters even notice that they're getting money back, and if they do, does that affect their opinion of the federal carbon tax? I'm also curious whether voters will be influenced by information and evidence as the political debate over the carbon tax unfolds in the months to come. Will they have a reasonably accurate understanding of the costs and benefits they face, or will they just take their signals from the parties they trust?"

To assess this, Harrison and her colleagues are surveying a group of Canadians at several intervals: before the carbon tax takes effect, after the tax is first applied, and after they get rebates through their taxes. "Our goal is to learn whether voters understand and support the carbon tax, and what difference the dividend cheques make."

ROPHE

Canada is warming at twice the global rate, according to a new report issued by federal scientists earlier this year. That finding follows on the heels of a landmark UN report issued last fall, which warned that humanity has just 12 years to avoid the consequences of catastrophic climate change, from wildfires, rising sea levels, and food shortages.

As the impacts of climate change grow more severe, so too does the scale of the challenge ahead. This requires overhauling our economic policies, changing the way we live our lives and design our cities, and making the climate crisis comprehensible to the public. How can research from the social sciences support this?

We look at how four UBC professors are using insights from behavioural psychology, comparative policy, and environmental economics to advance climate change solutions.

Kathryn Harrison

Why is climate change a topic you've devoted your career to?
Climate change is arguably the greatest challenge humankind is currently facing. I feel a sense of obligation to use my good fortune – born into a wealthy country, access to a top-notch education, and security of a tenured academic position – to do what I can to make things better for those less fortunate and future generations. I hope that my research and public scholarship can contribute in a small way.
If there was one solution or recommendation that you would like people to take away from your climate research, what would it be?
On climate change, there's been a really unhelpful dance between Canadian voters and politicians for more than three decades, even as our emissions have gone up and up. Politicians don't believe that voters will support them if they propose the kinds of policies needed to deliver real change, so they offer truisms like "the environment and economy go hand in hand" and adopt feel-good policies that help a bit at the margins but don't challenge our fossil fuel dependence.

In turn, most voters readily embrace the message that we can save the world without changing our lives. They reject policies – like carbon taxes – that have even modest impacts on them. If we're going to fix this problem, something has to give. Either political parties have to agree that this issue is just too important for partisan opportunism, or voters have to accept that fundamental change is needed and vote for candidates who are honest about that.

As part of Congress 2019 (see page 48), Kathryn Harrison will chair an open panel event on "Climate Change Mitigation: Carbon Pricing in the Canadian Federation." *The event takes place on June 4, 8:30-10:30 am in the AMS Nest. Details:* congress2019.ca/calendar/1090

Jiaying Zhao, *Psychologist*

Why does climate change remain such a polarizing topic? And what interventions could be made in our cities to encourage pro-environmental behaviour? As Canada Research Chair in Behavioural Sustainability, psychologist Jiaying Zhao uses insights from behavioural psychology to address these kinds of sustainability problems.

Engaging Climate Change Skeptics

Her recent work seeks to understand how to engage conservatives who remain skeptical about climate change. "Political groups view climate change in very different ways," says Zhao. "You have liberals who are worried about climate change and conservatives who are skeptical and don't believe it's driven by human activity. Yet the two groups are looking at the same scientific evidence. So our question is, why is information alone not convincing people? Why do you see this divergence of views and opinions given the same evidence?"

Zhao wondered whether the differences arise in part from an attentional bias driven by political orientation rather than insufficient exposure to climate facts. So in a recent study, she and her colleagues tested people's visual attention to climate-change related words (words like "carbon" or "warming"). They discovered that participants who were already concerned about climate change were better at seeing those words, while those who weren't concerned didn't pay any more attention to climate words than to neutral words like "table" or "chair." Zhao says this can create a feedback loop where concerned individuals are better at tuning their attention to climate news, which leads them to become more concerned.

For Zhao, this has enormous implications for communication. "You cannot engage conservatives on climate change in the same way you can with liberals," she says. Zhao suggests that for climate messaging to be effective, it should align with people's personal values and political ideologies. So for conservatives, this might require framing climate change action as a tool for advancing economic and technological development, or protecting the nation against threats like rising sea levels or wildfires.

Environmental Interventions

Zhao's other research has examined how small interventions can encourage recycling, composting and car sharing. She says that simply being aware of what contributes to climate change is often not enough to change behaviour, but making pro-environmental actions convenient and accessible can make a big difference. For instance, she and her colleagues showed that minimizing the distance between the recycling bin and suites in a multi-unit residential building improved recycling and composting rates by 60 to 130 per cent.

Why is this an area you chose to work on?
Because it is absolutely necessary! Human activity has caused adverse impacts on Earth's ecosystems and created a myriad of environmental problems. Sustainable development ultimately depends on changing human behaviour. So I think there is a tremendous space for psychology to contribute to sustainability.
If there was one solution or recommendation that you would like people to take away from your research, what would it be?
Make it easy and fun. For example, if cities can make public transit or car sharing services more convenient, that will encourage fewer people to drive, which will support our transition to a more sustainable world.

Seth Wynes,
Geographer

What individual lifestyle choices have the highest impact on climate change? A 2017 study by environmental geographer Seth Wynes showed that the four most impactful actions that individuals can take to lighten their carbon footprint are (in order of impact): having fewer children, living car free, reducing air travel, and switching to a plant-based diet.

If those findings surprise you, it might be because they're not the strategies most commonly promoted by governments, educators and the media. In fact, when Wynes analyzed a representative sample of educational materials (including 10 Canadian high school textbooks) as well as government resources on climate change from the EU, US, Canada and Australia, he found they largely fail to mention these actions. Instead, they focus on things like recycling, switching light bulbs or using cloth shopping bags – actions that have a relatively minor impact on emissions.

Wynes, a former high-school science teacher, was puzzled by this. After all, avoiding just one roundtrip transatlantic flight per year reduces more emissions than switching to green energy. Adopting a plant-based lifestyle is four times more impactful than comprehensive recycling and aligns with healthcare advice. And a US family choosing to have one less child would result in the same level of emissions reductions as 684 teenagers adopting comprehensive recycling for the rest of their lives. So why are governments telling people to switch their light bulbs instead of encouraging them to fly less and reduce their meat intake?

Wynes suggests the messaging may have been designed with a "foot in the door" approach. "If you start people on small actions that are easily achievable, then they can be scaled up later," he says. "But it's time to move onto the next stage." He says it's critical to revamp our educational materials to promote high-impact strategies, especially those targeted at young people who are establishing lifelong patterns.

Case Study: Reducing Business-Related Air Travel at UBC

Currently, Wynes is investigating what might nudge people from knowledge about climate change mitigation to pro-environmental actions. His latest research looks at a case study close to home: the carbon impacts of business-related air travel at UBC.

It may sound like small fry in the context of climate change mitigation, but the impacts would be huge: his study found that business-related air travel emissions at UBC could be equal to a whopping 63-73 per cent of the total annual emissions from operating the UBC campus. In Wynes' home department, emissions from business-related air travel by faculty members was 30 times greater than emissions from running the geography building.

"We know that air travel generates a lot of emissions, while UBC's campus emissions are small for a university this size," says Wynes, "so it's not surprising that business air travel has such a big footprint at UBC. Going forward air travel is going to be one of the last big sustainability hurdles for any university."

Wynes understands that academic life involves a lot of travel – conferences in faraway places, lectures across the globe. But would people cut down on air travel if they knew more about the carbon impacts of their travel choices and were given better options for meeting virtually with their colleagues around the world?

"I'm trying to figure out how people view their own air travel, how organizations can encourage low-carbon alternatives, and whether professionals can fly less without making career sacrifices," says Wynes. "Air travel is such a carbon-intensive personal action, so it's really worthwhile to look at different ways that we can reduce demand and help people do their jobs well without taking so many flights."

Based on the findings from their UBC case study, Wynes and his coauthor and supervisor Simon Donner have proposed a roadmap for public sector institutions looking to reduce greenhouse gas emissions from air travel (and as a side benefit, cut costs). This includes better tracking and communication of air-travel related emissions, improving video conferencing facilities, requiring economy-class travel (choosing a higher class was responsible for 8 per cent of emissions), and reducing flights solely for lectures.

Wynes is now partnering with UBC Travel and UBC Sustainability and Engineering to use the university as a living lab for curbing business-related air travel. "What we learn about how to cut emissions from business air travel can hopefully be used by other universities and institutions around the world," he says.

Why is climate change a topic you have decided to devote your research and time to?
We are in a crucial window of time where we can decide what kind of future we will live in, and it's important that we choose one where the atmosphere is compatible with human well-being. That gives me motivation to get up in the mornings.

If there was one solution or recommendation that you would like people to take away from your climate research, what would it be?
My number one recommendation to individuals would be to go big. So many of the actions that are suggested by the media are chosen because they're small and they're easy, but this problem is not small and it is not easy. Take trains, not planes, eat a plant-based diet and live car free! T

As part of Congress 2019 (see page 48), Seth Wynes will participate in a panel entitled "Green Academe: How can our carbon footprint-related actions in academia create meaningful change?"
The event takes place on June 5, 8:30-10:00 am in the AMS Nest.
Details: ***congress2019.ca/calendar/1257***

COLONIZED:

THE HUMAN MICROBIOME

How the trillions of bacteria in your body can keep you healthy into old age.

BY **RICHARD LITTLEMORE**

I'm sitting on an airplane 34,000 feet over the Pacific, reading an advanced copy of Brett and Jessica Finlay's new book *The Whole-Body Microbiome* on my cellphone, and all I can think is: "Catastrophe!"

It's not that I'm worried about falling from the sky. No, the disaster I fear is internal. The Finlays' book is a love letter to the billions and trillions of microbes that colonize our bodies and collaborate in everything from keeping our breath fresh to helping to harvest macronutrients in our lower intestines. The authors argue, convincingly, that the health of that entire bacterial community – your personal microbiome – is one of the great predictors of a long and happy life. Yet, 48 hours before being assigned this story, I had begun a course of antibiotics to conquer a lingering case of strep throat. I was about to devastate my whole microbial team. As I said: Catastrophe!

The good news, which unfolded in the pages of their book and in later conversations with father, Brett, and daughter, Jessica, is that *The Whole-Body Microbiome* is also a how-to manual for aging in good health, hand-in-hand with the microscopic creatures that float from your throat to your – well, just about everywhere. And, if you were looking for a tour through the microbiome crossed with a guidebook for healthy living, you could hardly do better than recruiting the Finlay team.

Microbiology buffs – or just longstanding UBC fans – will recognize the name Brett Finlay. The late Nobel laureate Michael Smith recruited Finlay to UBC in 1989. An Edmonton native, Finlay had done an honours BSc and a PhD in biochemistry at the University of Alberta and then gone on to do a post-doc in microbiology at Stanford University in California. Smith, who had a sharp eye for talent, recognized a brilliant and innovative researcher and somehow managed to outbid offers that Finlay had from powerhouse competitors including Harvard and the Massachusetts Institute of Technology.

Smith's judgment was surely borne out. Finlay, 60, has held the UBC Peter Wall Distinguished Professorship since 2002, and he has indeed distinguished himself in every imaginable way. He has published more than 500 peer-reviewed journal articles and, as a principal or co-investigator, attracted more than $100 million in research funding from sources including the provincial and federal governments, private sector companies, and international funders such as the Howard Hughes Medical Institute and the Bill and Melinda Gates Foundation. His largest current project is based on a $4.6 million grant from Genome BC for the Canadian Healthy Infant Longitudinal Development (CHILD) Study on childhood asthma and the microbiome. Finlay's list of awards and distinctions runs to four pages and ranges from the Orders of British Columbia and Canada (as an Officer) to prizes including the Killam and the Galien. Really, it would be easier to list the prizes that he hasn't won – yet – but you wouldn't want to jinx it.

Finlay's writing partner for this book is daughter Jessica, 30, an environmental gerontologist who is clearly determined to keep up the family standard. She did a BA and BEd at Queen's University, before switching to geography and gerontology for a master's and PhD at the University of Minnesota. She's currently doing a post-doc at the University of Michigan, studying environmental effects on cognitive decline – and particularly the effects of the built environment.

A couple of years ago, Jessica and her father were out for a run together in Maui, and they were talking about his last book, *Let Them Eat Dirt: Saving Your Child from an Oversanitized World*. This, also, was a guidebook on microbiota. As Brett Finlay says, "The first 1,000 days of life are just so important," and one of the big tasks for children is building a diverse, healthy and robust microbiome – a process that starts early. He says: "The first and best birthday present" we receive comes in the form of the vaginal and fecal microbes that babies ingest and collect on their journey down the birthing canal, as demonstrated by the fact that babies born by Caesarian section are at 25 per cent higher risk of asthma, obesity and diabetes. Finlay, and his co-author on that book, Dr. Marie-Claire Arrieta – a former post-doctoral student of his and currently a University of Calgary medical professor – explored this and other ground-breaking research, along the way urging parents to let

their little ones pet the dog, crawl in the mud and (again!) avoid antibiotics unless they're absolutely necessary.

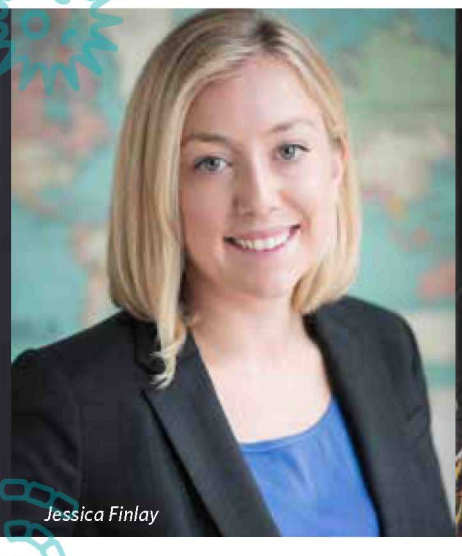
But during the run, Jessica complained that *Let Them Eat Dirt* spoke only of the experience of children from birth to 12 years. What about the rest of us? So father and daughter set off on a two-year project to review and report on more than 1,000 research papers in this fast-breaking field to help us all understand better how to manage our microbiome for the later parts of our lives.

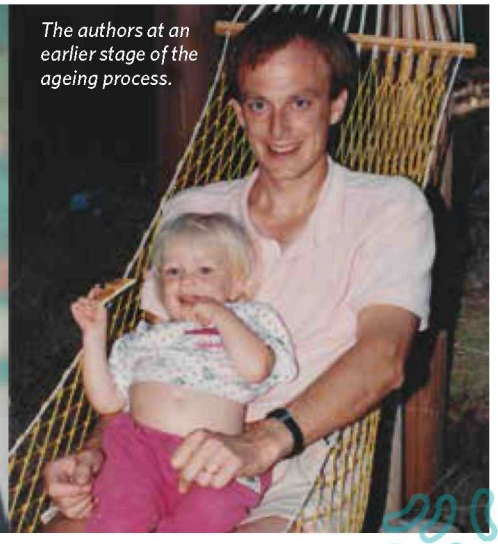
As Brett Finlay knew it would, the search turned up some amazing revelations. Microbes are crucial to our day-to-day health and implicated in everything from cardiovascular diseases to depression. For example, if you don't brush and floss adequately, pathogenic microbes in your mouth can break through damaged gums and into your bloodstream, later causing inflammation and tissue damage in your arteries and heart valves. Misfolded proteins in the gut (triggered by an altered microbiome) can make their way up the vagus nerve and into the brain, where they can cause plaque build-up that is similar to that seen in Alzheimer's patients. Gut bacteria are also implicated – or at least useful as a predictor – in Parkinson's disease.

On the bright side, the book is full of these kinds of "Say what!?" discoveries. More frustrating is the fact that everything is so new that the medical innovations and treatments that might arise are not yet available or are in their earliest stages. For example, one of the microbes we don't want is called *Clostridium difficile (C. difficile)*, an intestinal pathogen that causes severe diarrhea by producing potent toxins in the gut. *C. difficile* is a poor competitor and doesn't usually cause trouble in people with a healthy microbiome, which keeps the pathogen at bay. But if you kill off a large number of helpful gut bacteria in the course of treating some other infection, *C. diff* suddenly has the house to itself. It flourishes dangerously and is incredibly difficult to dislodge.

Remembering that most gut bacteria are either beneficial or benign, the new treatment for highly antibiotic resistant *C. difficile* is a big dose of someone else's gut bacteria – in the form of a fecal transfer. And yes, that's just what it sounds like: you slurry up a selection of feces from a healthy donor and inject it, by enema or through a tube running down the nose and into the intestines. This "repoopulation" works well, but remains, perhaps obviously, a treatment of last resort – and one you are warned NOT to try at home, in part because you don't know what effects might arise from other microbes in the "healthy" sample. One fecal transfer recipient, who had always been a healthy weight and who didn't change their exercise or diet regime in the least, still wound up marching toward obesity; the donor had been overweight and – we now know – the composition of your microbiome has a big influence on your weight and how you metabolize food.

