Climate Change Challenge

A Tyee Solutions Series by Geoff Dembicki

Climate Change Challenge

Geoff Dembicki is an Alberta-born journalist who reports on energy and climate change. His reporting has taken him to an exclusive Republican social club in Washington, DC; a tribal casino on South Dakota's Great Plains; the vast bitumen mines of northern Alberta; and a clean energy lab in Beijing.

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Introduction: More Than Just the Climate

BY GEOFF DEMBICKI

A reporter examines how the prospect of a hotter world is also changing minds

After years of reporting on the technical minutiae of climate change – its carbon megatons, its small victories in fuel efficiency, its 'price signals' – I sensed I was missing the larger picture. What those minutiae seemed to describe were the dimensions of a vast planetary canvas, not the shapes and colors that might someday fill it. So for this Tyee Solutions Society series I set out to answer a deceptively simple question: Assuming we *can* fix the climate, how would our future society look?

For many on Canada's west coast, the birthplace of both Greenpeace and the 100-Mile-Diet, the sustainable future will be painted in muted, earthy colors. The *modern farmers*, *degrowthers*, *re-wilders* and *tar sands warriors* who call this region home generally believe that our human species can only avoid climate catastrophe by returning as fast as possible to the natural world that created us. On Denman Island I visited a homesteader who'd completely renounced his urban life to pursue that vision. Yet after 10 years he was beset by philosophical doubts.

To better understand the dilemmas of a decentralized agrarian future, I spent equal time reporting on thinkers who believe sustainability will be achieved by moving in the exactly opposite direction. Among *techno-optimists*, *smart citizens*, *neo-sharers* and *makers*, I saw visions of the future painted in effervescent blues and whites – a world-view epitomized by the San Francisco Seasteaders who are attempting to build a floating city-state in the Pacific.

Was their faith in the capacity of technology to save humankind from climate change any more realistic—or

unrealistic—than the homesteader's competing faith in nature? After months spent contemplating each camp's vision of a future society, I came to see that both are driven by an overarching sense of alienation, distrust of institutions and yearning for the personal agency enabled by social networks. The stories I subsequently reported, and that appear in this compilation, became manifestations of those societal forces – early sketches of the sustainable future to which we are headed, one way or the other.

- Geoff Dembicki

Why Climate Change Is Splitting Republicans

BY GEOFF DEMBICKI

Emerging faction thinks party should adopt BC-style tax on carbon.

'Heresy' for Republicans to admit climate change is real, says former congressman Bob Inglis.

Earlier this summer, conservatives and libertarians packed Washington, D.C.'s Globe Theatre for a debate on how — or whether, even — Republicans should fight climate change.

On one side were analysts from the Heartland Institute and Heritage Foundation, two climate skepticism groups convinced the Right should never support a tax on the carbon dioxide Americans emit for free.

Theirs is also the position of the Republican Party, whose leaders openly question the science behind global warming, and argue a carbon tax "would devastate an already struggling American economy."

Which is why Andrew Moylan, from a national think tank called the R Street Institute, wasn't certain how the right-leaning Globe Theatre crowd would react to his debate position: that a carbon tax could in fact make the U.S. more prosperous.

"We saw the RSVP list ahead of time," Moylan recounted, "and it didn't suggest the room would be stacked in our direction."

By night's end, Moylan and his debate partner, former Republican congressman Bob Inglis, won the room over.

"We had a show of hands, and there was a pretty large consensus in support of our position," Moylan went on. "Maybe what that says is people agree there's a theoretical case to be made" in favour of a carbon tax.

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Climate change denial 'untenable' for GOP

A price on America's carbon emissions will surely remain theoretical for some time. No Republican in Congress publicly supports it. Nor does President Barack Obama. "We would never propose a carbon tax," the White House has promised.

Yet the Globe Theatre debate may signal emerging Republican fissures on global warming. "There is a divide within the party," one conservative scholar recently told the National Journal. "The position that climate change is a hoax is untenable."

And as conservatives such as Moylan and Inglis attempt to widen that divide, by pushing Republicans to embrace a carbon tax, they're looking north to the only jurisdiction in North America that has one: British Columbia.

"It's relatively early days for [B.C.'s carbon tax]," Moylan told Tyee Solutions Society. "But it's encouraging for those of us who support the idea to be able to point to someplace where it's actually happening."

You could say it's early days as well for Moylan's think tank, the R Street Institute. It was founded just over a year ago by defectors from the Heartland Institute, one of North America's most prominent climate skepticism groups.

Since the late 1990s, Heartland has received more than $600,000 from Exxon Mobil and $55,000 from Koch Industries to question climate science. Last summer, though, it did something "extremely ill-advised" in the opinion of Eli Lehrer.

Lehrer used to head the non-profit group's insurance research team. But he left in May of 2012, when Heartland ran a billboard in Chicago comparing believers in global warming to Ted Kaczynski, the Unabomber.

"A great many people think there is significant risk of climate change," Lehrer told Insurance Journal at the time. "A billboard that says people who believe that this will happen are similar to terrorists withdraws you from rational debate."

The Unabomber ad caused major insurance company backers of Heartland to withdraw their support. Within 24 hours, Heartland pulled the ad down, and called off future billboards featuring Osama bin Laden, Charles Manson and Fidel Castro.

Not long afterwards Lehrer, along with other former Heartland colleagues, created the R Street Institute. "It was largely an amicable split," Moylan said. "Obviously at its core was a disagreement over a major policy issue."

A Cautionary Tale

On the issue of global warming, R Street has for the past year promoted a solution it believes is compatible with conservative values: a revenue-neutral carbon tax, where the proceeds, like in British Columbia, are used to offset other taxes.

"Instead of taxing things everybody agrees are good, like income, investment and entrepreneurship, we should tax bad

things like greenhouse gases," Moylan said. "We think that will leave Americans richer in the future."

That remains a minority opinion in conservative circles.

Yet it's one shared by such prominent intellectuals as David Frum, a former George W. Bush speechwriter; Art Laffer, a senior adviser to Ronald Reagan; and Douglas Holtz-Eakin, an economic advisor on John McCain's 2008 presidential campaign.

"There are plenty of folks across a broad conservative spectrum" who support a carbon tax, Moylan said. But he admits, "It's definitely a fledgling group. We are under no illusions that this is going to be an easy fight."

Last November, one of that group's most vocal members, former Republican congressman Bob Inglis, flew to British Columbia to learn more about the carbon tax the province implemented in 2008.

Inglis' story is a cautionary tale for Republicans. The three-term House member from South Carolina helped write a carbon tax bill in 2009. In next year's primary vote, he lost to a Tea Party challenger by 42 percent.

"[My] most enduring heresy was saying that climate change was real, and let's do something about it," Inglis recently said. That conviction brought the former red state congressman to Canada last year.

The Pacific Institute for Climate Solutions had him meet with the B.C. Liberal caucus, eat lunch with then-environment minister Terry Lake, and address the B.C. Business Council in Vancouver.

"In the case of British Columbia, I think you are leading" on climate change, Inglis said during another talk at Simon Fraser University. The U.S., he added, would do well to "follow your example."

Inglis was referring to the province's $30 per ton levy on carbon emissions. A recent Sustainable Prosperity study found the policy helped B.C. achieve big cuts to fuel use and emissions without hurting economic activity.

"B.C.'s experience shows that it is possible to have both a healthier environment and a strong economy," said lead study author Stewart Elgie, a professor of law and economics at University of Ottawa.

Still, Premier Christy Clark's aggressive plans for liquefied natural gas could undo any climate progress made by the carbon tax. And her Liberal government this spring froze the carbon tax rate at $30 for the next five years.

Nevertheless, the policy's basic logic, that revenue from taxing carbon is used to reduce other taxes, is very appealing to conservatives such as Inglis, the Pacific Institute's executive director, Tom Pedersen, told Tyee Solutions Society.

"[Inglis] looks to the B.C. model as a template for the world," he said.

'Deep internal conflict'

For now Inglis is trying to make the province's carbon tax a template for the U.S. Right.

His efforts place him within a small, but growing, conservative contingent, National Journal reported, fearful that "if Republicans continue to dismiss or deny climate change, the party will become irrelevant."

That "deep internal conflict," the Journal has predicted, could soon cause an outright "GOP civil war over climate change." Nevertheless, it noted, "most Republicans feel much more secure on the side that denies the problem."

Denial of global warming is politically useful. It helps define the Republican Party as "anti-tax and pro-energy" in the eyes of the voting public, argues Marlo Lewis from the right-leaning Competitive Enterprise Institute.

"This clear product differentiation is an asset for the GOP," Lewis has said. "Conservative advocacy of a carbon tax can only blur the battle lines, divide GOP leaders, and demoralize the movement's activist base."

Some green thinkers are also skeptical. Even if conservatives like Inglis and Moylan are successful in getting Republicans to embrace a B.C.-style carbon tax, Grist writer David Roberts is unsure how much good it would do for the climate.

"It's just a fantasy that we can limit global temperature rise to 2 degrees with nothing but a [carbon] tax," he recently wrote. In his opinion fixing the climate demands a massive societal shift akin to wartime mobilization.

But the "large-scale government intervention" needed to enable that shift is anathema to the current Republican worldview. "It is today's hyper-conservatism," Roberts believes, "that is ultimately going to have to change."

Moylan from the R Street Institute agrees that a carbon tax "isn't going to do a tremendous amount in and of itself to reduce global emissions." Even so, he argues, adopting the policy would be an "important symbolic gesture."

More important still: putting a price on U.S. carbon emissions, and then using the revenue to reduce taxes across the country, Moylan believes, "will leave Americans richer in the future."

The "wealthier and more prosperous society" enabled by a carbon tax, he adds, would be better able to pay for the solutions needed to solve climate change, and fix the damages that it causes.

To bolster his argument Moylan looks north to British Columbia. Five years after implementing a price on carbon, emissions there have dropped. So too have tax rates. "Those are definitely some positive signs that we look to," he said.

He's hopeful the Republican Party will someday also see them.

Will Canada Become a 'Graphene Superpower'?

BY GEOFF DEMBICKI

Mining and tech firms race to produce material that might fix climate change, cure cancer.

It runs. It flies. It wins a Nobel Prize. It's graphene! Photo of graphene via Shutterstock.

It might be the most important mining rush you've never heard of — certainly, it's among the planet's strangest. The location is the northern Canadian wilderness, where resource firms are competing to extract a flaky mineral that might someday help solve climate change, revolutionize electronics and cure cancer.

The mineral they're after is a high-quality form of graphite. No, not the lower quality variety that goes into the end of your pencil. Large, undeveloped graphite deposits in Ontario, Quebec and elsewhere in Canada could be tapped to make a wonder material proponents say will shape the next industrial revolution.

