CONCLUSION

I was living in Port of Spain when the Deepwater Horizon oil platform exploded and sank in the Gulf of Mexico. British Petroleum (BP) had drilled into the Macondo field under 5,000 feet of ocean water and through 13,000 feet of rock. Geologists and engineers had joined the heroic effort to find oil in ever-more difficult and dangerous circumstances. On April 20, 2010, gas surged up the well under high pressure. The blowout preventer failed, and the blowout killed eleven workers (Konrad and Shroder 2011). My Trini informants sympathized immediately with the dead, men largely forgotten in the frenzy of American reporting. Then, these experts criticized BP: it operated in a slipshod, unprofessional manner, lining its well with inferior cement. A Trinidadian firm manufactured better cement, and even BPTT—the local subsidiary of BP—would not have made such stupid, irresponsible errors. Safety started to sound self-righteous. As the well bled oil in its second month, I visited the office of BPTT. Just to enter the building, I had to endure a fifteen-minute safety video—mostly about where to flee in case of fire. I wondered when the industry would look up from local flames to see the spill everywhere. For the geologist Rick Bass, the Macondo well served as a teachable moment. In a new foreword to *Oil Notes*—written in the midst of the spill—he calls for "a truer accounting of the full costs of dirty carbon" (Bass 2012, xix). At about that time, however, as the spill entered its third month, my informants began to rekindle, in themselves, Bass's original enthusiasm for oil exploration. "Now do you get it?" they asked me. British Petroleum had done nothing but perforate the caprock, and geological pressure was producing huge volumes every day. This is how it comes up, they explained. It seemed beautiful, natural, and inevitable. No one said as much, but the hemorrhage at the bottom of the sea seemed to prove that oil should come up, not that it shouldn't.

How does an anthropologist position himself in the midst of such harm

and such harmful thinking? When burned in large volumes, hydrocarbons wreak havoc. One cannot think otherwise without denying the findings of the Intergovernmental Panel on Climate Change. Here science and ethnography stand at cross-purposes. The ethnographer frequently searches for the common decency and goodwill that binds informants, readers, and the ethnographer himself. This thread does the work of translation, rendering the unfamiliar somewhat familiar. As a literary theme, hydrocarbons could do this job: they circulate nearly everywhere. Bass embraces his audience when he declares, "We are all complicit: the oil finders and the oil users" (2012, xix). I could have written that sort of book. But another principle of ethnography compels me to describe difference. The oil finders differ fundamentally from the oil users, a billion of whom consume next to zero anyway (Malm and Hornborg 2014, 65). Even heavy consumers driving American roads relate but distantly to the substance. Many could switch to other power sources and other technologies: buses, bicycles, or cars running on electricity generated from sunlight and wind. "Finders" work precisely to delay that substitution. They prove up supplies even as proven reserves greatly exceed what the atmosphere can safely absorb before 2050 (McGlade and Elkins 2015). These petroleum professionals live from oil, and the most passionate live for oil as well. No ethical choice would be easy for them. Most fail even to see the essential ethical choice. Christine Bader, for instance, identifies herself as a "corporate idealist." In the early 2000s, she started BP's program for social responsibility, emphasizing the rights of oil workers and neighboring communities. The spill "broke her heart." Corporate idealists, she concluded, should ask, "What are the greatest tensions that the core business of this company and industry have [*sic*] with the best interests of society?" (Bader 2014, 128, 193). Those tensions, Bader believes, center on mishaps or malfeasance at the point of production. She has only scratched the surface. Canada's industry-created Ethical Oil campaign suffers from a similar shallowness. The core business of any oil company damages the whole world. Conscience cannot abide the spill everywhere.

