

HIGHWAY TO HELL

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Northern Alberta. Negative thirty degrees. A temperature that, for outsiders like us, engenders concern for one's lungs with each hollowed breath. We first arrived in Edmonton before heading further north to the boreal forest, a place that serves as the ancestral home to scores of First Nations bands, aboriginal peoples that have lived on the land for the last 10,000 years. In more recent decades, the region has been transformed by the oil industry into an expansive, lucrative tar sands country.

At the Tim Hortons downtown, we eavesdropped on a couple of burnt-out miners bemoaning former employers and a shady proposal reportedly in the works to publicly finance the city's new hockey arena. The Edmonton Oilers, the local pro hockey team, have been mostly dry of success since the "Great One," Wayne Gretzky, took off for Los Angeles in 1988 after a string of championships. The week of our trip, Edmonton enforcer Luke Gazdic defended home ice in the "Battle of Alberta" by knocking out cold his Calgary Flames counterpart Kevin Westgarth with a jab to the face. Westgarth slipped backwards and smashed his braincase between the blue lines.

He had to be flown home early after sustaining a head injury. Edmonton went on to lose the game in overtime, anchoring their last place spot in the conference. The once dynastic Oilers were stuck at the bottom of the barrel.

We interrupted the workers' gruff banter to introduce ourselves. Bruce Greene had the look of a hockey player, despite his being at least a foot and a half too short to skate with the tree trunks in the NHL. Greene grew up in Ft. McMurray, a ballooning suburban town a few hours north of Edmonton that serves as base camp for major oil sands operations in the region. Greene worked in the "oil patch," as he calls it, for the last 16 years as an electrician. His face dimmed by the shadow cast from his Edmonton Oilers ballcap, the 42-year-old wore sallow skin with wind-burnt cheeks and jaundice rings beneath his eyes. Thirty below zero didn't keep him from sipping a Tim Hortons frozen Iced Capp™. Out of work when we met him, Greene recounted the many times he complained to supervisors, on a weekly basis he says, about pollution and safety hazards at former work sites. He thinks his outspoken nature landed him at the top of the layoff list. "I've been fired a couple of times, probably will be again. But I'm on the job again two weeks later." He summed it all up with one takeaway from a lifetime in the patch: "Money talks and bullshit walks."

Insatiable thirst for a material lifestyle in the West and a burgeoning middle class in the developing world have ushered in an age of extreme energy. Desperately reliant on fossil fuels, we clear cut forests, sully our waters, and pump the sky full of CO₂. It's all an afterthought, a cost of doing business in order to heat our kitchens and gas our cars. The easy scores are gone; today we venture to the final frontiers and abysmal depths to scrape what's left. Scientists now call our day the Anthropocene, an era in which Earth's ecosystems have been fundamentally transformed by humans—by us.

In Canada and the United States—two of the world's highest emitters of carbon pollution—TransCanada's proposed Keystone XL pipeline has become a political football, a symbol of our collective energy future. Grassroots environmentalists have rallied against the project that would expedite ever more carbon-intensive oil extraction and refinement, while big unions and conservative pols hail the pipeline as a jobs project that will bolster North American energy independence. The decision to approve or reject the U.S. portion of the pipeline, set to carry 830,000 barrels of crude oil on a daily basis to the Gulf of Mexico, rests exclusively with President Obama. The source of the Keystone pipeline, and others like it, can be traced to the northern reaches of the Canadian province of Alberta. Tar sands country is home to the third largest known reserves of oil in the world, after Saudi Arabia and Venezuela. Recovering the oil from the Alberta tar sands, though, requires a colossal industrial undertaking across the heart of one of the planet's most pristine forests.

Before we took off to see for ourselves, Bruce Greene kindly warned us to be safe on Highway 63, the "Highway to Hell," a two-lane interstate from Edmonton to Ft. McMurray that has effectively become a service road for industry. "A lot of people die needlessly on that highway," Greene said. "It's pretty bad in the wintertime. I had quite a few friends die on that highway."

No less than five minutes after turning onto 63, we found ourselves stuck 10 cars deep behind a tractor trailer hauling a hundred-foot section of pipeline. Drivers of pickup trucks swung into the oncoming lane to test the limits of depth perception before gunning for it. We made our first attempt at passing only to be shooed back by an 18-wheeler spitting gravel into our windshield. The platform trailer just ahead carrying the pipeline took up three quarters of the entire road, surrounded in front and back by an armada of heavy duty pickups warning: *Oversize Load*.