That material is graphene, a substance 200 times stronger than steel, so thin it's considered two-dimensional and extraordinarily conductive of heat and electricity. In 2010, the two researchers who isolated it were awarded the Nobel Prize. Now scientists across the world are competing to patent new uses for graphene, setting off, in the Wall Street Journal's words, "a scientific gold rush."

Invisible cloaks, ultra-fast-charging electric cars, bendable electronics and printable solar panels are just some of graphene's potential applications. Last month, Ottawa-based Grafoid announced the material could be injected into people's blood streams to fight prostate cancer. "It's like *Star Trek*," Dr. Gordon Chiu, the firm's vice-president, told Tyee Solutions Society.

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If even a fraction of these applications become widespread, global demand for the high-quality flake graphite used to make graphene would soar. That might in turn create a vexing geopolitical dilemma for the United States, which mines no natural graphite of its own, and imports more than 50 per cent of its current supply from China.

Resource firms looking to mine Canada's graphite deposits see an emerging market opportunity: supply America with graphite, help reduce Chinese imports and partner with high-tech developers like Grafoid to produce and profit from graphene. Could their gambit, as industry tracker Marko Spasenovic has speculated, be quietly transforming Canada into a "graphene superpower"?

Surrey company sees 'huge potential market'

Canada moved one step closer to that reality this September, when Lomiko Metals, a Surrey, B.C.-based junior mining company that owns graphite properties in northwestern Quebec, made a surprising announcement. "It's been a quiet summer," read an article on Graphite Investing News. "Now, however, Lomiko is ready to reveal what it has been up to."

Graphite is mainly prized these days for its role in making the lithium-ion batteries used by electric cars, smart energy grids and various mobile devices. That's why Lomiko was originally attracted to the mineral. But its focus changed once CEO Paul Gill found out about graphene's seemingly infinite possibilities. "You're looking at a huge potential market," he said in an interview.

Earlier this year, Lomiko partnered with Graphene Laboratories, a New York-state based tech firm attempting to accelerate graphene's entry into the marketplace. The two companies first met "through Twitter, of all things," Gill explained, after Lomiko began tweeting infographics it'd made on the wonder material's potential to "change everything" about modern life.

"[Graphene Labs] sent me a note saying, 'Did you just send out 100 tweets on graphene?'" Gill went on. It was in some ways an unlikely match: a West Coast resource explorer accustomed to Canada's rugged outdoors, paired with East Coast scientists more comfortable in lab coats. But graphene right now is expensive to produce, and Lomiko's graphite deposits offer a chance make it cheaper.

Which is in effect what the two companies announced this September. Using mineral samples from Lomiko's Quatre Milles property in Quebec, Graphene Labs was able to produce some of the first ever graphene made from Canadian graphite. "We are very pleased," said Elena Polyakova, the firm's CEO and a respected graphene scientist. "We hope to use [Lomiko's] graphite to reduce costs." Gill sees their efforts in larger geopolitical terms.

China right now produces up to 80 per cent of the planet's graphite, and has imposed export restrictions. The U.S. mines no graphite (but does produce a petroleum-based synthetic variety with a heavy carbon footprint). Canada's current

output, meanwhile, is not of sufficient quality for graphene. "People will realize our importance very quickly," Gill said of Lomiko and Graphene Labs. "That we have a way to… take over supply of the [North American] market from China."

A cure for cancer?

Some of the talk these days about graphene sounds like it came straight out of science fiction. "This one's really way out there," is how Grafoid vice-president Dr. Gordon Chiu prefaced his description of the Ottawa-based technology firm's latest project. Early this September, Grafoid partnered with ProScan RX Pharma to develop a cure for prostate cancer that requires no surgery, radiation or chemotherapy.

By combining cancer-targeting antibodies with graphene, researchers have created a "biological computer chip," claimed a recent summary, that can search the human blood stream for "cancerous prostate cells and destroy them with a flash of red light." Someday, Dr. Chiu speculated, such technology "could double your life" and enable astronauts to reach new frontiers in "space exploration".

But he's the first to admit graphene-based cancer treatments are unlikely to be realized, if ever, for a decade at the very least. Perhaps more promising in the short-term is the firm's partnership with Hydro-Quebec's Research Institute, which addresses one of the major factors holding back mass adoption of electric cars: bulky, inefficient batteries. Current models only power your car for so long, and take hours to charge.

That problem could potentially be solved with graphene. Built into electric cars, the material's thinness and conductivity could transform the entire industry, allowing vehicles to charge up in mere minutes, or even seconds. Earlier this summer Grafoid and Hydro-Quebec claimed to have made progress towards that goal, filing a patent for a new graphene-based composite that could enable, they claimed, an electric car battery "the size of an orange."

It adds to the more than 9,200 graphene patents filed since the wonder material's discovery in 2004. But Grafoid is different from most players in this so-called "scientific gold rush." The firm is owned in part by Focus Graphite, a Canadian junior mining company, whose Lac Knife property in Quebec contains, it claims, some of the planet's highest quality graphite. Should Grafoid's cancer and climate solutions ever prove viable, Lac Knife could provide the graphene needed to mass-produce them.

'Graphene superpower'

Partnerships like these between Canadian graphite miners and tech firms are being watched closely in the graphene world. Last spring, industry tracker and nanophotonics scientist Marko Spasenovic cited them as evidence that "Canada is emerging as a real 'graphene superpower.'" At this point it's still hard to measure.

"If Marko sees it that way, that's interesting," said Keith Blakely, co-founder of the Buffalo, New York-based Graphene

Stakeholders Association, which hosts its first-ever annual meeting later this month. “Particularly because he’s not Canadian.” Still, Blakely has reason to feel skeptical. Though scientific interest in graphene right now is extraordinary, commercial demand for it outside of a few niche industries is small.

Part of that is a function of graphene’s high price (which most observers expect will eventually come down). And partly it’s because the material is so new. Researchers are still figuring out its properties. Standards are lacking. Potential markets for it haven’t yet adjusted. “Like most things that have come out in the advanced materials arena,” Blakely explained, the arrival of graphene into our daily lives “will be a subtle transition.”

Soon to hit markets though will be graphene-based inks, he predicts, capable of printing electronic circuits, and drastically reducing the price of solar power. Another is reinforced plastic with properties of metal. Samsung’s efforts to develop flexible touch-screens are also promising. And afterwards: Who knows? University of Texas scientists are experimenting with graphene-based invisible cloaks. Graphene is being studied as well by the U.S. military. “The potential for products that are hard to imagine today certainly does exist,” Blakely said.

If and when graphene finally hits the mainstream, Lomiko Metals and Focus Graphite (as well as competitors like Northern Graphite and Ontario Graphite) could find themselves at the centre of a graphite boom in Canada’s north. Might they also help transform Canada into a “graphene superpower”?

“I don’t think it’s something that’s going to replace [Canada's] oil and gas in dollar value,” Blakely said. But, he adds, “It probably bears paying attention to.”

Canada among Global Conflict Broker's Toughest Gigs

BY GEOFF DEMBICKI

Adam Kahane helped bring peace to Colombia, but says ending our climate stalemate may be harder.

Conflict specialist Adam Kahane: In apparently impossible standoffs, 'people have been able to find a way forward.'

Adam Kahane specializes in conflict — especially the nasty, intractable kind that seems impossible to resolve. Over a remarkable two-decade career, he's helped South Africa transition from apartheid, Colombia end its decades-long civil war and Guatemala reckon with the painful aftermath of genocide.

The Montreal-born "scenario-planning" expert — whose insights have been praised by Nelson Mandela and other world leaders — has worked in more than 50 countries. But Kahane says one of his most challenging assignments ever took place six years ago in Canada, when he was contracted to help resolve a national climate change debate that'd become deadlocked and bitter.

Kahane relied on techniques he'd used in violent conflicts around the world: Get all the players together in one room (in this case green activists, business leaders, academics and politicians from all the major parties). Encourage them to find common ground. And use those first inklings of consensus to build creative solutions.

All told, more than 75 "unlikely allies", including five former prime ministers, pledged to achieve "steep cuts" in Canada's greenhouse gas emissions. But since then Canada's poor climate record has been ridiculed at climate conferences — and inspired international activist campaigns against the country's oil sands.

Kahane admitted in an interview that in some ways Canada's climate stalemate may be "more difficult to resolve" than violent conflicts he's experienced in other countries. He'll

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be discussing potential solutions to that stalemate, among other surprising insights, at a Stonehouse Institute-organized lecture in Vancouver on Oct. 21.

Until then, read on to learn what else Kahane has to say about what the world's most intractable conflicts have in common, why bitter opponents often agree on more than they realize, and how there's a downside to framing struggles over Northern Gateway and the oil sands as a "war".

On what Canada's climate stalemate shares with violent conflicts:

"The parallel I draw is when you have different actors who don't at all see eye-to-eye and just keep hitting each other — where neither side can win.

"That's very dramatic in a decades-long civil war like in Colombia, or the genocide in Guatemala, or the conflict between black and white in South Africa. But I see this same feature of stuck, polarized conflict in Canada as well, and specifically around climate change.

"The question I'm asking is when you're stuck like that, what does it take to get unstuck? Because I've seen people terribly, violently stuck… and even in such apparently impossible standoffs, people have been able to find a way forward."

On why standoffs in Canada are so intractable:

"There's a way in which the problems in Canada are more difficult to resolve than those in other countries I've worked in.

"That's because in Colombia, in South Africa, in Thailand, in Sudan, everybody agreed that [their situation] wasn't working and if they kept going the way they were going they were in real danger. The thing that makes [resolving] issues, including climate change, in Canada so difficult is that many people think things are just fine.

"People say 'things aren't so bad, so I'm not going to change at all.' That's really difficult, when people think they can afford to just stay where they are."

On how opponents aren't as different as they think:

"What all these [conflicts] have in common is that each side is so used to rehearsing its own story: 'This is the way things are. This is what I want. Those other people keep blocking me. They don't understand. There's no way out so I just have to fight them harder.'

"People think that the story they're telling about the way things are is the truth. So we say they're downloading. They're giving the story they always give without any awareness that there could be… another way of looking at things.

"Now, when you bring people together, what always happens is that people discover to their surprise that 'wow, those other people who I don't know, understand, like or trust, we have something in common.'"

On why empathy on its own is not enough:

"Empathy is a very, very important first step…. It's not agreeing or disagreeing, it's listening to you to try to understand where you're coming from. However, I think empathy is crucial but not sufficient.

