

DAWN FROM TWILIGHT

Iver Arnegard

PHIL'S PLANE SKIPPED across the turquoise surface of Lake Ikgskiza, carved a wake of white foam and, giving its full weight to the water, sank to a stop at the north end: eighty miles west of Fairbanks and anything you'd call a road.

I jumped down and tied the plane to the dock. Phil was out of the cockpit before the last of the engine's throes, but with a final backfire the propeller jerked to a halt and the enormous silence of the wilderness was everywhere. We'd traveled thousands of years back in time. Aside from the plane and Phil's cabin, nothing out here had ever been changed by humankind.

A smile formed inside his beard as we walked down the dock and started the uphill climb to the cabin.

This was the man who first told me about Peak Oil a year ago. He was also my girlfriend's father. The cabin we were working on was part of a compound his entire family would eventually live in. If Phil was right about the future, no one in America was more likely to survive it than him. Out here he had a wood burning stove, an outhouse, a five hundred gallon storage tank for fuel, and solar paneling. He'd even built his own sawmill. Phil'd called moose out of the lake and shot them from his front porch. The surrounding hills supplied endless amounts of spruce and birch. Completely autonomous, he was succeeding in the lifestyle that lured me to Alaska in the first place.

Phil was an intelligent and articulate guy who spoke more like an ivy leaguer than the outdoorsman he was. An energy expert, his company, Arctic Technical Services, had helped home owners and businesses use energy more efficiently for years. Phil knew people in each town on the Alaska Highway, every village throughout the Bush.

He was a friendly guy, though I'm not sure he liked me. For one thing, I was taking his only daughter, Rita, out of Alaska and away from her home at what he would call a crucial time.

The first night I met him, last May, he started in on Peak Oil. Meaning the peak production of oil, after which the world's supply would decline while the demand continued to increase. It meant we were halfway through the oil age, and the second half would be like breathing through a straw — one which grew exponentially smaller as time went on. After we peaked, the world would never produce as much oil, or cheap energy, again and we'd enter an irreversible, permanent decline.

Our petroleum-based financial system is fragile and it doesn't take much to disturb it. During the oil shocks of the 70s a five percent loss in production caused gas prices to quadruple. Just a few years ago, during California's natural gas shortage, another five percent drop resulted in costs four times the norm. Now, the most conservative estimates predict a three percent annual decline after we peak in oil production. That means it would take less than five years for gas prices to reach fifty dollars a gallon.

Of the forty leading oil producers, over half have peaked and are in decline. In the spring of 2005 the world's second largest reservoir, the Burgan field in Kuwait, peaked. Just as every field peaks, so will every country. And eventually the world. "No one has a crystal ball," Phil once told me. "No one can say exactly when the world will peak but most petroleum geologists think it'll happen in the next two or three years. The problem isn't that you run out of oil. Someone, somewhere in the world, will be drilling for it fifty years from now. The problem is once you peak you'll always have less and less, and the last of the oil in any given field is always heavier. Harder to drill for, harder to refine. You think gas is expensive now?"

Phil never put me in a better mood. Since I met him I've had more nightmares and higher anxiety. The thing is he doesn't base his prophecies on a dream he had or a misinterpretation of some religious doctrine. He's a smart guy, in touch with most of the world's energy experts. And Peak Oil isn't theoretical or open to debate. The supply of fossil fuels is finite, nonrenewable. We know that most of the world's oil fields have been discovered. Discovery in the U.S. peaked in the '50s and production peaked forty years later. Since then we've had to import over two thirds of our oil from other countries, mostly nations that don't like us very much. Global discovery peaked in 1965 and if it follows the trend of the U.S., then the world as a whole will peak any year now.

Oil companies haven't found any reserves that could balance the energy deficit. Now, for every four barrels of oil consumed world wide, only one is discovered. The question isn't, Will we peak? It's, When? And, How do we live our lives afterwards?

I could list other reasons why Phil has reservations about me, like my reckless courtship of his daughter. I met her at the University of Alaska where I was working on my master's degree. Rita had lived all over the world: from Scotland to Japan, to Belize, and seemingly all countries in between. She wasn't working toward a degree, just taking classes that interested her. Already self-employed, she was a massage therapist in the winter, and fought fires every summer.

