



PITS OF THE WORLD

The Cripple Creek and Victor gold mine, 10,000 feet up in the Colorado Rockies, is nestled in the crater of an extinct volcano.

BURIED TREASURE

GIANT MINING COMPANIES
ARE TEARING UP SOME OF THE
WILDEST PLACES ON EARTH TO
FEED OUR HUNGER FOR GOLD.
BUT DO WE EVEN NEED IT?

BY GEORGE BLACK

PHOTOGRAPHS BY RON HAVIV

EVEN THOUGH THE SACRISTY WAS DIMLY LIT, THE MAN FROM

Celendín kept his sunglasses on, because he had been blinded in one eye by a police bullet. All around, scores of peasant protesters were bedded down for the night on bare mattresses. Outside, under a glittering three-quarter moon and scudding clouds, student hunger-strikers were huddled in pup tents against the evening chill. Women in the tall white straw hats, rust-colored shawls, and multiple petticoats of the northern Peruvian highlands were stirring huge cauldrons over a wood fire. One of them ladled me out a warming plateful of some unidentifiable stewed fruit. The walls and railings around us were covered with posters, most bearing the words *Conga No Va!* The literal translation—*Conga Will Not Go Forward!*—doesn't quite capture the raw force of the sentiment, which is closer to this: *Conga*—a giant new gold mine, majority-owned by the Newmont Mining Corporation of Denver—*Go Home!*

The colonial church of San Francisco in Cajamarca, 350 miles north of Lima, had been under occupation for a month, and no set designer could have fashioned a tableau more pregnant with symbolism. Up the block, a silent phalanx of riot police with shields, helmets, visors, nightsticks, and guns. And just beyond them, the *cuarto del rescate*—the ransom room—a place on which the entire history of the Americas pivoted. The conquistador Francisco Pizarro came here in 1532 and took the Inca emperor, Atahualpa, as his prisoner. Have your people fill this room once with gold and twice with silver, he said, and you will be released. It was done. Pizarro ordered Atahualpa garroted regardless, and the Inca empire collapsed.

Since those distant times, the business of gold has been transformed. The days are long gone when a miner could reach into his pan and pull out a gleaming nugget. The modern gold mine is an open pit many hundreds, even thousands, of feet deep where infinitesimal flecks of the precious metal are embedded in millions of tons of rock and must

be flushed out with sodium cyanide diluted in millions of gallons of water—the “heap leach” method. As these mines have grown bigger and the technological challenges more complex, few can make the necessary investment. Power is concentrated in an ever-smaller number of big corporations, such as Newmont.

Yet other things, starting with geology, have remained constant. The Peruvian Andes form part of the spine of the Americas, much of it of volcanic origin, which stretches from the rainforests of Alaska to the glaciers of Patagonia and bears, close to the surface and temptingly accessible, a wealth of gold, silver, copper, and other valuable metals. Characteristically, the places that hold these treasures have five things in common: they are beautiful, they are remote, they are environmentally fragile, they are the ancestral home of indigenous peoples, and they have a tendency to produce violent conflict.

THE PROTESTS AGAINST CONGA HAD SIMMERED FOR YEARS.

Unlike many people faced with the prospect of a mega-mine, the *cajamarquinos* had actually lived next door to one for the better part of two decades, and so had some idea of what to expect from another. Yanacocha, in which Newmont also holds a majority stake, lies about 20 miles north of town. It is the largest gold mine in South America; in 2011 it produced an astonishing 1.3 million ounces, worth about \$2 billion.

I went out early one morning to see Yanacocha with a local farmer named Gomer Vargas, a wisp of a man with sculpted features that suggested his distant Asian ancestry. Dressed all in black and wearing sandals, one might have taken him for a foot soldier in the Vietcong.

We drove up twisting dirt roads, traditional Peruvian harp music playing on the car radio, through a checkerboard landscape dotted with scrubby patches of grazing land and plots of wheat and pigeon peas. We passed a couple of For Sale signs in one forlorn hamlet. Vargas blamed



the mine's consumption of water. "Cattle raising has suffered," he said. "Down in Cajamarca, people only have running water for two hours a day."

And then, abruptly, we were on blacktop. There were yellow center lines, guard rails, white marker posts, signs that told you not to use your cell phone while driving and that seat belts can save lives. Yanacocha.

A few weeks earlier I'd visited a big mine in Cripple Creek, Colorado, the property of AngloGold Ashanti, the world's third-largest gold producer. I'd stared up at the sky from the bottom of the 800-foot-deep pit; watched the colossal mechanical shovels and haul trucks at work; seen the black pipes, like outsize garden hoses, snaking up the towering ziggurat piles of ore-bearing rock to deliver the cyanide. So I thought I knew what awaited me here. But Yanacocha was on a whole other scale. The mine workings stretched for seven solid miles, one fathomless terraced hole after another, with a kaleidoscope of toxic tailings pits in shades of cerulean, lime, ocher, orange, lapis, and kelly green. (This is where Google Earth really comes into its own.) There was evidence here and there of efforts to reclaim the mined-out areas, tufts of grass planted at intervals like a questionable hair transplant on a bald head.

We stopped at one of the heap leach piles. The cyanide here was applied not by hoses but by sprinklers, such as you would use to water a lawn or irrigate a farm field. The spray was drifting toward us on the breeze, so we kept our distance. A company sign by the roadside read: *El hombre es el unico guardián de su naturaleza—cuidemos nuestro mundo.* Man is the only guardian of his nature—let's take care of our world.