"The best example of this is climate change…. Everyone is just doing their thing, working their job, driving their car, heating their home, arguing their point. But when you add it all up the whole system that supports human life is being destroyed.

"We can pretend what we're doing doesn't impact the climate, but our pretending doesn't make it so…. So what's beyond empathy is to realize that we are all part of the same whole system. Only then can we start to find creative ways forward."

On choosing to fight your opponents, instead of negotiating:

"It's very important to realize there's more than one way to approach these stuck problems, and I'm not saying that one is always right and the other always wrong.

"One position for approaching things is to say, 'We think we know what needs to be done and the other side isn't listening, so we have to become stronger.'

"We're seeing a dramatic expression of that right now in the U.S. Congress, this idea that if we can be strong enough we can force the other side to do what we want. What often happens is you just get into an endless cycle."

On the cons of framing environmental struggles as wars:

"The basic analogy, whether it's about [Enbridge's Northern Gateway] pipeline or the oil sands, is that they're framed as a war — a war in the sense that we have irreconcilable interests and either 'you're going to win or I'm going to win.' That's partly true, so it's not a stupid thing to say. In a sense, it is a war.

"In a war what you want to do is mobilize people around something specific. You want to get people into the battlefield against the pipeline or for the pipeline. I get the logic of that. I'm not saying its wrong. But what's the downside, and is there another way?

"The more narrowly you frame the fight the less opportunity there is to find a way out. So if we frame it as 'will there be a pipeline or not?'… then the room for finding a solution other than win/lose shrinks. That's the downside of fighting these things one battle at a time.

"It's only when you broaden the question [beyond that narrow fight] that you can find creative answers."

The Four Tribes of Climate Change

BY GEOFF DEMBICKI

More than ever, influential subcultures shape our response to global warming. Which do you belong to?

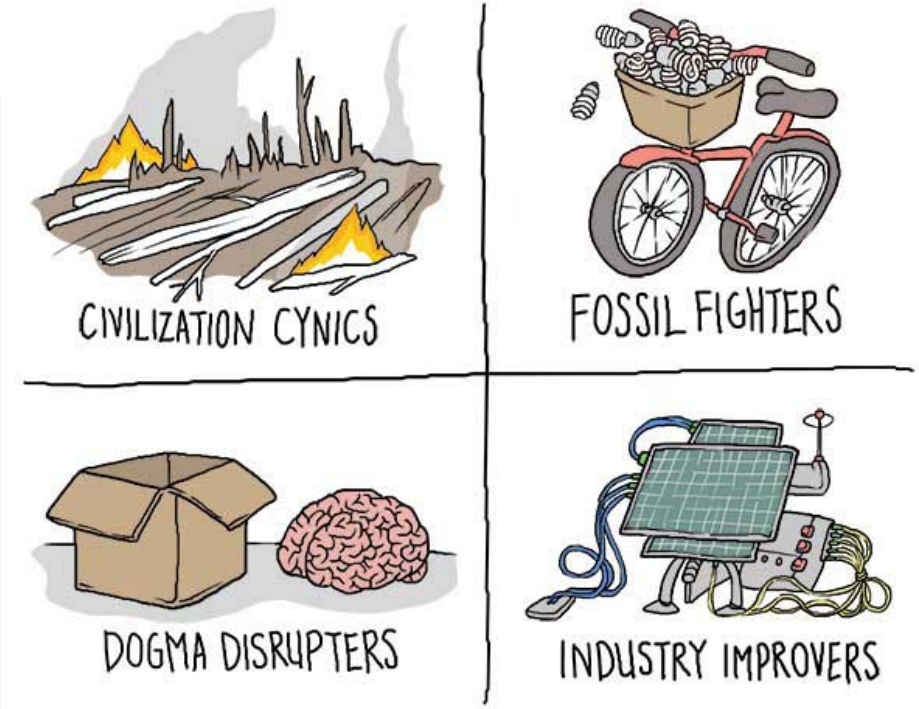

Illustration by Indiana Joel.

People have always disagreed about climate change. But for two fleeting years starting in 2006, it really seemed like most North Americans had accepted the climate narrative pushed into the mainstream by Al Gore and Lord Nicholas Stern: that in global warming humankind faced its greatest ever challenge, but solving it would make us all richer and stronger.

That worldview was so compelling, you may recall, that it won Gore the Nobel Peace Prize and elevated environmental worries to the top of North America's political agenda. It also caused Canada's Conservative Prime Minister, Stephen Harper, to assert in 2007 that global warming is "perhaps the biggest threat to confront the future of humanity today." Well, we all know what happened next.

Wall Street collapsed. So did climate talks in Copenhagen. Americans elected a Congress more polarized than any other in U.S. history. Cap-and-trade legislation fell to pieces. Activists declared war on Canada's oil sands. Harper's government declared war on activists. Media mostly ignored a global boom in climate-saving technology. And humankind's carbon emissions continued their inexorable rise.

It now seems improbable that a single, compelling climate narrative could recreate the environmental zeitgeist of 2006 and 2007. Instead, four influential subcultures have risen in the intervening years, each with its own story to tell about the limits and opportunities of a warming planet. Taken together, they represent the fears and hopes of a generation living through tumultuous global change.

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The Civilization Cynics

Imagine waking up one day suddenly unconvinced by western society's founding myths. You realize human progress is a sham. Endless growth, impossible. Your middle-class lifestyle? Built atop a battery of horrors: factory farming, rainforest destruction, mass extinctions and a dangerously warming climate. How would your world look if you admitted civilization is teetering on collapse?

"The funny thing is, as soon as you say it's not going to be all OK, that's a huge weight off your shoulders," Paul Kingsnorth, a widely published U.K. writer and former environmental campaigner, told Tyee Solutions Society. "It allows you to be way more honest." That idea is central to the Dark Mountain Project, a network of writers and artists seeking new meaning in a civilization they're convinced is falling to pieces. Kingsnorth co-founded it in 2009.

"Lots of things are collapsing around us, but we still need to get on with our lives," Kingsnorth explained. Unconvinced the "green growth" promised by new clean technologies can save civilization, but dubious of an imminent "zombie apocalypse," Dark Mountain attempts to envision a humbled human existence more closely connected to nature. "We're not looking for a program to save the world," he said.

Kingsnorth spent much of his earlier career as a green activist trying to do just that. Over time he grew dismayed with the movement. "A lot of greens are not being honest about the causes of environmental destruction," he said. Oil firms like Shell are indeed ruining the planet, he agrees. But so are the regular people who buy their products. "We've seen the enemy and it's us," Kingsnorth said. "We're all complicit."

Since launching Dark Mountain in 2009, and publishing four anthologies of "Uncivilized" writing, Kingsnorth has watched the project grow into a "minor global movement," giving voice to fellow Civilization Cynics around the world. "We've tapped into a current," he said, "a sense of hopelessness and doom, and more interestingly than that, a positive desire to engage with what comes next."

The Fossil Fighters

For years you've felt an uneasy disconnect between your low-carbon lifestyle and the rising global temperatures it seems to have no impact on. Your home is lit by energy-efficient lightbulbs. You bike to work each morning. The produce in your fridge is organically grown and sourced from farms less than 100 miles away. What more can one person possibly do?

"Those things are all incredibly important," Phil Aroneanu, co-founder of 350.org, a leading opponent of the Keystone XL pipeline, said. "But they won't alone solve climate change."

Ultimate control over Earth's fate, he believes, resides in the corporate boardrooms of Shell, Exxon and other producers of fossil fuels. "We really need these companies to keep 80 per cent of the [oil, gas and coal] reserves they have in the ground," he said.

That won't happen without a fight. Ruining the planet makes those firms filthy rich. Since they can purchase political influence at the highest levels, the only recourse for regular people, Aroneanu is convinced, is to hit the streets en masse like the civil rights protesters of an earlier generation. "We need a huge societal shift," he said, "and only a social movement where everybody's involved" can achieve it.

Social movements require symbols. And few are more potent these days than the Keystone XL pipeline. The campaign by 350.org to defeat it could prevent a huge new source of carbon emissions. But Keystone, Aroneanu said, "is also a microcosm of what's wrong with our energy economy." It makes climate change feel real. "You can understand what it means to have a pipeline in your backyard," he said.

The same goes for tap-water lighting on fire. Tankers sailing through sacred rainforest. Boreal landscapes torn to shreds. Severed mountaintops. Oil-smothered ducks. These are the icons uniting Fossil Fighters across North America in battle. "We don't have the money to compete with the fossil fuel industry," Aroneanu said, "but we do have our creativity, our diversity and our bodies."

The Dogma Disrupters

At a family reunion you make the mistake of arguing with your conservative uncle about climate change. The whole thing is a hoax, he claims — liberal junk science used to justify government intrusion into the lives of hardworking North Americans. Your uncle's an intelligent guy. Why does he think the 97 per cent of climate scientists who say the Earth is warming are wrong?

"On one level the debate is not really about climate change," Ted Nordhaus, co-founder of the Breakthrough Institute, a California-based environmental think-tank, told Tyee Solutions Society. "It's about what society should look like." For years global warming has been conflated with tough controls on industry and big subsidies for clean energy. "Not surprisingly," he added, "a whole bunch of people on the right said, well, 'I don't think I believe your science.'"

Dismissing those people as idiots won't fix the situation. But changing the terms of the climate debate just might. Instead of hard limits on economic growth, think ultra-efficient buildings, widespread electric cars and power grids that resemble the Internet. "You get into very different mindset when you understand this as technological problem," Nordhaus said. "It's the politics of possibility."

That model sees government as the catalyst for a cleantech revolution, the same way federal policy helped create technology like the iPhone. It prioritizes coalition-building over conflict. "So much of the model on the left comes from the civil rights movement and protest politics," Nordhaus said. "You would think that's the only way social change has ever happened, and it's just not the case."

For now U.S. Republican denial of global warming shows little sign of changing. Same for the Canadian government's fixation on oil profits. But the answer for Dogma Disrupters

isn't to hit the streets. They'd rather transform the assumptions that led us here. "What we're trying to do with climate change," Nordhaus said, "is force it out of the ideological frames that have defined the issue for a generation."

The Industry Improvers

You've just invented an incredible new product you're convinced will stop global warming. It promises to transform one of the world's dirtiest industries into the cleanest. But nobody in that dirty industry seems to care. You watch the eyes of executives glaze over as you talk carbon emissions and rising sea levels. Finally one of them asks you: "How will this new product save us money?"

"The adoption of clean products and services is being driven by economics," said Dallas Kachan, founder of Kachan & Co., an international cleantech consultancy based in Vancouver. Corporations, in other words, don't run on benevolent green ideals. They're interested in shrinking their ecological footprint if it makes them more profitable. "Saving the planet is kind of a pleasant after-effect," Kachan said.