Brett Finlay


Jessica Finlay


The authors at an earlier stage of the ageing process.

This was unpleasant information for the newly chubby fecal transfer recipient, but it could be cool news for the rest of us. If researchers can figure out which microbes are promoting or preventing specific conditions – obesity, diabetes, asthma – there is a chance they can grow tailored probiotics that we could take as treatments. This might even work for certain types of mental illness. In mouse experiments, researchers have found that mice that receive fecal transfers from populations that are stressed or depressed become stressed or depressed themselves. And if you can cause it, there's a chance you can stop it, again by identifying and targeting problematic microbes or by promoting the ones that are helping keep us healthy. As Brett Finlay says, this research opens even more possibilities than gene therapy (you can't go back and change your genetics, but you can change your microbiome). Finlay says: "We're five years away from the next generation of probiotics."

Microbes are crucial to our day-to-day health and implicated in everything from cardiovascular diseases to depression.

In the meantime, Jessica Finlay says there are still four things we can do. The first is to eat well. We can search out *pre*biotics, the high-fibre and/or starchy foods that are most effective at nourishing the microbes in our gut. These include foods such as asparagus, Jerusalem artichokes, bananas, oatmeal, honey, maple syrup, legumes and (brace yourself) red wine! (The latter, of course, is to be consumed in moderation, but still!) There's also much to be gained by eating *pro*biotics, foods with beneficial live bacteria and yeasts: think kimchi, sauerkraut, kefir, tempeh, yogurt and kombucha. You can also take

probiotics in pill form, but keep in mind that they are not regulated by Health Canada or by the US Food and Drug Administration, so you should, at the very least, be skeptical about any enthusiastic claims for their effectiveness (see *www.probioticchart.ca* for a list of medically proven probiotics).

The second recommendation is to exercise, which is good for you anyway, but also appears to be good for your microbiome. And the same can be said for the third recommendation, which is to reduce stress. From a microbiome perspective, it seems that this is a condition that can be self-reinforcing: if you are stressed, your microbiome adjusts and, according to mouse models, can perpetuate the tendency to be stressed. Anything you can do to avoid starting the spiral will help.

Finally, eat dirt!

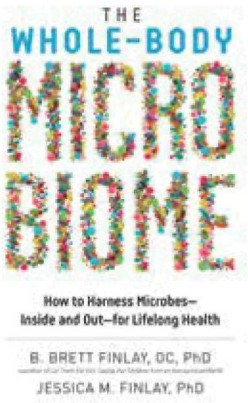
Actually, neither Jessica nor Brett recommended that for adults. The real advice was to "get out there." Open the windows or, better still, go outside. Spend lots of time with other people: shake hands, give them a hug, kiss your kids. Dig in the garden, pet the dog. And be cautious about using antimicrobial handwashes or, indeed, antimicrobial anything. Jessica complained that she bought a t-shirt for running and found it was "antimicrobial." She took it back. Most of the time, she says, the best cleaning tools are soap and water. (At the end of the day, we also might be shrinking away from the wrong things. The Finlays' book advises that there are 10 times as many microbes on your cell phone as on your toilet seat. One of those clearly needs an extra wipe once in a while.)

If researchers can figure out which microbes are promoting or preventing specific conditions – obesity, diabetes, asthma – there is a chance they can grow tailored probiotics that we could take as treatments. This might even work for certain types of mental illness.

Although the Finlays didn't say so, a fifth recommendation might be to look for fun things to do and interesting people to do them with. Father and daughter were both effusive about working together on this shared project, with Jessica saying that, although Brett has always been "just Dad," it was still "very validating that he wanted to work together."

And the ebullient Brett seemed to sum up both the experience of writing and the promise of all this research, saying:

"Money doesn't buy happiness; science does." T



Publisher Douglas & McIntyre
ISBN 978-1-77162-220-2
Paperback (320 pp), $26.95
Available at bookstores everywhere

MIND your diet

It seems almost anticlimactic that medical science can't come up with an improvement on your mother's advice to eat your vegetables, but there you go. For gut health, brain health, heart health – for good health – it seems there is no getting away from the spinach and broccoli.

In *The Whole-Body Microbiome*, authors Brett and Jessica Finlay recommend the MIND diet, where MIND stands for the Mediterranean-DASH Intervention for Neurodegenerative Delay, and DASH stands for Dietary Approaches to Stop Hypertension. This MIND diet was developed by Martha Claire Morris, a nutritional epidemiologist at Rush University Medical Center, through a study funded by the National Institute on Aging. And her February 2015 study found that, in addition to previously reported beneficial effects on hypertension, it lowered Alzheimer's risk by about 35 per cent for those who followed it moderately well and up to 53 per cent for rigorous adherents. The following is a simple outline for a healthy diet:

Include These

- **Green leafy vegetables:** *every day*
- **Other vegetables:** *at least once per day*
- **Whole grains:** *three times per day*
- **Nuts:** *every day*
- **Wine:** *one glass per day*
- **Beans:** *every other day*
- **Berries:** *at least twice per week, especially blueberries and strawberries*
- **Poultry:** *at least twice per week*
- **Fish:** *at least once per week*
- **Olive oil**

Limit These

- **Red meats:** *fewer than four servings per week*
- **Butter and stick margarine:** *less than one tablespoon per day*
- **Cheese:** *less than one serving per week*
- **Fried or fast food:** *less than one serving per week*
- **Refined sugars and carbohydrates (eg: pastries and sweets):** *limit*

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SAVE THE DATES!

RESO

A new program for Tahltan First Nation youth seeks to involve them in the sustainable development of their ancestral land.

BY **CHRIS PETTY,** *MFA,86*

In August 2014, the tailings pond at the Mount Polley mine site failed, spilling millions of litres of highly polluted mining waste into Polley Lake and raising the level by 1.5 metres. The slurry continued its path through Hazeltine Creek, expanding it from two metres wide to more than 50, and on into Quesnel Lake and Cariboo River. It was called one of the biggest environmental disasters in modern Canadian history and will continue to have a devastating impact on the area for decades to come. For Nathan Skubovius, a member of the Tahltan First Nation, it was also a personal turning point.

"I knew that Imperial Metals, the company that was responsible for that disaster, was the same company that was building the Red Chris mine in the centre of the Tahltan territory," says Skubovius, who would go on to study mining engineering at UBC. "It was a big shift for me to understand how mining can go in the wrong direction. I realized that if I was going to do anything to change things, I needed to use my education."

Skubovius didn't grow up in the Tahltan territory, but spent many summers there with his grandfather learning about his traditions and the Tahltan way of life. He developed a strong bond with the territory and knew, at some point, that he would do something for his people to help sustain his ancestral land.

"I've always been a bit of a doer," he says. "And I'm not the kind of person who stands by and lets things just happen."

His enthusiasm during those summer visits drew the attention of the Tahltan Central Government (TCG). When he entered UBC in 2015, the TCG asked him to be a representative on the Tahltan Youth Council. In 2017 he was hired as the Land Use Planning co-ordinator and led focus groups on different aspects of development in the territory. The TCG has a long history of activism in promoting traditional values while embracing the demands of modern industry. In 1987, it established a resource development policy that declared the territory open for business, and outlined the restrictions and regulations that needed to be met before development could happen.

The TCG also championed the idea of re-establishing long-neglected nomadic trails and getting Tahltan youth involved and interested in their ancestral traditions. As youth leader, Skubovius was tapped to organize a group of young people to help build a footbridge – designed by his father – at a traditional crossing, and that experience started the idea that would eventually manifest itself as the *Tene Mehodihi* ("The Trail We Know") project. He saw it as a way to educate Tahltan youth in their own culture and give them some insight into the opportunities that awaited them in the development of the Tahltan lands. It would expose students to

traditional and modern survival skills and, at the same time, introduce them to the technical skills they would need to work in the resource industry.

Development in the Tahltan lands is, as is the case in many First Nations, controversial. Focused largely on gold, copper and natural gas, resource development places huge and sometimes extremely damaging demands on the land. Memories of the various gold rushes of the 1800s don't die easily, and there have been some projects in resource-rich First Nations territories that have ignored local concerns. Others, like the Mount Polley mine, have been disastrous. In 2012, a methane fracking exploration project slated for the headwaters of the Skeena, Stikine and Nass rivers – an area called the Kablona that is considered sacred by the Tahltan nation – was halted due to protests by the Kablona Keepers, a group of Tahltan elders. The Kablona Keepers have protested a number of exploratory operations over the years, though they don't condemn development per se. In an interview with the *Globe and Mail* at the time, the group's spokesperson, Rhoda Quock, was quoted as saying, "I don't want people to get the impression we're against all development. We're not. But these places are sacred and need to be preserved."

Christine Creyke, lands director for the TCG, thinks that development, properly managed, can be a benefit to all. "The Tahltan Nation is industry supportive," says Creyke, who has signed agreements with resource companies that provide significant returns to the community. "Our agreements with industry help support all the work we do in sustaining and building our community."

Skubovius echoes these perspectives. "We're not against development," he says, "it's just where, when, at what pace and to whose benefit. These are the serious questions that project managers have to consider. We have locations identified – grave sites, sacred sites, village sites – and when projects come in without considering those things, they won't go ahead."

One of the prime considerations Skubovius has for development projects is the employment prospects for Indigenous workers. "Mining jobs of the future aren't going to involve heavy labour or machine operation," he says. "What we need are more electricians, more managers, more project designers. There's a big shift in job opportunities. And that means more education for our workers."

PRECIOUS URCES

Students on top of Eve's Cone during their 2018 hike. Mount Edziza is in the background.

Which is where the *Tene Mehodihi* project comes in. Skubovius' idea was to create adventure hikes for Tahltan youth that show them the importance of their traditions and include strong educational components. By showing students the richness of their traditions, and tying that in with the opportunities that await them, Skubovius hopes to encourage Tahltan youth to stay in the territories.

"One of our biggest issues in the Tahltan territory," says Creyke, "is the retention of our people. Right now, 85 percent of our members live outside the territory. In 10 years, it may climb to 95 percent. Nathan's idea fits really well with our overall goal as a nation to retain our youth and encourage others to move back to the territory."

"Tahltan culture is about being efficient on the land, whether it's how to use the landscape – ridgelines, peaks, other high points as guidelines to travel – or how to harvest food in the wilderness, not wasting precious resources and understanding what you need to survive. It's a good mix."

The Tahltan were originally a nomadic people who over the centuries followed caribou herds along well-worn routes. Most of these routes have, in the recent past, fallen into disuse and become overgrown. One of the first activities, building the footbridge, was followed by the TCG sponsoring a cleanup of a trail that runs past Buckley Lake, skirts the Mount Edziza volcano and ends up in Telegraph Creek. In the summer of 2018, that trail was used for the first hike of the Tene Mehodihi project.

The hike involves two different facets. Firstly, with the help of elders who join the hike at Buckley Lake, students learn how their ancestors used the land, how they travelled and how they lived. They also learn about traditional Tahltan crafts, food preparation and art.

The second aspect of the hike is where UBC comes in. Students are introduced to navigation and bush skills and visit a mining exploration camp that was set up by a mining concern to investigate the potential for resource development nearby. Using the resources of the camp and those of UBC participants, students learn how to use various instruments to test plants, take water and soil samples (and properly document them), analyse rocks, and perform water management tasks. It helps give the students an insight into the intricacies of the development process and, hopefully, stimulates their interest in learning more. Last summer's hike was to take seven days, though it was cut short by a day because of the wildfires that raged through Telegraph Creek.

Nadja Kunz, assistant professor with the UBC School of Public Policy and Global Affairs and the Norman B. Keevil Institute of Mining Engineering, was part of that hike.

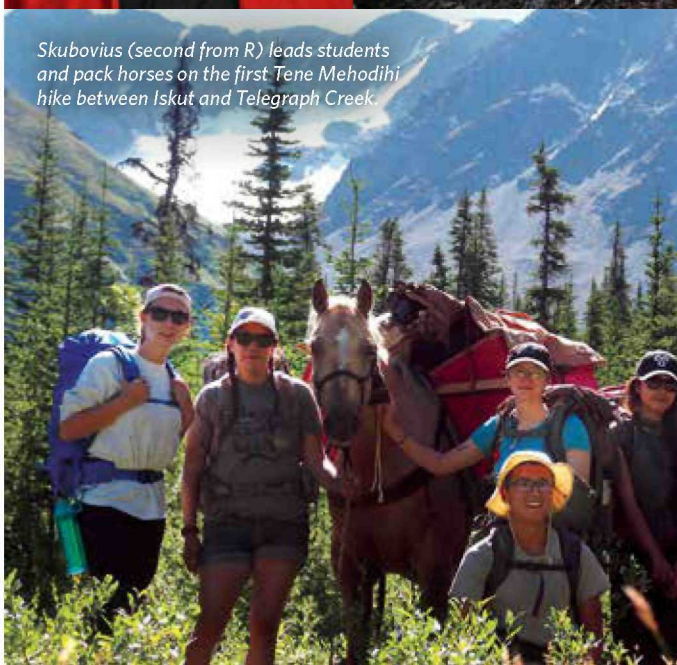
"I'm interested in the social and environmental issues around mining," she says, "as well as the engineering challenges. Participating in the hike was a great way to involve the students in the physical aspects of mining development, but also in how that development impacts the land."

During the hike, Professor Kunz, who is Canada Research Chair in Mine Water Management and Stewardship, brought water sampling equipment along

The Tahltan First Nation is a territory of roughly 93,000 square kilometres in northern BC that extends east from the Alaska panhandle and includes the upper Nass tributaries, the western half of the Stikine plateau, including the sacred headwaters of the Stikine, Nass and Skeena rivers, and north into the Yukon Territory. Half of the residents in Tahltan territory are dispersed between three main communities: Telegraph Creek, Dease Lake and Iskut.

Nathan Skubovius

During the hike, students learn how their ancestors lived and used the land. In the foreground are rattles they made using deer hide.



Skubovius (second from R) leads students and pack horses on the first Tene Mehodihi hike between Iskut and Telegraph Creek.

to show students how water monitoring works, and introduced them to the kind of equipment and analysis they could expect to encounter in a university setting.

"Having UBC professors involved in research projects is a big part of the program," says Skubovius. "They help students understand the processes that have an impact on development and sustainability. UBC's standards are world class, so when our students experience these projects and conduct these experiments, they're doing it with instruments and instruction of the highest calibre."

And, coupled with traditional instruction, students will see the connection between sustainability and development. "Tahltan culture is about being efficient on the land," says Skubovius, "whether it's how to use the landscape – ridgelines, peaks, other high points as guidelines to travel – or how to harvest food in the wilderness, not wasting precious resources and understanding what you need to survive. It's a good mix."

This summer, Skubovius plans two hikes. The first, mirroring the 2018 adventure, will involve 14 to 16 year-old-students, with supplies and equipment brought along on pack horses. The second, with older students, will have students packing in their own gear to hike around the western edge of the Mt. Edziza plateau. They will meet up with the younger students at Eve's Cone, one of the cinder cones on the flank of Mount Edziza.

Skubovius' long term plan is to expand the *Tene Mehodihi* project to include five different adventures running through the summer, with students able to acquire industry-valid certification – such as First Aid, water and avalanche rescue – that can be built into the high school curriculum.

"We're building the model, and we need to figure out what's gone wrong, what's gone right. We need to understand the steps it's taken to get to this spot. Then, I hope, we can share this program with other mining communities."