Near Misses

Fossil fuels were never foreordained. Near misses and contingencies have pushed Trinidad and much of the world toward hydrocarbons. Yet the most sweeping accounts of energy transitions suggest an unstoppable

juggernaut. Vaclav Smil (2008, 380) refers to a "law of maximized energy flows" under which civilizations continually exploit denser fuels in more efficient ways. Nuclear fission and the latest experiments in fusion, argues the geographer Alfred Crosby, "count as triumphs in the quest of the children of the sun for more energy" (2006, 5). Perhaps the notion of a quest confers nobility on something ultimately squalid, reframing missteps as breakthroughs. Even critics—who wish to derail the train of fossil fuels—trace environmental ruin to the DNA of our species. *Homo erectus* walked resolutely out of Africa, recalls Elizabeth Kolbert, a leading popularizer of climate science. Modern humans settled the world and burned its forests and much else as well. "And now we go to Mars. We never stop" (Kolbert 2014, 251).[1] So far neither Kolbert nor the paleoanthropologist she quotes has left Earth, and no one lives on Mars. The possible technology, in other words, only becomes real under the right circumstances. Meanwhile, other possibilities bear no fruit at all. In Trinidad, chance favored oil and gas, fuels that perform far worse—in environmental terms—than the alternatives.

The island thus missed moments and movements that were both solar and utopian. In part, sunshine lacked competent champions. In 1732, Joseph Gumilla noticed a sunlit floral feast, harvested effortlessly by Amerindians and equally available to Spanish farmers. Cultivators of cacao would have to immigrate. No ship could load insolation and carry it across the Atlantic. That tether to place made solar energy more democratic. Elites could only monopolize it by monopolizing the land—a common occurrence now but less feasible in the eighteenth-century Americas. If settlers had come, they might have proved Gumilla right. Madrid, however, did not take the Jesuit seriously enough to fund his idea or even to value local lifeways. Very likely, his spellbound demeanor—inspired by the enchantment of energy and nature—failed to impress those who allocated vessels and supplies. This conundrum accompanied solar power: wonder at its unseen plenty discouraged the quantitative and managerial approach necessary to exploit it. Certainly, Conrad Stollmeyer failed to square this circle. Still, in 1845, he and Adolphus Etzler got farther than Gumilla. They recruited and transported Englishmen to a utopian colony to be powered by sun, wind, and tropical nature in general. Tropical pathogens slew the settlers before Stollmeyer and Etzler could build a converter of solar into mechanical power. In fact, the two men barely grasped the design specifications of their Satellite. In 1861, the French mathematician Augustin Mouchot patented

the first solar-powered pump (Butti and Perlin 1980, 67). But, by that time, Stollmeyer was working—very competently now—with hydrocarbons. For Trinidad, the sun rose, so to speak, just a little too late.

Timing also failed in the case of somatic power. At the end of the eighteenth century, Josef Chacón knew how to harness the energy of muscle and bone, and he did harness it. He transported "arms" from other islands to Trinidad and across the wide Atlantic. Plantation slaves flowed like fuel—indeed, as the first transoceanic global fuel commodity. There was nothing utopian about this arrangement: elites monopolized the trade and, through their racism, monopolized the very idea of humanity. If solar power opened one's vision, slavery narrowed it to a thin slit. And slavery contaminated the very idea of harnessing human energy. In the nineteenth century, Trinidad tacked from one extreme to another: from the utter exploitation of human energy to revulsion at the mere hint of it. Earl Lovelace begins *The Dragon Can't Dance*—arguably Trinidad's national novel—with a reminiscence of Laventille, Port of Spain's slum. The residents' ancestors "took a stand in the very guts of the slave plantation, among tobacco and coffee and cotton and canes, asserting their humanness in the most wonderful acts of sabotage they could imagine and perform, making a religion of laziness and neglect and stupidity and waste. . . . After Emancipation . . . they turned up this hill to pitch camp here on the eyebrow of the enemy, to cultivate again with no less fervor the religion with its Trinity of Idleness, Laziness, and Waste" (Lovelace 1979, 2–3). Anyone anywhere may enjoy leisure. But it may be particularly difficult in Trinidad, the United States, and other postemancipation societies to propose muscle as a performer of work. At one of the policy consultations on climate change (see chapter 5), I recommended tree-lined bicycle lanes in Port of Spain. From Laventille or from my own neighborhood of Cascade, I suggested further, one could pedal to work in the cool shade, free of traffic and parking problems. "But I don't want that," wailed one consultant. His response seemed natural, and no Trini environmentalist challenged it.[2] Through its overreach, slavery exalted idleness and invalidated a low-carbon source of energy.