Never has it been easier to do both at once. Kachan points to recent technology advances in sectors like clean energy, low-carbon transportation, water recycling, sustainable agriculture and green buildings. Cleantech, he explained, "is now built into more or less everything." In business parlance such innovations are referred to as "efficiencies." "It's not about carbon," he said. "It's about doing more with less."

Lately cleantech firms themselves have been forced to do more with less. Global clean energy investment peaked in 2011 at $302 billion, and has fallen steadily since. It's evidence of a maturing industry, Kachan believes, the same temporary slump faced by dot-com firms in the late 1990s. Politics are also a factor. "We've had completely underwhelming policy support for clean technology" in North America, he said.

Yet the "fundamental drivers" for cleantech remained unchanged: a world population set to hit 10 billion. Looming shortages of food, water and other vital resources. Rising global temperatures. Across the planet, Industry Improvers are looking for cheaper, better and less harmful ways to run human civilization. "The demand for clean products and services," Kachan said, "isn't going away anytime soon."

Should We Scrap the 'Green Economy'?

BY GEOFF DEMBICKI

Saving the planet means first changing the language of solutions, say cleantech leaders.

'Cleantech' leaders like Dallas Kachan are working to create a new ecological lexicon and redefine what it means to be green.

For much of this past summer Dallas Kachan struggled with a question that felt heretical: Should he abandon something he'd spent the last decade of his career promoting? Kachan is an influential tracker of the breakthrough technologies enabling humankind's transition to a less harmful global economy. In simpler times most people, himself included, referred to that activity as "cleantech."

Kachan feels some responsibility for the term. He was formerly a managing director at the market intelligence firm that coined it, the Cleantech Group. And when he left in 2010 to form his own Vancouver, B.C.-based consultancy, Kachan & Co., he positioned the entire business around "cleantech" — shorthand, in his view, for money-making solutions to overpopulation, resource scarcity and climate change.

So it was with some trepidation that he sat down at his computer last June after five days of meetings with investors, entrepreneurs, lawyers and business leaders in the San Francisco Bay area. "I find myself facing the reality that intelligentsia in the sector are distancing themselves from the phrase," he wrote on his blog. "The term cleantech has undeniably fallen from favour, they said. Why?"

Kachan's dilemma is faced at large these days by businesspeople trying to solve humankind's biggest challenges. Their planet-saving solutions have weathered years of polarizing debate, political attacks, public skepticism and challenging economics. The very words used to describe

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those solutions — "green," "clean," "sustainable," and "environmentally-friendly" — may now be liabilities.

"Words have power," explained Joey Marquart, global cleantech sector lead for Edelman, a public relations firm. "The way you describe something will influence whether your audience listens to you, and some words increasingly turn off certain audiences." Already an effort is underway among Kachan's cohort to create a new ecological lexicon, and in the process, redefine what it means to be "green".

'There's still a stigma'

When Garvin Jabusch first started investing in environmental solutions back in 2002, he had a hard time being taken seriously. "We were derided outright," he told Tyee Solutions Society. Some people used the contact sheet Jabusch kept at his booth during trade conferences to show their disdain. "People would fill that thing out and put stuff like 'tree-hugger' and 'are you kidding me?'" he said.

Now, investment banking giants like Morgan Stanley and Goldman Sachs have clean technology divisions. Citi this fall deemed the ongoing global shift to renewables a "sea change that we believe is only just beginning." Yet many investors remain skeptical that advances in clean energy, water recycling and green buildings, to name just a few, can be immensely profitable. "There's still a stigma," Jabusch said.

That may be partly due to an ecological lexicon badly in need of revision. It's why the investor team at Green Alpha Advisors, which Jabusch co-founded in 2007, is so conscious of word choice. "Talking about the 'green economy' evokes images of fuzzy green companies," he said. "'Sustainability' has that same problem. It's suffered so much from misuse and overuse that it can mean anything."

So Green Alpha's criteria for using a new term to define itself was as follows: It had to avoid the baggage of worn-out phrases like "sustainability"; promise serious financial returns; suggest an inevitable shift in current economic activity; and imply less harmful ways of generating wealth. "Next economy," in the opinion of Jabusch and his colleagues, is a term that meets all the requirements.

"Yes, it's green and sustainable," he said, "but it also encompasses other things." For Green Alpha "it is a vision for how the global economy must evolve" to deal with overpopulation, scarcity and climate change. The narrative Jabusch hopes to evoke is not of limits, but smartly managed growth. "Once we modeled the 'next economy,'" he said, "we started picking companies that are leading the way there."

Looking beyond 'utopias'

Joey Marquart also spends a lot of time thinking about words. He oversees cleantech communications for Edelman, the world's largest public relations firm, transforming the dull science of disruptive technology into narratives that enthrall politicians, investors and the consuming public. People just

aren't captivated these days by talk of a "green," "sustainable" or "new energy" economy, he thinks.

"They sound like utopias," Marquart said. Blame years of polarizing green debate. Blame the recession. Blame Solyndra's bankruptcy, and the politicians who used it to portray clean energy as risky and unprofitable. "If you look at any organization or company that was using the word 'green' really aggressively in its marketing a few years ago," he said, "they're probably not using that exact word anymore."

Some now talk about "advanced energy" instead. One U.S. business group promoting the phrase describes it as the "best available technologies for meeting energy needs today and tomorrow." Those could be wind, solar and smart grids, as well as natural gas and nuclear. That agnostic definition may appeal to people "uncomfortable with the ideological connotations of the word 'clean,'" Marquart said.

"Advanced energy" also reflects an emerging industrial reality: that the global economic system made possible by oil, gas and coal is becoming more and more inseparable from the lower-carbon version starting to replace it. This summer, for instance, former oil sands executive Jean-Michel Gires joined the Calgary offices of Chrysalix, an investor in technologies that make the industry cleaner.

"The two are not very different at all," explained Keith Gillard, general partner at Pangaea Ventures, a Vancouver-based energy solutions investor. "Making the oil sands more environmentally sound also makes them more profitable." In his opinion the same is now true for almost any industry. "If you ruin the environment you are causing your own company long-term damage," he said.

'A license to lead'

With all this on his mind, Dallas Kachan struggled to reach a decision on "cleantech" last summer. "Do we stick with the term?" he asked himself again and again. Kachan compared notes with Ernst & Young and other trackers of planet-saving technology. Finally he knew what to do. "We've decided to stay with it," he recently told Tyee Solutions Society. "The term 'cleantech' is not going anywhere anytime soon."

That's one major theme of "Cleantech Redefined," a report co-released by Kachan & Co. last October. "The global economy is undergoing a tectonic shift," it reads, as an exploding — and increasingly affluent — world population confronts resource scarcity and climate change. "These market forces have led to an inflection point for cleantech," it adds, "and are now pushing it into the economic mainstream."

Other forces are pushing cleantech in the opposite direction. They include cheap U.S. natural gas, lagging Chinese investment, Europe's ongoing debt crisis and feeble political action on climate change, according to Bloomberg New Energy Finance. "Weakness almost across the board," is how it recently described the steady decline of global clean energy investment from a 2011 peak of $302 billion.

Overshadowed by these challenging economics, though, as well as years of negative headlines and nasty political debates,

is one surprising piece of good news. More than two-thirds of people (68 per cent) across the planet "trust" providers of renewable energy, suggests Edelman data, compared to less than half (49 per cent) for oil firms. "That's a license to lead, folks," Marquart recently wrote.

Renewables don't just benefit the environment. They're a trusted source of innovative technology. "For those reasons the words 'clean' and 'tech' together are still useful," he said. So is the fact that in the "advanced energy" future of the "next economy" people will still need ways to describe the very best money-making solutions to global ecological challenges. "That gives terms like 'cleantech' longevity," Marquart said.

What Climate Change Does to Our Minds

BY GEOFF DEMBICKI

Surprising insights from studies on the experience of Canada's Inuit.

Pioneering research out of Cape Breton University is measuring how rising global temperatures affect the mental well-being of Canada's Inuit. Sea ice photo via Shutterstock.

Sometimes the smell of Skidoo exhaust makes Melva Williams yearn for the winters of her childhood, when cross-country journeys began in the darkness of early morning, layers and layers of clothing kept the intense cold out, and the ice was so thick people rarely worried about plunging through it. A few years ago, Williams and her husband found themselves unable to traverse Labrador's frozen wilderness after an unusually warm winter left the ice too thin to support their snowmobile.

Now she wonders whether "there may be a time when the weather conditions change so drastically that we cannot safely travel on the ice" at all. Each mild winter Williams experiences — and lately there have been a lot of them — brings her closer to that "heartbreaking" reality. "To be a part of a culture and a people that has a necessary connection to nature and the outdoors and is used to living in a certain way — to see that slipping away is scary," she lamented in a video posted to YouTube.

Her fears may seem anachronistic in a highly modern Western culture that's never felt so detached from the physical world. Our generation venerates the self-inventing tech entrepreneurs building a "new economy" unbound by traditional notions of place or time. We spawned a transglobal class of plutocrats that calls no country home. Yet an emerging body of mental health research suggests we may share more in common with people like Williams than most of us imagine.

"We've totally misunderstood our connection to the natural world," said Ashlee Cunsolo Willox, a Canada Research Chair at Cape Breton University who's helping lead first ever studies

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that measure how rising global temperatures affect the mental well-being of Canada's Inuit. One of her biggest takeaways: that human identity is inextricably tied to the natural world. As climate change alters that world in profound and unexpected ways, she told Tyee Solutions Society, "very few people are going to be untouched."

'A caged in animal'

Few people know more about life on a warmer planet than the Inuit of Canada's Nunatsiavut region, a vast Arctic wilderness in northern Labrador. The five Inuit communities nestled into the region's coastal inlets can be reached only by snowmobile or floatplane during the winter. They're still far enough below tree line to be fringed by black spruce forest. "In many ways, they have also experienced warming and changes at a faster rate than Inuit communities higher in Canada's North," Cunsolo Willox said.

Four years ago, she joined a team of researchers working with the town of Rigolet, and first visited during the mildest winter any of its 310 residents could remember. The annual sea ice freeze-up came two months later than usual, and left about two months early. Even while it lasted, the sharp and choppy conditions made snowmobile travel riskier. "In the back of my mind I'm thinking 'I hope the ice is safe, I hope we're okay,'" one woman explained. "Which is something we never ever had to think about before."