From the moment it opened in 1993, Yanacocha inspired deep mistrust. The most traumatic incident occurred in 2000, Vargas said, when a mine truck spilled 333 pounds of mercury in the village of Choropampa. People scooped it up with their bare hands and took it home in jars; children delighted in their shimmering new playthings; hundreds of villagers sickened. Soon afterward, Newmont carried out an internal audit that showed 20 serious environmental violations at the mine. The CEO was warned that senior officials risked criminal prosecution.

Now Newmont and its partners planned to invest \$4.8 billion in a new operation, Conga, a few miles to the northeast of Yanacocha, smack on the headwaters of five local river systems. The statistics were prodigious. Over its projected 17-year operating life span, Conga would yield almost 12 million ounces of gold and 3.1 billion pounds of copper. There would be two main pits, each more than a mile wide. The tailings would cover almost three square miles. Four lakes would be drained to gain access to the ore-bearing rock, to serve as waste pits, or to provide water for the mine's operations. Legend says that the largest of them, Perol, is where Atahualpa's treasure was hidden; when the moon rises over the mountain, it is said, the lake is radiant with the glow of gold from its depths.

Newmont's 10,000-page environmental impact assessment was approved in 2010 after an accelerated review, and last November the ongoing protests turned violent. Police used live fire. The man from Celendín lost his eye. The government declared a state of emergency. The Ministry of the Environment produced an internal report slamming

the EIA, but official statements denied that any such report existed. In December the prime minister resigned and the cabinet fell apart.

Under pressure, the government eventually agreed to an independent review, calling in three experts from Spain and Portugal. Their report was made public in April. Three days later, President Ollanta Humala, who

SACRED WATERS

Laguna Azul is one of four high-altitude Andean lakes that may be drained to make way for the \$4.8 billion Conga gold and copper mine.

from NRDC ALASKA'S BIG DIG



JOEL REYNOLDS

NRDC's western director, based in Santa Monica, and director of the organization's work on the proposed Pebble Mine in Alaska

There's a contentious battle right now over the Pebble Mine, which would produce huge amounts of copper, gold, and molybdenum. What are the main environmental concerns?

If it's built, the Pebble Mine would be one of the largest in North America. It would be located on Bristol Bay, at the headwaters of the most productive wild salmon fishery in the world. And it would contaminate the watershed, decimate native species, and destroy communities that have been sustained by salmon for thousands of years. This is a classic example of the wrong mine in the wrong place.

Under the Clean Water Act, the Environmental Protection Agency has a rarely used "veto authority" over projects that would cause unacceptable harm to waterways and fisheries. Is the agency likely to exercise that authority in this case?

Nine federally recognized tribes from the Bristol Bay region have asked the EPA to intervene to protect their communities and the salmon fishery. Because the environmental record of large mines has consistently been one of failure—all big mines eventually leak contaminated waste—there's no question that, over time, development of Pebble would poison the ecosystem. The EPA's legal authority to protect Bristol Bay is unequivocal, and the potential for irreparable harm—even if the mine were to operate perfectly, which large mines never do—is clear. The only question is a political one: will the EPA choose to exercise its authority in the face of aggressive opposition from a majority in the House of Representatives that has repeatedly attacked the agency? We're doing all we can to encourage the EPA to act.

But you also have many state politicians claiming that the mine enjoys majority support among Alaskans.

That's totally false. In contrast to many other development projects in Alaska, the Pebble Mine is unpopular both locally and statewide. Public opinion polls over the past several years have consistently shown that more than 80 percent of residents of the Bristol Bay region oppose the mine. Statewide that number has ranged between 57 percent and 60 percent. The reason is simple: commercial and recreational fishing are a critical economic engine for Alaska and its people. While mining has historically enjoyed public support in the state, Pebble is different because of the unacceptable threat it poses to the Bristol Bay fishery. The developers' assurances that the mine will not harm that fishery are simply not credible.



had taken office a year earlier promising to rein in abuses by foreign mining companies, delivered his verdict: *Conga Va*—though with modifications. Newmont was asked to explore ways to preserve two of the four threatened lakes, find alternative sites for dumping its waste rock, and enlarge the artificial reservoirs it proposed to build to compensate local communities for their lost water.

I asked one leader of the protests what he thought of these concessions. I might as well have asked him to stand on his head in a tailings pit. “This means the total extermination of our water,” he snapped. “There is nothing to discuss.”

THERE ARE MULTIPLE SIDES TO EVERY STORY, OF COURSE.

So that evening, I sat down first with Marco Arana, one of the animating spirits of the movement against *Conga*, and then with Fredy Regalado, regional coordinator of the Grupo Norte, the consortium of mining companies operating in northern Peru.

Arana is a small, stocky man, a Franciscan priest. He speaks softly and with a slight lisp, projecting a quiet, deep-rooted indignation. After his ordination in 1989, he told me, he was sent to a poor rural parish near Cajamarca. The peasants informed him that there were some gringos in the vicinity and they appeared to be digging holes, guarded by armed men of threatening demeanor. Springs were drying up. Then, after Yanacocha began operations, cattle fell sick and people complained of rashes and pinkeye. Eventually, after the mercury spill in 2000, Arana and others formed an organization called Grufides, specializing in environmental protection, conflict resolution, and technical training for farmers.

Enough, said the bishop of Cajamarca. Father Arana was removed from his parish and transferred to a teaching post in Lima, then told to go to the Vatican and remain there for seven years. Being a man who does not take kindly to what he considers an injustice, he came back after two. But his problems were only beginning. “We are believers in

nonviolent resistance,” he said. “But the intelligence services began to tap my phone. They accuse me of instigating violence. There have been threats against my family. I always travel by taxi. I never sleep alone.”

