

Labban

Book Review Interview

David McDermott Hughes, *Energy Without Conscience: Oil, Climate Change, and Complicity*.

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This conversation took place on April, 2017, in the Department of Geography at Rutgers University.

ML: Would you give us a brief summary of the book, its main conceptual contributions, interventions in the debates on energy and climate change, etc.?

DMH: Thanks, Mazen. I am thrilled to be able to discuss my book with you and in the presence of so many friends and colleagues in the Department of Geography. *Energy without Conscience* poses a simple question: Knowing what they know about climate change, why do people continue to produce hydrocarbons? I approach and answer that question through three major claims.

First, it is ethically wrong to produce oil, gas, and coal. In other words, climate change is a matter of ethics – and conscience – first and foremost. Climate change is caused by real, known people in specific places, not by “humanity.” It is *not* a species-wide event for which everyone holds responsibility. (Although, on the impact side, it is a species-wide event in the sense that everyone is suffering or will suffer under business-as-usual to varying degrees.)

Labban

Second, we tend not to recognize this immorality for a number of reasons. The harm of fossil fuels is hidden in plain sight. I argue that there is what I call a “symbolic deficit” around these materials. They are seen as technical categories only: primarily as a fuel or a means to other things. The book spends a lot of time puzzling through the origins and significance of fuel as a concept. In the Caribbean, I argue, it arose in the course of trans-Atlantic slavery as planters and colonial officials disenchant energy and removed its sacred, God-given meanings. They crafted a commodity that was measurable, transportable, storable, and replaceable as it was consumed, that is, as plantations worked slaves to death.

As the third and last claim, we can and should think differently about oil. Hydrocarbons are a choice. At least, the influential sections of the minority of the world’s population who directly produce and consume them have significant scope for agency. Oil is not produced naturally, as petroleum geologists often imagine. The book digs deeply into their worldview, one in which visual representations of oil have conflated geological and market forces. I don’t believe, however, that we should reject oil and gas completely. They are nearly magical in their energy density, that is, in the amount of power they contain in a small, light package. We should cherish these substances, and for that reason as well as in fear of the consequences of overuse consume them sparingly. Climate change has arisen through an offhand – one might say, disrespectful – attitude towards energy.

ML: You’re a scholar of Southern Africa, you’ve worked in and written on Southern Africa, on colonial conflicts over land and representations of nature in Zimbabwe. What got you interested in the Caribbean, Trinidad and Tobago particularly? A shift of topical and geographical interest.

Labban

DMH: Well, as you know, working in Zimbabwe just became too difficult, dangerous, and depressing. The place broke my heart actually. Once I moved on from Southern Africa, I thought I should study climate change and, particularly, the social and cultural causes of climate change. That emphasis drew me to petro-states. Trinidad and Tobago was the first of those, if one defines petro-state as an entire regional or national economy dominated by the extraction, export, and processing of hydrocarbons. Indeed, the oil industry – as a sector, rather than just as a well or two – began in South Trinidad in 1866.

ML: Interestingly, the words Trinidad and Tobago are not in the title of the book, which leads me to assume the book is not primarily about Trinidad and Tobago per se. Nevertheless, the focus on a small island in the Caribbean is quite interesting from a methodological perspective. Most literature on energy has focused on the shifting centers of empire: Britain (coal) and the US (oil); sometimes client states and protectorates (Middle East and Africa); or rivalry in world markets with large consumers and producers of hydrocarbons (Russia, China, etc). Why did you choose Trinidad as the site to explore questions about energy and climate change, an island of some 1.3 million people, which by any account is a marginal contributor to fossil fuels production (oil: 0.1% of world total; gas: 1%) and consumption (0.05%; 0.6%), and carbon dioxide emissions (0.001% of total CO₂ emissions). Did you deliberately want to address those questions from the margin of the world energy system, so to speak, to illuminate its reality by looking at it from its less familiar margins?

DMH: Like many petro-states, Trinidad and Tobago runs at high per-capita carbon emissions. Energy is subsidized and cheap, and, unless they are quite poor, people tend to use it wastefully. When I did the fieldwork, the country ranked fourth, at 28 MT per capita. The US was at 19 or

Labban

20. Of course, as you say, the total emissions are small in comparison to the US and most other countries.

The choice of Trinidad also permitted a kind of natural experiment. Trinidad and Tobago is possibly the world's most successful petro-state. It has almost entirely avoided the resource curse of corruption, violence, pollution, and economic stagnation. The oil industry, which is fairly competent, well regulated, and locally staffed, rarely spills oil on land or in the water. This is no Nigeria, Ecuador, or Gulf of Mexico. So, in my case study, I am not distracted by local problems. By "local problems," I mean accidents at the point of production which, however harmful in place, do not change the conditions for life on Planet Earth. I am interested in that kind of total threat, in climate change in other words. Trinidad's oil and gas industry is only causing that kind of harm, a danger which observers tend to discount in comparison to the local alarms. In a sense, I want to elevate climate change to at least the status of a spill. In the book, I call it the "spill everywhere." Trinidad, whose hydrocarbons do not generally leak on land or in water, is only spilling oil everywhere.