Unable to hunt, fish, trap and forage, Rigolet's residents spent months indoors. They felt bored. Many became restless and depressed. "When I don't get out on the land," one resident explained to the researchers, "I'm like a caged in animal. I really can't relax properly." Cunsolo Willox's team had come to Rigolet to study how warmer weather affected the community's overall health. Researchers soon realized the biggest impacts were occurring inside people's heads. "I can't imagine how life would be if I couldn't travel in the winter," Williams lamented.

Others described the milder weather of recent years as "devastating," "depressing," "frustrating," "sad," "scary," "worrisome," and "extremely stressful," according to a summary of Cunsolo Willox's research published this fall. For some of Rigolet's seniors and elders, the mental impact was existential. "The place has changed so much around them," Cunsolo Willox said, "that they no longer feel at home."

A new type of sadness

Halfway across the planet, a similar type of mental anguish had been observed among people living in the drought-stricken Upper Hunter region of eastern Australia. For decades they had seen their landscape transformed by open-pit coal mines, power plant pollution and a drier, less predictable climate. Some suffered "from a form of chronic distress," wrote Glenn Albrecht, a researcher who studied the

region. “Their relationship to their home environment had turned bad.”

Albrecht coined an influential new term to describe the particular type of sadness he witnessed in the Upper Hunter: “solastalgia.” “The homesickness you have when you are still at home,” is how he defined it. Researchers have since documented solastalgia among the older indigenous women known as “Aunties” on Australia’s Erub Island, and most recently in the cold and isolated Nunatsiavut towns of northern Canada. “[Albrecht's] concept is very, very relevant,” Cunsolo Willox said.

Her team found that solastalgia seemed to affect Rigolet’s oldest residents most. Like Inuit all across Canada’s north, they’d lived through six decades of traumatic change. They’d been forced off their traditional lands, sent away to residential boarding schools and assimilated into a Western culture bearing little resemblance to their own. Now they couldn’t depend on an annual sea ice freeze-up to provide structure to their lives. “And that’s almost worse,” Cunsolo Willox said.

Denied the opportunity to hunt for caribou, to visit winter cabins in the woods, to leave town on Skidoos in the pitch black of early morning, Rigolet residents young and old found it harder to deal with traumatic events from the past. “When people are unable to spend time on the land,” one local health worker explained to researchers, “they have more time to dwell on the negative, to remember things like residential schools experiences when they felt really trapped and unable to leave.”

‘It makes you, you’

Being trapped indoors made some people feel cut off from themselves and their identities. “It’s like taking part of your arm away,” one man said. “There is just really something missing.” Cunsolo Willox’s team heard variations of this statement over and over again: that people physically identified with the natural world surrounding them. They didn’t so much consider themselves as being from Nunatsiavut, as literally of it.

Despite the changes brought by a warming climate, more than two-thirds of those interviewed for the studies said they still loved the land they’d grown up in, and would not choose to leave it. “The land… defines who we are,” one young mother told researchers. “It makes you, you.”

That feeling may be hard for many North Americans to relate to. “In a world of cheap airfares, laptops, and the Internet, we proudly regard mobility as a sign of how advanced we are,” tech writer Clive Thompson has argued. “Only losers get attached to their hometowns.” In many ways, any sense that our identities might be “directly related to the ground we stand on,” Cunsolo Willox said, “that we can feel our ancestors and our history through it, has been lost in many urban settings.”

But just because we don’t feel that connection doesn’t mean it’s gone. Our psyches may in fact remain deeply vulnerable to environmental change. After Hurricane Katrina, for instance, Harvard researchers found the rate of “serious mental illness”

among survivors to be double that of the general population. Still, the mental impact of a warmer climate will likely be felt gradually. Look to Australia, where 25 per cent of kids "honestly believe [the world] will come to an end before they get older," one survey suggests.

These are glimpses into a disorienting future. "Although they cannot be described with certainty," the American Psychological Association predicts, global warming's effects on our emotional well-being "are likely to be profound." No need to explain that to Rigolet's Melva Williams, though, for whom Skidoo exhaust triggers memories of a simpler childhood. "Whenever the cold is just right, the wind is just right, I happen to smell that smell again, it brings me right back to those happy times," she said.

Four Remarkable Revelations About Big Oil in 2013

BY GEOFF DEMBICKI

Recent disclosures show powerful industry adjusting to uncertain future.

Major oil and gas firms are bracing for a disorienting future. Just how may surprise you. Photo by ezioman via Flickr Creative Commons.

In some ways 2013 will be remembered as a year of stalemate for one of North America's richest and most influential industries. It marked 12 more months that President Barack Obama was unable — or unwilling — to make a decision on TransCanada's Keystone XL pipeline. In Canada the political and economic fate of Enbridge's Northern Gateway pipeline remained equally uncertain.

Yet the past few months have also yielded rare glimpses into the preparations major oil and gas companies are making for a disorienting future. The four headline-making disclosures listed below show them reckoning like never before with increasingly powerful opponents, a global energy system in transition, the financial risk of rising carbon emissions and bitter economic rivalries.

1) Shell is lobbying against Big Coal

Perhaps the most surprising disclosure of them all came late last month, when Shell made its rift with the global coal industry public, admitting to an Australian newspaper that its lobbying efforts may have influenced the World Bank's decision in July to restrict financing of new coal power stations, except in "rare circumstances."

"We found out most coal plants get their funding started by using the bilateral funding agencies, such as the World Bank," Maarten Wetselaar, head of gas at Shell, reportedly said. "So we were talking to them about the impact their policies

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have on the energy mix of the world," adding, "We actively influence the space."

This may be one of those rare instances when the financial self-interest of a major oil and gas company benefits the planet. Shell, after all, is investing billions of dollars worldwide in liquefied natural gas, a fossil fuel competitor to coal, and one with potentially lower climate impacts. Concluded RenewEconomy: "The real impact of Shell's lobbying is to leave Big Coal even more politically isolated than before."

2) Ottawa made oil expansion harder

Political actions often come with unintended consequences like when Canadian Natural Resources Minister Joe Oliver penned an open letter in early 2012 to environmental opponents of Enbridge's Northern Gateway project (as well as other west coast pipelines), denouncing them as foreign-funded "radicals."

Turns out Canada's oil sector wasn't totally thrilled by Oliver's comments, as suggested in a Calgary speech given by the president of Kinder Morgan Canada, a major pipeline builder, last October. "I was not a huge supporter of how actively the federal government was a year or two ago in promoting pipeline projects for its interests and taking on some of the opposers," Ian Anderson reportedly said.

The reason? Oliver may have been unwittingly "fanning the flames" of environmental opponents, which ultimately makes it harder for Kinder Morgan and others to win social license for their projects. "I don't need [governments] making the grassroots opposition any worse than it might already be," Anderson said.

3) Big Oil underestimated its opponents

Speaking of environmental opponents, we have Wikileaks to thank for publishing a detailed breakdown of the activist groups fighting against oil sands expansion, prepared by the Texas-based global intelligence firm Stratfor in 2010. (Canadian oil sands giant Suncor denies paying for the analysis, although its name is all over it according to InsideClimate News.)

What's clear is Stratfor — which categorized almost two-dozen civil society groups as radicals, idealists, realists and opportunists — underestimated the green movement's growing strength. "Activists lack influence in politics," it advised, and so oil firms shouldn't worry too much about appeasing them.

That might have been the case in 2010, when "activists [were] not stopping oil sands growth," Stratfor claimed, and their "chance of success with [the] U.S. government [was] slim." Yet three years later, TransCanada's Keystone XL pipeline is still stuck in political limbo. The analysis leaked this month, then, "shows how powerful these [green] movements have become," one campaign leader told InsideClimateNews.

4) Major firms are bracing for carbon pricing

One climate policy supported by nearly all green groups (as well as many economists and politicians) is a price on the carbon emissions that oil and gas firms currently emit for free. Not only do companies like Exxon Mobil, BP and Shell think such a price could become reality, they're factoring it into investment decisions.

That was the major takeaway from a report released recently by the Carbon Disclosure Project, an environmental data firm, which concluded that 29 major firms are using a so-called "shadow carbon price" in their planning to evaluate financial risk. "Companies acknowledge the process of ongoing climate change," the report read, "as a key relevant business factor for which they wish to be prepared."

The oil firms included in that list are looking at global warming "from a rational perspective, making a profit," report co-author Tom Carnac reportedly said. Carbon pricing in North America remains politically unlikely. But, he added, "companies see that the trend is inevitable. What you see here is a hardening of that understanding."

A Homesteader's Philosophical Dilemma

BY GEOFF DEMBICKI

Ten years after fleeing the industrial system, what has Peter Janes achieved?

In 2003, Peter Janes ditched the industrial system and moved to Denman Island to live self-sufficiently. 10 years later, he surveys his progress. Photo by Geoff Dembicki.

In spring 2003, Peter Janes decided to do something most people only dream of — that is, if they think about it at all. He left behind an academic education and the urban life that went with it to move to a small island off British Columbia's coast. Appalled at what he saw as industrial humankind's destruction of the natural world, Janes figured the most honest response was to build an alternative system: by producing his own food, building his own house and generating his own power.

"I wanted to physically make the world a better place," Janes said. With his family's help, he bought 40 acres of forested land on Denman Island. It came with two trailers. Janes and a girlfriend he's no longer with moved into one, and promptly sold the other — "a big, ugly, white vinyl doublewide," he said. They planted a vegetable garden and got some chickens. Self-sufficiency "was definitely an ideal," Janes explained, "but we were doing everything we could" to achieve it.

That ideal has since become an influential driver of North American culture. It's in The 100-Mile Diet. The rise of agritourism. The urban gardens of Vancouver, Detroit, Brooklyn and Mexico City. Bill McKibben bestsellers like *Deep Economy* and *Eaarth*. The Global Village Construction Set. Modern Farmer magazine. Resurging farmers' markets. The Degrowth movement — a "shift away from our current industrial society," as adherents put it — across North America and Europe.

For Janes, it now presents a philosophical dilemma. After 10 years striving to build a self-sustaining farm on Denman

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Island, he's struggling with questions that probe his life's meaning. Assuming he could cut all ties to the industrial system — and that's "a very tall order," he realizes — would it be worth the immense time and energy he must continue expending for the next five, 10, 50 years? Can the actions of a few people in the woods, he wonders, truly make the world a better place?

'Big catalyst'

Janes' green awakening isn't traceable to a single moment. There was no Exxon Valdez-type catastrophe that shook him out of his urban stupor. He recalls a growing dissatisfaction with the insular academia of the University of Victoria, where he took anthropology and environmental studies. And he recalls a gnawing sense, as articulated by writers like Wendell Berry, who he was reading at the time, that few things sacred can survive an industrialized society bent on conquering the natural world.