I'd just made the decision to pursue my PhD when I met her. Another degree meant I had to move. This caused a crisis — I loved Alaska. I'd come to live out the Londonesque fantasies of my childhood.

But, though I'd enjoyed my first year up north, alone in a remote cabin, I'd learned that it wasn't for me. For one thing, I liked people more than I'd thought and missed human

contact. I'd also dreamt of becoming a writer. Still, I didn't want to leave Alaska, just wanted more of a community. So I applied to the MFA program in Fairbanks. Afterwards it didn't take long to realize that, along with writing, I wanted to keep teaching. Preferably in Alaska. The problem? It required a PhD and there were no programs in the state.

I'd applied to Ohio University in Athens because, though I'd made my decision late, I could still meet their deadline. I was thrilled and dejected to receive the acceptance letter. Part of me had hoped there'd be no reason to leave. I had other skills, like carpentry, and it was hard to imagine a PhD, or anything else, was worth moving down south. I wanted to live off the land again, on my terms. Maybe build a cabin on the edge of some village. And besides, I'd just met Rita.

I'd only talked to Rita once or twice but what did I have to lose? There's freedom in knowing you're about to check out. So I looked her number up in the book and after two or three rings she answered. I asked if she wanted to meet at the Golden Eagle for a drink and she said yes. When I woke up the next morning she was lying in bed with me.

I dealt with the conflict the best way I knew how: I stopped eating altogether and started drinking three bottles of wine a day. It wasn't hard. When I'm depressed I lose my appetite. I'm also an insomniac and the wine, at the time, was the only way to sleep. I'd tried it all: meditation, breathing techniques, counting sheep. The only thing that worked was booze. I can function hungover: do my job, teach. Whatever. But without sleep I'm a zombie. I lose focus, forget everything.

I started living my life as if it were about to end. And in a way it was. Alaska was the original dream and I was cashing in on it. In a month.

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“WHAT ABOUT alternate forms of energy?” It was the night I met Phil after Rita had disappeared with me for two weeks. He'd opened a bottle of scotch. I didn't know what to say but figured I'd keep asking questions about energy. Rita had gone inside to talk to her mom, leaving Phil and I alone on the porch. I took a slug of whiskey.

“Can't they run cars off ethanol?”

Phil turned and raised an eyebrow. “That's a joke.” He sipped from his glass and peered into the woods in front of his house. “I mean, they can run cars off ethanol but do you know how much oil it takes to convert biomass into fuel? For one thing, almost all the land we use for agriculture is fertilized. And fertilizer is made from fossil fuels. If America decides to use energy at its present rate, but have it all come from biomass instead of oil, we would have to double the size of our farmland. And then, where the hell would we grow crops?” He laughed and lit a cigarette. “Most of the best land has been paved over anyway.”

Somewhere I'd heard of a hydrogen concept car, so I asked him about it.

“The problem with hydrogen?” Phil said. “I don't know where to start. First of all it's not a form of energy, it's a form of energy storage—through hydrogen fuel cells. Otherwise it's like ethanol: In theory, you can run cars off of it. But most equations break down somewhere between theory and reality. The manufacturing of fuel cells is mostly designed to run off hydrogen made from natural gas, which comes from petroleum. The only other way to get it is through water electrolysis. And that takes nuclear power. Way more plants

than we have and you don't even want to know how much oil goes into building one. Besides, hydrogen's a dangerous element. Who'd want to do the crash test?

"Others look to electric cars to save us," he said. "But first of all, our administration gives benefits and subsidies to oil companies, not alternate energy. Second of all, we better start building a fleet of electric cars now. It takes ninety barrels of oil just to build a single car. And after they're built, cars, even hybrids, still require oil.

"Besides, transportation is only a fraction of our consumption. Electric cars would only delay the inevitable."

I shrugged, asked him about solar and wind, but the problem, he said, was that you couldn't get enough from either of those sources or both combined. Not enough energy to live the way Americans live. Or a portion of that lifestyle.