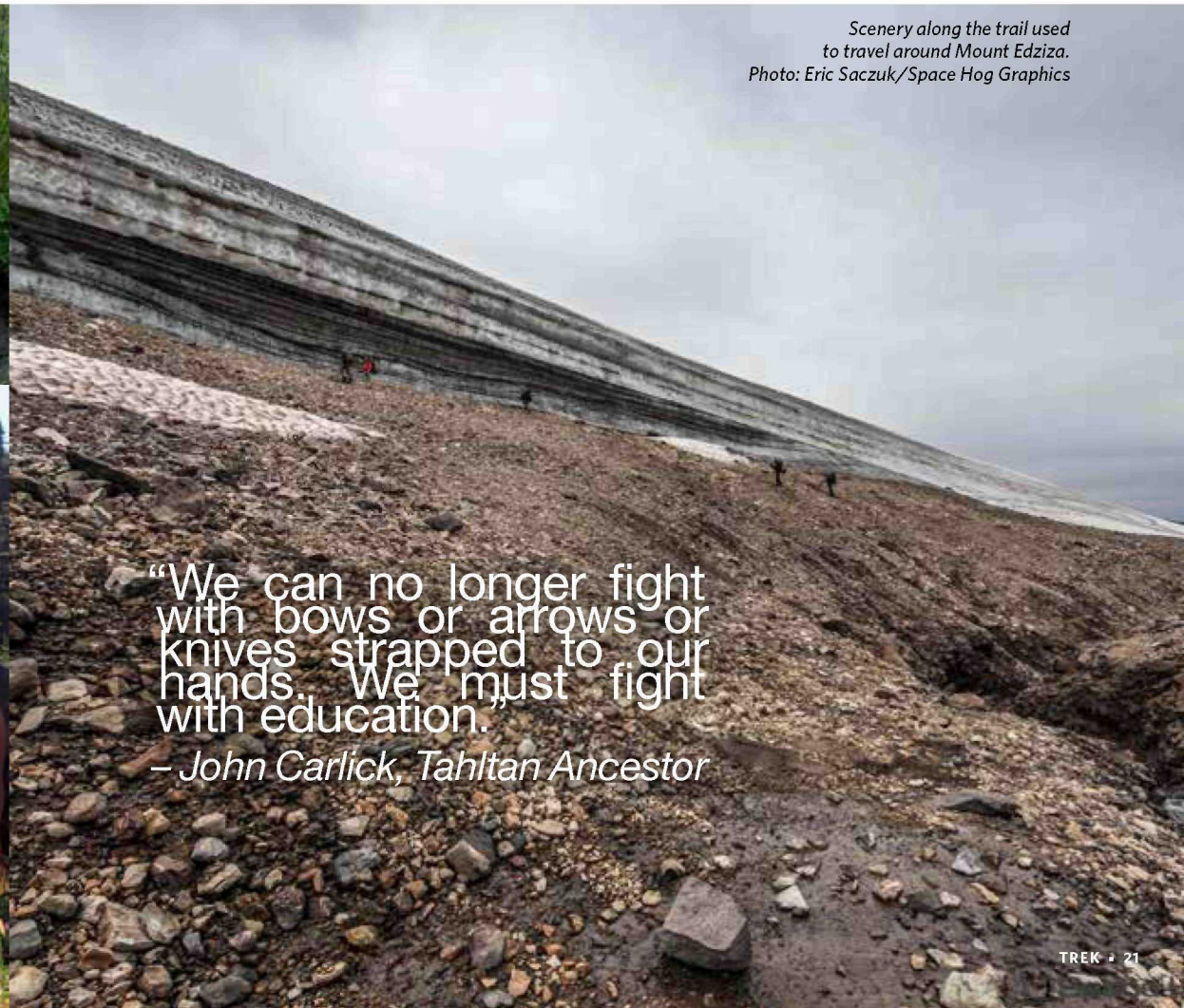
Skubovius' plans after gradudation aren't set in stone just yet. He will spend this summer managing the *Tene Mehodihi* project, working out the bugs and planting the seeds for the project's future. Then, he sees a PEng in his future, and perhaps an engineering job with an international mining company. But his vision for *Tene Menodihi* is long-term.

"We're building the model," he says, "and we need to figure out what's gone wrong, what's gone right. We need to understand the steps it's taken to get to this spot. Then, I hope, we can share this program with other mining communities.

"We have a long history of mining in the Tahltan territory, and we'll have a long future in mining. We're a resource rich area. We're going to have large-scale industry for years to come, and I know the big companies are bringing autonomous equipment to these sites, which will mean huge job losses for our communities. If we can train the next generations to take on the higher-level occupations, and to not be equipment operators, we'll be very successful in the industries, and in sustaining the land."

Avoiding future Mount Polley disasters will take a combination of will, knowledge, dedication, an unbreakable bond with the land and an understanding of its significance to traditional culture. Nathan Skubovius and the new generation of First Nations leaders will see to that. T

UBC prof Nadja Kunz (R) teaches water and plant sampling techniques to the student participants and discusses the impacts of mining and exploration.



Scenery along the trail used to travel around Mount Edziza. Photo: Eric Saczuk/Space Hog Graphics

"We can no longer fight with bows or arrows or knives strapped to our hands. We must fight with education."

– John Carlick, Tahltan Ancestor

A PORTRAIT OF THE

In which Hinda Avery, *PhD'93*, makes a case for elderhood, activism, and comics, just by being herself.

BY **DIANE HAYNES,** *BA'89*
PHOTOS BY **MARTIN DEE**

Hinda Avery disturbs the peace. She doesn't mean to. "The last thing I'm trying to do," she says, "is offend anyone or be insensitive." She speaks sincerely, so it might be less a result of what she does than simply who she is: a single, never-married-by-choice, happily child-free, vocal, 79-year-old radical second-wave feminist activist, educator and philosopher, animal welfare activist and student, fine artist, comic book artist and filmmaker, second-generation Holocaust survivor and Nazism resister. Oh, and she's funny. It's a devastating combination.

She doesn't *look* like a troublemaker. Diminutive, simply dressed, grey-haired and smiling, she is the very picture of retired respectability. Which can make the F-bombs a bit of a shocker. In 2005, after decades in academia, Avery launched a second career as an artist, initially as a way of comprehending her family history. She painted the women in her mother's immediate family who'd been murdered in the Nazi Holocaust of WWII, adding in her mother, her sister, and herself. Over time, no longer wanting to see herself and her family as victims, she began to paint larger figures in colours less typical of concentration camps than of the comics she'd loved as a child. She gave the women voices – and guns. She called them warriors and wonder women. She named them the Rosen Resisterrrz, after her mother's family. Eventually, she added Der Führer himself, and made *him* the victim – of her paintbrush. "I really like the idea of working with a different view of the Holocaust," she says, "and using laughter and confidence as a weapon." Come to think of it, maybe it is what she does that gets some folks riled up.

Not everyone was a fan. "Many members of the Jewish community... didn't see this as something funny, didn't see [Hitler] as a cartoon character," Avery says. "They felt this was too sensitive of a subject and that I shouldn't be tackling him the way I did." Nevertheless, the Resisterrrz appeared in galleries around the city, and *Vancouver Courier* editor Michael Kissinger made a film about her work called *Hinda and Her Sisterrrz*. "Smiling, foul-mouthed, bikini-clad elderly women holding guns?" Kissinger says. "I was sold." It became an official selection of the 2017 Jewish Film Festivals in Toronto, San Francisco, Boston, Vancouver, and Victoria.

Andrea Van Noord, a University of Victoria Germanic and Slavic Studies professor who has used Avery's artwork in her classes, says, "Typically when you talk about Holocaust representation you [see a] natural progression [over three generations] of taking more risks, being more confrontational, more creative in how [artists] choose to talk about it. With Hinda, you see ... three generations of thinking within a single body of work. It's extraordinary."

Avery exhibits an instinctive intelligence in both her changing approach to her subject matter and her use of humour as a form of resistance. Although she has some regrets about choosing teaching over a career in art earlier in her life, her power as an artist now is fired by her evolution as a woman, a feminist, a philosopher, and a second-generation survivor. In other words, this art could only have emerged at this time. And given the recent rise of neo-Nazism, Avery's timing is impeccable.

> The switch from fine art to cartoons, though seemingly regressive, is in fact the action of a revolutionary. In their capacity to foment change, and with a global market share in the billions of readers and dollars, comics, manga, and graphic novels are the tools of our time.

In *Why Civil Resistance Works*, Drs. Stephan and Erica Chenoweth write that in over 320 conflicts between 1900 and 2006, nonviolent resistance was more than twice as effective as violent resistance in achieving change, and that humour is a particularly powerful tool. In 2014, the German town of Wunsiedel turned the annual neo-Nazi pilgrimage to Rudolf Hess' gravesite into "Germany's most involuntary walkathon." For every metre the neo-Nazis marched, locals pledged 10 euros. A sign at the "finish line" thanked marchers for their contribution to the anti-Nazi cause – close to $12,000 USD – amidst showers of rainbow confetti.

Hinda Avery in her studio

artist AS AN old woman

The walls of Avery's studio are lined with her new comic book character, Bayla.

"I'm obsessed with the portrayal of women in the media, which I think is really very demeaning."

Personally, the *Rosen Resisterrz* led Avery to some measure of healing. Artistically, they led her to comic books. She created *Bayla's Issues*, a series of underground comics about an older Jewish woman who wants to be a world-famous artist but struggles with inner demons, a lack of confidence, and the ravages of age. "She's an anti-heroine," Avery says. "It's been the opportunity to express darkness. There's no happy ending." The switch from fine art to cartoons, though seemingly regressive, is in fact the action of a revolutionary. In their capacity to foment change, and with a global market share in the billions of readers and dollars, comics, manga, and graphic novels are the tools of our time.

Avery names Daniel Clowes and Robert Crumb as underground favourites. "They're about one's inner lives," she says, speaking of their comics or perhaps of her own, "and our struggles between our values and principles and our dark desires and temptations. How much harm are we allowed?"

Avery has turned the basement of her early-1900s wood-frame house into a simple studio, and works in the mornings with CBC Radio 2 for company. She chooses a topic and a layout, then begins to sketch. Graphic artist Tony Bosley, the son of a close friend, scans the sketches and drops in the colour. "I have a terrible time with the text," Avery says. "When I come up with the right punch line, it does give me a chuckle. [But] there's a lot of pain in the jokes."

This time around, Avery is ready for the controversy. "Bayla's an older woman with wrinkles," she points out. "We're not used to seeing images of women with wrinkles. And the swear words. And they're not positive." But the underground scene has been a welcoming space for women writers and artists, so although the hyper-sexualization of young female characters is still predominant in comic book imagery, the tide is turning.

"I'm obsessed with the portrayal of women in the media," Avery says, "which I think is really very demeaning." She has just seen *Woman at War*, an Icelandic film starring Halldóra Geirharòsdóttir as Halla, a 50-something choir director living a secret double life as an eco-activist. "It's a portrayal of a woman one would never see coming out of Hollywood," she says. "It blew me away."

Avery has produced and directed two films herself, starred in a third, and is working now with Michael Kissinger to turn *Bayla* into an animated short. Kissinger sees Bayla as a kind of Charlie Brown figure, "if Charlie Brown was an elderly Jewish woman."

"I'll be glad if it happens in my lifetime!" Avery says, laughing. These are the jokes when you're 79.

Unlike Halla, Avery has never made a secret of her politics or her passions. "I discovered the women's movement in the late 60s," she recalls. "I was a hippie. I remember reading Betty Friedan's book [*The Feminine Mystique*] and just..." She uses her hands and arms to depict a descending cascade of awareness. She recalls the spirit of feminism's second wave: "That feeling of finally, finally we could be who we wanted... of breaking out of the chains. In those days, we thought the changes would be vast and permanent." Avery marched after Trump's election, and follows third- and fourth-wave feminist movements such as #metoo and #timesup. "I have remained militant all these years," she says. But she worries about women burning out. "These issues we were tackling in the sixties and seventies we're still tackling today."

She recalls the spirit of feminism's second wave: "That feeling of finally, finally we could be who we wanted... of breaking out of the chains. In those days, we thought the changes would be vast and permanent."

Ironically, one of feminism's biggest challenges today is infighting: mainstream or liberal feminists pitted against radicals, celebrity icons and front-liners duking it out for media real estate, and younger feminists jockeying for power and visibility against older women who want to stay relevant in the movement they've dedicated their lives to. Unless and until all feminist voices are heard, the only winner is the patriarchal status quo.

Avery was one of Vancouver's first teachers of women's studies. "It was a new discipline in those days," she says. "It was an awakening. I recall several women [students] changing their lifestyles." She also lectured on women's issues in architecture and urban planning, the subject of her PhD dissertation, and produced an award-winning education program called "Environments for Girls

Avery's comic book anti-heroine, Bayla, is an elderly Jewish woman who struggles with inner demons.

A painting from the Rosen Resisterrrz *series, which uses humour as a weapon.*

and Women: City Design from a Feminist Perspective." She says now, "I wanted – and want – a much more gender-neutral place to be." The World Economic Forum's annual Global Gender Gap Report along with Price Waterhouse Cooper's Women in Work Index pinpoint the best places in the world to be a woman. Iceland is one. The country starts gender equality lessons in preschool, protects women's equality in work with legislation, outlaws gender discrimination in advertising, schoolbooks, and the workplace, mandates gender equity in corporations and on boards, has made the profiting from sexual exploitation illegal, has a Ministry of Gender Equality in its government, and offers the best parental leave policy in the world. As of 2018, Canada ranked 16th on the list, and the US 51st.

Avery's *Rosen Resisterrrz* canvases are rolled and stored in plastic sleeves in her studio, and her new animation is in Michael Kissinger's hands for now. What is next? "I don't know," she says. "I'm kind of lost." Avery has just completed a fourth-year course in UBC's world-renowned animal welfare program entitled, "Animal Welfare and the Ethics of Laboratory Animal Use." The course looks at public concern for animal suffering, debate about the benefits of the research, concern over the genetic modification of animals, and the capacity of animals to sense and express pain. "It's been traumatic," Avery admits. "I feel like I'm sitting in a Holocaust Studies course. I think my history is the reason I'm involved in animal rights and animal advocacy." A trustee of the BC Foundation for Non-Animal Research, Avery is not the first to draw comparisons between the treatment of Jews by Nazis during the Holocaust and the daily treatment of factory farm and research animals worldwide. It's a controversial stance that the Anti-Defamation League (ADL) and others have criticized as anti-Semitic. But proponents say the parallels are less about the victims than the perpetrators, and the arbitrary distinctions that allow us to value certain lives over others. Parallels or no, when 95 per cent of the drugs tested on animals now fail in human clinical trials, we have to ask: How much harm, indeed?

These days, Avery feels keenly the limitations on her time and her energy. She could choose dotage over conscious elderhood. Peace over continued political action. Except that such choices would require her to be someone other than who she has become. Audre Lorde (1934-1992), an American feminist and civil rights activist and a contemporary of Avery's, said, "I am not free when any woman is unfree, even when her shackles are very different from my own." It's a good bet that until everyone has a measure of peace – humans, animals, and Earth alike – Hinda Avery will keep on disturbing ours. T

"Smiling, foul-mouthed, bikini-clad elderly women holding guns? I was sold."
– filmmaker and Vancouver Courier *editor Michael Kissinger on deciding to make a documentary about Avery's work.*

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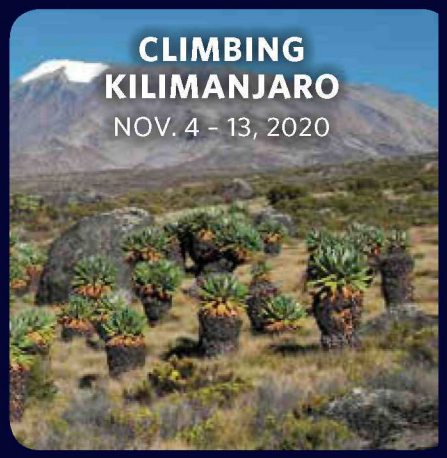

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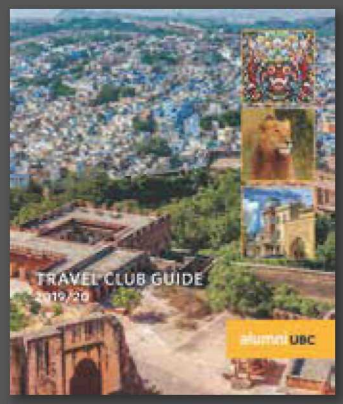