Regalado, meanwhile, a physician and expert on infant malnutrition, presents the kinder, gentler face of the mining industry. Yet he gave me no more reason than the protest leaders to think that this dispute would be resolved through dialogue. In describing the ambitions of the Grupo Norte, he was implicitly throwing light on the larger unease of the *cajamarquinos*. Huge as *Conga* and Yanacocha might be, they are only part of a much bigger picture. Nearby, two Chinese companies are planning to invest almost \$4 billion in a new copper mine. Next to that, the London-based company AngloAmerican is developing another big copper deposit. The dream is to transform the Cajamarca region into one of the world’s great mining complexes. Mining already accounts for 61 percent of the country’s export earnings; it is the driving force behind the “Peruvian miracle,” which has produced economic growth rates comparable to those of China and India. What government could say no?

“There’s really no reason for this fight,” Regalado said as he flashed through his PowerPoint slides—graphs, pie charts, tables of social indicators, photos of mining equipment, colorful folk festivals, kids with laptops. “It reflects a historic mistrust based on the unsafe, unscientific mining methods of the past and the low level of education among the people.”

Since the early problems at Yanacocha, he continued, Newmont had cleaned up its act. If people were still angry, the fault did not lie with the company. Two decades of mining had brought only limited improvements in people’s everyday lives, he acknowledged, despite the millions of dollars in taxes and royalties that had flowed into the

NO COMMON GROUND

Above, a state of emergency was imposed in Cajamarca after recent protests turned violent. Franciscan priest Marco Arana, right, has been a leading critic of Newmont’s mining operations in Peru.

region. The problem was that the local authorities had no idea of how to make use of the bonanza. Rather than investing in social infrastructure, the politicians either left the money sitting in the bank or lavished it on prestige projects—sports fields, spiffed-up parks—which made them look good but brought few tangible benefits. Yet the mining companies took the blame. People expected benign paternalism, and didn't understand the flow of money. I could see the logic of his argument; it perfectly illustrated the legacy of centuries of underdevelopment.

NEXT DAY, A YOUNG MAN NAMED HERIBERTO HUAMÁN VILLANUEVA, a 20-year-old peasant-turned-law-student, took me up to the Conga site. He wore a heavy sweater and a red *chullo*, the typical Andean woolen hat with earflaps, against the biting morning air. As the road rose to 12,000 feet, well above the tree line, the *lagunas* began. We climbed to the top of a rocky hill and looked out over a chain of small, irregularly shaped lakes, dotted across the high grassland like blue amoebas. "My father used to tether his horse and sleep up here when he was taking his produce to market in Cajamarca," Huamán said.

The road dipped sharply into a narrow valley, and a larger lake came into view, flanked on one side by an elongated, steep-sided mass of dark rock. There was a modest trout farm here, and two men were drying nets by the water's edge. "This lake is called Namococha," Huamán said. "But people also call it Laguna el Cocodrilo, for the shape of the rock. There is a legend from the time of our ancestors about a giant



crocodile that could destroy the world. So they prayed to the gods for deliverance, and the gods turned the crocodile into a mountain."

Close to the mine site, we stopped for lunch at the home of a peasant. He took us to see a nearby spring seep. There was only a feeble trickle of water, even though the rainy season had just ended; five months of drought lay ahead. The problems had started as soon as Newmont began to sink its exploratory boreholes, the man said. "We don't want gold or silver," he complained. "Only our water. Do you see anyone here wearing jewelry of precious metal?" His sister was crouched nearby, electric blue skirts billowing over her Wellington boots, scooping out black mud from a dried-up irrigation channel with her bare hands. She

stood up, glaring, and launched into a tirade against the evils of the mine.

There was a barred gate at the entrance to the Conga site, with a half-dozen black-clad police toting automatic weapons. But they let us through after a perfunctory document check. Huamán particularly wanted me to see the Laguna Azul, one of the lakes that Newmont had proposed to use as a waste pit. It was a gorgeous sheet of water, aptly named—*azul* means blue—and perhaps half a mile wide. He stooped down near the edge to show me a plant that exuded a thick, clear jelly. "We call this *uñuigán*," he said. "It's good for colds and stomach upsets." He plucked another stalk. "Valerian," he said. "Mix it with milk and you go straight to sleep—*poom!* And that one over there is *Puya raimondii*. You mash it up to make a poultice. When it hardens you can use it like a plaster to set a broken arm."

He rolled up his trouser legs, waded into the shallows, and scooped up a few mouthfuls of the icy water. Then he looked out over the blue lake, turned to me, and said, "*Así es nuestra cultura.*" Such is our culture.

The problems began at the second checkpoint, where the guards interrogated us for 45 minutes. Eventually the chief of security was called in. There was a brief conference. He waved a hand at us. Leave. Now.

On the way back to Cajamarca, the driver's cell phone rang. I saw him blanch. "Two dead?" he said. In fact it turned out to be three, and then later five, after two more died of their injuries, all shot by police that afternoon during a protest in nearby Celendín, the hometown of the one-eyed man I'd met in the church.

In Cajamarca, mourners were screaming at the fixed ranks of riot police. A woman had lit a row of candles on the sidewalk, tracing a line of demarcation between the two hostile groups. A young girl was weeping. She told me that one of the dead in Celendín, a boy of 17, had been a classmate.