Solar was a nice idea but a single panel, which costs over dollars, barely produces any energy. And only on a sunny day. "Companies aren't manufacturing enough anyway," Phil said. "I ordered my panels in October and they didn't get here 'til April. That's how backlogged they are now. Wait till people start panic buying."

Wind couldn't compete either. Denmark uses it more than anyone. Their landscape is littered with turbines some, four times taller than the statue of liberty and they still only get five percent of their total energy from wind.

Phil put out his cigarette and drained the last of his scotch. "You'll see," he said. "The more you think about this problem, the more you realize there are no fix-all solutions, if any solutions at all. It's a maze of dead ends. Best thing you can do is learn to live without electricity or oil. Those who can live off the land and renew their sources of energy are the ones who will survive in the future."

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THAT FIRST MORNING Rita woke up in my bed I asked her to hit the road with me. The seasonal job I'd had at a greenhouse since graduation was over and for Rita it was too early to fight fires. We decided we'd leave that weekend, bum around Alaska until our money ran out.

After throwing on clothes from the night before we drove to the bar for breakfast, ordered Bloody Marys, and were drunk by noon. We bought some beer and headed to the Tanana. The next three days were the same: drinks with breakfast, drinks on the river, and drinks in the bar at night.

That Friday we headed south, made it past Trapper Creek, and pitched my tent by a nameless lake. We sat around our campfire drinking the wine we bought at a gas station along the way.

The next two weeks blurred together. Further south we camped along Resurrection Creek, hiked glaciers by day and drank in the bars outside Seward at night. Near Whittier we kayaked among killer whales in the Gulf of Alaska. Along a trail, somewhere in the Chugach, Rita and I nearly walked into a mother bear and her cubs. When we felt like moving on, we did. When we were tired, we stopped and set up camp.

Outside Wasilla a sign advertised sky diving. I'd never gone but it seemed like a good time to jump out of an airplane. When I asked Rita, she shrugged.

I'll never forget crouching on the floor of that plane, climbing to twelve thousand feet. "Has the reality of this set in yet?" The pilot was yelling over the roar of the engine. I hollered back. "No!"

"Well, it's about to." He smiled as the door dropped open.

And there it was. Reality. Two miles down. Wind snapped across my jumpsuit and I was about to tumble out when I heard Rita's voice behind me.

"Wait," she said. "I want to go first."

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ONE THING I LOVED about Alaska was that it transcended money. Wealth was measured in how much wood you had for the winter, how much moose meat you could put up. My first summer there I bought a subsistence hunting license for five bucks. I was eligible because I made less than eight thousand taxable dollars a year. With the license I could hunt and fish for almost any kind of game. Moose, caribou, salmon, crab. That summer I pitched a tent along the Talkeetna River and lived almost entirely off the land. I worked odd jobs only when I wanted money to go to the bars in town. I hadn't known that kind of freedom until then and I haven't known it since.

During the next five years I never had indoor plumbing. I hauled my water in five gallon jugs, sometimes through deep snow. And I always had an outhouse. Believe me, when you shit outside at fifty below it goes "clunk" as it hits the ground. Friends and family thought I was insane. And why not? Most of them lived in the suburbs of D.C., didn't understand my lifestyle, and refused to listen to rants about independence and freedom.

On August 14th of 2003 the power went out along the east coast. No one could shower or drink fresh water. For three days my parents, back in Virginia, walked to a construction site so they could use the port 'o potty. Had it been December they'd have had no way to heat their home. They didn't laugh at me after that. A power outage in Alaska wouldn't have changed my daily routine. I wasn't hooked to the grid. I had a wood burning stove, an axe, and acres of woods around me. The electric heat I sometimes used was a luxury. If I had to I could live entirely without oil.

To people like Phil, the blackout was just foreshadowing.

It should've been a wake up call, but no one got the message: Natural gas, a form of fossil fuel which has already peaked in North America and is predicted to peak worldwide shortly after oil, was already reaching its limits. After a mild summer, a heat wave settled over the northeastern U.S. and air-conditioning units promptly exhausted energy sources. The blackout, officially blamed on a fallen branch, was caused by a series of tripping breakers. During summer months, the time of day the U.S. uses most of its natural gas is between : and : p.m. That's not only one of the hottest times of day but it is also when all three users are consuming. Residential, commercial, and industrial. When did the blackout occur? : p.m.