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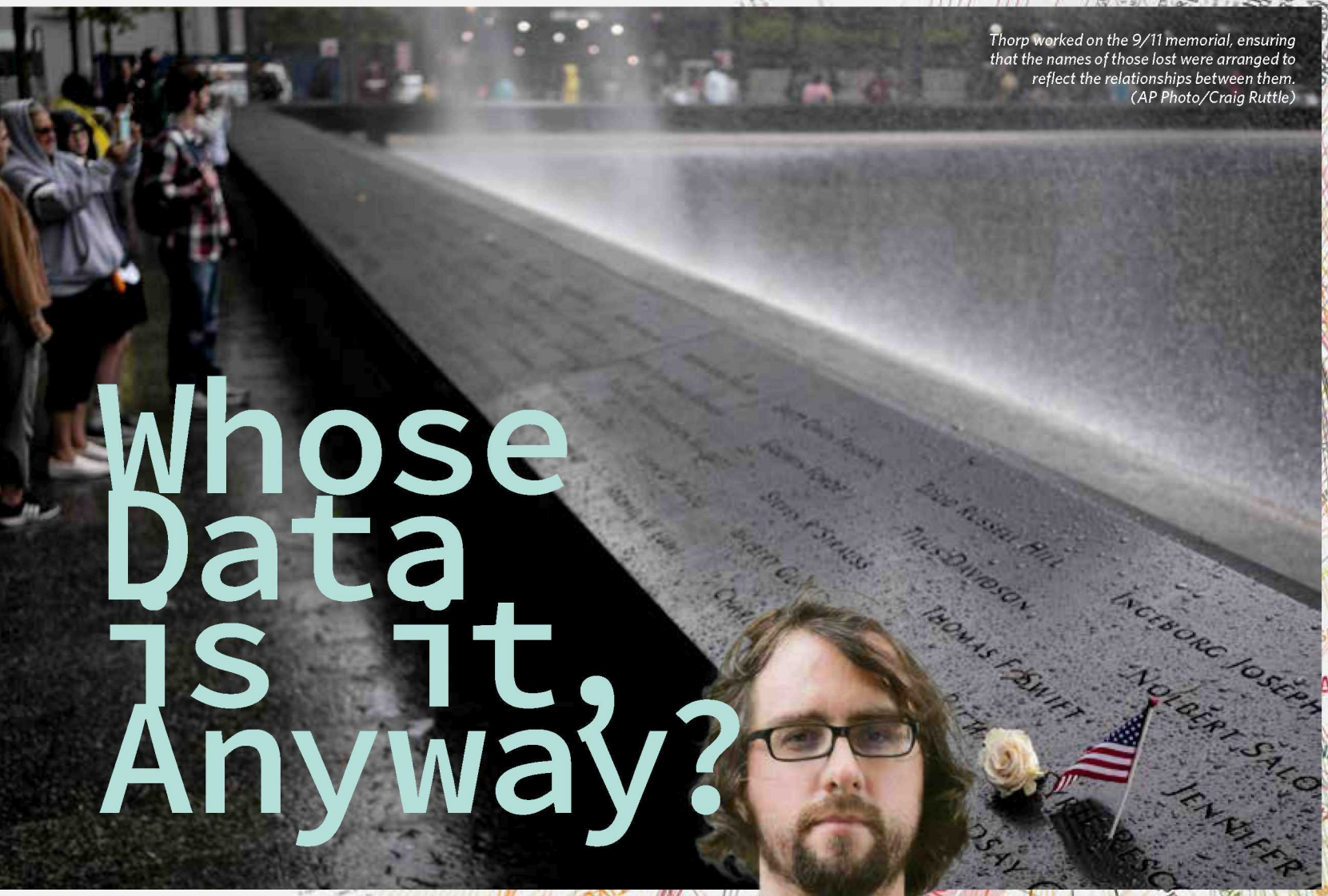


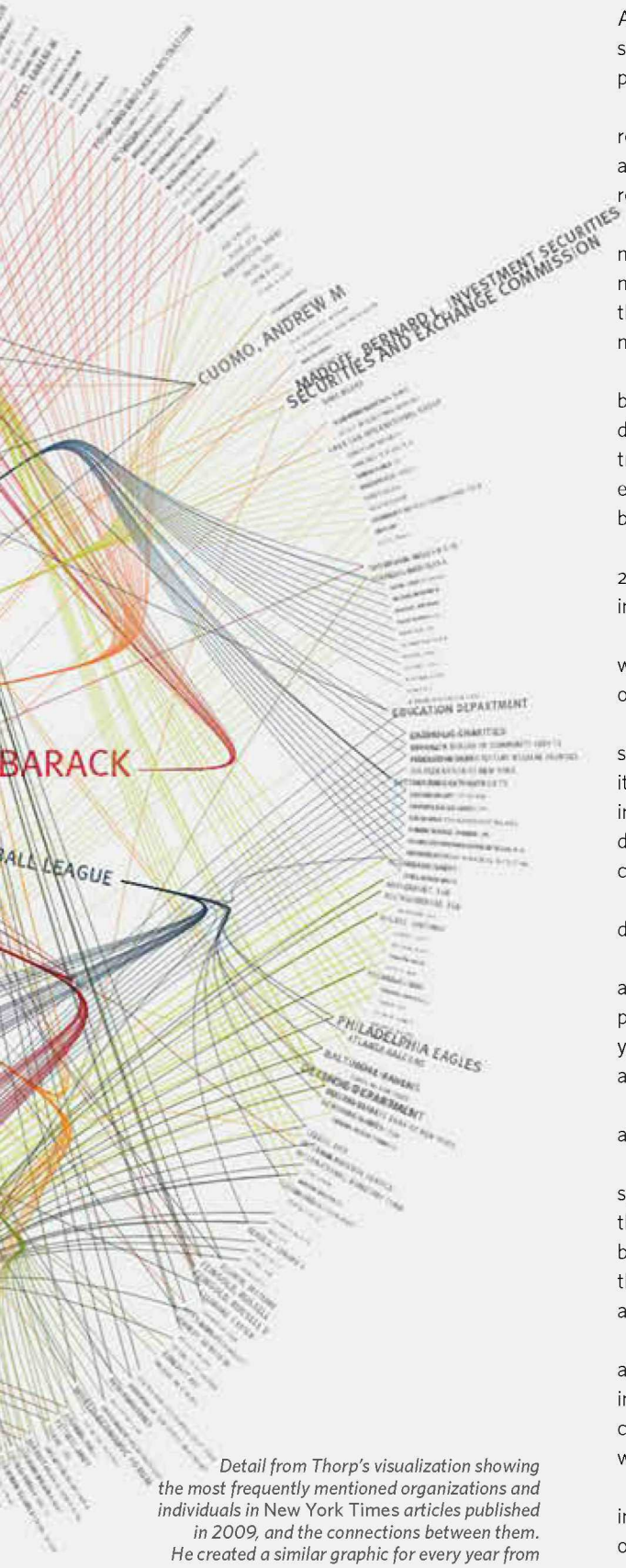
Thorp worked on the 9/11 memorial, ensuring that the names of those lost were arranged to reflect the relationships between them. (AP Photo/Craig Ruttle)

Whose Data Is It, Anyway?

Data artist Jer Thorp speaks out against the monopoly and misuse of our data.

BY **CHRIS CANNON**

Jer Thorp. Photo: Ken Tisuthiwongse



Detail from Thorp's visualization showing the most frequently mentioned organizations and individuals in New York Times *articles published in 2009, and the connections between them. He created a similar graphic for every year from 1984 to 2009. (flickr.com/people/blprnt/)*

At the corner of Greenwich and Fulton in New York City, 2,983 names are arranged around two square reflecting pools, the footprints of the World Trade Center. Permanently etched in bronze parapets, the names are a public list of those lost in the 1993 and 2001 attacks.

But it is more than a list. As well as preserving their names, the memorial also preserves their relationships. Visual data artist Jer Thorp worked with designers to produce an algorithm and a software tool that would arrange the names according to nearly 1,500 "meaningful adjacency" requests made by next-of-kin.

Family sits with family. Friend next to friend. Officemates, flight crews, first responders – memorialized not just for who they were, but for what they meant to each other. We think of social networks as something fluid and constantly changing, with much of the machinery whirring behind the scenes. But the 9/11 memorial is a static network, a freeze-frame of relationships at a single moment in history.

Though this is one of his best known and most personally affecting creations, Thorp had already been working for years as a data artist, creating visual representations of massive and complex data sets and organizing the information to give it the context of a narrative. His projects ranged from tracking the sharing activity of *New York Times* readers over social media to representing each and every person in the UK's National DNA Database – 4.5 million in all – in a single graphic organized by race, age, and criminal record.

"By placing data into a human context, it gains meaning," Thorp told a TedxVancouver crowd in 2009. "Because it automatically builds empathy for people involved in these systems, and that turns into a fundamental respect."

But within a few years of the memorial project, he gradually came to challenge his own medium, worried about the false sense of objectivity the data engendered and the increasing impact that the owners of that data had on our daily lives.

"I think in the beginning it was easy to take a data set that you downloaded from the web and do some clever things with it without being critical about where that data came from, who recorded it, and why, and what are the politics of the data," he says. "Visualization was the way that I got into the subject of data, but since then I've been pretty skeptical about it. Most of the work that I've done for the last four or five years has been thinking about other methods that can be used to both communicate data and to find agency with data."

Now a proponent of "data humanism," Thorp speaks out against the monopoly and misuse of our data, empowering users to reclaim the agency of their own information.

Born in Edmonton, Thorp grew up in Tsawwassen, BC, entering UBC in 1993 to study cell biology and genetics. But like many tech entrepreneurs on the edge of the Silicon Valley boom, he found his pursuits outside the classroom more rewarding. He left the school in his last term, working for a few years at the Vancouver Aquarium before eventually pursuing a freelance career developing websites and experimenting with visual tools that would help him understand complex systems.

"I went from a web developer who would do weird internet art on the side to being a weird internet artist that would do web development on the side," he says.

It was a slow transformation. Though his early work was focused on the aesthetics of visualized systems, he soon started noticing how these systems had political and social questions baked into them. A series of projects based on *New York Times* content, for example, examined the inverse ratio between mentions of "communism" and "terrorism" over a nearly 30 year period; the frequency of the words "hope" and "crisis" over the same period; and the intricate connections between people and organizations mentioned in a year's worth of content, represented in a single graphic.

As the reach of social media grew, taking an increasingly central role in data collection, Twitter and Facebook gave him an even greater palette to draw from. In 2009, he collected tweets that included the words "just landed" to plot the travel patterns of social media users. Soon after, he created a 3D model of people around the world tweeting "Good Morning," colour-coded to reflect what time they got up.

Essentially, he was collecting our stories – taking discrete bits of information and building them into structures to form individual and collective histories. Some of these projects were for clients, others in collaboration with his partners at the (now closed) Office for Creative Research, and some just for fun, an exploration of this new frontier of collected personal data.

"This idea of using narrative to frame our way through a complex data set is something that we've done over and over and over again," he said in a recent fellowship speech at the Library of Congress. "Because I think it does give us a chance to investigate the things that are otherwise really difficult to investigate. So I believe that if aliens were to touch down today and try to understand our culture, they would look towards these gigantic data sets."

But the more Thorp immersed himself in the stories behind the data, the more wary he became of its objectivity. He began looking at how the data was manifested in the first place, the conditions that led to its creation, how to be critical about what is missing as much as what is shown, "to try to throw a wrench into this belief the data can be objective."

"In my own work, I've been really aware of how am I reinforcing the messages that come from Silicon Valley and the powers that be, the narratives of what we can and can't do with data," he says. "We need to be thinking about different mechanisms. So for me that's meant building projects that are more participatory, that don't depend on technology as much."

Among his most impactful projects was one he credits for fueling his transformation from data artist to data humanist: the St. Louis Map Room, a 2017 collaborative mapping experience that took him a decade to realize.

Over the course of a month, 29 different groups occupied a vacant school gymnasium to hand-draw 100-square-foot maps of their neighbourhoods from their perspectives as residents. Community organizations drew data they had collected by hand – bike traffic, gardens, churches, food banks. Students drew their routes to school, noting which were safe and which were dangerous.

Each group then got to see official city data projected onto their map, from bus lines to poverty statistics, confirming or challenging discrepancies between civic data and lived experience. For the first time, locals could see how they were represented, and misrepresented, in the official numbers.

"If mapping is a source of power," Thorp wrote of the project, "each mapper claimed some of it by making maps of their community that reflected them as they are, or that communicated what they'd like them to be."

While Thorp admits that part of this new phase of his work was to provoke, his real interest was in providing people with experiences that give them a sense of agency. All cities have some form of portal that allows citizens to see their collective data, but most residents can't access or organize this information in any meaningful way.

"What the Map Room does is it gives people a mechanism in which they can feel like they have a way not only to find value from that data so they can understand things about their city that they maybe didn't understand before," he says, "but that they can find ways to critique that data, and to come back to the city and say that they feel like the story that is wrapped around their lived experience is not being accurately represented in that data."

With plans to expand to other cities over the coming years, the Map Room project is one of a growing number of tools opening the door for the disenfranchised to access and understand their community data and how it is being used.

But Thorp is out to slay an even larger beast. As much as social media has provided a boon

"I believe that if aliens were to touch down today and try to understand our culture, they would look towards these gigantic data sets."

Detail from Thorp's visualization of the frequency of the words "hope" and "crisis" in the New York Times, *between 1981 and 2009. The word "crisis" has surpassed "hope" on only a handful of occasions. (flickr.com/people/blprnt/)*

of raw data to study and make art out of our public lives, it has also fuelled the growth of surveillance capitalism – the practice of Big Data using our information to classify us, predict our habits, and sell us products.

Data Humanism is partly a response to this threat – designing data systems for the well-being of the people from whom it was taken and providing them with mechanisms for feedback. Thorp and other data humanists believe we should do more to honour the complexity of individual and community realities, so we can create real, functioning data publics.

"What is it like to live in data?" Thorp asked in his Library of Congress address. "It sucks. I don't mean that only in the pejorative, I also mean that it's like a gigantic vacuum cleaner. We are the subject of extraction...The word collection or the word gathering are these neat and polite ways to describe something that I think is a little more violent. We're scraping and abstracting and mining data from individuals."

As much as social media has provided a boon of raw data to study and make art out of our public lives, it has also fuelled the growth of surveillance capitalism – the practice of Big Data using our information to classify us, predict our habits, and sell us products.

In other words, our social habits, dutifully recorded on our devices and sold to third-party vendors, are being tracked and monetized. We are being used by advertisers – most of the machinery surrounding our data exists to place ads in our web browsers.

But it's not the collection of information that's having a chilling effect on our democracy. From this data, advertisers build tightly focused demographic profiles and make decisions that have a direct impact on our lives – the level to which we can be insured, the type of health insurance we're being presented with, the credit cards we're being offered.

Thorp believes we can change this practice, that we can return data agency to the first party: Us. In 2015 he co-founded Floodwatch, a Chrome browser extension that tracks the ads a user sees on the internet and helps them understand how their information is being used to build their online identities. The information is also sent to researchers, who can use the data to track discriminatory advertising practices – something easy to spot in traditional marketing venues, but much harder to see online where ads are targeted towards individual users.

The St. Louis Map Room project involved participants hand-drawing maps of their neighbourhoods from their perspectives as residents.

Thorp had previously helped design Openpaths, a secure data locker for smartphones that takes the location data a phone generates and translates it into useable information for the owner, such as understanding what resources go into their transportation choices or optimizing their data plans based on where and how often they travel.

Like Floodwatch, Openpaths gave users the option of donating their data to researchers, who could repurpose it for the public good in areas such as epidemiology, disaster response, and urban planning. But at its most basic, Openpaths was about empowering the user to form a relationship with their data in a way that made sense to them.