Events unraveled rapidly after that. More riot police blocked off the entrances to the plaza and chased us through the steep cobbled streets. The inevitable groups of infuriated young men charged the police lines, firing rocks from slingshots. Tear gas canisters rained down on us. I smeared my nostrils and cheekbones with Vicks VapoRub, a more effective antidote than the vinegar that sympathetic residents were tossing down from their wooden balconies.

Later we watched as white pickup trucks loaded with police slowly circled the plaza. Others began to tear down the *Conga No Va!* posters. One of the vehicles slowed down and a policeman pointed his tear gas pistol in my face and screamed at us to go home. Amid the chaos, a cluster of about 40 people, led by Father Arana, sat cross-legged on the sidewalk holding candles and singing "The Sounds of Silence" in Spanish. *Hello darkness, my old friend.* The state of emergency was reimposed at midnight.

BOB MORAN, WHO IS A HYDROGEOLOGIST AND GEOCHEMIST BY profession, may know more about the impact of hard-rock mining than anyone alive. I went out to see him at his home in Colorado, which is perched on the shoulder of a mountain above the town of Golden and looks down, appropriately enough, on the narrow valley of Clear Creek, where the Colorado gold rush began in earnest in January of 1859.

The prospector who made that first strike came here for the same reason men have always craved gold. The lustrous, untarnishable metal is value incarnate, the ultimate expression of wealth, power, and prestige. It's the stuff of Olympic medals, Oscar statuettes, altar monstrosities,

the crowns of kings. But does gold have any real intrinsic worth? Or is it valuable only because we perceive it to be valuable, like tulips in seventeenth-century Holland? Gold has some utility in the electronics industry, as an efficient conductor of low-voltage currents, and it commonly occurs in association with copper, which has myriad industrial uses. But for the most part we continue to mine it to satisfy our demand for the ostentatious display of wealth.

Moran has been immersed in the world of mining for 40 years. He started out as a government scientist, then had a lucrative career as a corporate consultant. Latterly, with mines like Yanacocha and Conga spreading to the remotest corners of the world, he has found himself on the other side of the fence, his skills sought after by those who suddenly find themselves facing the prospect of a giant mine in their backyard.

He is a slimly built man, pushing 70 now, with a mop of white hair and a beard to match, and eyes that dance with energy and good humor. Irish eyes, the cliché would say. He speaks in a rich, emphatic baritone. His father—whom he describes as “a larger-than-life character who got into lots of fights”—was the district attorney for Mono County, California, where he achieved renown by uncovering illegal diversions of water by the city of Los Angeles, a virtual sequel to the movie *Chinatown*. “He brought suit against the city—and won,” Moran said. “He took me to the places where the diversions were happening, and I learned the first rule of water: it flows toward money.”

Moran got his doctorate at the University of Texas. “It was very good on straight formal geology,” he said, “although all the money came from the oil industry, and most people went into the oil business.” Nevertheless, he had no political epiphany, no desire at that time to take up cudgels against corporate power. Instead, he took a job in Colorado with the U.S. Geological Survey.

It was 1972, and the dirty legacy of mining had finally crept onto the national agenda. The Environmental Protection Agency was two years old, the Clean Water Act was brand new, and people were beginning to think seriously about how to enforce it. “There were hundreds of miles of streams in Colorado that were contaminated, much of this being from gold mining,” Moran told me. “And there were rules now, so how were you going to respond? But the cool thing was that we were producing real technical data—and doing it with public funding.”

The new federal regulations were not the only significant development for the mining industry at that time. In 1971 Richard Nixon took the United States off the gold standard, which Alexander Hamilton had established 180 years earlier. By 1980, with gold now a freely tradable commodity and an attractive hedge for investors during tough economic times, the price had soared from \$35 to \$850 an ounce. So two things were happening at once: mining corporations were expanding their reach to reap the windfall profits, but they were also obliged to show compliance with the new environmental rules.

Moran found that his scientific expertise was suddenly in great demand, and from the late 1970s through the mid-1990s, as an independent consultant, he built a client list of Fortune 500 companies: Kerr McGee, Union Carbide, Anaconda, Gulf & Western, W. R. Grace. The fees were

fabulous. “I’m billing any number of hours I wish,” he said. “As a young guy, you’re seduced by this. You’re flying high.”

Over time, however, doubts began to nag at him. “I began to see the Clean Water Act as a kind of Trojan horse,” he said. “The corporations saw the potential for liability, so they moved to control the data.” He saw companies spending tens of millions of dollars to keep contaminated sites off the federal Superfund list; he saw his data massaged by lawyers in court, or locked away in a safe if they were considered too sensitive for public disclosure. “We could run the EPA in circles because we had the firepower, the money, and the resources,” he said. “The deck was stacked. It was sleazy dealing, and I’d had enough.”

Even though the corporations could outmaneuver the EPA, they still chafed at the regulatory hoops they had to jump through. They looked increasingly to Africa, Asia, and Latin America, where there were lower labor costs and few government regulations or enforcement powers, and a little money under the table could help grease the wheels of business. There were huge fortunes to be made by

those who could afford the 9- and 10-figure investments required for the new mega-mines that were proliferating in the developing world. Historically, the peaks and troughs of the gold market had mirrored the state of the world economy, but the new century brought an unprecedented bull market. The price of gold rose for 10 straight years until, in 2011, it peaked at almost \$2,000 an ounce, driven by the demand for luxury goods in China (which buys more than 500 tons of gold a year

for jewelry alone) and the economic boom in India (which is now the largest consumer of gold in the world).

DOES GOLD HAVE ANY REAL INTRINSIC WORTH? OR IS IT VALUABLE ONLY BECAUSE WE PERCEIVE IT TO BE VALUABLE, LIKE TULIPS IN SEVENTEENTH-CENTURY HOLLAND?