Ft. McMurray is situated in a scenic valley where the Highway to Hell meets the banks of the Athabasca River. Ft. Mac, as it's known locally, is North America's latest in a long history of boom towns promising riches. Average incomes in the region run upwards of \$190,000 a year, which has made the cost of living in many ways more expensive than New York City. It's still a blue collar town though, where four-wheel-drive pickup trucks hog snow-plowed roads and the smell of gasoline fills the air. The first exit off Highway 63 leads straight to the Oil Sands Discovery Center, a museum dedicated to the region's most precious resource. Attractions include a yard full of retired trucks and drills, and the opportunity to take a whiff of fresh tar sands. The Center also publishes a coloring book for kids highlighting *Everyday products made from petroleum* on page three, and *Wildlife that could be "effected" by an oil spill* on page ten. Museums are full of fun facts but we wanted the real thing. We requested tours of the massive oil sands facilities just north of town but were turned away by each of the three local operators, Syncrude, Suncor, and

Albian (Shell). Media representatives politely informed us that it takes weeks to months to schedule tours, that there's no way on such short notice. "That's bullshit," Bruce Greene told us when I had mentioned back in Edmonton that we were having troubles setting up a tour. "Just don't tell them you are journalists," he grinned.

At the Boomtown Casino, a slots-only gaming center in Ft. Mac's city center, we met Alex, a 65-year-old Scottish émigré (he declined to provide his surname), who has worked off and on in the oil fields since the 70s. Alex could not understand why his employer would turn us away. He assured us that the industry is acting responsibly, that safety and the environment are paramount. "Safety above all else, then the environment," he said confidently. Alex thinks that industry should be happy to invite outsiders in to show the obvious care and respect afforded to laborers and the land. "Do you think the natives have something to worry about?" he asked us sincerely before parting ways.

Gaining access to the infamous open pit mining sites was out of the question. We were relegated to gazing from the highway at the giant plumes of smoke and steam and flares of fire gushing from pipe stacks. Environmentalists often describe the sky scape north of Ft. McMurray as akin to the Gates of Mordor. Upon approach, we understood why.

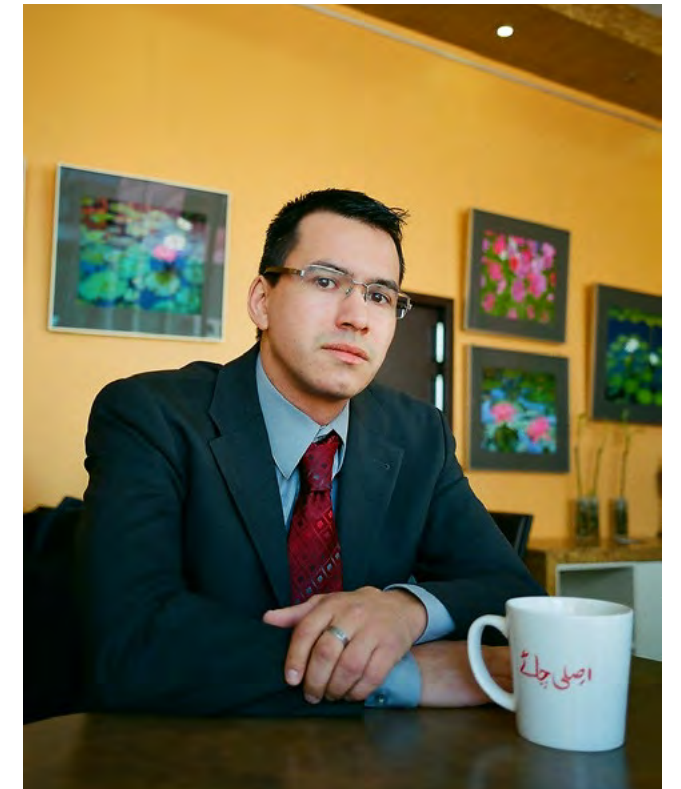
Tar sands are pretty much what the name implies: a mix of quartzite and clay (the "sand") and bitumen (the "tar"). Bitumen is the heavy hydrocarbon that refineries down in Texas are hoping to get their hands on, and the pickings aplenty. At least a couple trillion barrels of this to-be synthetic crude underlie an area the size of Florida. Some 1.9 million barrels of bitumen are extracted on a daily basis, with forecasts of 5 million each day by 2030.