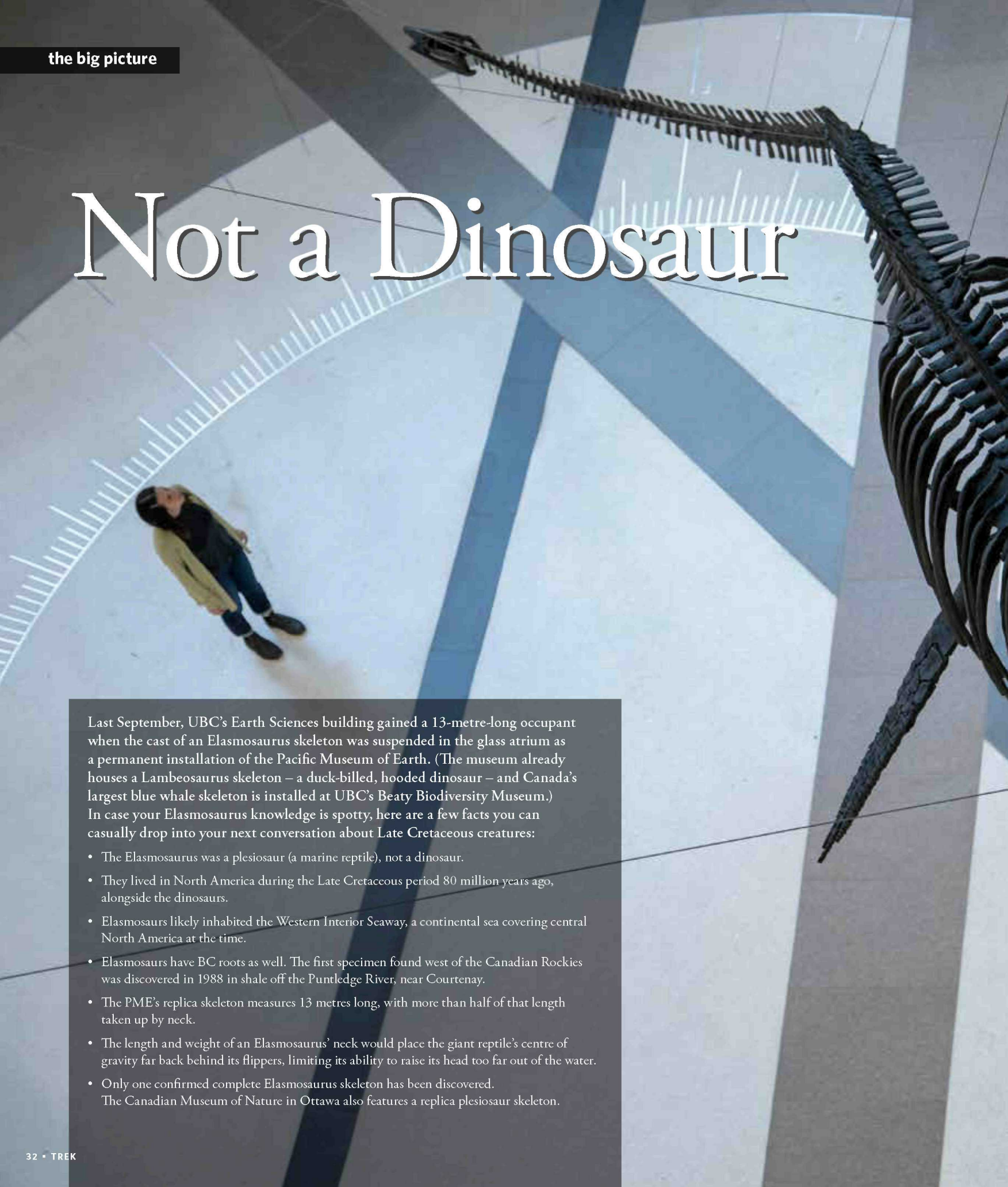
"Data visualization as a medium is something that's sort of born out of the hard sciences, and as a result I think the ways that we typically try to visually communicate data are exclusionary," says Thorp. "They don't speak to a ton of people, so the work that I've been invested in the last part of my career has really been about trying to bring data into public space, trying to get the language that we use to communicate data out of charts and graphs, into some types of communication that are maybe friendly and a little bit different than what we expect from visualization."

His work has not gone unnoticed. In addition to his recently completed residency at the Library of Congress, Thorp has spoken at venues ranging from New York's Museum of Modern Art to NASA's Jet Propulsion Laboratory, and his work has been seen in publications as varied as *Scientific American*, the *New Yorker*, *WIRED*, and the *Harvard Business Review*. He has been recognized as a National Geographic Explorer and a Rockefeller Fellow, and in 2015 was named by Canadian Geographic as one of Canada's Greatest Explorers.

Currently an adjunct professor at NYU, Thorp is publishing his first book next year – *Living in Data* – detailing how we got where we are with data, the work he and other disrupters are doing around surveillance capitalism, and a road map about how we might achieve something better.

"I think it's important to understand that we've gotten to where we've gotten to very quickly," he says. "So any idea that we might have that this path we're on has any kind of permanence I think is a myth that certain parties would like us to believe. I do think we still have some power to plot out what our future might look like." T

Not a Dinosaur



Last September, UBC's Earth Sciences building gained a 13-metre-long occupant when the cast of an Elasmosaurus skeleton was suspended in the glass atrium as a permanent installation of the Pacific Museum of Earth. (The museum already houses a Lambeosaurus skeleton – a duck-billed, hooded dinosaur – and Canada's largest blue whale skeleton is installed at UBC's Beaty Biodiversity Museum.) In case your Elasmosaurus knowledge is spotty, here are a few facts you can casually drop into your next conversation about Late Cretaceous creatures:

- The Elasmosaurus was a plesiosaur (a marine reptile), not a dinosaur.
- They lived in North America during the Late Cretaceous period 80 million years ago, alongside the dinosaurs.
- Elasmosaurs likely inhabited the Western Interior Seaway, a continental sea covering central North America at the time.
- Elasmosaurs have BC roots as well. The first specimen found west of the Canadian Rockies was discovered in 1988 in shale off the Puntledge River, near Courtenay.
- The PME's replica skeleton measures 13 metres long, with more than half of that length taken up by neck.
- The length and weight of an Elasmosaurus' neck would place the giant reptile's centre of gravity far back behind its flippers, limiting its ability to raise its head too far out of the water.
- Only one confirmed complete Elasmosaurus skeleton has been discovered. The Canadian Museum of Nature in Ottawa also features a replica plesiosaur skeleton.

"We hope to ignite a sense of amazement and curiosity in visitors as they imagine this majestic sea creature swimming through a Cretaceous sea."

Kirsten Hodge
Director of the PME

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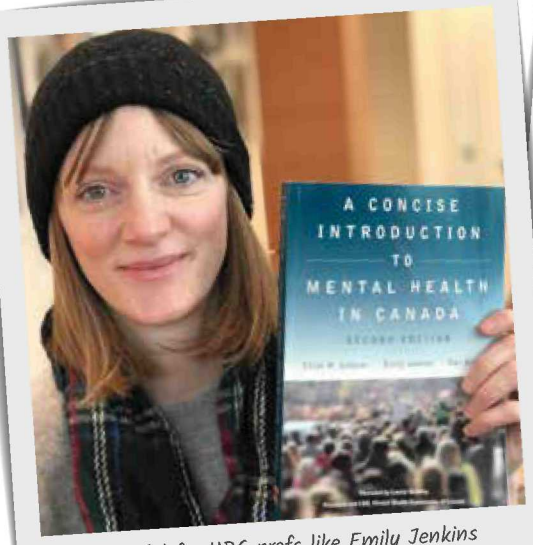
prez LIFE

*Highlights from the busy schedule of UBC president Santa J. Ono. Follow him on Facebook, Instagram, YouTube and Twitter @**UBCprez***



Grateful for UBC profs like Emily Jenkins (Nursing), who has done so much to support youth with mental health challenges.

Congratulated UBC Okanagan Relay students for raising 14K for the Canadian Cancer Society.

Met with alumnus Ryan Beedie, MBA'93, who has established the Beedie Luminaries Scholarship Program and pledged $50M to help remove financial barriers to a university education.

Welcomed former Ohio Governor John Kasich (third from left) to UBC, who gave a presentation as part of the UBC Connects speaker series.

Heard about the #MeToo movement from founder Tarana Burke, who visited UBC as part of the UBC Connects speaker series.

Met with Vancouver Board of Trade President Iain Black.

Came across this campus snowman, who looked vaguely familiar...

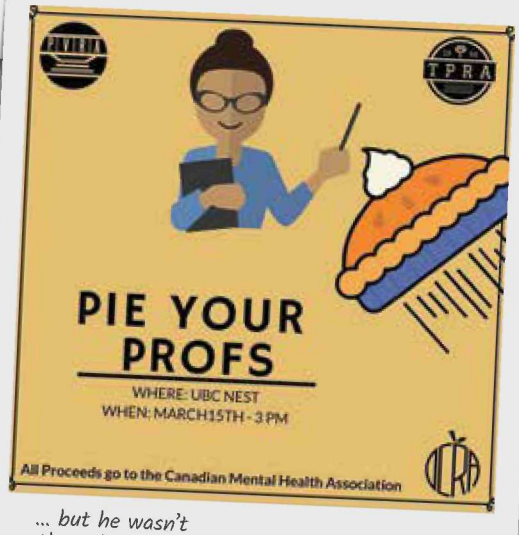
Impressed by UBC student John Michael Koffi, who at the age of 20 has published a book about his experiences as a refugee (REFUGE-E: The Journey Much Desired).

Honoured Major League Baseball pitcher Jeff Francis by retiring his T-Birds jersey.

Dropped in on a Biology 140 class.

Stormed this Wall.

Volunteered to be "pied" with whipped cream to support a fundraiser for mental health programs...



... but he wasn't the only victim.

@UBCprez

Met these future UBC STEM students, who have already demonstrated excellence in academics and community leadership.

Got to know some UBC Okanagan students on our Kelowna campus.

Congratulated Dr. Jacquelyn Cragg, postdoctoral fellow with the International Collaboration on Repair Discoveries (ICORD) at UBC and a 2019 recipient of one of the L'Oreal-UNESCO International Rising Talent Award for Women in Science.

Trek Online video series:

Ask Santa!

What makes Professor Ono proud of UBC? What challenges is UBC facing? How can alumni be involved?

Visit *trekmagazine.alumni.ubc.ca* to find out.

Tiananmen Square, Beijing, 1983.

class ACTS

Adventures in Mainland China

In 1983, 22 students from the UBC Department of Geography, led by professor Marwyn Samuels and accompanied by two professors of Asian Studies, embarked on a six-week adventure through Mainland China that would change the way they viewed the world. China had only recently opened its doors to visitors after years of Cultural Revolution, and this was the first inter-departmental exchange between Peking University and any university in the West.

"In taking this trip, I had hoped to learn about another world – how a culture so completely different than ourselves lives – and discover China's history and geography," says participant **Allison Jordan**, *BA'83*, "but I mainly wanted to learn and understand myself."

After spending time exploring Beijing, their journey took them across thousands of kilometres. "We toured by bus and train," recalls Jordan. "It was like travelling back in time a couple of centuries. The countryside was very agrarian and contained few roads. All buildings were similar – a stark contrast to the beauty of Beijing's temples and gardens."

Despite the warmth and hospitality of their Chinese hosts, Jordan says she and her classmates were often taken aback by the cultural differences they encountered throughout the trip. Their ever-present guide ensured that they only travelled to approved areas. While dining at a restaurant, she recalls an employee joining them in a singalong of Swing Low, Sweet Chariot, but being reprimanded by her supervisor because the song was too religious. Another time, workers accompanied them for lunch at the Shisanling Tombs, but quickly excused themselves "out of fear that we foreigners may have too much influence on them." Even in an academic setting, only half of Peking University's 40 professors of geography were permitted to interact with the UBC students.

"The differences in culture opened our eyes to a new world and the differences in the level of freedom," Jordan says, "and we realized how blessed we are to be living in a democratic country." Her experiences on the trip – both positive and less so – left a lasting impression. "I've encouraged my kids and their schools to get involved with a group called Me to We, which encourages kids to volunteer on a local and global level and to understand different cultures and diversity with all walks of life."

In summer 2018, several participants from the trip reunited in Vancouver to celebrate its 35th anniversary. "As a group, we felt like a family. At the [reunion], we felt like kindred spirits and the years in between just vanished."

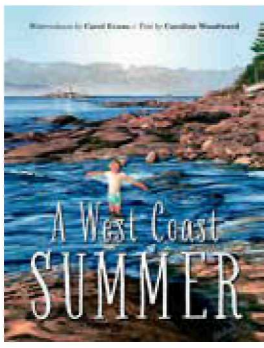
Reunion in Vancouver, BC. From left around the table (clockwise): Charles Tremewen, Rita Tremewen, Christophe Sonnendrucker, Cathy Tremewen, Doug Marshall, Susan Bennett, Professor Dick Copley, Professor Peter Rowbotham, Cathy Moore, Allison Jordan, Mike Lucas, Gary Koch.

What have you been up to lately? Share your latest adventures, unique stories, milestones, and journeys with fellow alumni in Class Acts. Don't be shy. You're a member of *alumni UBC* – you've got bragging rights.

If your submission includes photos, please ensure they are as high-resolution as possible. Submissions should not exceed 750 characters (about 200 words), and may be edited for length and clarity where necessary.
trekmagazine.alumni.ubc.ca/classacts

1970s

Author and lighthouse keeper **Caroline Woodward**, *BA'74*, and renowned Salt Spring Island artist Carol Evans have collaborated on a picture book for children. Published in September 2018, *A West Coast Summer* (Harbour Publishing) pairs two dozen of Evans' wonderful watercolours with a lilting, rhyming story by Woodward. It tells of a timeless and idyllic season where "Sea salt in the air floats everywhere / and cedars smell so sweet beside the shore." Children race bikes along sand flats, search under



History Keepers of the Kootenays

The City of Nelson and its Cultural Development Committee recently presented Nelson couple **Frances Welwood**, *BA'64, BLS'66*, and **Ron Welwood**, *BA'66, BLS'67*, with a special citation in recognition of their lifetime work preserving, documenting and promoting Nelson's history.

Ron sat on the city's heritage committee for almost 20 years, wrote numerous articles on Nelson for *British Columbia History*, and compiled three brochures to help facilitate self-guided tours around the city: *Walking; Motoring;* and *Cemetery*.

After arriving in Nelson in 1969, Ron became immersed in the area's storied past. As librarian at Notre Dame University of Nelson and David Thompson University, he realized that print and non-print resources on the region were not being collected and preserved in a central location. Taking it upon himself, he began to amass a collection of "Kootenaiana."

When David Thompson University closed in 1984, this inventory was transferred to the Nelson Public Library and the Nelson Museum Historical Society, and Ron continued to collect as the librarian at Selkirk College from 1984 to 2000. Still accessible, these collections continue to be a valuable resource for researchers.

Frances was on the board of directors of the Nelson and District Museum, Archives, Art Gallery and Historical Society (Touchstones Nelson Museum) for over 20 years, and is an accomplished historian, writing many articles for *British Columbia History* and local news media.

In the early 1990s, she began to research the life of Annie Garland Foster for a Nelson Museum exhibition. An early graduate of the University of New Brunswick, Garland Foster was the first woman elected to Nelson City Council in 1920. Frances spent nearly two decades painstakingly researching and gathering details of this enigmatic woman's life, publishing a full-length biography of Garland Foster, *Passing Through Missing Pages*, in 2011.

Both Ron and Frances are active volunteers, leading walking tours that showcase Nelson's history to both locals and visitors. For almost 30 years, they have regularly attended the British Columbia Historical Federation conferences as Touchstones delegates, enthusiastically promoting the city and its vibrant culture and history.

(Photo by Bill Metcalfe / Nelson Star. Used with permission.) L-R: Nelson Councilor Jesse Woodward, Astrid Heyerdahl of Touchstones Nelson Museum, Ron Welwood, Frances Welwood, Nelson Mayor John Dooley

logs and in tide pools for tiny creatures, jig at the dock for herring, dance at a totem-raising ceremony, pick berries, make memories, and leave footprints in the sand. • **Gordon Butt**, *BSC'76*, has recently retired after 38 years in the environmental sector. He established his consulting firm – Madrone Environmental Services Ltd. – in 1988, which has since hired numerous UBC graduates. Gordon still remembers the day he spent walking around campus at the beginning of his second year, wondering in which department he should enroll. A chance visit to the Geography Department sealed his fate, and his UBC education has served him well ever since. His career has led him to some of the most beautiful places in BC, as well as to far-flung locales such as Malaysia, Thailand, the UK, and (now) Tanzania.