IF THE EPA SCIENTISTS AND REGULATORS WERE OUTGUNNED BY wealthy corporations, the imbalance of power in a place like Peru was infinitely greater. Starting in the mid-1990s, Moran was answering his phone to a different kind of caller: not-for-profits; governments eager for the wealth the mines could bring but nervous about surrendering their sovereignty; and local, often indigenous communities with long and bitter memories of foreigners showing up to appropriate their riches.

“I severed all my corporate ties,” he told me, “and I have more work today than I’ve ever had in my life.” Over the past 15 years he has provided independent data for clients in 40 countries—from Guatemala to Kyrgyzstan, from Indonesia to Argentina.

Moran visited Peru professionally for the first time in the mid-1990s. It was one of his last corporate consultancies. “It involved a huge mine in the northern Atacama Desert,” he said. “They were sucking out their water from lakes 15,000 feet up in the Andes, and all of it was running off as waste down a dry *quebrada* and ending up in the ocean. The *campesinos* were so desperate for water that they were tapping into the mine tailings to irrigate their land.” He came again in 2001, this time contracted by Oxfam America, to analyze a Canadian project that called for the diversion of a river and the forcible relocation of 14,000 people. During one of his subsequent visits, he was summoned to the office of the minister of energy and mining. “There was a roomful of

suits, but no one would give me their business card," he recalled. "The minister said, look, we have a big problem here. How would you like to be our independent expert? To me it was a clear attempt at bribery."

Word of Moran's reputation reached Father Marco Arana in Cajamarca, and he invited the American to visit. "I could see right away that Conga was a disaster waiting to happen," Moran said. He returned in the wake of last winter's violence, this time to examine Newmont's environmental assessment of the project and help the community ask the right questions about its likely impact.

"What we were looking for was impartial scientific information," Arana said. "To us it wasn't only a matter of what the market wants. It was a search for an ethical alternative."

"The companies say I'm anti-mining," Moran told me, "but that's bullshit. To me it's a question of fairness, of leveling the playing field."

The starting point, he said, is baseline data, so you know what conditions are before mining begins. "How much water is there in the rivers, lakes, wetlands, springs, and wells? What's its quality? What's the aquatic biology and the soil chemistry? What can you grow? Without those studies, it's impossible to determine whether the impacts of mining are acceptable, and therefore to give informed consent."

Moran also invariably asks whether the company will pay for the water it will use, as local farmers customarily do. (The answer is often no.) Will it make the required tax and royalty payments on the volume of gold it produces? (Ditto.) And without independent data, how do you even know if it's telling the truth about what that volume is? "After all," he said with a twinkle, "remember what Mark Twain is supposed to have said: a mine is a hole in the ground with a liar standing next to it."

I asked him what the biggest environmental hazard is once a mine is in full production. Thinking of that sinister spray drifting toward me on the

Andean breeze, I assumed he would say cyanide. But he shook his head.

"Sure, heap leach tailings are highly toxic," he said, "and cyanide is a major problem if there's a catastrophic event like the Baia Mare spill in Romania in 2000, which moved all the way down the Danube to the Black Sea. It's also the symbolic association with things like Zyklon B. But to me the bigger problem is the slow, chronic, long-term harm that comes from the crushed waste rock. At one mine site in Spain, there was evidence of continuous acid drainage going back 8,000 years." So Moran always poses the same question: are government regulators holding companies liable for the treatment of contaminated water after a mine closes—which may cost hundreds of millions of dollars? "If not," he said, "you're just dumping those costs on the public, on your grandkids."

Moran spent most of February in Cajamarca, poring over Newmont's data and traveling up to the Conga site at dawn to take field measurements. His critique of the environmental impact assessment was ferocious. "In many ways, it is an insult to the public and the regulators," he wrote. It was disorganized and incoherent; the technical quality of the analysis would be unacceptable in a developed country; it was based on false assumptions and rosy projections; it failed to consider the experiences of countless similar mines around the world; liability for post-closure cleanup was ignored; and so on and so on for almost 30 bullet-pointed pages. Backed by Moran's reputation, the report was not something the Peruvian government could ignore, and it was instrumental in the decision to call in a panel of foreign experts. For opponents of Conga, meanwhile, it was reassurance that their fears rested on a solid scientific foundation.

"Moran gave a talk in Cajamarca, and people

FEELING BETRAYED

Peruvian protesters say that President Ollanta Humala has abandoned his earlier promises to hold mining companies more accountable.





PITCHED BATTLE
From the Inca capital of Cuzco to the Amazon to the streets of Cajamarca, pictured here, Peru's anti-mining protests have often turned violent.



came from all over,” Marco Arana told me. “It was the first time they’d heard directly from a real expert. He spoke with simplicity, but also rigorously. So the communities saw him not only as a scientist but as a friend.”

An intelligent man, the peasant said when he showed me his dried-up spring seep, in the characteristic clipped-off Spanish of the native Quechua speaker. *He knows his wells, his springs, his water sources.*

While Moran was working on his report, critics of the mine invited him to join a protest march from Cajamarca to Lima. He declined. “I never let myself get aligned with any political group, because it compromises my technical credibility,” he told me. “It takes them a while to understand, but you’re much more powerful if you keep your politics private. I just load the gun. I don’t aim it, and I don’t fire it.”