In the 1950s, geologists and politicians in the U.S. and Canada toyed with the idea of lowering atom bombs into the ground to shake loose the earth while heating up the bitumen. The Soviets actually went ahead with the experiment, and it worked, but the oil turned out to be radioactive. Today, there are, generally speaking, two ways to get the bitumen up from the ground. Open pit mining—strip mining—is the first. This is where plants and trees, soil and waterways, are ripped from the ground and cleared away, referred to by industry in technical terms as "overburden." Never mind that these biodiverse ecosystems serve as home to iconic North American wildlife like caribou, lynx, otter, beaver, wolverine, bison, and bear. And these are just the animals with four legs; half of all bird species in North America migrate to the boreal and accompanying wetlands to breed. The importance of this place extends beyond its borders. The boreal forest sequesters more carbon from the atmosphere than any other terrestrial ecosystem, twice as much as tropical rainforests. "We're replacing a carbon sink with a carbon bomb," warns Garth Lenz, an environmentalist and photojournalist who tours Canada pleading with people to pay more attention to the fragmentation and destruction.

The second, "state-of-the-art," method of sucking up the black stuff is to inject high pressure steam underground in order to make the bitumen more viscous so that it can flow into a network of subterranean pipes. This process is called in-situ drilling, similar to that of hydraulic fracturing for natural gas. And like the fracking boom in the States, high-pressure underground injection for bitumen holds the future. Surface reserves are close to being tapped out and open pit mining can only take you so deep. Plus, in-situ is said to be a less invasive technique, which is an interesting way of putting it.



Bruce Greene



Billy Turner



Oliver Glanfield



Crystal Lameman



Drilling for bitumen is an incredibly energy intensive affair, consuming roughly one barrel of oil and 36 barrels of water to produce just three barrels of bitumen. Each day, millions of gallons of water are thrown in with a mix of chemical agents used to filter the bitumen from the sand. In any given load of tar sands, only about 10 percent is bitumen—the other nine-tenths have to be separated out. The leftover mess is poured into enormous tailings ponds, man-made chemical lakes big enough to be seen from space, where industrial byproduct is left to sit for decades. There are more than a dozen tailings ponds along the Athabasca River (the original source of the water used in the process). All put together, tar sands waste lakes in the region cover an area roughly twice the size of the island of Manhattan. Two of Syncrude's tailings ponds actually hold records as the first and third largest dams in the world, as measured by structure volume. Insiders recognize tailings ponds as a liability and the industry is said to be investing \$1 billion in tailings-reduction technology. Syncrude boasts, "We've developed revolutionary methods that will help us incorporate tailings into our reclamation program and use them in the construction of new landscapes." One of these methods is pouring fresh water over the chemical waste in hopes that it will "evolve into natural ecosystems and, over time, support healthy communities of aquatic plants, animals, and fish." In the meantime, ponds are guarded by scarecrows, affectionately nicknamed Bit-U-Men, and fitted with sound cannons to keep wildlife out. In 2008, a flock of 1,600 migrating ducks were found trapped in the toxic sludge floating atop one of the company's vast tailings ponds. Most were euthanized, and Syncrude was ordered to pay a \$3 million levy. Shortly after the fine was imposed, another 500 ducks found the same fate, but this time Syncrude and neighboring operator Suncor were cleared of any wrongdoing.

Tailings ponds pose more threat than just being a sticky landing pad for luckless waterfowl. Total E&P Canada, a Calgary-based energy company focused on oil and gas exploration and production in the Athabasca oil sands region of Alberta, compiled seepage flow values reported for all existing, approved, and planned developments to compute the total seepage to the Athabasca River. Extrapolating from industry-provided data, they estimated that in 2013 tailings ponds were leaking at a rate of 3.3 million gallons each day into the river, which they think will increase to 6.3 million gallons per day by 2044. New federal research this year by Environment Canada confirms that tailings are polluting groundwater and seeping into the Athabasca River, but the government study stopped short of quantifying the amount of waste water that is escaping.