1980s

Kenneth Johnson, *BASc'81, MASc'86*, was the proud recipient of three prestigious engineering awards in 2018. A distinguished and highly experienced engineer with expertise in cold regions, Ken was elected a Fellow to the Canadian Academy of Engineering for his substantial contributions to engineering in Canada. Notable among them is his continuous effort over the past 30 years to improve the quality of life in cold regions through the engineering of water and sanitation systems. Ken also received the Can-Am Amity Award from the American Society of Civil Engineers for his work in advancing relationships between engineers in Alaska and Canada; and the Canadian Society of Civil Engineering History Award. • **Allan Baker**, *BSc Pharm'82, RPh*, was named the 2018 Canadian Compounding Pharmacist of the Year by the Professional Compounding Centers of America (PCCA) Canada chapter in recognition of the lasting impact he has had on his community, patients, and colleagues. After working in a national chain

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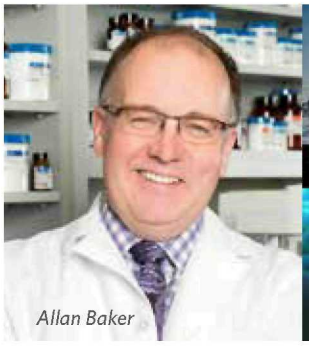
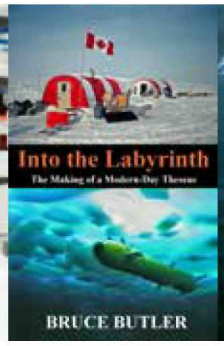
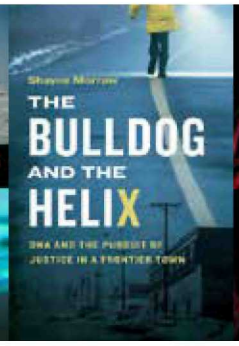
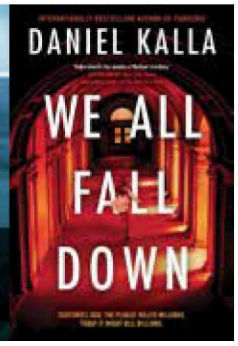


Allan Baker







after graduation, Allan – a second-generation pharmacist – wanted to become an independent pharmacy owner like his father. He went on to found Macdonald's Prescriptions in Vancouver, which he has proudly owned and operated since 1992. • **Bruce Butler**, *BSc'83*, has released his second book, *Into the Labyrinth: The Making of a Modern-Day Theseus*. It tells the story of Project Spinnaker, a Canada-US defence research project begun near the end of the Cold War and intended to give Canada the capability to monitor Soviet submarine traffic in its Arctic waters. The star of the project was Theseus, a massive autonomous underwater vehicle developed by a BC-based subsea engineering company for the sole purpose of laying cable in ice-covered waters. Drawing on his experiences as the vehicle's systems engineer, Butler describes how the design team (mostly UBC graduates) overcame numerous technical obstacles before deploying Theseus on its arctic mission off the northern coast of Ellesmere Island. • In his new book, *The Bulldog and the Helix: DNA and the Pursuit of Justice in a Frontier Town*, author **Shayne Morrow**, *BFA'85, MFA'88*, covers two landmark DNA investigations, both based on child sex slayings in Port Alberni, BC. In 1977, the town was shaken by the brutal murder of 12-year-old Carolyn Lee, who had been abducted while walking home from her dance class. Tragedy struck again in 1996, when 11-year-old Jessica States disappeared while chasing foul balls at a local fast-pitch game, her body later found beaten in the woods. At the time of States' murder, Morrow was working as a reporter for the now-defunct *Alberni Valley Times*. His interest in forensic science led him to cover the States case and relate it back to the Lee case, which had gone unsolved for years. In his coverage, Morrow gained unprecedented access to the investigators and scientists who were on the trail of both killers. Emerging DNA technology in the mid-1990s led to a renewed interest in the Lee case and ultimately to the conviction of her killer in 1998. The technological mechanisms put in place during that case would lay the groundwork for the capture of States' killer a year later. *The Bulldog and the Helix* is a riveting portrait of a town rocked twice by the most heinous type of crime imaginable and a community's unrelenting search for justice. • Drawing on 35 years of experience, award-winning filmmaker and educator **John Pozer**, *BA'86*, has released his first book: *21st Century Film Student PRIMER: Everything You Need to Know and Do Before You Go to Film School*. Geared towards helping students ensure that their investment in post-secondary film education delivers the maximum possible return, Pozer's book lays out a practical approach for scholastic achievement. He provides advice on how to build your voice, accomplish your best work, and make the most out of your creative time and efforts. • Bestselling author **Daniel Kalla**, *BSc'88, MD'91*, has released his new novel, *We All Fall Down* (Simon & Schuster Canada). When NATO infectious diseases expert Alana Vaughn is urgently summoned to Genoa to examine a critically ill patient, she's stunned to discover that the illness is a recurrence of the Black Death. Alana soon suspects bioterrorism, but her WHO counterpart, Byron Menke, disagrees. In their desperate hunt to track down "patient zero," they stumble across an 800-year-old monastery and a medieval journal that might hold the secret to the present-day outbreak. With the lethal disease spreading fast and no end in sight, it's a race against time to uncover the truth before millions die.

1990s

Sandra M. Finch, *DMD'91*, has achieved American Academy of Cosmetic Dentistry (AACD) Accreditation. Achieving accredited status requires dedication to continuing education,

Great Trekker

Michael Audain, *OC, OBC (BA'62, BSW'63, MSW'65, LLD'14)*, chairman of Polygon Homes, is the recipient of the 2019 Alma Mater Society's Great Trekker Award. Initiated in 1950, the award honours a UBC alumnus who has achieved eminence in their field, made special contributions to the community, and shown ongoing support of their alma mater.

On Friday, March 22, AMS President **Marium Hamid** presented the award at the AMS All Presidents' Dinner, an annual celebration to commemorate the achievements of UBC's outstanding student leaders. While he was a student in the 1960s, Audain displayed the same spirit of leadership, as evidenced by his passionate acceptance speech. He was founder and president of the Nuclear Disarmament Club, led UBC's student protests against nuclear arms, and co-founded the BC Civil Liberties Association.

Audain is one of Canada's leading philanthropists and chair of the Audain Foundation, which supports the visual arts and wildlife conservation. He is an officer of the Order of Canada and a member of the Order of British Columbia. Audain continues to make an extraordinary impact on his alma mater, where his vision has helped enrich the UBC campus and make a difference to the lives of students.

He established the Audain Graduate Fellowships in Curatorial Studies and has supported UBC's Audain Art Centre, the Audain Gallery at UBC's Museum of Anthropology, and exhibitions and contemporary art acquisitions at the university's Morris and Helen Belkin Art Gallery. UBC's Reconciliation Pole, which was raised in April 2017, was jointly commissioned by the Audain Foundation and UBC. Dr. Audain was also a member of UBC's *start an evolution* Campaign Cabinet from 2008 to 2015 and served on the Faculty of Arts Dean's Advisory Board for many years.

AMS president Marium Hamid presented Dr. Michael Audain with the 2019 Great Trekker Award in March.

Sandra Finch

Todd Tubutis

Shannon Foster (C)

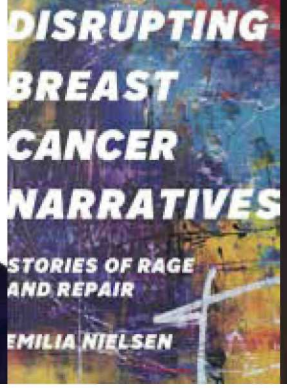
careful adherence to protocol, and a resolve to produce exceptional dentistry. Sandra is only one of 456 dentists and laboratory ceramists worldwide who have achieved Accredited Member status. Moreover, she is the first female dentist in BC and one of fewer than 20 in Canada to realize this goal. She pursued the accreditation for over 10 years while managing her busy practice and growing family demands – a real demonstration of her tenacity and spirit! Her family (personal and professional) are all proud of her accomplishment. • **Todd Tubutis**, *MA'98*, has been named director of the Art Museum of West Virginia University in Morgantown, WV. He was previously associate director of the Sheldon Museum of Art at the University of Nebraska-Lincoln. In his new role, Tubutis hopes to build on progress towards establishing the museum as a vibrant cultural hub for the WVU campus and community.

2000s

Last November, **Shannon Foster**, *BSc'03*, was recognized with the 2018 Leadership Award for Women in Technology from the association of Applied Science Technologists and Technicians of BC (ASTTBC). This award honours a woman who, as an ASTTBC member, has distinguished herself in her field of technology and has demonstrated leadership by serving as a role model and promoter of careers in technology. Shannon's personal mission is to build a support network among women in technology to help retain talent in the industry. In pursuing it, she has enthusiastically demonstrated leadership and mentorship in the BCIT Women in Engineering Club. She also initiated a series of pub nights for female technologists in multiple cities across BC. Shannon works as a civil engineering technologist for Urban Systems Ltd., and is based remotely out of Revelstoke, BC. She works alongside engineers to deliver civil design and construction projects for municipalities, First Nation communities, and land development clients. • **Troy Wong**, *BCom'07*, recently received the Emerging Leader Award from the Chartered Professional Accountants of Ontario (CPA Ontario). This award recognizes exceptional achievement by CPAs under 34 years of age who are regarded by their peers as leaders committed to innovation, impactful contribution, and social responsibility. Troy co-founded Neptune Dash Technologies Corp., the world's first publicly traded blockchain masternode company, which raised $23.1 million

Jaimie Boyd

Pearl E. Gregor



Aarondeep Bains

in its first year and is one of the top-ten publicly traded blockchain companies in Canada. • After various roles in Asia and a Master of Advanced Management degree from Yale University, **Arun Adhikary**, *MBA'09*, is now the senior director of the Carlsberg Group in USA and Mexico. • **Pearl E. Gregor**, *PhD'09*, has released *I, the Woman, Planted the Tree: A Journey through Dreams of the Feminine*, the first book in her Dreams Along the Way series. This memoir chronicles her harrowing journey through clinical depression with no relief from talk therapy, the medical establishment, pharmaceuticals, or conventional religion. She shows the tumultuous process of the descent to the unconscious and the slow process of individuation through meditation, dreams, and alternative therapies. The book is well-footnoted for additional reading in Jungian and feminist theory, women's history, consciousness studies, and more. Her dissertation at UBC was *The Apple and the Talking Snake: Feminist Dream Reading and the Subjunctive Curriculum*. • For the last two years, **Preeti Adhikary**, *MBA'10*, has been working as the VP of Marketing at Fusemachines Inc., an artificial intelligence company based in New York City.

2010s

Jaimie Boyd, *MA'10*, was recently named one of the top 20 most influential young people in government. The 2018 ranking by UK-based Apolitical listed 100 future leaders, aged 35 or below, making a mark on government and public policy around the world. As director of Open Government in the Government of Canada, Jaimie leads a team that works to make government more transparent, accountable, and participative. • **Aarondeep S. Bains**, *BA'11*, was recently appointed to two positions: president of the South Asian Bar Association (SABA), Toronto Branch – the largest diverse bar association in Canada (Aaron is the youngest appointee in the history of the association); and member of the Committee of Management of the St. George's Society of Toronto, one of the oldest charities in Canada. Aaron currently works as a Capital Markets lawyer at Aird & Berlis in Toronto. • **Emilia Nielsen**, *PhD'13*, has recently published her scholarly text, *Disrupting Breast Cancer Narratives: Stories of Rage and Repair*, with the University of Toronto Press. Her debut book of poetry, *Surge Narrows* (Leaf Press, 2013), was a finalist for the League of Canadian Poets' Gerald Lampert Memorial Award. Its follow-up,

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Choco4Peace

Matt Whiteman, 2019 (credit Wayra Pasquis)

In 2016, the government of Colombia signed a peace agreement with the Fuerzas Armadas Revolucionarias de Colombia (FARC), the country's largest guerilla group. After more than 50 years of armed conflict, many hoped that Colombia could move past its reliance on the drug trade to fuel its national economy.

According to studies from the United Nations Office on Drugs and Crime, however, the amount of Colombian land used to grow coca leaf – the plant used to make cocaine – has been steadily rising by about 45 per cent per year since 2013, reaching 422,550 acres by the end of 2017. This is in spite of the government's ongoing campaign of crop eradication and a program established by the peace treaty to pay farmers for voluntarily giving up coca production and switching their crops to cacao. When approximately 73 per cent of the nation's cacao farmers live below the poverty line, it can be difficult to convince coca producers to face the financial risks that come from giving up the lucrative plant, despite its illegality.

One group hoping to change this is Montreal-based startup Choco4Peace, which recently recruited **Matt Whiteman**, *BA'09, MA'15*, to serve as manager of Partnerships and Growth. Choco4Peace uses blockchain technology to connect producers directly with stakeholders in the cacao industry, providing farmers with access to broader markets, fair prices, increased investment, and better equipment. The Choco4Peace platform emphasizes transparency and traceability, helping to build trust and mitigate risk for producer and investor, alike.

For Whiteman, joining Choco4Peace was a natural fit, both personally and professionally. As a graduate student, his research focused on the ethics of engaging with vulnerable communities abroad. This experience, including time spent in Eldoret, Kenya, gave Whiteman a unique perspective. "I had gotten fed up with watching so many millions, billions, trillions of development dollars squandered because [aid] organizations weren't able to properly respond to the communities they were working with, or suffered from inefficiency, corruption, and circumstances beyond their control," he says. Enter the emerging paradigm of the "social enterprise" – revenue-generating organizations with an emphasis on achieving social, cultural, or community outcomes. "If you can put a market value on doing the right thing," says Whiteman, "then that is really interesting to me."

At present, Choco4Peace are gathering seed funding to pilot their project and have secured support – financial or otherwise – from a diverse group of investors and other stakeholders, including the Food and Agriculture Organization of the United Nations (FAO), the World Bank, and the sitting president of Colombia, Ivan Duque. They have also received expressions of interest in partnership from six cacao associations in three regions of Colombia, representing about 600 farmers, and have pending buyers ranging from airlines to universities and hospitals. To meet this demand in the short-term, Choco4Peace have joined with a premium bean-to-bar chocolate maker in Montreal to produce small batches of product using cacao purchased through their supply chain.

"I have always wanted what I do to matter – to feel real," says Whiteman. "I think about the world I want to live in, and what I want my role to be in shaping that. What would I be satisfied with on my deathbed?" Looking forward, he is optimistic about what Choco4Peace can help to achieve. "The potential for this project to secure peace in a country plagued by over 50 years of war, to lift people out of poverty, to create environmental benefits – that is irresistible to me."

Get more information at *choco4peace.org*.

Choco4Peace founder Sergio Figueredo (5th from left) at a meeting with the Federación Nacional de Cacaoteros of Colombia

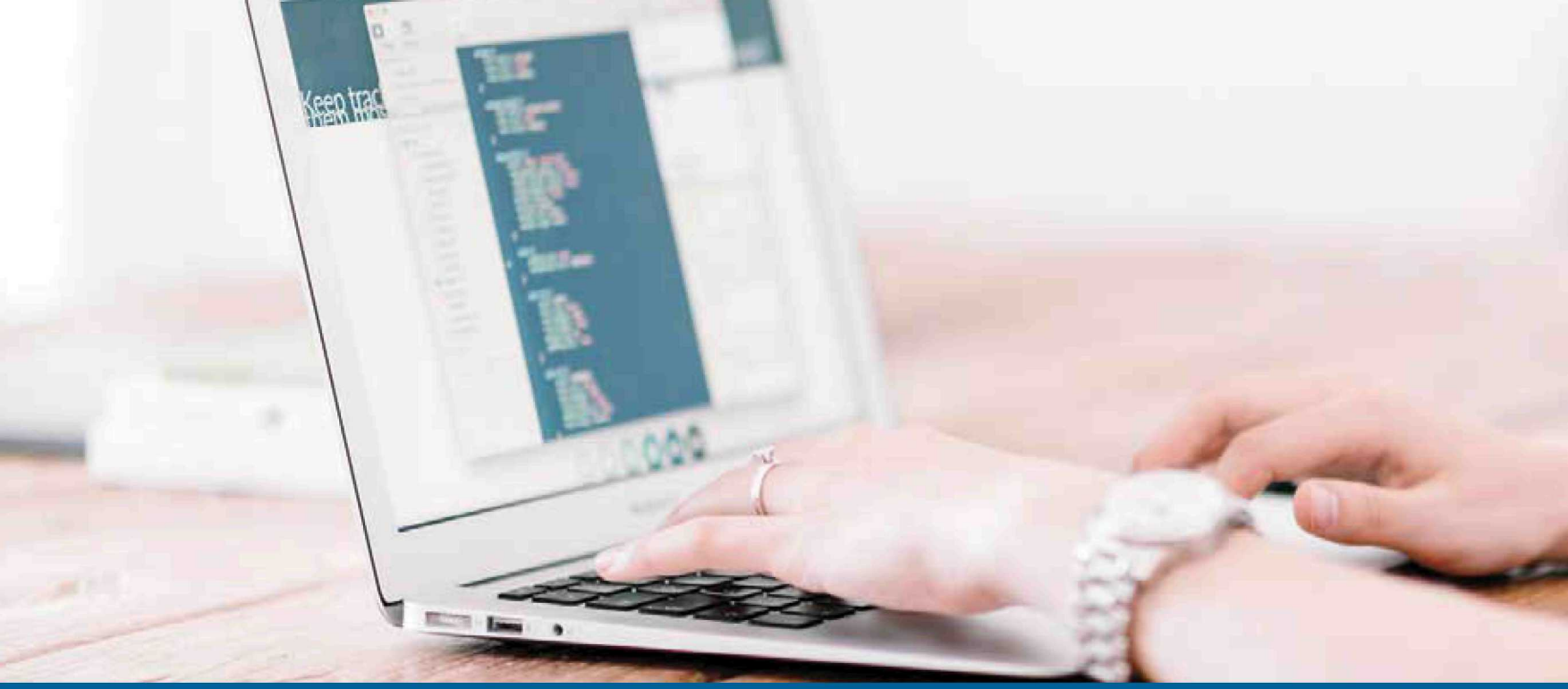
Body Work (Signature Editions, 2018), is a finalist for the Lambda Literary Award for Poetry – one of just a few Canadian finalists for what is billed as "the most prestigious LGBTQ book prize in the world." In 2018, she joined York University's Health & Society Program in the Department of Social Science as a tenure-track assistant professor in Arts, Medicine and Healing. • Since graduation, **Chol Duot Gak**, *BA'16*, has published two books on FriesenPress, both written under his nickname Chol-wdwuok. From escaping a massacre with his family to seeking education in a Kenyan refugee camp, *Angels in Swollen Crises: Stepmother* (2016) recounts the author's experience as a child caught in the maelstrom of the Second Sudanese Civil War. *Of Rags and Grades: Struggle of One* (2018) continues the story, documenting his tireless efforts to escape the camp and find a better future through education. Learn more at *cholwdwuokbooks.com*. T

Governance and Nominating Committee Seeks Recommendations

The *alumni UBC* Governance/Nominating Committee is seeking recommendations of potential alumni nominees to serve on the organization's Board of Directors. In particular, the committee seeks candidates who have the skill sets and experience necessary to effectively set strategic direction, develop appropriate policies, and ensure *alumni UBC* has the resources necessary to effectively fulfill its mission and vision. Preferred attributes include: prior board experience in the not-for-profit, government, or corporate sector, and involvement with the university.