CONGA WAS A CAUTIONARY TALE OF ALL THAT CAN GO WRONG IN a poorly regulated environment beset by cultural misunderstanding. And other countries hoping to profit from the gold boom—like Peru’s neighbor to the north, Colombia—had begun to ask, could it happen here?

Like Peru, Colombia is heavily freighted with the legends of gold. Even the Bogotá airport is called El Dorado. Forty miles to the north is a volcanic crater lake, Guatavita, that is the origin, it is said, of the legend of the golden man—a priestly ruler, the *zipa*, who coated himself with gold dust before plunging into the water.

Now AngloGold Ashanti, owner of the mine I’d visited in Colorado, has discovered a massive gold deposit in Colombia and is planning to open a multibillion-dollar mine called, appropriately, La Colosa. To make the parallels with Peru even more unnerving, the town where it would be built, in the central Andean department of Tolima, is also called Cajamarca. (The name, I was told, means *cold country* in Quechua.)

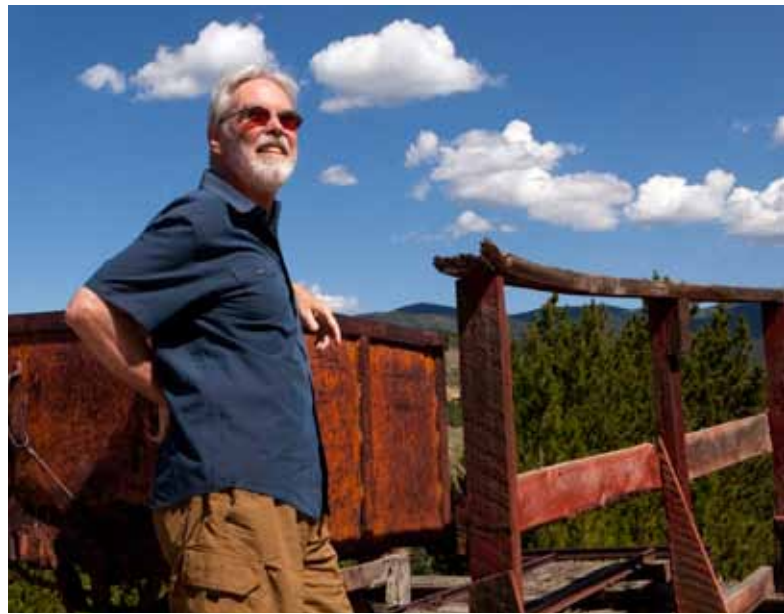
Moran first came to this other Cajamarca in 2009, contracted by a Dutch peace group, IKV Pax Christi, which had been working there for five years. The town is in the historic heartland of the Revolutionary Armed Forces of Colombia (FARC), a tenacious guerrilla group that has built a massive war chest from cocaine, kidnappings, and payoffs from illegal gold mines. “You often find drug mafias where there’s gold,” Moran said. “In Central Asia, my Russian colleagues say, every dissident army is paid for by illegal gold. It’s like conflict diamonds in Africa.”

When AngloGold Ashanti showed up in 2007, IKV Pax Christi’s concerns naturally expanded into the likely impact of industrial-scale mining operations. And much as Father Arana had done in Peru, it asked Moran to provide his independent expertise.

“AGA were very cooperative,” he said. “They escorted me on a tour of the site. But when the newly appointed president of their Colombian operations, Rafael Herz, said there were no problems at La Colosa, I asked him, ‘Have you ever actually worked in a mine?’” The answer was no. (Herz’s background is in the energy industry.)

Moran said that the likely conflict over water, coupled with the presence of the FARC, made La Colosa especially worrisome. The future mine site is nestled among steep, forested mountains on the headwaters of the Río Coello, which nourishes Colombia’s most important rice-growing region. It is also an area of extraordinary biodiversity. Only three countries in the world contain more species: Colombia ranks number one in amphibians, number one in birds, and number two in butterflies. The richest area of all is the central Andes.

A group of Tolima activists made the four-hour drive to Bogotá to recount to me their experiences of working with Moran. They had followed his advice to take a firsthand look at comparable mines



elsewhere in Latin America, said Luis Carlos Hernández, a scientific adviser to a local group called Ecotierra. He was one of a delegation who traveled first to Yanacocha and then to an AngloGold Ashanti mine in Brazil. This they saw as something of a Potemkin village. It was a much smaller enterprise than La Colosa would be, and its use of water presented no threat to local food production. “We felt as if we were in paradise,” Hernández said, “that this mine had been handed down by God, and that God must surely be a Brazilian.”

Yanacocha, however, left them “shell-shocked”—Moran’s word—and the protests in Tolima gathered force after they reported back, culminating in a march of 30,000 people this June. The tone was deliberately non-confrontational, said another member of Ecotierra, Renzo García. “These are joyful celebrations of our culture,” he said. “We can’t let ourselves be stigmatized as radicals.” (Although that will happen anyway, Moran said, when I told him the story later. “As my grandfather used to say, they speak about my drinking, but not my thirst.”)

THE CHALLENGE AT LA COLOSA IS RELATED TO SECURING AN unequivocal social license to operate,” says AngloGold Ashanti’s most recent annual report, and that was the main topic of a long conversation I had with Rafael Herz.

“Obviously the conflict in Peru worries us,” he said. “But this is a very different situation. AngloGold Ashanti is not the problem here. The rice industry uses several hundred times more water than La Colosa would. It’s very inefficient. We can actually help them with better water management techniques, like regulating the supply during the dry season.”

And the Tolima protests?