Three hours by ice road north of Ft. McMurray, near the downstream junctions of the Peace and Athabasca Rivers sits Ft. Chipewyan. If the Athabasca River were a vein running through tar sands country, Ft. Chipewyan would be the region's heart. The idyllic hamlet, population 1,200, overlooks Lake Athabasca and is home to First Nations and Métis peoples, along with a handful of outsiders who have settled there. The Mikisew and Athabasca Chipewyan First Nations (ACFN) bands there are vocal opponents of oil and gas industry. With fundraising help from rock legend Neil Young, the ACFN recently filed suit against the Federal government and Shell Canada in opposition to the region's newest mine expansion project. Shell has said the development will double its production in the area. According to the band's application, the approval process for the Jackpine mine expansion broke at least three federal environmental statutes, as well as several international treaty agreements that enshrine the constitutional

right of aboriginals to be consulted on development in traditional territories. A statement on behalf of the ACFN maintains that the band is not against development but, rather, "are working towards achieving responsible and just relationships, governance, development, and economies."

At the Fort Chipewyan Bicentennial Museum—which had just received a \$100,000 grant from Shell—we met Pam Gibot, a 29-year-old aboriginal person and mother of three, and Oliver Glanfield, an 83-year-old raconteur who "married into history" by wedding a woman of the Dené First Nations. Glanfield gave us an extensive oral history of the area and conveyed a deep respect for the indigenous. "The contributions of the aboriginal people are astounding. If it hadn't been for them, the explorers and fur traders wouldn't have gotten to first base," he explained as we sat on the second floor of the museum, a replica of the original Hudson's Bay Company store, established more than 200 years ago as a fur trading post. After the lesson, we asked about modern industrial development in the area, and Glanfield apologized to us for "muddying the waters." He says that, at times, people get tired of being interviewed because outsiders don't want to talk about the positive sides of industry, the burgeoning economic development. The risks are overblown, he says, and oil sands have naturally polluted the Athabasca forever. "Everybody blames the plants, and I do agree that they've been careless. And there are higher levels of chemicals in the water," but the operations have not disrupted traditional ways of living he says. "As far as hunting and trapping go, it's a recreational pursuit today." Because of the oil sands, he insists, "People have got jobs, and they are good paying jobs."

During his thirty years in the Forest Service, part of Glanfield's job involved dealing with land use issues. "I don't like to see the big expansions without responsible reclamation," he holds. Every few miles along Highway 63, billboards advertise the majesty of reclaimed lands, former mines that have been resodded with grass patches and evergreens. One spot even promised wild bison, but we couldn't find any. In fact, the only animals we had seen so far were roadkill and a murder of crows picking at a motor oil can littering the parking lot of the Oil Sands Discovery Center. Right off HWY 63, the Syncrude-sponsored Bison Viewpoint peers over a rather large lake of chemical wastewater, a sort of moat separating the ghosts of bison past and Syncrude's central operating center on the horizon. Pam Gibot sighed at the idea of responsible reclamation: "You can't shatter glass into a million pieces, glue it back together and call it the same."

Oliver Glanfield is concerned with chemicals leaching into local waterways, but skeptical of scientists coming around to study the possible effects of industrial runoff. "Let me tell you a story about Ph.D.'s," he delivered, settling into his wooden chair beneath a portrait of Queen Elizabeth II. "There was an old Pastor who was greeting his flock outside of the church on Sunday. A little old lady came up and says, 'Pastah, what all those funny lettahs behind yo' name?' And he said, 'Sista, M.S. means *More o' the Same*, and Ph.D. means *Piled highya and Deepah*.'"

"It all boils down to *this*," he concluded, rubbing thumb opposite forefinger. "We all need to cut back on our oil and gas consumption," and with a somber grin asked if we had flown or driven here. Both, we told him. Back to NYC in a few days.

Dr. John O'Connor is just one of many imploring for more health studies. A primary care physician who has practiced medicine for 32 years, he served patients along the Athabasca River in Forts McMurray, McKay, and Chipewyan for much of the last two decades. He's just returned from Washington D.C. at the invitation of U.S. Senators Barbara Boxer and Sheldon Whitehouse (outspoken Keystone XL opponents) to testify before Congress as to the adverse health effects of living near tar sands developments. Dr. O'Connor began to speak out in 2003, struck by the "sheer number of cancers and autoimmune diseases in such a small population." The outdoors community, he says, maintains a healthy lifestyle. People still eat the local animals and gather plants for traditional medicines. But the elders in the area began complaining to the doctor of the changes in their environment and food. "It was all very compelling, and concerning," he recalled.