The U.S. is the world's greatest consumer of energy. With only five percent of the earth's population, we use twenty five percent of its oil. We get fifteen percent of our natural gas from Canada, and that accounts for over half of Canada's total production. With dwindling supplies of fossil fuels, it's obvious that that relationship can't continue.

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RITA LIVED AT HOME the summer we skipped town together but it never occurred to us to tell anyone where we were going or when we'd be back. After two weeks friends and family feared the worst. By the time we reappeared, Phil and his wife, Bridget, were hysterical. We showed up one night and stumbled through the door.

"Mom? Dad?" Rita said. "This is Iver."

A few days later I was flying to the compound with Phil. It was an initiation, I'd later find out. And I passed. For two days I helped him build his cabin. But it wasn't my labor that impressed him. I was open to his theories on Peak Oil. Most people thought he was radical at best. But not me. I was as paranoid as he was. This helped soften the blow when, two weeks later, after my acceptance letter, Rita told her parents she was moving with me. They weren't happy about it, especially with society on the verge of collapse, but what could they do? Two weeks later we hit the road again—headed for Ohio.

The trip was clunky to say the least. We were broke and had to stop in North Dakota, where I drove grain trucks for a week, to raise money. From there on, with each passing mile, I sunk deeper into depression. There were no mountains. Nowhere remote enough to pull over and camp, unless you paid or had reservations. Compared to what I was used to, Illinois and Indiana were hot, flat and crowded. And Ohio was worse. The sun set as we passed through Columbus. We stopped and got a cheap room in Logan, forty miles northwest of Athens. I couldn't sleep that night sure I'd just made the biggest mistake of my life.

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PHIL'S PREDICTIONS for the future are apocalyptic. Horrific, at best. After the world peaks—sometime in the next three years—the stock market will crash. Gas prices, along with everything else, will sky rocket and keep increasing, never to level out again as unemployment and poverty reach all time highs. After declaring martial law, the government will allow no one, other than the military or police, access to gas. This will result in rioting, looting, and unspeakable violent crimes.

Chances are, after the peak, we'll lose our trade with China as we compete with them over the world's dwindling oil supply. We'll be lucky if they don't invade and, with a population five times our own, completely annihilate us.

One night Phil laughed. "Better brush up on your Chinese." We were working our way through a case of Budweiser while he channel-surfed from the couch. "That, or change your major from English to Chinese Literature."

Phil's advice to anyone? Load up on food and guns.

Alaksa, where people stockpile game, where this year a law legalizing concealed weapons passed, is a good place to do just that. Phil has more firearms than anyone I know and is in the process of ordering three years worth of freeze-dried food.

As he flicked through the channels he paused for a moment on ABC. Lost, the number one show on T.V., a series about a group of people from all around the world stranded on a deserted island. They've got to work together to survive without modern conveniences or technologies. Maybe the idea that we'll all soon be struggling for survival has seeped into the collective unconscious.

Or maybe it's just a coincidence.

AS SUNLIGHT SEEPED into the room I was shocked to look out and see rolling hills.

Covered by dense foliage, they stretched beyond the horizon. Nothing like the flat, treeless landscape we'd been driving through for days. I woke Rita and she smiled as I pointed out the window. Southern Ohio, and its maze of hills and hollows, was nothing like the rest of the state. And Athens, a small town near the West Virginia border, sat in the foothills of the Appalachians.

Rita and I rented one of the first houses we looked at. Away from town, though close enough to commute by bike. It wasn't nearly as wild or remote as where we'd come from but with a garden, a creek out back, and surrounding forest, it was almost "Alaskan." We had no neighbors, lived outside a small town called Shade, and could survive off the land if we wanted to—we'd just be eating deer and bass instead of moose and salmon.