Even then—having rejected so many alternatives—Trinidad might have reaped the maximum social reward from petroleum. Agriculture and industry on the island might have used pitch, oil, and gas to underwrite postemancipation equality and leisure. Here, too, individual temperaments misaligned with technological possibility. Stollmeyer had once wished to

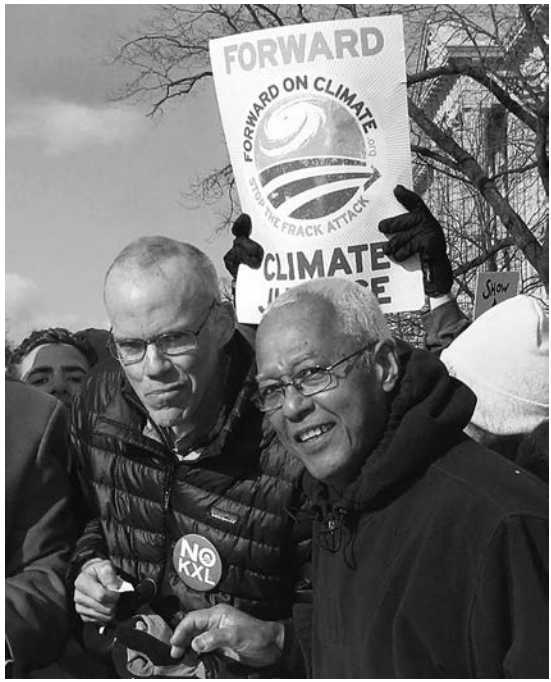
obviate all human labor. He distilled pitch into fuel after, rather than before, his encounter with freedmen and their trinity. That experience shriveled Stollmeyer's faculties. He appears to have grown racist and even vindictive, far more eager to see blacks bent double under bitumen loads than to see them lounging under a tree. He and other capitalists deflected a potential leisure dividend toward more production. I first learned of Stollmeyer's humanitarianism through Johnny Stollmeyer, who lived along my jogging route in St. Ann's. He worked as a horticulturalist. I met him among opponents to La Brea's aluminum smelter. "We need to be preparing ourselves," he advised me, "to all live within the photosynthetic carrying capacity of our bioregion."[3] His family had certainly changed its tune, I joked. Not finding this quip funny, Johnny informed me of his great-great-grandfather's idealism. Following consciously in those footsteps, the younger Stollmeyer dreamed of small-scale agrarian villages—subsidized, presumably, by the country's wealth in hydrocarbons. Perhaps pitch and fraternal substances could, at last, pay a utopian dividend. Meanwhile, Johnny was planting trees for the liquefied natural gas plant, helping it to compensate for the destruction of landscapes in Point Fortin. Afforestation satisfied him in the short term. For one reason or another, the most free-thinking Trinis have failed to criticize the principle of burning oil and gas itself.

I lived through one of the more evident missed opportunities in 2010. Trinidad's antipollution movement had identified carbon dioxide as one of a number of risks. Was a movement against hydrocarbons about to begin? Activists protested the multipollutant smelter complex. Then, as Wayne Kublalsingh and others defeated the smelter itself, they acquiesced to the adjoining power plant, the complex's only emitter of carbon dioxide. Critics might have quashed both facilities. But carbon emissions did not rank high enough as a moral and environmental issue. The following year, as La Brea's power plant rose from the ground, it provoked a different kind of concern. Absent the smelter, how could the electrical grid benefit from a 50 percent boost in wattage? In 2011, a panel of the Green Business Forum considered this question. "We have a lot more power capacity than we do demand," lamented Dax Driver of the Energy Chamber.[4] Surplus electricity had already invalidated plans for a wind farm. Joth Singh, head of the Environmental Management Authority, conceded, "What I see . . . is a *percentage* of renewable energy on the grid, if it is going to happen at all."[5] No percentage will happen unless the country's environmental poli-

tics undergo a sea change. Now considered the environmental conscience of Trinidad, Kublalsingh has been protesting the route of a new highway not far from La Brea. He conducted a months-long hunger strike in 2014. From his bed, the emaciated man wrote against imperialism, capitalism, plantations, and—more diffidently—against heavy industry too. "The lands should be used," he insists, "to create an altered, *supplementing the oil and gas paradigm*, economic platform for the island and the Caribbean" (Kublalsingh 2014, 4; emphasis added). "Supplementing" is not sustainable. To mitigate climate change, Trinidad and all the petrostates will need to replace the paradigm of hydrocarbons. So far, contingencies, political will, and (mostly absent) conscience have backed Trinidad's status quo.