Dr. O'Connor says that early efforts by the Canadian government to study cancer risks were disingenuous. Health Canada, the national health service, sent representatives to study deceased files in Ft. Chipewyan, "the usual first step," according to a government report. Dr. O'Connor recalls that on the first visit by representatives of the Alberta Cancer Registry, one of the doctors swigged a mouthful of water and boasted, "See, there's nothing wrong with the water in Ft. Chip." By 2006, Health Canada had put out a report saying local residents had nothing to worry about. In the coming year, Dr. O'Connor received a series of letters from Health Canada, supported by Alberta Health, that accused him of causing "undue harm" for raising such concerns. Years later, the national cancer board released data showing that cancer rates in the area were in fact 30 percent higher, though the sample size and timespan were too small to be conclusive so the board recommended further a thorough health study of the area; Health Canada dropped their complaint against Dr. O'Connor.

This spring, Alberta's provincial Chief Medical Officer announced that an update to the cancer report "shows slightly higher rates of three specific types of cancer," but "the overall cancer rate in the community is not significantly higher than expected." Still, the report remains a statistical snapshot and the Canadian government has not commissioned a comprehensive long-term health study. "There's been nothing, not a single thing," O'Connor huffs. This is consistent with a greater war on science in Canada, he accuses. "It's the goose that laid the golden egg," he says, alleging that the government doesn't want to find out that industry is the culprit. "Everyone, to one degree or another, is reliant on industry. There's no plan B, no diversification, no alternative in terms of work." He tells me that he isn't in the business of campaigning to stop all development. "Poverty kills faster and more assuredly than exposure," he says. "You can't shut it down; you would decimate lives and communities." But the doctor insists on comprehensive and longitudinal health studies. A direct link between specific cancers and industry runoff may be tenuous, but he challenges, "Don't look the other way, don't bury your head in the sand."

Billy Turner, a law student and burgeoning activist, says that today's land grabs and environmental degradation harken back to colonial mentalities of the 19th and 20th centuries, a time when aboriginal people were unable to retain a lawyer or even get copies of the treaties they had signed. Government-mandated residential schools, rife with physical, emotional, and sexual abuse, subjugated hundreds of thousands of First Nation, Métis, and Inuit children to English and French language immersion where native traditions were punished. Students spent ten months a year away from their parents and their communities. "I would

parallel it to a military camp, but they were just children," Turner says. With three-quarters of residential schools overseen by the Catholic church, Christianity and Canadian values were enforced through a policy called "aggressive assimilation." Turner says that this legacy compelled him to study law, so that he could represent indigenous peoples. "It's a history of apartheid, and it really destroyed the culture," he explains. "Now we're playing catch up. A lot of First Nations people are trying to find their own identity."

In centuries bygone, the Canadian government enshrined policies of assimilation under the assumption that aboriginal peoples could not keep up with the modernization of society. Today, however more subtly, government and the oil industry offer cash and promises of self-determination as incentives to look the other way while traditional lands are cleared of "overburden," mazed by pipelines and service roads, and fissured beneath people's feet.

We left Ft. Mac for a two hour drive past reclaimed lands full of young pine trees that poorly hid service roads and drilling rigs on lease sites. In Lac La Biche, home to the Beaver Lake Cree Nation, we met Crystal Lameman. She's devoted the last two years to speaking out against the transformation of her ancestral home into an industrial landscape. Oil and gas companies are required by Treaty, a set of nation-to-nation agreements enshrined by the Canadian Constitution, to consult First Nations peoples on tar sands development. Lameman says the whole process is a farce. Oil companies announce town hall meetings on weekday afternoons where lunch is served and an iPad is raffled off while promises of sustainable development and economic reward are evangelized.