Around this time, Janes embarked on a "crazy walk," he said, from Cape Scott on Vancouver Island's north tip, to Victoria, 500 kilometres southeast. He hung out with lots of activists, and began to notice disconnects between their comfortable lives — "drinking black tea with white sugar," for example — and the ecological injustices they railed against. "That was a big catalyst for me," he said, "that it doesn't make sense to be upset about all this stuff but then be supporting it."

Janes dreamed of an education centre in the woods. Blending farming, spirituality and outdoors skills, it would give people the tools to live less destructively. Arriving on Denman Island in 2003, though, he got sidetracked learning his own new skills. Slaughtering animals was one of them. "I'm a bit of a bull, a hard-headed person," he said. Yet he recalls feeling "pretty emotional" shooting his first sheep. Its carcass bled onto a feed pile, and other sheep munched obliviously on the bloody grain.

That first year some university friends stayed over the summer. Even with their help, Janes was learning that true self-sufficiency would be much harder than he'd thought. Going off the electrical grid was prohibitively expensive, the farm itself produced almost no income and he needed money to buy food and tools. So he took menial labour jobs when he could, trying not to enter the winter too burdened with debt.

Staying put

History is full of hard-headed idealists like Janes. In 5th century BC, an Athenian named Diogenes renounced his possessions to live in blissful squalor (and later befriended Alexander the Great). "One of the first back-to-basics freaks in recorded history," claims one account. More recently, during the 1960s and '70s, up to 100,000 Americans fled to Canada, some of whom started communes in B.C.'s wilderness. Kurt Vonnegut's son, Mark, lost his mind at one northwest of Vancouver.

Janes is unsure he could handle the social stress of communal living. "That comes with all its own problems," he said. But family to him is important. Janes met Magdalene Joly, his partner of nearly six years, in a friend's backyard. Joly had dropped out of music school and was spending lots of time on Denman, drawn to a sense of place she found lacking in cities. She was also drawn to Janes, his self-reliant ideals and stubborn efforts to achieve them. "He can basically do anything," she said.

'I wish we had 10 more generations to heal our planet's wounds,' said Magdalene Joly, seen here at her Denman Island homestead. Photo by Geoff Dembicki.

Not long after, she moved onto his farm with her son Raphael. Joly, a trained herbalist and nutritionist, brought a formidable skill set. She baked steaming loaves of bread and made herbal medicines and teas. What her family didn't use they sold in local markets and cafés. In a western culture obsessed with mobility she loved the challenge of staying put, of keeping animals alive, the taste of freshly picked kale. "The nature of society's problems lies in being alienated from the land," she said.

Where Janes' hard-headedness could verge on cynicism, Joly strove to be earnest and optimistic. "We sort of balance each other out," she said. Slowly money came in. Janes sold fruit and nut tree seedlings he'd propagated at his Tree Eater Nursery, and crafted "pointed hoes" and other tools on a homemade forge. Joly planted a huge garden, and this year launched a community supported agriculture program, delivering to eight local families weekly boxes of fresh produce and homemade specialties like nettle pesto.

Yet it sometimes seemed the further they fled the industrial system, the more tied to it they felt. Years of hard work accumulated, and still Janes and Joly's lifestyle wasn't possible without store-bought staples like rice and flour, diesel for their pick-up truck, and BC Hydro's power. "There were a lot of people who came [to B.C.] in the '70s and tried to do all the same stuff as us," Janes said. "Then they all got older and stopped." He went on: "I don't want that to happen, but who knows."

Inner conflict

There was little sign of Janes and Joly stopping soon during a recent winter morning on their farm. "Uh oh, the geese have

escaped," Janes said, taking pursuit as '80s rock wafted from a distant stereo and chickens squawked nearby. An almost finished two-storey wood house — whose beams Janes had logged, milled and assembled — stood stark against the forest clearing's fog. Joly squished through some mud to pick kale that tasted especially sweet and nutty. "Frost does wonders for it," she said.

Still, they wondered what it all added up to. "I wish we had 10 more generations to heal our planet's wounds," Joly said. "But I sometimes worry that we really don't, and then I start to feel like, 'What am I doing living on this little island?'" Some days the answer seems clearer. After a Scandinavian man emailed recently about buying one of Janes' homemade tools, Joly's nine-year-old son Raphael told her how inspired it made him feel. "I can see that we've made a really positive imprint," she said.

A new generation is also finding inspiration in the do-it-yourself ideals of local farming. Last July, Vancouver opened North America's largest urban orchard, one of 446 community garden plots built across the city in 2013. "On some campuses," the New Yorker reported, "a junior year spent weeding an asparagus bed has become as popular as studying abroad." It's because "there's a deep drive in humans to create their own existence," self-sufficiency guru Marcin Jakubowski told the magazine.

Janes wouldn't disagree. It's just that after 10 years, he's unsure what wider good his own deep drive has served. "I now know by direct experience how hard it is to shift away from the momentum that our society has," he said. But in the process he and Joly have created their own existence to a degree most people could only dream of. "What does success look like to you?" Joly asked him. "How do you know when you've reached that point?" Janes paused, then quipped: "I'm already onto the next thing by then."

How Is Climate Change Reshaping Our Culture?

BY GEOFF DEMBICKI

Tell us what you think. Then hear leading thinkers on shifts in tech, business, politics and nature at free Jan. 22 event.

On the path towards a different society — but how will climate change change us? English Bay, Vancouver, by Gordon Montgomery from Your BC: The Tyee's Photo Pool.

What do the two words climate change mean to you? Do they suggest civilizational collapse? Oil company greed? Hidden cultural codes? The business opportunity of a lifetime? In recognition that climate change means a whole lot of things to a whole lot of people, Tyee Solutions Society last fall identified four of the most influential tribes shaping our response to it: Civilization Cynics, Fossil Fighters, Dogma Disruptors and Industry Improvers. The list was necessarily incomplete.

That's because climate change represents a new way of thinking about the future of human existence. It's the framework through which we must now evaluate our place in the universe. Four climate tribes? In reality there are too many to count. Yet taken together they constitute a generation — our generation — living through tumultuous global change. And though the future we're creating is uncertain, it's by no means unforeseeable. Nor will it be entirely bad, scary and destructive.

That's not the view you get in most media reports on climate change, where our elected leaders are seen to be failing again and again to protect us from calamity. Media should hold those politicians accountable. But all too often their stories channel a sense of helpless defeat. Which is why on Jan. 22 Tyee Solutions Society and the Stonehouse Institute are partnering with SFU Woodwards to present a public event on "How Climate Change is Reshaping Our Future."

The free event runs from 7 to 9 p.m. in the Goldcorp Theatre at 149 West Hastings (click here for more details, or to register for early tickets). Four of Vancouver's leading thinkers on

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environmental change will address questions that go to the very heart of how we live our lives. Will the future of North America be bursting with human potential, and the technology that liberates it? Or will it be defined by hard limits to growth, and the rural ideals of earlier generations?

Four perspectives on our future

Each panelist brings an ambitious vision, grounded in experience. The Tsleil-Waututh Nation's Carleen Thomas, who is manager of intergovernmental affairs for its Sacred Trust initiative, which opposes Kinder Morgan's oil sands shipping ambitions, will discuss people's future relationship to nature. She'll be joined by Jim Hoggan, president of Hoggan & Associates, one of Canada's top communications firms, as well as founder of the influential climate website DeSmogBlog, who'll talk about the future of political discourse.

Appearing also on the panel will be Christie Stephenson, an authority on socially responsible investing, whose work at NEI Investments busts the myth that "green" and "profitable" are in competition — she'll lay out the future of sustainable business. And Keith Gillard, general partner at energy solutions investor Pangaea Ventures, will discuss the future of disruptive clean technology, and how industrial-scale spider venom and microgravity may soon transform our daily lives.

Further down an explored path

The event will be moderated by myself, alongside the Stonehouse Institute's Ashley Arden. If you've followed my reporting for Tyee Solutions Society, you'll know I've been pursuing all angles on the cultural impacts of a warming climate. Like how this B.C. firm, for instance, is leading our transition to an "Internet of Things", one of the decade's biggest tech stories. And how Canada is rushing to produce a wonder material called graphene that may someday fix climate change and fight cancer.

You'll also know that I've closely examined questions of environmental strategy. Is Bill McKibben's campaign to defeat the oil sands our society's best shot at stabilizing the climate? Or is the cultural polarization resulting from the campaign making that objective even harder? How you frame climate change, after all, profoundly affects your sense of its solutions, as this esteemed conflict negotiator told me last fall — or whether environmental skeptics even listen to you in the first place.

Those businesspeople striving to solve humanity's biggest ecological crises face similar challenges. Yet one alternative to their tech-centrism is to cut all ties to industrial society, like what this B.C. couple is attempting. Over the past decade they've learned what Canada's indigenous peoples have known for millennia: that human identity is inextricably tied to the natural world. As warmer temperatures transform that world, we should expect our culture to change with it.

To fully appreciate how those changes are already reshaping our future, make sure to RSVP here for a ticket to the free Jan. 22 speaking event, presented by Tyee Solutions Society, the Stonehouse Institute and SFU Woodwards.

What Will Save Humankind: Tech or Nature?

BY GEOFF DEMBICKI

Study traces origins of today's cultural divide to medieval Christianity.

A 14th century tapestry of New Jerusalem, a prophetic vision of a dazzling, holy city. Is this what Google has in mind?

Among the questions that divide North American culture, this one's near the top: Will planetary salvation be achieved by creating new technology, or by returning to the natural world that created us? Google's purchase this month of Nest, maker of Internet-connected appliances that reduce household energy use, was a $3.2-billion bet on the first vision. Neil Young's recent Honour the Treaties tour, which had a stated goal of shutting down Canada's oil sands, was a step towards the second.

Both events were in some way a reaction to ecological crisis. Yet each helped push our culture in a different direction. Google is creating the future evoked by phrases like "Big Data" and "The Internet of Things," where technology largely determines Earth's limits. Young's tour resonated with those who may believe the opposite: that the "do-it-yourself" resilience of indigenous peoples, organic farmers and other seekers of "self-sufficiency" will allow us to more closely follow nature's rhythms.

This divide feels uniquely 21st century. But it may stretch all the way back to medieval Christianity. From this foundation of Western thought came two enduring utopian visions: one the basis for salvation by technology, and the other by nature. "You still see that tension today," said Arizona State University's Dr. Braden Allenby, who not long ago co-published a paper on it in *Sustainable Development*. "At issue are two very different ideas about the end point of human existence."