Please send suggestions to
Shelina Esmail, *Chair, Governance & Nominating Committee,*
c/o Tanya Walker,
Director, Alumni Engagement,
3rd floor - 6163 University Blvd,
Vancouver, BC, V6T 1Z1

email: *tanya.walker@ubc.ca*
no later than June 14, 2019



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In memoriam

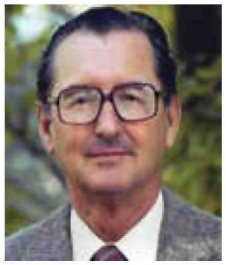
James Brooking Brown, ***BA'40***

Jim Brown, emeritus professor of experimental physics at the University of Kent (UK), died in April 2018.

During WWII, Jim worked with the Royal Canadian Navy on degaussing ships and on studying underwater sound, including trials of the hydrophone array on a captured German U-885 submarine. He was demobilized in Scotland as electrical lieutenant RCNVR in October 1945, and began a doctorate in low temperature physics at the Clarendon Laboratory, Oxford, shortly thereafter. Then, seeking adventure and the opportunity to explore, he went to Lingnan University in Canton, China. His work on a new type of expansion liquefier to produce the first liquid helium in Asia was interrupted by the arrival at his university of the advancing victorious Red Army during the establishment of the Communist government. This was followed the next year by the expulsion of Westerners, including Professor Brown. He used to happily regale colleagues with stories of his time in China, of which he clearly had many fond memories.

He then spent two years on liquid helium research at the Royal Military College in Kingston, Ontario. During the Korean war, he heard from former students on both sides of the conflict. From Ontario he returned to BC, publishing work on liquid helium and superconducting thin films.

Arriving in Kent with the university's first undergraduates in 1965, Jim established the Low Temperature Laboratory. With colleagues, he effected the first application of the quartz microbalance to measure thickness of the helium film and measured the Bernoulli effect in the flowing electronic fluid of a superconductor, as well as undertaking other work to elucidate the contact potential of metals under stress. More recently, Jim had been a member of Kent's Applied Optics Group and still attended meetings on campus in his 90s.
Jim used to visit the campus regularly after his retirement. He was popular with students, with some of the "First 500" holding him in high regard and still in touch with him all these years later. Staff found his warm and gentle approach to life of comfort, reminding them of the good things in life.



George C. Anderson, ***BA'47, MA'49***

George was born in Vancouver, BC. While studying at UBC, he spent his summers contributing to the BC Game Department's research on the trout in Paul Lake near Kamloops. Realizing that he was more interested in the lake's ecosystem than in the fish themselves, he enrolled at the University of Washington in 1949 for a PhD in zoology. After completing his doctorate in 1954, George was offered a position at the UW Department of Zoology to continue his research on lake ecology. The same year, George met Harriett, with whom he would share 47 years of marriage before her death in 2003. They had one son, who died young.

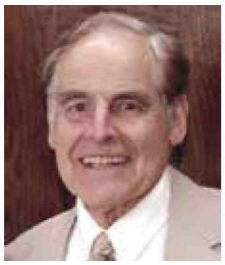
From the Department of Zoology, George moved to the Department of Oceanography, where he spent the rest of his career. He became associate chairman in 1977, and, after the formation of the College of Ocean and Fishery Sciences in 1980, was named director of the School of Oceanography.

In 1971, George was invited to administer the Marine Science program for the US Atomic Energy Commission in Washington, DC. Missing the Pacific Northwest, however, his family returned to the West Coast after the year-long commitment was complete.

A year later, George was appointed as a part-time member of the Atomic Safety and Licensing Board Panel, whose members hold the title of Administrative Judge. To better serve these responsibilities, he attended the National Judicial College and earned a Certificate in Judicial Writing. In the following 10 years, George sat on boards overseeing the construction and operation of nuclear plants in several states across the US. After much of the licensing of nuclear plants had been completed, he adjudicated other cases – such as plant modifications, nuclear medicine, and industrial radiography – before resigning from the panel in 2005.

George took on other assignments throughout the 1970s, including his service on multiple ocean sciences committees for the National Science Foundation, and his roles as chair of the Advisory Committee for the University National Oceanographic Laboratory System and chief scientist of Deep Ocean Mining Environmental Studies at the National Oceanic and Atmospheric Administration.

After selling his home in May 2005, George moved to Issaquah, Washington, where he met and, in 2006, married a lovely lady named Margaret. Sadly, she passed away the following year.



Robert Albert Cox, ***BASc'47***
July 22, 1925 – October 12, 2018

Bob passed away peacefully in Richmond, BC, giving his soul back to the Creator at the age of 93.

He is survived by his wife Susanna Heinrich-Cox, after over 41 years in unending eternal love; his children Priscilla, Elisabeth, Grace, Joanna, and Stephen; step-children Richard and Michelle; as well as many grandchildren and great-grandchildren.

An accomplished engineer, Bob graduated from UBC with a Bachelor of Applied Science in Electrical Engineering. He worked for BC Electric Ltd. (now BC Hydro), BC International Engineering, Ltd., Columbia International Engineering, Ltd., and founded ELICON – Electrical and Industrial Control Systems, Ltd. – in 1975. There, he served as president of the organization until his retirement in 2001. Bob was also proud to serve on many membership boards within the profession.

Bob was a man of varied interests. He enjoyed reading, floor hockey, and boating, to name a few. Bob's greatest interest, however, was his faith. From the age of 17, Bob started reaching out to children, teaching them and calling them toward God. At UBC, he was a key figure in the Intervarsity Christian Fellowship Organization. He was a great supporter of the Union Gospel Mission until his final days, always enlisting friends to help him with his volunteer work for the poor.

Later in his life, Bob converted to Catholicism and became a parishioner of Saints Peter and Paul Roman Catholic Church in Vancouver. He found great comfort, direction, and spiritual guidance from his friend in Christ, Father John Horgan. Bob had finally found what he felt was "home."

In 2008, along with Father John, Susanna and Bob made the journey to the holy land under the Foot Steps of Saint Paul Pilgrimage. He felt lifted high into God's love on this journey, and it made a powerful impact on his faith. Even on his deathbed, Bob relived his incredible experiences with Father Horgan and stated he was prepared and ready to meet God face to face.

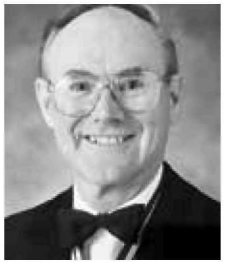
He was a well-respected man, loved by his large extended family, his church family at Sts. Peter and Paul, and all his friends both past and present. He will be sadly missed and forever loved.

Harold J. Page, ***BASc'49***

Born and raised in Victoria, BC, Harold attended Victoria College in 1944-45, then transferred to UBC to study electrical engineering. His engineering career spanned private industry, utilities regulation, and executive roles within the BC government. A dedicated PEng, his contributions were recognized with a lifetime membership in Engineers and Geoscientists of BC, Life Senior Membership in IEEE, and induction as a Fellow of the Engineering Institute of Canada. He also received the Queen's Silver Jubilee Medal in recognition of his worthy and devoted service to community and profession.

A career highlight was serving as a BC delegate to inter-provincial and federal-provincial working groups that developed and negotiated constitutional proposals that informed the Canadian Constitution Act, 1982. Harold's principal contribution to these efforts was on matters surrounding communication infrastructure.

In 1988, Harold received an Honorary Doctor of Engineering degree from the University of Victoria for his contributions to the establishment of the school's Faculty of Engineering. Predeceased by his beloved wife of 69 years, he leaves four daughters, four grandchildren and four great-granddaughters. Harold was an outstanding husband, father, professional, and citizen. A true gentleman, his integrity, competence, and kindness were widely recognized and will be missed.



Gordon F. MacFarlane, ***BASc'50, LLD'91***

Gordon served during WWII as a pilot. Following the war, he attended UBC and graduated in electrical engineering. He joined BCTEL, now TELUS, in 1950. In 1976, he became president of Automatic Electric in Brockville, ON, returning to BCTEL in 1977 as chairman and CEO – positions he filled until his retirement as CEO in 1990 and from the Board of Directors in 1997.

One of Gordon's professional legacies was starting MPR (Microtel Pacific Research), which became an important research hub for developing electrical engineers and high tech CEO's in Western Canada.

Gordon served our community twice as chairman of the United Way of the Lower Mainland. He also served on the Premier's Economic Advisory Council of BC, the Business Council on National Issues, and on the boards of UBC, Simon Fraser, BCIT, the Bank of Nova Scotia, BC Gas, Air Canada, and Fletcher Challenge.

He received the McNaughton Gold Medal Award in 1982 and the Professional Engineers of BC's R. A. McLachlan Award in 1991, the same year he was appointed to the Order of British Columbia.

Harvey Allen Buckmaster, ***MA'52, PhD'56***

April 8, 1929 - November 28, 2018

Harvey was born in Calgary, AB, and died in Victoria, BC, on November 28, 2018. Predeceased by his first wife, Pat Wood, he is survived by his wife, Margaret, and by his nephews and cousins and their families.

Harvey received degrees from the University of Alberta in mathematics and physics *(BSc. Hon'50)* and UBC in both applied mathematics *(MA'52)* and experimental physics *(PhD'56)*. His post-doctorate took him to Cambridge University. He later became a professor at the University of Alberta and the University of Calgary, as well as an adjunct professor at the University of Victoria.

He played several leadership roles at the University of Calgary and was inducted into the Order of the University of Calgary.

Gifted with a keen intellect and an endless sense of wonder and curiosity, Harvey saw the natural world as full of mysteries to unravel and complex problems to be solved. His combination of theoretical and experimental skills gave him a unique ability to function in both the academic and non-academic worlds.

Anne Pomeroy Autor, ***BA'56, MSc'57, Professor Emerita***

January 26, 1935 - November 13, 2018

Dr. Anne P. Autor was born in Prince George, BC. As a student, she received three degrees in biochemistry, including undergraduate and master's degrees with honours from UBC and a PhD from Duke University. After post-doctoral studies at the University of Michigan, her first faculty appointment was at University of Iowa's Department of Pharmacology in 1972. Dr. Autor returned to Vancouver in 1983, serving as professor of pathology at UBC and clinical researcher at St. Paul's Hospital. She was a visiting professor in research laboratories in the UK, Switzerland, and South Africa. After retirement from UBC in 2000, she taught at Al Ain University in the United Arab Emirates and the Aga Khan University in Karachi, Pakistan.

Dr. Autor authored numerous scientific treatises and published two books on the biochemical mechanisms of oxygen toxicity. She opened the first DNA forensic lab in BC, working closely with the RCMP. She was active in many professional and civic organizations in the US and Canada, including the UBC Faculty Senate, and served as an advisor to the BC Ministry of the Environment and two US government agencies.

She is survived by son Kurt Autor of Wasilla, Alaska, and by son Erik, daughter-in-law Ariadne, and grandsons Christian and Alec Autor of Falls Church, Virginia.

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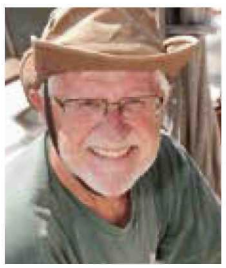
Mary Roma Rowlands, ***BPharm'56***

Mary "Roma" Rowlands (née Ranaghan) of Madison, Wisconsin, passed away on December 23, 2018. She graduated from Convent of the Sacred Heart High School, Vancouver. At UBC, Roma belonged to Kappa Alpha Theta sorority and the Players Club. After graduation, Roma worked in drug stores in Prince Rupert and Powell River. She married Bob Rowlands (UBC engineering grad) in 1959 at Saints Peter and Paul Church, Vancouver. They moved to Urbana, Illinois, then Chicago and subsequently Madison, Wisconsin. Roma was licensed and practiced in BC, Illinois and Wisconsin. In 2003, she joined a US medical team that visited rural Guatemala. The Rowlands travelled throughout the former USSR, Europe, Australia, Istanbul, Taiwan, Hong Kong, Indonesia, Singapore, the UK, Ireland, Finland and Nunavut (Hudson Bay, Cornwallis, and Baffin Islands). Above all, Roma's prime interest was her family. In addition to gardening, recent activities included belonging to a book club and a grandmothers' exercise group. She is dearly missed by her husband, Bob, of Madison, Wisconsin, and sons Philip of Stoughton, Wisconsin, and Ted of Naperville, Illinois, and their children.

John K. Stager, ***Professor Emeritus***

Born in Preston, ON, in 1928, John was a quintessential geographer. His PhD thesis was a classical historical geography of the Mackenzie River Valley. He engaged in fundamental permafrost research. Appointed as professor at UBC in 1957, John was an inspirational undergraduate teacher. His teaching of the Introductory Physical Geography course for 27 consecutive years was one of the foundation stones of the Geography Department's reputation as a strong teaching department. He also taught a Geography of the Canadian Arctic course for 23 consecutive years, with passion.

John will be most remembered and admired as a consummate university administrator. His six years as assistant dean in Graduate Studies (1969-75), 15 years as associate dean of Arts (1975-90), and overlapping period as director of ceremonies (1984-89) were acknowledged by senior administrators as exceptionally successful. He was a recipient of the President's Service Award for Excellence. John was an exceptional colleague. He will be greatly missed.



James D. Jamieson, ***MD'60***

James passed away peacefully at age 84 in his Guilford, Connecticut, home on October 22, 2018.

He was born in rural Canada (Armstrong, BC) in 1934, and attended both college and medical school at UBC. Jim continued his career in science at the Rockefeller University, working with George Palade – an emerging leader in the then-new discipline of cell biology – and received his doctorate degree in 1966. After doing post-doctoral work with Palade at Rockefeller, Jim followed his mentor to Yale in 1973 to establish the Section of Cell Biology, and served as chairman of the Department of Cell Biology from 1983-1992. He was director of the MD-PhD training program for over 32 years. The concepts established by Jim's work continue to serve as a fundamental paradigm of modern cellular biology.

He was elected to the presidency of the American Society for Cell Biology (1982-1983), and received the Bohmfalk Prize for Basic Science Teaching (1999) and Teacher of the Year Award (2005).

He was a beloved scientist, husband, and father who will be greatly missed.

May Brown, ***CM, OBC, MPE'61, LLD'87***

Born in Hardisty, AB, in 1919 and raised in Surrey, BC, May Brown became a significant and highly respected force in sport and outdoor education in Canada.

She taught in the School of Physical Education (now the UBC School of Kinesiology) from 1947 until 1955, returning in 1961 to complete her master's degree in physical education. As the first hired coach for the UBC women's field hockey team, May is remembered for instilling a sense of team loyalty and accountability that continues to the present day. She was also a pioneer in the promotion and organization of synchronized swimming in BC, coaching some of UBC's young swimmers during the 1950s and '60s. Today, UBC's coveted May Brown Trophy goes to the graduating female athlete of the year. May was passionate about outdoor education and its role in supporting active living for young people. She and her husband, UBC faculty member Lorne Brown, founded Camp Deka boys' camp in BC's interior, which they directed for 15 years.

Beyond UBC, May had a distinguished political career, saying she was motivated to join politics in part by the poor state of Vancouver's playing fields. She was elected to the Vancouver Park Board and served as a city councillor for 10 years. She also served on the boards of the YWCA, the Canadian Camping Association, the National Advisory Council of Fitness and Amateur Sport, Sport BC, the Vancouver Community Arts Council, and the Victoria Commonwealth Games Society. Her support of women in sport and public life earned her enormous respect and admiration.

May maintained strong and supportive connections with UBC athletics and in 1987 received an honorary doctorate from the university. In 2000, she received an *alumni UBC* Achievement Award and in 2007 was inducted into the UBC Sports Hall of Fame. In 2012 she became the first woman to receive the BC Sports Hall of Fame's W.A.C. Bennett Award for her contributions to field hockey.