In 2008, Crystal's uncle, and then-Beaver Lake Cree Nation (BLCN) Chief, Alphonse Lameman, filed suit against the Crown—the original signatory to Treaty 6—and its successor states Canada and the province of Alberta. The suit asserts that the government has wholly failed to uphold in good faith the fiduciary responsibility to enforce recognition of Constitutionally-protected rights as well as failing to protect the "ecological integrity" of the territories. The suit aims to halt the "wholesale destruction of traditional hunting, trapping, and fishing areas." Instead of targeting one mine or pipeline, BLCN is going after the whole thing—the cumulative effects of over 19,000 projects. After five years of legal sparring over statutes of limitation and questions of jurisdiction, the judge advised both parties to prepare for trial. A trial date has not been set.

Danika Billie Littlechild of Ermineskin Cree Nation, a lawyer who represents indigenous peoples, says that indigenous rights are crucial to preserving a future for all of us. "These treaties are one of the last lines of defense against the kind of environmental violence that is represented by the tar sands developments," she explains. "When I talk about treaty peoples, it's not just about indigenous peoples. Anyone that lives in treaty territory are beneficiaries of that treaty." And in an era of climate change, we all live downstream from the tar sands.

"We've come into a time where the rights of peoples are being abrogated and derogated in the name of quick and dirty economic development, where the benefits of such development are not going to those who are experiencing the greatest impacts. This is a common story for much of the environmental violence happening across the globe today. Often when we think of climate change, the people who suffer the most are not the people whose activities are the major contributors to climate change."



As we drove off the Lac La Biche thoroughfare towards the Beaver Lake Cree Nation reserve, Lameman was aghast over four recent spills in neighboring Cold Lake, just over an hour's drive east. The spills occurred on lease sites that employed the new steam injection in-situ method. One spill happened beneath a lake, which had to be partially drained, and another beneath an active Air Force weapons testing range, which now requires seismic monitoring. Operators blamed the system failure on old equipment but can't say for certain if it was the process itself that was responsible for sending cracks through the earth. "These fissures have been created in the ground and you can see these cracks where the bitumen is seeping. The spills haven't stopped, the ground just froze over winter," Lameman reports.

She notes that the rivers and lakes of the region are connected by aquifers that flow north towards the Arctic. "The elders knew the water was connected long before science told us so," she says. As recently as the 70s, the Beaver Lake reserve didn't even have running water, so Crystal's uncle went after the government. Dugouts were built where the Cree people could go to pull water from the ground and haul it home. With pride Crystal recounts, "Uncle Al said: 'My children are not cattle, and I will not lead my children down to the dugout like cattle to drink.' He got us running water."

In suing the Crown, the Beaver Lake Cree Nation asserts: "This land is our spiritual, physical, and economic homeland. We keep this land in honour of our ancestors and on behalf of our future generations, so that as long as the sun shines, the rivers flow, and the grass grows, we can continue our traditional way of life." But smoke plumes fill the sky, water escapes only to be returned as a chemical cocktail, and roots are lifted from the soil. It's all part of the search for more bitumen. They are "taking the milk of our mother and turning it into a commodity." As we walk across the reserve, Lameman pointed to a large creek bed dried after generations of flowing, "We're already seeing a huge decline in

water levels." Had the surrounding aquifers been tapped? "I don't know," she laments, "there's no accountability or transparency. Nobody tells us anything."

"We would go to the ceremony grounds as a kid, at night you could hear the frogs and the loons, and all this wildlife. There's nothing there now because it's all dry. Changes like that we are seeing and no one will tell us why. It's all speculation." The animals that are found on the reserve today, herds of deer mostly, shouldn't even be there, but migration patterns have been disrupted by miles of service roads and above-ground piping.

We drove along a narrow pebbled road named after her *Kóhkom*, the Cree word for grandmother. She pointed to a small Husky Oil sign pitched in the ground between a fork in the road. "Now we've been surrounded by farms that have been leased out to oil companies, and there's a threat of a new pipeline coming through that would carry chemicals that are used to dilute bitumen."

At the heart of the small Beaver Lake reserve, we drove down a snowy path to find a penned meadow, home to dozens of bison—the first sign of wildlife we had seen during our trip to the boreal. The wind howled and bit our cheeks, but the statuesque creatures were insulated by chestnut fur. They were enormous, but scurried off as we quietly approached the fence.

Silence.

"You see what a little piece it is. This little bit that we have left, they want to do away with it," she whispered.

We drove off the reserve, back into town towards the lake, past the elementary school where Lameman was due to pick up her two young kids. "People seem to think that development is the way to go—that it's our savior. Oil agreements are going to save us. But from what?"