Against Fuel

Closer to my home, the politics of oil are changing. On the streets of Washington and New York, people are now challenging the spill everywhere with mixtures of hope, fear, and anger. In 2011, Bill McKibben launched a movement against the importation of oil derived from Alberta's so-called tar sands. A generation before, he had published *The End of Nature*, the first jeremiad against climate change for a popular American audience. "How should I cope," he asked in the book, "with the sadness of watching nature end in our lifetimes, and with the guilt of knowing that each one of us is in some measure responsible?" (McKibben 1989, xxv). This literary shift into a moral key did not inspire masses of American readers either to protest fossil fuels or to cut their own emissions. But, in the tar sands, McKibben found a stirring set of symbols: the heavy hydrocarbon—which also flows through La Brea—requires strip mining and chemical-intensive processing. Extraction has polluted the Athabasca River and sickened many First Nations people living downstream. If approved by the U.S. president, the Keystone XL pipeline to Houston could cause the same damage in the heartland of the United States—and would certainly raise carbon emissions. Through this geography, McKibben linked local spills to the global spill. In 2011, he forged a broad alliance between indigenous people and ranchers in the Great Plains and more conventional, coastal environmentalists. I too joined immediately, as did Eden Shand, Trinidad's former deputy minister of the environment, then living in Delaware. "I was at the front of the march," he related breathlessly to me on the streets of Washing-



C.1 Shand's Facebook post of February 19, 2013. He added the caption, "That's me with Bill McKibben, leader of the Climate Action rally in D.C. He's there for the children of the future."

ton, DC, in 2013, posting a photo to his Facebook page (figure C.1). (Note his stoop, damage done by the gravel truck on the Savannah.) Meanwhile, McKibben and his organization, known as 350.org, targeted all fossil fuels everywhere. In 2014, close to 400,000 of us marched in Manhattan. Finally, a popular movement against hydrocarbons was emerging in the United States. It has a long way to go. A TV news reporter captured my family at the end of the New York march. "David Hughes and teenage son Jesse drove in from New Jersey," she narrated—inaccurately—that night. The reporter had not asked us about our means of transport. She assumed that people cross distance in cars, and most of her story concerned the demonstration's disruption of city traffic.[6] What will it take to get more—and more influential—Americans and Trinis to rethink business as usual?

To start with, producers and users might rethink hydrocarbons entirely, as something more than fuel. A cultural reform—complementing the more explicitly political dissent—is long overdue. Geologists, economists, and other experts on oil and gas still propagate a myth of liquidity and inevitability. Stratigraphy is destiny, they feel, and the Earth practi-

cally ejects hydrocarbons. "That oil is coming up," Krishna Persad always assured me. Otherwise it would be "stranded," like a shipwrecked sailor on a desert island. What if we thought of oil as stranded in the fashion of nineteenth-century Africans, relieved to be left on their coast as the last slave ship sails away? With emancipation, elites turned their back on an energy source. Plenty of it still remained, and it still carried out a useful economic function. Somatic energy of course continued to power production—through wage labor—but never with the same throughput as in the body-consuming, body-killing sugar plantation. Simply put, no one legally uses people as fuel in industry anymore. Few can even imagine such a motivation, so immoral is slavery now considered. Oil might become the new slavery. At least some writers have suggested the analogy.[7] Canadian critic Andrew Nikiforuk refers to a "new servitude" in which "the values of one energy system have been neatly imposed on the other." Like masters of the Old South, high emitters consume energy profligately and mostly in the pursuit of luxuries and luxurious degrees of comfort (Nikiforuk 2012, 70). The historian Jean-François Mouhot confesses to his own participation in bondage because, as he argues, "Suffering resulting (directly) from slavery and (indirectly) from the excessive burning of fossil fuels are now morally comparable" (Mouhot 2011, 329). Perhaps the strain in this comparison will fade. Masters of oil will have to leave it in the ground, like slave masters relinquishing their human property and leaving Africans alone. People of good conscience will eventually strand conscienceless forms of energy. Oil will pass from inevitable to immoral to impossible.