“Look,” he said with a note of impatience, “they’ve invented a hundred reasons to oppose us. But it’s an artificial conflict, and besides, it’s premature. There’s been no real tradition in this country of modern, high-tech metal mining. Petroleum is more important right now, and coal. Until recently it hasn’t been possible to exploit the gold reserves because of all the internal violence—the FARC, the *narcotraficantes*, the right-wing paramilitaries. But we’re in a new phase now, and the

LEGACY OF GOLD

The mountains around Bob Moran’s Colorado home are still littered with relics of a century and a half of mining.

environmental sensitivity of the mining industry has been transformed in the past 10 years. We won't start production at La Colosa until we meet all the necessary standards."

Which begged the question, of course: could a developing country like Colombia codify and enforce those standards quickly enough to head off the explosion? After all, Peru hadn't.

"I don't want to sound like too much of a nationalist," Herz answered. "But there's a high degree of government oversight and independence here. Colombia wants to attract mining, so it's been careful to prepare the right institutional framework. This country has a technocratic tradition. What it needs is more experience."

Herz's aides pressed some reading matter on me as I left. Concerned about the long-term impact of mining? Here's a booklet about the restoration of worked-out mines: *101 Things to Do With a Hole in the Ground*. Botanical gardens ... movie sets ... a theme park ... a wedding venue ... a golf course ... a mushroom farm ...

And the water problem? Please, take a copy of our book *Aguas Adentro—In the Water*, a dual-language coffee-table tome filled with gorgeous photographs of waterfalls, soaring green hillsides, the tumbling rivers of Tolima; a volume of such extravagant proportions that I wondered if it might cost me an excess baggage charge on the flight home.

ANGLOGOLD ASHANTI HAS DISCOVERED A MASSIVE GOLD DEPOSIT IN COLOMBIA AND PLANS TO OPEN A MULTI-BILLION-DOLLAR MINE CALLED, APPROPRIATELY, LA COLOSA

I CAUGHT UP WITH BOB MORAN AGAIN AT THE OFFICES OF THE Contraloría, Colombia's equivalent of the U.S. Government Accountability Office. It was the day after the killings in Peru. This was his third trip to the country in the past year, and he was here this time at the request of Sandra Morelli, the head of the agency, to train her regulators and staff scientists—"loading the gun" for them—and then to spend another week collecting independent data at a working mine.

The original idea had been to focus on gold. But the plan changed: they would be dealing with coal instead. As Herz had said, this was a more mature industry. (Colombia is the world's fifth-largest exporter of coal, shipping it through the Caribbean port of Santa Marta.) But the industry was also reeling from recent scandals over the evasion of royalty payments, gross violations of air quality standards, and other environmental abuses. "The Contraloría probably saw coal as the low-hanging fruit," Moran said. In any case, his techniques were just as applicable to coal as they were to gold. So the goal now was to "pre-audit" a mine owned by the Alabama-based Drummond Company, in Colombia's sticky, steamy northern lowlands—a dry run for the real thing later in the year.

I sat in on the last two days of the training, seeing this as a good

opportunity to test Herz's confidence in the competence of the Colombian government. The atmospherics weren't encouraging. When I arrived, the only thing on the whiteboard was a packing list: *sunblock, insect repellent, hats, long pants and long-sleeved shirts, sunglasses (for gringos)*. The mood in the room was oddly desultory, as if the participants weren't sure how to take advantage of the presence of a visiting expert of Moran's stature. There was also a certain air of defensiveness, especially from a team of scientists from the environment ministry.

"You're telling me all the reasons why we can't do an audit. Now tell me how we can," Moran teased them after one awkward exchange.

Toward the end of the last session, he asked to see the maps they'd be using for their inspection of the Drummond mine. An embarrassed official mumbled that they didn't actually have any.

"We should have had maps six months ago!" Moran exclaimed. "Now we're hostage to whatever we get tomorrow. And we have no Plan B."

People stared at the table, fiddled with their cell phones. But then he just grinned his Irish grin and started whistling the song from the crucifixion scene in *Monty Python's Life of Brian*: "Always Look on the Bright Side of Life."

I WENT UPSTAIRS TO SANDRA MORELLI'S OFFICE, WHICH WAS BIG enough for a game of touch football. "I'm glad to hear that Señor Herz is so dedicated to the food security of the Colombian people," she said with heavy irony, when I told her about my visit to AngloGold Ashanti. Morelli is a constitutional lawyer, a former member of the Andean Commission of Jurists, and a person of formidable energy. She is the first to admit that she is a neophyte on environmental issues, but she is a zealous fighter against inefficiency and corruption. A recent photomontage in one of the Colombian papers depicts her as Joan of Arc, dressed in chain mail, bowstring drawn.

When I said I'd just arrived from Peru, she grimaced.

"What happened there is a warning for us," she said. "There's going to be a huge problem at La Colosa. Most of the population of Tolima depends on that water. How do we know we can trust the company's data? The rice industry doesn't want this mine. If we don't get the social aspect of this right, we're going to end up in the same position as Peru."

She raised an eyebrow when I said that Herz seemed confident that any problems could be headed off by AGA's commitment to socially responsible mining and the government's independent monitoring skills.

"The environment has ceased to be a national priority in recent years," Morelli sighed. "There are only 16 full-time government inspectors for more than 6,000 mines—and those are just the legal ones." She complained that regional offices were understaffed and often incompetent, lacking basic data about the impact of the extractive industries—even when this was a matter of public scandal.

The Contraloría has been studying the mining and energy industries since 2005, she went on. "But we're still quite primitive, very backward in our professional standards and technical skills," she said. "That's why we brought in Moran. Plus there's a lot of corruption. Government agencies are infiltrated by nefarious interests. Many officials are in bed with the corporations or the guerrillas or the paramilitaries." Morelli herself has received death threats.