After turning it over in my head for almost a year, I've come to peace with Peak Oil. I'm as prepared as I can be without obsessing, or altering the course of my life. I can grow my own food, I have an emergency supply of non-perishables, and all kinds of survival gear, from water purifiers, matches, and sub-zero clothes to leathermen knives, a backpack, and a four-season tent. I like Athens, and my new department, and I'll stay until I earn my degree. Even if society as we know it starts to unravel I won't be moving to a compound in the middle of nowhere. I already know I like people too much, most of my friends and family live in the lower ' , and there'd be work to do on the front line. For one thing, I already have the awesome responsibility of teaching my students conservation and helping them get ready for an uncertain future.

Thanks to Phil I've prepared, in my own way, for the worst. But I won't continue to beat myself up. The world's always been "about to end" according to someone. Peak Oil is just the latest version of how it's going to happen. There's always something to fear. Nuclear war, terrorists, bird flu? A hundred years ago we never could've imagined the advances or inventions just around the corner. Flight. Relativity. Heart transplants. The internet?

Maybe the solution to Peak Oil just hasn't been thought of or invented yet. Don't get me wrong, I think the future looks bleak, and we have a difficult transition ahead of us. I think a depression is inevitable, and more resource wars will be waged to control the dwindling supplies of fossil fuels. We're clearly in Iraq only because of its oil. There were never any weapons of mass destruction for us to find.

When the U.S., the world's greatest energy junkie, no longer gets its fix from oil, it'll turn to dirtier, more expensive substitutes. Like tar sands, which produce barely more energy than the energy used in their extraction. Or coal. We actually have an enormous supply, more than any other country, and through coal gasification we can mix its residue with oxygen and water to create a flammable gas. We've also been developing methods of carbon dioxide removal though, for now, coal remains the dirtiest fossil fuel, and an increase in use would help speed up global warming and all of its repercussions.

While the alternatives to oil come with their own frightening side effects, they do exist and wouldn't be too hard to develop. Nuclear is clean and could completely replace fossil fuels. But there's a lot of opposition. And for good reason. Three Mile Island put an end to nuclear power development in the U.S. Then there's Chernobyl. Think four

hundred times more radiation than the fallout from Hiroshima. Think cataracts, leukemia, thyroid cancer. Years later babies born brain damaged and deformed.

The Ukrainian government built a concrete tomb the sarcophagus around the radioactive rubble of reactor four. Now, over twenty years later, they're building a new sarcophagus to replace the old one. When finished, it'll be the largest moveable structure on earth with a price tag of eight hundred million dollars.

Nuclear power plants make great targets for terrorists and there's always the problem of where to store waste, but if Americans want to continue living the way we do, we'll embrace nuclear.

Last fall Phil's company paid for Rita and I to attend an energy conference at Antioch University in Yellow Springs, Ohio. There were representatives from Cuba there and I got the chance to speak to one of them. Carlos Cruz. We talked for a while of his travels but I finally got around to asking him about oil.

"So what would you do if you discovered more of it in your country?" I said.

He laughed. "It would be nice because we could sell it to other countries. But none of us want oil anymore. We're better off without it."

It would be nice if we could learn that maybe we don't need to use so much energy. Maybe we could restructure our lives. There are so many valuable lessons Peak Oil could teach us. For one thing, we have a model to follow, though we'll probably choose not to since it would mean sacrificing our gluttonous habits in favor of a better life.

Cuba experienced their version of Peak Oil in the nineties when we forced a trade embargo on them. Overnight they were cut off from everything, including oil, and plunged into a depression. Their currency worthless, Cubans had to find new ways to ensure they wouldn't starve. Those in rural areas returned to animals and human labor for agriculture, instead of tractors. Though decades of petroleum based fertilizers had ruined the soil they eventually built up enough organic mass for healthy crops. In Havana, Cubans planted roof-top gardens. The government rationed everything and issued bikes for workers to get to and from their jobs. Over the many years required to reconfigure a productive society, free of fossil fuels, Cuba experienced horrendous poverty in which the average citizen lost thirty pounds.