This "new abolitionism" recalls the old, enchanted sensibility toward energy (Hayes 2014). How might one undo the monochromatic, flat attitude encapsulated in the idea of fuel? How might one revive the "moral panic" that accompanied movements for emancipation (Wahab 2010, 100)? Before that point, long before any pipelines were built, Chacón devised the idea of a disenchanted, rootless, ocean-crossing standard unit of energy. Unwittingly, he replaced Gumilla's full-throated adoration of God-given, plant-powering sunlight. Blessings became barrels. As is now clear, oil carries a vast negative blessing, a curse. Through combustion and conversion into carbon dioxide, hydrocarbons spread a scourge upon the face of the Earth, destroying natural and human communities. Increasingly, this almost religious, apocalyptic indictment rings true. But its less censorious inverse may catch on more quickly: imagine oil as a positive blessing, indeed,

so powerful and so precious that one would want to use it sparingly, reverently. One might drive a car rarely and with immense fulfillment. Mimi Sheller proposes this approach to aluminum. Each 12-ounce can takes 3 ounces of gasoline equivalent to produce. Currently, we treat those containers as "cheap throw-away material." "We must become reenchanted," she pleads, "with the magic of aluminum's contribution to our capacity for lightness, speed, mobility, and flight but also wary of . . . environmental destruction" (Sheller 2014, 261). Moralized in this way, combustion would constitute a vice, pricking the conscience as a risky pleasure. Traders might still measure oil in barrels and transport it as a global commodity. Diamonds come in carats too, and the consumer proceeds with caution, releasing the mineral genie only when necessary or truly important. Of course, much else must happen: governments need to regulate oil, gas, and coal. They need to provide cheap, widespread public transportation. They need to convert electrical grids to wind and solar power. Overall, states need to undo the short-term, profit-driven capitalism under which so much of the world now lives (Klein 2014). Meanwhile, and in a less economic and political sense, anyone may help end domination by fossil fuels through veneration for them.

By the same token, anyone can embrace green energy through an act of imagination. Capitalism, markets, and so on hardly constrain us; for sunlight exceeds the bounds of any commodity form. Continuously, the sun sends 162,000 terawatts of energy into the atmosphere of the Earth, of which 128,000 remain in the terrestrial environment. By comparison, fossil fuels contribute less than 12 terawatts, a drop in the solar bucket.[8] We enjoy star rays everyday—and not primarily as electricity from solar panels. Michel Cazabon painted energy in two forms: the Pitch Lake in 1857 and, through his entire life, solar power. As described in a recent novel, he was constantly "trying . . . to see the light falling on bamboos" (Scott 2012, 459). Rays make art. They also enable surprisingly strategic alternatives to fossil fuels. Shortly after he joined Trinidad's Carbon Reduction Strategy Task Force, Krishna Persad invited me to a one-day cricket match. Sitting in stands named after Conrad Stollmeyer, he shared his idea of piping natural gas to every home in Trinidad. Residents would run their clothes dryers directly on natural gas, rather than less efficiently on electricity derived from gas. "I've got something better than any of that," I boasted, "a solar-powered clothes dryer." "Really?" he turned away from the game and

toward me. "What's the technology?" "It's a long, thin technology," I said coyly, "fairly cheap and widely available." "It's not available here," he contradicted me. "Do you have it up in the States?" "Yes, but it works much better in Trinidad, at lower latitudes. We went around like this, slowly and somewhat stupidly because of the rum Persad had thoughtfully brought. Finally, laughing, I disclosed the technology: a clothesline. Sunlight will not be bottled—at least not nearly all of it.