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'Possessors of nature'

Now hold on. Allenby's reasoning requires you first accept an argument made by many social researchers: that potent ideas rarely emerge from nowhere. To be widely accepted they must build upon earlier ideas, just as those ideas once did, and so on in a cascade of human belief that can stretch thousands of years. That's how Allenby traced today's tech and nature divide to tensions in medieval Christianity. "The vocabulary is different," he said, "but a lot of the assumptions are the same."

What would Utopian Thomas More make of smart meters?

Some of the those assumptions may have origins in the New Testament's Prophecy of New Jerusalem. This Biblical vision of human progress towards a dazzling holy city influenced Thomas More's medieval conception of a futuristic "utopia." It was boldly reimagined by Francis Bacon in the 17th century as a scientifically advanced New Atlantis ruled by Christian technocrats. Bacon drew from a religious tradition, Allenby said, "that viewed technology as a means of… working towards the realization of God."

Even bolder was the vision of philosopher René Descartes, who like Bacon, his contemporary, argued that through technology people might become "like masters and possessors of nature." Descartes took the idea even further, forgoing the blatant Christianity of Bacon's utopian *New Atlantis* to envision an ideal society more recognizably modern — one that would enable "man to create, from the raw material of nature, a modernistic temple unto himself," Allenby's paper argues.

Early environmentalism?

Others were reaching much different conclusions. Among the most formative was St. Francis of Assisi, whose 13th century thinking evoked the Old Testament's Garden of Eden to whose grace humankind should strive to return. Now regarded as the Patron of Ecology, St. Francis honoured "Sister Earth our Mother who sustains and governs us." He aimed, says one account, "to substitute the idea of the equality of all creatures, including man, for the idea of man's limitless rule of creation."

St. Francis was ultimately unsuccessful. Yet his thought influenced how the 18th century philosopher Jean-Jacques Rousseau "understood humankind's relationship with nature," Allenby's paper argues. Rather than the scientific and technological progress celebrated by Bacon and Descartes, Rousseau envisioned an ancient "state of nature" undisturbed by human activity, and a future agricultural society where people co-operated without the constant pressure of economic growth.

Echoes of this vision can be heard in Thomas Jefferson's conviction that farmers are "the most valuable citizens." Rousseau directly influenced Ralph Waldo Emerson, a seminal figure in modern environmental thought. Meanwhile, the techno-utopianism of Bacon and Descartes was embraced by early socialist theorist Henri de Saint-Simon, whose grand modernist visions, Allenby argues, laid the intellectual framework for U.S. conceptions of Manifest Destiny.

Tensions build

By the mid-20th century, both visions of salvation — whether by technology or nature — were deeply embedded in Western consciousness. Yet as the scale of humankind's impact on the natural world became harder to ignore, so too were the tensions between them. In the years following 1972's Stockholm Conference, which elevated ecological protection to the global agenda, "you had development people getting into more serious disagreements with environmentalists," Allenby said.

An international effort to resolve those tensions culminated in the 1987 Brundtland Report. Its roadmap for a "sustainably developed" global economy in effect fused two utopian visions traceable to medieval Christianity. "It was a way to overcome a very difficult political and intellectual issue while at the same time drawing from past human experience," Allenby said. Yet he's uncertain this union of economic growth to environmental quality truly settled the issue, or merely buried it.

More than 25 years later, there's still a profound cultural divide between the technology-rich future being built by companies like Google, and the appeal to a more natural state of human existence made by Neil Young's tour. As global crises like climate change get worse and worse, we'll be ever pressed to decide whether to seek a New Jerusalem, or return to the Garden of Eden. Can both visions ever be reconciled? Or will we forever remain, Allenby wonders, "arguing religion"?

Finding Hope in the 'Sharing Economy'

BY GEOFF DEMBICKI

Millennials are changing how we understand planetary crises and each other.

Sharing is more than sweet — its application can also change how we understand and respond to global ecological crises. Photo via Shutterstock.

I suspect few writers have better articulated the existential quandary created by our ailing planet than French philosopher Bruno Latour. In a lecture several years ago he described our current age as one when collective human action threatens to end planetary civilization for good — and yet no single person can be held accountable. Nor can any person's actions alone create a better outcome. The result, Latour argued, is we now feel "guilty about having committed crimes for which we feel no responsibility."

The problem Latour identified is a function of scale. Enmeshed in our local lives, it's impossible to truly see the global picture. But what if we conceived of people the way science conceives of data: as belonging to vast networks of meaning? Our knowledge of global warming is after all assembled from weather stations, ice cores, tree rings and billions of other local data sources. "Can this lesson of assembly be followed," Latour wondered, to create vast networks of people whose combined actions address "Earth's changing state"?

It turns out Latour's vision is shared in Silicon Valley. The Bay Area's latest generation of tech firms — including travel rental provider Airbnb, ride-share app Lyft and small job outsourcer Task Rabbit — sell access to networks rather than ownership of goods. In the fast emergence of a "sharing economy," where people make goods or services temporarily available to others, tech thinkers sense a profound shift in how we relate to each other and the world around us. Could it also

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change how we understand and respond to global ecological crises? And in the process, transform human identity?

Earlier this month, as part of an ongoing reporting project on new and emerging solutions to climate change, I traveled to San Francisco to find out if the sharing economy being driven by Millennials is just North America's latest corporate fad — or whether there's something truly meaningful happening beneath the hype.

'Very exciting shift'

My interest in the sharing economy was first piqued by Canadian-born Nicholas Parker. In 2002, he pioneered the concept of "cleantech" (short for clean technology), an industry now worth $170 billion. So I paid close attention when Parker addressed a late January green business forum in Vancouver. In his opinion a societal desire by Millennials for thrift, design, community and sustainability is disrupting accepted wisdom about how to heal our ailing planet. "We're seeing a very exciting shift," he said.

As one of those Millennials my head was spinning. Like many of my peers, I'm far less interested in owning a car or house than my parents' generation; I yearn for the acceptance of creative communities even though I was told to feel unique my whole life; and I worry deeply about the uncertain environmental and economic future I'll someday inherit. But I'm unsure how to make it better. After hearing Parker speak of an "exciting shift" in part caused by people like me, I needed to learn more.

My arrival to California coincided with the state's worst ever drought. Dust clouds spread deadly fever across the interior. Yet in the cozy Airbnb I'd rented in San Francisco's working-class south, only a small bathroom Post-it note hinted at crisis: "Every drop counts." My first morning I went to meet Joey Marquart in a French café on the edge of Chinatown. He arrived 10 minutes late, blaming the ride-share app Lyft. "The driver was new," he apologized with a laugh. "So we got a little lost."

As cleantech vice-president for Edelman, a global public relations firm, Marquart identifies emerging trends in sustainability. These days he's watching the sharing economy closely. "This concept of sharing and not necessarily owning something is powerful," he said. "It has incredible ramifications." An example: by patronizing Airbnb instead of a hotel, you require far less power and water, he said. "It's using technology to consume things differently." I recalled that Post-it note: "Every drop counts."

A new mentality

But after saying our goodbyes I wondered how anyone could calculate the power and water I'd saved by forgoing a hotel. Same for the green benefits of car-shares like Zipcar. One widely touted 2010 study found each car-sharing vehicle in North America takes, on average, about 15 personal vehicles

off the road. The estimate is highly dependent, though, on city density and household driving patterns, leading some to accuse Zipcar and others of "greenwashing," and argue that "these environmental claims can't just be taken at face value."

As I walked amid the office buildings of San Francisco's financial district, I tried to make sense of an emotion stirred by something deeper than reducing cars or power usage. I felt a sense of possibility about the future even if I couldn't quite figure out why. On the fifth floor of the district's art deco Hearst Tower, Ted Howard suggested I'm not alone. "This whole sharing economy," he said, "is definitely a mentality that's coming up with the current generation more than older generations."

Howard helps lead the San Francisco branch of Agrion, a global network of business leaders creating a greener economy. What gets him particularly excited these days are microgrids, a technology that allows people to generate their own renewable energy (from rooftop solar panels, for instance); share it with their neighbours; and live in communities more resistant to power outages and extreme weather. In such a system, he said, "you really can help yourself as well as helping others."

It's still very much a nascent vision. Many power utilities are wary about giving up the centralized control — not to mention profits — they've enjoyed for a century. But California just passed laws making local energy projects easier. Crowdfunding sites like Mosaic help provide funding. And Howard believes societal pressure only keeps growing. "The income gap is the biggest it's been in decades," he said. "There's lots of alienation. People feel a mental and physical need to connect with others."

'Brave new world'

While Howard sees in the sharing economy idealistic solutions to an economic system that alienates people from their environment and each other, others fear it could actually make alienation worse. In this "brave new world" where people compete to give rides, rent out spare rooms and crowdfund, say, solar panels on their roof, "you won't have: a regular salary, paid vacations, employer-provided health insurance, or a chance of getting rich," writes Harvard lecturer Steven Strauss.

As my flight took off from San Francisco I tried to comprehend an economic shift defined as much these days by local clean energy and community gardens as the corporate strategy of Walmart, BMW and Home Depot. Below me the city's lights receded into darkness, and I wondered whether Millennials like myself were creating a vast new network committed and able to heal our ailing planet, or buying into a system designed merely to enrich the next generation of corporate CEOs.

Back in Vancouver I went to a forum at the Hive with people mostly convinced of the former. "The vibe in here is just electric," declared April Rinne of the San Francisco-based Collaborative Lab, who is among the sharing economy's most outspoken advocates. In its rise she sees new tools to allay

societal isolation, and regain control of a future dictated by governments and corporations. “We are seeing a shift,” she said, “from centralized institutions to decentralized networks of individuals.”

This shift in her opinion will allow us to radically reduce waste, build more caring businesses and create stronger communities. “If you care about sustainability,” she said, “you absolutely want to support the [sharing] economy.” Biking home under a starlit sky I thought again of the philosopher Latour. Still unsure where this new paradigm would ultimately take us, I nonetheless felt less guilty about my role in creating global ecological crises, and alienated from their potential solutions.

I allowed myself to feel the slightest bit hopeful for the future.

Global Shift to Clean Energy No Longer 'Theoretical'

BY GEOFF DEMBICKI

That, and other surprising insights from a Q&A with Bloomberg New Energy Finance's Ethan Zindler.

Clean energy has earned the right to not be called 'alternative' anymore, says Bloomberg's Zindler. Wind turbines near Denmark. Photo via Shutterstock.

We're not totally screwed. I doubt Ethan Zindler would use those exact words to describe the rapid global transition to cleaner forms of energy he's spent the past eight years or so tracking for Bloomberg New Energy Finance. But that's the feeling I was left with after reaching him by phone recently at the market intelligence firm's Washington, D.C. offices. Zindler, its head of policy analysis, doesn't advocate for clean energy. His job is to make sense of the sector's latest financial data.