She uses words like *predatory* to describe the mining industry. The coal mines in northern Colombia, where Moran was now headed, epitomized the challenge. "We just did an audit of the port of Santa Marta," she said. "It was a disgrace. They were dumping in the

ocean. There were oil and grease spills. They were using ancient, unsafe vessels flying under flags of convenience.”

“Only 3 percent of mine permits are ever denied, and they’re usually granted on the companies’ terms, even in environmentally sensitive areas,” Morelli continued. “Royalties are set way too low, in the name of ‘investor confidence.’ There’s a fear that if we ask them to conduct their activities in a responsible manner, they’ll take their business elsewhere and take the jobs with them.” I’d heard that kind of talk in Peru. During the standoff over Conga, Newmont made the threat quite explicit: block this project and we’ll switch our investment to Indonesia or Ghana. This is a global boom.

I was suddenly aware that Moran had entered the room and pulled up a chair next to me. He said to Morelli, “Drummond just denied us access to the mine.”

She frowned. “They have no right to do that. We have a written agreement.”

She turned to an aide and said, “Check it.”

He thumbed around on his BlackBerry for a minute, then nodded.

She picked up the phone. “Mauricio,” she said—Mauricio Cárdenas, that is to say, the minister of mining and energy. “Sandra Morelli. I have a problem.”

Another call, and a young army colonel materialized behind me, impeccable in braids and epaulettes and mirror-bright shoes.

“I need transportation and security for these people.”

She issued her instructions with a kind of weariness; how ridiculous, what a waste of everyone’s time, to be forced to deal with this nonsense.

The colonel snapped his heels and left.

“I imagine you must have a lot of disagreements with the government,” I said.

Morelli just smiled and said, “I don’t have to be in agreement with them. My job is to monitor them.”

BY OUR LAST NIGHT IN BOGOTÁ, MORAN LOOKED EXHAUSTED. OVER beers in a dingy hotel restaurant, we talked more about what had happened in Peru.

He shook his head and said, “I’ve seen people killed in half a dozen countries now, but five at one time is unusual.”

I felt I had to ask him the hardest question of all. He had come into a bitterly polarized situation, and the opponents of the mine had felt that their grievances were vindicated by his findings—even though these were much more nuanced than their anger. He had never suggested, for example, as the activist in the church of San Francisco had put it, that Conga would mean the “total extermination” of their water. So did he feel any responsibility for the way events had unfolded?

He seemed thoughtful rather than offended by the question.

“No,” he said. “You can’t think that way. You can never tell how things will play out. I’ve worked with indigenous groups that wanted mining projects to go forward. On the other hand, that Canadian

project I worked on in Peru was killed in the end. Same thing with a mine in Patagonia, in Argentina, where the company had to write off an investment of \$700 or \$800 million. That gives me real pleasure. Although of course these are countries where you can buy a hit man for a hundred bucks, so that makes you a bit nervous.”

Next morning, Moran headed north to the Drummond mine, and I made the pilgrimage that is obligatory for every visitor to Bogotá: to the Museo del Oro. Each gallery displays the genius of pre-Columbian goldsmiths from a different part of the country. One contains artifacts from Tolima, where AngloGold Ashanti hopes to develop the La Colosa mine. Tolima specialized in simple, flat pectorals denoting shamanic power, with men taking on the attributes of birds, bats, and jaguars. But the centerpiece of the collection is the golden raft of the Muisca, who inhabited the area around Bogotá. Less than eight inches by four, it shows

THE GOLDEN MAN

The raft of the Muisca, which is more than 3,000 years old, is the finest surviving example of the skills of pre-Columbian goldsmiths.

in intricate, three-dimensional detail the *zipa* of legend, coated in gold dust, surrounded by his priests and acolytes, ready to throw himself into the lake, the ceremony legitimizing his spiritual and temporal authority over his subject people.

The power of the golden man crumbled, of course, in the face of the greater power and purpose of the European invaders. In Peru,

the conflict had felt equally irreconcilable. PowerPoints and expanded reservoirs seemed beside the point. For one side, water could be measured in cubic feet and acreage of cement; for the other it was a matter of identity. It reminded me of something one of the environmentalists from Tolima had said: *It’s like trading your kidneys for a dialysis machine.*

But an irreconcilable conflict is not necessarily an immobile one. While geology remains static over the centuries, history does not. The empire of the Incas had fallen, but the killings in Celendín on that July afternoon did



not tamp down the anger of Atahualpa’s descendants. In the end it was the Peruvian government that blinked, ordering the suspension of the Conga project the following month. A spokeswoman at Newmont’s Denver headquarters told me that “Conga is still in our plans, but moving ahead on a very measured basis.” Pursuit of “the necessary social environment” would continue. But with polls showing almost 80 percent of *cajamarquinos* opposing Conga, the company’s multibillion-dollar investment seemed to hover somewhere between the back burner and the mortuary slab. When the man from Celendín lost his eye last winter, Newmont stock was trading at \$70; when the Cajamarca poll was taken in August, it was down to \$29.

Bob Moran’s credo is that when the playing field is leveled a little, with all parties having access to the science and the data, power and purpose may yet settle into a more even balance. As AngloGold

Ashanti says, it’s all about securing an unequivocal social license. And for the captains of the new gold boom, that license may be something that can no longer be taken for granted. 🐼

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Read George Black’s column about environmental advocates risking personal safety. onearth.org/13win/gblack