Still, the rest of the world should take notes, start working toward the kind of society Cuba built out of that despair. One important thing they did was to relocalize. Everything had to function on a smaller scale. Cubans started growing and buying their food closer to home, purchasing goods and merchandise at the local level. When gas becomes too expensive, goods can't be shipped thousands of miles, like they have been in the U.S. for decades. After the world peaks it won't be affordable, or possible, to ship produce from southern California to New York City. The 3,000 mile Caesar salad will be one more example of how wasteful and stupid we've been.

During the embargo, even entertainment changed. Instead of communicating electronically or watching T.V., Cubans rebuilt stronger personal bonds, started interacting face to face. Since their energy crisis, they've built a better, more meaningful, way of life. And since their food is no longer grown, saturated in petroleum-based chemicals, their average lifespan has actually increased.

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ON MY WINTER BREAK from Ohio Rita and I returned to Alaska for a visit. Our first weekend back in Fairbanks, Phil flew us to the lake. Over the Minto Flats: a maze of channels and sloughs converging into the Tanana. The landscape frozen, only open patches of white amidst the frosted clumps of spruce, marked where water flowed beneath several feet of ice. To the north, the snow fields of the White Mountains reflected a salmon pink sunrise where a reddish glow climbed through shades of lavender toward the purple overhead. We flew over the most pristine landscape I'd ever seen. Even in the 21st century, it remains mostly undiscovered and, except for a few Athabascans, unknown to the world.

Our first night, we huddled around the stove, eating half-frozen spam and thawing a solid rock of canned chili we'd found in the cabin. With the fire raging, it was still hours before the air temperature rose above freezing, though we laughed so hard at our predicament it was easy to ignore the cold.

We talked about changes Phil planned to make to the cabin, a little about Peak Oil, but avoided discussing when Rita and I would move back to Alaska—the only place Phil thought we'd be safe. Fortunately the subject changed to weather conditions: Phil had decided we'd leave at first light since there may be cloud cover moving in tomorrow.

As the chili thawed we drained the can into a pot and cooked it with some hot sauce. After dinner, Rita unfolded one of the cots in the cabin and went to sleep in the corner. Phil and I stayed up. I was beat, but I wanted to talk to him. And we did. For hours. Everything from his upbringing to mine. It was the closest I'd ever felt to him and instead of drinking we were freezing our asses off in a cabin with no T.V., no computer, no phone, or radio. Just two guys talking by a fire. That night, for the first time ever, Phil asked about my program and was genuinely interested as I described the classes I'd take next quarter and the changes I wanted to make to my syllabus. It was late when we finally went to bed. Phil set up a cot on the far side of the room as I laid down beside Rita. It was finally warming up in the cabin, though outside the mercury hovered at thirty below.

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NOW IT'S MORNING. Still dark. This time of year the sun barely lifts above the horizon, glides west for a few hours and sinks again. I woke in the middle of the night, couldn't get back to sleep, so I lit a candle and have been writing ever since. Trying to make sense of my life since I met Rita, left Alaska, and now returned.

It's a while before Phil and Rita begin to stir. As they dress, I put away my notebook and stoke the fire. The three of us unpack the bagels we brought with us and toast them over the stove. We make cream cheese and turkey sandwiches as the first of dawn's light stains the darkness outside.

After breakfast we bundle up and hike our gear down to the lake. Rita and I untie the wing covers and pack them away while Phil disconnects the small portable stove that's been heating the plane's engine all night. In a matter of minutes the Cessna's packed and ready to go.

Phil climbs in, starts the engine, and powder kicks up as the propeller spins itself invisible. Rita takes her seat beside him but I stay on the ice while the engine warms up, gazing across the lake where soft light drains into the sky above the hills. I love these

winter days, opening with brilliant sunrises, which bleed, uninterrupted, into spectacular sunsets, nothing separating dawn from twilight.

When I finally climb in, Phil pumps the throttle and we begin to slide across the ice. It doesn't take long for the plane to gather speed, a jet stream of snow-dust billowing out behind us. As the spruce on the far shore approach, we grow lighter and, somewhere near the middle of the lake, lift off the ice. As we rise above the hills, wilderness stretches in all directions. Steadily gaining altitude I notice cloud cover building to the east, making it difficult to see what lies ahead. We are gliding over a landscape almost entirely unknown, climbing through nameless shades of lavender.

NOTES

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