These days the data tell a powerful story. Recent price declines for solar energy have been "massive," he explained, while merely "substantial" for wind, meaning that a global shift away from fossil fuels is no longer "theoretical." It's happening, and fast. Zindler will describe B.C.'s potential role in that transition March 4 at a Vancouver lunchtime event organized by Clean Energy Canada.

Read on to learn other surprising insights from Tyee Solution Society's recent Q&A with Zindler: why libertarians are embracing solar power, what renewables providers really think of carbon taxes, and how clean energy has earned the right to no longer be called "alternative."

On why Bloomberg New Energy Finance exists:

"Our view is there's a major and very abrupt transition underway in the energy sector and so we're interested in

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the 'new' part of energy, which is new technologies that are changing how energy is produced, and also delivered and consumed.

"We're best known for our research on renewables, but we do also track… energy efficiency, and we're increasingly focusing on natural gas, but really the new and novel uses of natural gas."

On profound changes underway in 2014:

"I've been with [Bloomberg New Energy Finance] for eight years. Typically the way things work is governments put in place a supportive policy, private capital quickly thereafter flows in and you have a clean energy industry that's built up.

"That's really been more or less the history. But we're entering a new phase in the sense that these technologies are starting to become cost competitive without subsidies. Now, that's not something that's happening everywhere at the same time by any means, but it's starting to happen in different places at different times.

"We're entering a period now where its no longer theoretical that these technologies [like wind turbines and solar panels] are going to compete [with fossil fuels]… and so that's why it's such an interesting period and so much change is underway."

On libertarian support for solar power:

"I think there's definitely a libertarian flank on all this, which is people like the idea that they are producing their own energy and using it themselves. And they don't like the idea necessarily that they have to pay some kind of fee for this opportunity.

"We've seen some of that particularly in Georgia, where regulators have tried to crimp on solar development… and also in Arizona, where one of the groups really supportive of the solar industry is run by the son of Barry Goldwater, [who was] a quite conservative presidential candidate."

On the 'serious' money invested in clean energy:

"If you just look at investment in power projects that use renewables and you compare that to fossil fuel projects that generate power, we're getting closer to parity…. This should earn [clean energy] the right to not be called 'alternative' anymore, because it's not particularly marginal, it's a serious amount of money.

"We've tracked over a quarter trillion dollars invested in the industry last year and you know that was a down year compared to a couple years ago…. So this is real money, it's not insubstantial. [The sector] is starting to make real headway.

"But to some degree [this shift] is just getting started, because the real scale-up happens as these [clean] technologies

truly become cost competitive to fossils without subsidies, and they're getting there, but they're not entirely there yet."

On the promise and peril of Asia's modernization:

"It's a different game over there. The question is whether you can build new clean [energy] capacity instead of building new coal capacity…. Can these [clean] technologies be used in countries that are rapidly modernizing, where they're trying to get literally millions of new people onto the grid for the first time?

"I don't know if you've seen the recent numbers out of China. It kind of blew the rest of the world away in terms of new solar installations…. While there definitely was still growth in new coal generation in China last year, it was at a slower rate than it had been in a quite a number of years. That's a very positive sign for sure."

On the true impact of carbon pricing:

"I think it's clear that a carbon tax that is on the books, that has longevity and some political commitment to it sends a very important signal over the long term. But it's not the only way to support a clean energy industry.

"In Europe we did a survey of our clients several years on this question and asked them what was motivating them to do clean energy in the EU…. The answer in most cases was that it was things like feed-in-tariffs or policies that were explicitly pro-renewables that were stronger drivers than a carbon policy.

"So carbon policy is definitely helpful. It sort of sets the right background music. But in the foreground if you really want a utility — like this year — to add clean energy capacity, often the best way is to simply mandate it."

Worried About Earth? Hit the High Seas

BY GEOFF DEMBICKI

What Seasteaders reveal about our desire to be saved by technology.

A Seasteader's paradise? This "Swimming City" concept by András Gyõrfi took top prize in the first Seastead design contest, 2009. Photo: Wikipedia.

Nearly 400 years ago, the English scientist, author and philosopher Francis Bacon wrote of a mysterious island nation in the Pacific Ocean, whose citizens used technology to solve hunger, cure sickness and control the weather. At the centre of this fictitious society existed a research lab known as Solomon's House, where elite scientists worked outside state control to achieve "the enlarging of the bounds of Human Empire," Bacon wrote, and "the effecting of all things possible."

Since its 1627 publication, *The New Atlantis* has become one of the founding visions of our modern scientific age, instilling in Western thought Bacon's idea of technology as a means to improve the human condition. "To a great extent," claims a journal inspired by the book's legacy, "we live in the world Bacon imagined." Man of many legacies, Bacon played a lead role in Britain's colonization of North America, meaning in Canada and the U.S. we also live in the world he helped settle.

About six years ago, a group based in California's Bay Area, led by the grandson of U.S. economist Milton Friedman, began designing and raising money for a floating ocean city-state, whose citizens could harness the sea to solve hunger, cure sickness and fix climate change. "There's a rich history of people imagining a better society… on the ocean," the Seasteading Institute's Joe Quirk told me recently in San Francisco. "The difference now is that the technology to do this is at hand."

Whether that's true is a matter of debate — and one covered at length in more than 170 media reports on the Institute. What

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intrigued me more about Seasteading was its complete faith in technology to solve our planet's ills. "There's a split among people who care about the environment between people who want go backwards and people who want to go forwards," Quirk said. "I don't think there's any going back to nature." Did that faith say something larger about our society?

'Blue civilization'

Not long ago the Seasteading Institute posted eight videos narrated by Quirk on its website, offering oceanic solutions to world crises. Malnutrition? Harvest vast farms of nutritious sea-algae. Oil shortages? Turn a portion of the algae into biofuels. Climate change? Tap the ocean's clean thermal energy. Heart disease and diabetes? Allow medics to innovate on offshore labs. These and other "moral imperatives" can be fulfilled, Quirk narrated without irony, "by building floating cities on the sea."

I recently met Quirk in a cafe near San Francisco's Glen Park. He moved from New Jersey two decades ago, and became a best-selling writer of action novels and pop-science. Now he's writing a book on ocean societies. "I realized [seasteading] was an astonishing story," he said. A key tenet is that daunting crises like climate change can only be solved with ever more sophisticated technology — by "integrating nature into a blue civilization," he said, and "using the strengths of the sea."

Quirk's vision is audacious, but not necessarily far-fetched. Some biofuel firms see great promise in algae-based "Green Crude." And Lockheed Martin, for one, has studied ocean thermal energy since the 1970s. Nor are small floating cities so unrealistic: they might combine aspects of offshore oilrigs and cruise ships. So what's holding back our shift to a blue civilization? Seasteaders assign much of the blame to an ineffectual public sector. "Technology evolves," Quirk said. "Governments don't evolve."

That belief is shared worldwide. Or so suggests Edelman's 2014 Trust Barometer, which found global trust in the private sector to be 14 per cent higher than in the public sector, the largest such gap in the survey's history. "People see companies as a better place to rest their hopes than governments," Edelman cleantech vice-president Joey Marquart told me. Technology developers were the most trusted of all. "Tech gives this sense of the possible," he said, "this sense of inventing our way out of [crises]."

Libertarian roots

For Seasteaders, those crises aren't just environmental. On a planet with seven billion people, but only 196 national governments, they believe we're in desperate need of fresh political ideas. The high seas for them represent a vast fluid laboratory, outside the control of land-based authorities, where experimental micro-nations can flourish. "We envision a future where… political pioneers are trying out their ideas in a sort

of research and development department on the ocean," Quirk said.

Media outlets as diverse as Mother Jones, NPR, The Globe and Mail, BBC News, Fox Business and Reason Magazine have run stories on that vision. It's evidence, in Quirk's opinion, that the Seasteading meme has "captured the imaginations of people all across the political spectrum." Quirk, a self-described "political agnostic," argues a shared belief in technology's potential to fix world problems is what unites the Institute's own staff, who identify as "progressive, conservative, libertarian and confused."

Yet there's no confusion over Seasteading's ideological roots. Co-founder Patri Friedman is a strong believer — like his grandfather, Milton — in limited government and personal freedom. He thinks technology can achieve these libertarian ideals faster than democratic politics. "Technology alters incentives," he once wrote in the right-leaning Cato Institute's web journal, "which is a far more effective way to achieve widespread change than to attempt to fight human biases or change minds."

A growing number of libertarians see such potential in renewable energy. The son of 1964 presidential candidate (and conservative icon) Barry Goldwater is now leading an Arizona campaign to oppose centralized restrictions on rooftop solar panels, and equate "energy choice" with personal liberty. Similar efforts are underway in Hawaii and Georgia. They're flanks of an emerging global shift to decentralized energy that General Electric recently estimated could by 2020 be worth $206 billion.

A new frontier

For now, a floating city-state capable of producing its own energy, solving hunger, curing sickness and fixing climate change is no more real than the fictitious island society envisioned 500 years ago by Francis Bacon. Yet Seasteaders not long ago crowdfunded $27,000 to pay for an aquatic design by Dutch firm DeltaSync. And matching funds came from a philanthropic foundation run by Paypal co-founder and early Facebook investor Peter Thiel, which has put over $1.25 million into Seasteading.

Thiel also funds efforts to reverse aging and prepare for machines smarter than humans. He wants to reclaim the Jetsons-era zeitgeist of the 1950s and '60s, when human creation felt limitless. "The collapse of the idea of the future" for him began with the 1973 oil shocks. Since then we've faced one global crisis after another. Only by liberating our technological potential, Quirk thinks, can humankind overcome them. "We're not going to save humanity by making people live like they did hundreds of years ago," he said.

Hundreds of years ago, when Bacon was writing *The New Atlantis*, he also conceived of technology as a tool to achieve "the enlarging of the bounds of Human Empire." Yet he hinted at some of the future dilemmas "that arise with the ability to remake and reconfigure the natural world," argues

one interpretation, such as the tension between unshackled innovation, and its potential to destroy us. What are crises like climate change, after all, but unintended consequences of our modern industrial epoch?

I thought of that tension later as I walked through San Francisco's Castro district and up onto the exposed Twin Peaks high above. Why were some people so fervently convinced, I wondered, that the same explosion of technology imperilling future human existence would also save it? To the east I looked out over the Financial District, and towards the drought-ravaged Californian interior. But to the west I saw only the shimmering blue Pacific Ocean, and a cloudless horizon.