Like the young Conrad Stollmeyer, I dream of a utopia. Utopias begin with a revolution in political and economic conditions and culminate in a "new person." Imre Szeman calls for "new ways of making subjects, which can be the only hope for the planet we collectively inhabit" (2014, 462). Such a reform may unfold with less effort than Szeman implies. It begins with filling the moral void around energy. In that space, high emitters would express a growing sense of responsibility for climate change. Anyone might wonder at energy. Fusing both sentiments, this new subject would subscribe to a postfuel notion of the ability to do work. In connection with wind power, for instance, Robert Righter (2002) describes "energy landscapes" pulsing with blades both beautiful and technologically sublime. Harvesting energy from the planet's surface in this way invites people to reengage with their surroundings. Neighbors of turbines see energy daily. Rather than merely consuming it by the gallon or the kilowatt, they cohabit with it. Or they collaborate even more concretely. Andrew Mathews (2014, 6) refers to "domesticating the carbon cycle" as Italian foresters gather energy from biomass. They are not merely cultivating, harvesting, or harnessing wood. On a larger scale, they understand their role in a planet-wide circulation essential to life and due for rebalancing. Thus, new thinking about energy might focus simultaneously on the near at hand and on far-reaching journeys. I do not mean to suggest only that one treat certain commodities as fetishes of good conscience (Carrier 2010). We should consume less and, first of all, notice the flow of these substances into and through our lives. Sustainability, then, benefits from attention and mindfulness to objects and the energy consumed in making them. In this form, we might find an attainable utopia: a way of treasuring the ability to do work.

At root, I am asking you to imagine what energy has lost. As the history and ethnography in these pages make clear, energy has become an object of

political economy—and merely that. Readers may interpret the foregoing chapters in two ways. First, I have traced the pathways of various hydrocarbon commodities: bitumen, oil, and natural gas. In each case, supply and demand became and remained robust. Even before hydrocarbons, certain residents of the Caribbean demanded slaves and, in so doing, strung together the first intercontinental energy market. None of these protagonists, though, has simply bought and sold. They have imagined energy as one thing and not as another. Here is the second gloss on *Energy without Conscience*. From Chacón to Stollmeyer to Persad to Kublalsingh to Manning, influential Trinis have constructed a mental model of the ability to do work. As they bought, sold, and debated that good, they branded it as one thing: as a necessary, available, unquestionable means to everything modern. Even as modernity transformed one product after another—from sugar through to plastics—producers and consumers perpetuated this narrow vision of energetic means. In imagining those means as fuel, they cut off other ways of thinking about energy. Not deliberately—but systematically, nonetheless—all parties to Trinidad's oil economy exempted the substance from moral analysis. Here is the greatest complicity: the failure to consider alternatives and to apply conscience to those choices. Throughout the hydrocarbon age—in Trinidad and beyond—so many people have extracted and burned so much with so little pause or reflection. What if one did pause and consider paths not taken, options once available and perhaps still at hand? Only a handful of my informants—people like the politician-turned-protester Eden Shand—willed themselves to see the profound decision all around them. So many other people have, in a blandly unimaginative way, brought the world to the brink of disaster.

The nagging question that remains is one of attitude. In what tone—and on what common ground—should one write or speak of fossil fuels and their loyalists? What can an anthropologist and an ethnographer contribute through writing? Occasionally, in *Energy without Conscience*, I have employed the condescending, judgmental tone of one who sees the future. Perhaps I should apologize for insulting some Trinidadians, for labeling them as complicit and conscienceless in the face of planetary harm. Rather than retract, I will end more bluntly still: the petro-geologists among my informants are in the wrong and doing wrong. I did not find them to be exceptionally greedy or underhanded, but I did detect a moral problem. They take credit for producing hydrocarbons while disavowing

blame for climate change. The costs of this abdication remain obscured, but soon they will break into view and provoke a widespread rejection of fossil fuels. I write with a bias for optimism—what the economist Albert Hirschman once called "a passion for the possible" (1971, 26). Others share this hope for a low-carbon future. Indeed, virtually the whole world already acts in accord with this positive scenario. Few among us are preparing in any practical way for the converse: the runaway rise in sea level and extreme weather that more hydrocarbons guarantee. Trinis are not moving from the coast. Illogically perhaps, they refuse to surrender it to the planetary depredations of their own leading industry. We are all banking on a rapid economic and political shift to sustainability. Perhaps some believe carbon capture and storage will solve the problem singlehandedly. The rest of us consign oil firms to an ash heap, worthy of condescension and worse. Perhaps this is the most hopeful finding of all: on the plane of unacknowledged assumptions, governments, firms, and individuals have already replaced coal, oil, and gas. All the dissident must do now is recognize and assert what so many assume. Any tone in any medium will help. Humor and wonder and science and art—as well as outrage and rage in the streets—will move the world to burn far less fossil fuel. Conscience will replace complicity. Obama has prohibited construction of the Keystone XL pipeline. Shand has returned to Trinidad and wishes to install wind turbines on the north coast.