In 1986, May was appointed to the Order of Canada and in 1993 to the Order of British Columbia. She died this March in Vancouver, aged 99.

Howard Douglas Colby, ***BSP'61***

Doug passed away with his family at his side in Vancouver's St. Paul's Hospital on August 8, 2018, a few days after he was diagnosed with multiple myeloma. He arrived at UBC from Edmonton in 1957 and graduated four years later with his degree in pharmacy. He met his wife, Judy *(BSP'65)*, while they were students in the faculty. Doug's pharmacy career included retail (Osoyoos Drug), computers (Unidrug) and wholesale (Southwestern Drug). From pharmacy, he moved on to renewable energy and served as a director of IPPBC (Independent Power Producers of BC) for many years. He was predeceased by his parents and younger son, Christopher. A celebration of Doug's life was held in North Vancouver on September 29, 2018.

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Kenneth R. McMillan, ***BSc'61, MSc'65***

Ken McMillan, a recipient of two degrees from UBC in Science, passed away amongst family on January 27, 2019. Ken was a microbiologist, food scientist, consultant, and entrepreneur. He obtained his PhD in Microbiology in 1971 from the University of New England, Australia. Originally from Trinidad, Ken immigrated to Canada to attend UBC. Ken worked for General Foods in Cobourg, Ontario, and Toronto during the 1970s and 1980s, and then moved to Kellogg's where he led a very successful career as the vice-president for Quality and Research for Kellogg's Canada. When Kellogg's Canada shut down its locations, Ken moved on to run a location of the Academy of Math and Science and, later, the Bookmark Learning Centre. He also consulted at the Guelph Food Technology Centre, which enabled him to travel the world while helping businesses ensure food quality and food safety. His travels took him to Japan, Egypt, Europe, Jamaica, and Malaysia, among other locations. Ken was a family-oriented, caring man who was very dedicated to his grandkids. He was an advisor and mentor to his children. He will be forever loved and greatly missed.

Robert (Bob) George Thompson, ***BASc'61***

Bob passed away on October 28, 2018, in San Diego, California. Born in Vancouver in 1938, he spent his childhood in the Bridge River Valley of BC, as an outstanding student, avid curler, track star, and a Queen Scout of Canada. At 16, he worked summers hauling freight in his father's trucks over the mountains from Shalath to the mining towns of Bralorne and Pioneer.

In 1961, he graduated in Mechanical Engineering from UBC and married Betty Sell *(BEd Elem'64)*. They moved to Montreal, where he began his career working on the PT6 gas turbine engine at Pratt & Whitney Canada. They enjoyed the friendship of many other UBC graduates based in the city, and Bob continued his studies to earn a graduate diploma from McGill University.

In 1969, Bob took an opportunity to work in California and live 1,500 miles closer to his and Betty's parents in BC. By this time, they had two sons (Ronald and David) and a daughter (Willow).

Bob worked for several engineering firms in California and participated wholeheartedly in his community, becoming a commissioner for the American Youth Soccer Association, a volunteer for the United Way, and a Life Fellow of the American Society of Mechanical Engineers.

After 18 years at Hamilton Sundstrand in San Diego, where he worked on advanced aircraft auxiliary power gas turbine engines, Bob retired in 2003. For the next few years, he enjoyed body surfing, travelling, and being with his family.

When diagnosed with Alzheimer's in 2015, he received extra loving care from his wife, son Ron, and the Silverado Community. Predeceased by his parents, sister Florence *(BHE'64)* and nephew David, Bob is lovingly remembered by Betty, Ron, David and Willow; nephew Christopher *(BA'95)* (Margaret); grandchildren Fraser (Damaris), Trevor and Mackenzie; great granddaughters Kaylee and Kenadie; grandnieces Sophie and Alexa; and many dear relatives and friends. His ashes will be interred at the Burnaby Heritage Cemetery.

Susan McLoughlin, ***BEd'70***

UBC alumna Susan Margaret Alisen McLoughlin (née Howey, formerly Lanoville) passed away on December 17, 2018, after a brief illness.

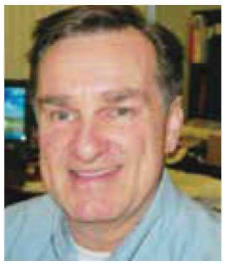
She is survived by daughter Natalie and step-daughter Marni Sheppard (Nasahn). She is pre-deceased by parents Bernice and Harry Howey, husband Colin (2001), and brother John Howey (1999).

Susan triumphed over addiction in the 70s and was a leader and mentor for many years in a 12-step program, a second chance at life that she never took for granted.

Later, with her husband Colin, she would move to the town of Peachland, where she distinguished herself first as a staff member at the BC Women's Enterprise Society, then on the Board of the Peachland Wellness Centre, and finally as the Founder and CEO of the natural skincare company SBT Seabuckthorn.

Susan was a loving daughter and sister, supportive wife, and an incomparable mother. She was a comfort, role model, mentor, friend, and confidante without equal.

A service will be held in Vancouver in the spring or summer of 2019.



Norman Philip Rempel, ***BASc'72***

It is with great sadness that we announce Phil's passing on March 26, 2018, after a short but very courageous battle with liver cancer.

Phil loved working as an engineer and worked with three different companies during his 46-year career: Keen Engineering, Stantec Inc., and Rocky Point Engineering Ltd. He was a dedicated professional who brought a wealth of knowledge and experience to his work, and was a valuable mentor to young engineers embarking on their careers.

Phil was a fun-loving, thoughtful, and dedicated family man. His favourite pass time was socializing with friends and family, and he was always the ultimate host. He loved travelling to Mexico, especially Puerto Vallarta, and enjoyed partaking in all aspects of the Mexican culture. Phil also enjoyed watching and playing sports, gardening, listening to music, and watching movies.

Phil is survived by his wife Linda, his son Ryan (Lorraine), his daughter Jennifer (Ian), and his three grandchildren whom he adored: Ellena, Cooper, and Parker. Also left to mourn his loss are his extended family, work colleagues and many friends.

Obituaries are included in our biannual print issues, usually published in May and November, and should be 1100 characters (about 300 words) or less. Please send original photos by post or attach high resolution images to your online submission. Tributes may be edited for length and clarity where necessary. Note that print issues of the magazine are also published online.

There is no fee for submission.

Due to the high number of submissions, we are unable to guarantee publication in the next print issue. If you would prefer your submission be included in the next applicable online issue in lieu of print, please select that option on the form.

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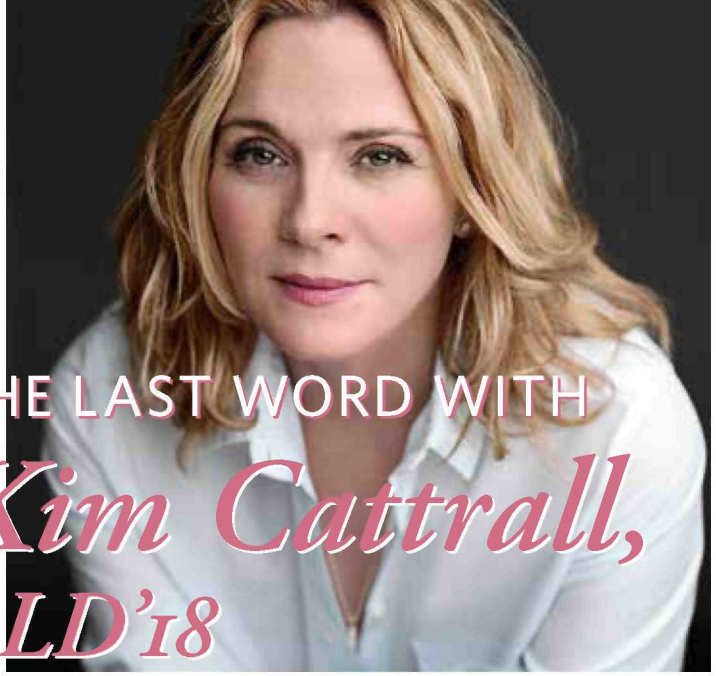

THE LAST WORD WITH *Kim Cattrall, LLD'18*

Born in the UK, raised on Vancouver Island, and trained at the American Academy of Dramatic Arts in New York, actor Kim Cattrall belongs on both sides of the Atlantic – as reflected by the sheer variety of her resume (and also by her Twitter profile: "Liverpool born, Canadian-bred New Yorker"). Although best known for her award-winning portrayal of sexual adventuress Samantha Jones in the HBO series *Sex and the City*, Cattrall has covered miles of dramatic terrain – from blockbuster Hollywood movies to classical theatre productions in London's West End. Last fall, she received an honorary degree from UBC. As well as her acting pedigree, it recognized her writing on sexual health and awareness and her activism on issues associated with gender, sexuality, and identity. Below is an edited version of the speech she gave to graduating students, including those from UBC's Department of Theatre & Film.

"I am a product of the BC Arts programs of the 1960s and 70s, without which it's doubtful I would be standing here today. Those programs – they were my lifeline until I left for New York City and theatre school at the age of 16. After graduation, I was fortunate enough to land my first professional job, and I have been learning as I go. Those early lifelines are important to nurture in the arts. They nurture us all. An arts education teaches young minds how to think, how to question, how to bring wonder and insight to an artist and its audience.

I remember being right where you are this morning, at my graduation. I couldn't wait to get started. I was so hungry to begin. The speaker at my graduation was the Canadian-American actress Colleen Dewhurst – one of the greats. It was the mid-70s. She was appearing on Broadway and had just won her second Tony Award. She was theatre royalty, and my anticipation for her words of wisdom was palpable. She had made it. She had the key to success.

She spoke, and, to my dismay, painted a picture of gloom. I remember her saying: I wouldn't be in your shoes for 10 million bucks. If you can do something else – God! Do it! This is one of the toughest professions. *It was just not what any of us wanted to hear.*

In hindsight, I think she meant it was going to be tough, but I don't think she meant to be discouraging. She just knew how difficult it was going to be, and she wanted us to know that there were no guarantees of success, no matter how talented you were or how hard you worked. And she wasn't wrong, but that doesn't mean her message was absolute.

As John Lennon once sang, life is what happens to you when you're [busy] making other plans. Whatever your path will be – however specific your plans – you can be certain it will take many detours, which could lead to a totally different interpretation of your life choice. And that can be wonderful.

I encourage you to be proud of who you are. Our national modesty is so ingrained in our character that it can sometimes be a cliché. But as Canadians, you stand alongside a legacy of great artists who have [shaped], and continue to shape, this industry for generations.

I will continue to challenge people's perceptions on topics of gender equality, women's sexuality, and now, most recently, ageism. As an actor and now a producer, I take on projects that inhabit those topics. Our stories – all of our stories – are as unique as our fingerprint. And we need these stories to remind ourselves of what it is to be human.

I encourage you all to follow your dreams, but to have a life – live, go places, experience. Evolution isn't failure. And stand up for yourself. Experiment. Be bad. Be badass. And say yes to what scares you. And keep learning. Stay open. Welcome challenge with radical acceptance.

Look – when all is said and done, you've already accomplished one of the toughest acting challenges there is, and that is convincing your parents and friends that you'll be able to make a living at this!" T

Who was your childhood hero? | *My dad*

Describe the place you most like to spend time. | *Our home on Vancouver Island*

What was the last thing you read? | New York Review of Books *hardcover,* Guardian *and* Globe and Mail *online*

What or who makes you laugh out loud? | *Steve Coogan as Alan Partridge*

What's the most important lesson you ever learned? | *Follow your gut*

What's your idea of the perfect day? | *Sleeping late, pancakes with a cup of tea, a long walk on the beach, then home in front of a wood fire*

What was your nickname at school? | *KC, my initials – as in Casey*

What is your most prized possession? | *Photographs I've taken or saved*

What would be the title of your biography? | Pancake Day, *but that title could change*

If a genie granted you one wish, what would it be? | *Bring our loved ones back*

What item have you owned for the longest time? | *A now, sadly, one-eyed childhood doll and my poetry books from my childhood*

Whom do you most admire (living or dead) and why? | *Gordon and Sarah Brown – for their belief in family, friendship and an unwavering commitment to educating young girls. Marianne Elliott for her belief in theatre as brilliant storytelling.*

What would you like your epitaph to say? | *Liverpool's Cleopatra*

If you could invent something, what would it be? | *Drop in therapy centres on every street corner. Needed.*

In which era would you most like to have lived, and why? | *Now. No better time for women.*

What are you afraid of? | *Spiders*

What is your latest purchase? | *A floral headdress for my Mardi Gras costume*

Name the skill or talent you would most like to have | *Satire – a dying art form*

Which three pieces of music would you take to that desert island? | *John Coltrane's* "Favorite Things"; *Joni Mitchell's* "A Case of You"; *Lou Reed and Metallica's* "Junior Dad"

Which famous person (living or dead) do you think (or have you been told) you most resemble? | *Gene Tierney*

What is your pet peeve? | *People who are flakey*

What is the secret to a good life? | *Navigating your passions while enjoying long breaks of ambivalence*

Do you have a personal motto? | *Make change your companion*

What's the most important thing left on your bucket list? | *Getting back to writing*

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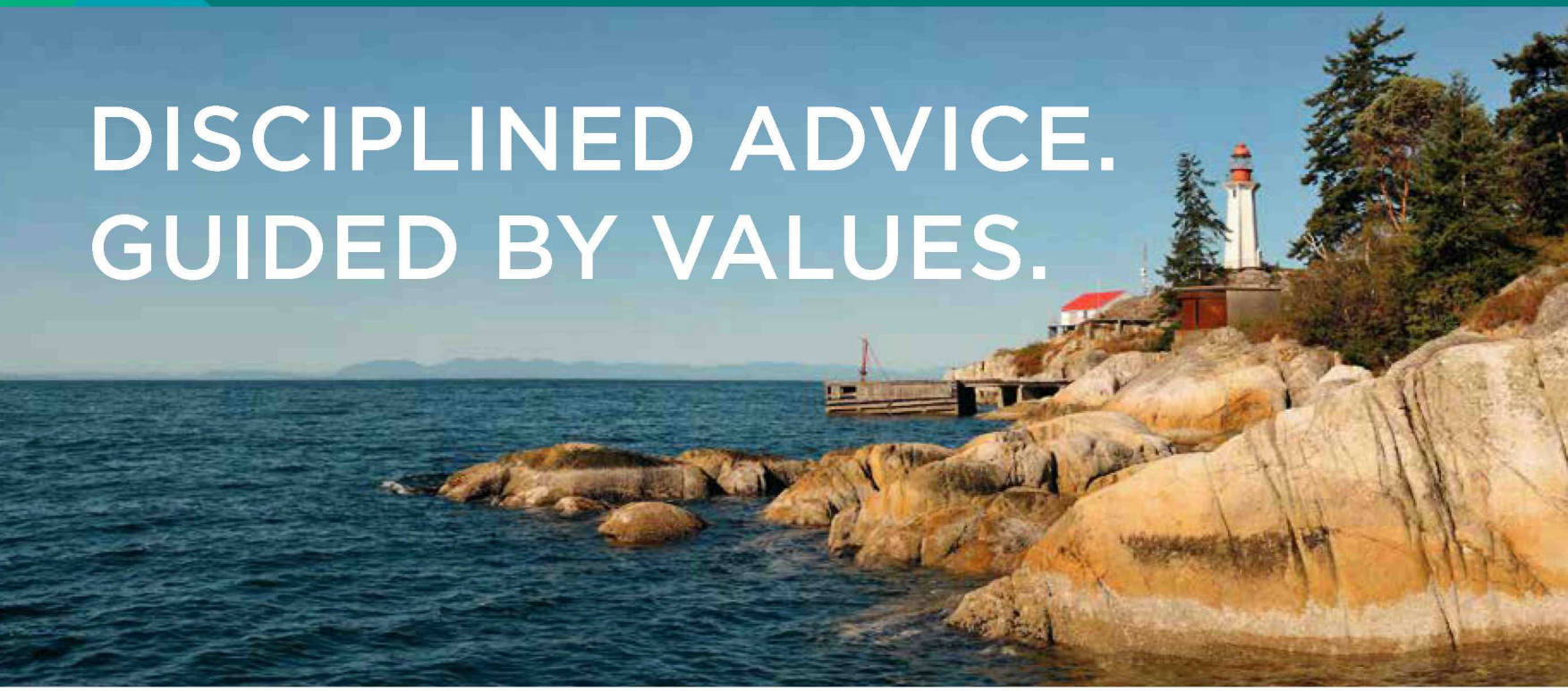

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