ML: You describe the relation to your subjects, informants, as not dispassionate but lacking the "usual anthropological sympathy". You practice a peculiar variation of a "militant anthropology of elites" that expresses responsibility but not care: you do not care for your subjects (petroleum geologists): you "oppose their interests" (4); you think they are "mostly wrong" (63); your conversations with them "bordered on arguments, as instructive as they were contentious" (121). You found them lacking "moral clarity" and they refused to consider what you call "questions of conscience": whether one should produce oil; whether oil is intrinsically harmful; and whether they contribute to climate change, rather than just suffer from its consequences as victims. You

Labban

admit at the beginning of Part II, the ethnographic part of the book, that your attitude is tinged with “colonial arrogance” as much as “anti-colonial outrage” (63), and you state from the beginning that you have a “political agenda—to challenge people’s [Trinidadians’] complicity with climate change” (22). How did you manage not to let your political agenda and attitude towards your subjects stand in the way of your ethnography? You write that “attitude became your method” (21); what do you mean by attitude as method?

DMH: That is a great question. I teach my grad students that the difference between ethnographers and, say, astronomers, is that *we* are the instruments. The astronomer studies stars through a telescope. Ethnographers study people through themselves, through their conversations, relationships, and, yes, through their disagreements with those informants. So the trick to doing ethnography is not to dumb oneself down as a mindless sponge. The trick, especially in the politically charged environments where we tend to work now, is to know one’s opinions, values, and so on and deploy some of them as prompts to elicit illuminative reactions. I wouldn’t say one should constantly *bait* informants like a matador does a bull. But, it’s fine to play around the edge between humor and insult, especially when one is studying powerful elites. Indeed, the petroleum geologists could take all this and more. I don’t believe I ever threatened or offended them. I also benefitted from a rhetorical form in Trinidad called *picong*: the trading of jibes which calypsonians and politicians are quite good at.

ML: One of the central arguments of the book is that the “silence and disregard” with which most people treat climate change, lack of care about carbon emissions and their consequences, stem from the banality of fossil fuels, oil particularly, its seeming inevitability (partly because of geological representations of its formation and “migration”) and invisibility (because it inhabits

Labban

geological space, subterranean strata not accessible to immediate perception, and because it circulates disguised as plastics and various other products, or enclosed in an infrastructure of pipes and tanks). In summary, you argue oil is dangerous because people treat it as ordinary, neither moral nor immoral, but amoral. You write, however, that oil could have entered human history as a “moral category”, but it did not. You blame the “amorality of oil” on Conrad Stollmeyer. How could have oil entered history as a moral category and how did Stollmeyer make it amoral?

DMH: As I mentioned before, oil is magical in its energy density. From the outset, producers and consumers of oil might have revered it. Indeed, because of its energy density, oil could have replaced human labor and ushered in an era of universal leisure. Chapter 2 recounts a kind of counter-factual, or “what-if” story: What if certain contingencies had gone the other way and oil had liberated workers and become respected for having done so? The utopian dreamer Conrad Stollmeyer almost made all of this happen in Trinidad in the middle of the 19th century. Just after the failure of his utopian scheme, and by sheer coincidence, he got involved in the Trinidad’s Pitch Lake, the largest hydrocarbon seep in the world. He distilled bitumen into kerosene, then called petroleum. He could have sent it to the sugar factories and considerably alleviated the toil and danger of that work. Instead, he sent it to the more lucrative illumination market. This is how oil, as I put it, “missed its utopian moment.”

ML: Let me turn to the question of “paradise without labor” (41). The utopian schemes of the 17th and 18th centuries promised to abolish labor on moral grounds, and replace it with inanimate sources of energy (oil distilled from asphalt as “reliable substitute for human bodies”) or ambitious contraptions and devices running on solar energy (iron slaves). Stollmeyer believed

Labban

that harnessing human bodies was “deeply immoral”. That is, white human bodies. Stollmeyer observed freed slaves enjoying leisure time and because, as you put, “he didn’t actually like black people”. That “paradise without labor” was essentially a white man’s paradise, and the utopian schemes you discuss were racist rather than emancipatory in any true sense—colonial fantasies in which White European slave owners availed themselves of the riches of the tropics (as if those were lying there in waiting for the colonizer) while trying to emancipate themselves from work and from dependence on slaves. But then he reversed his position on work and leisure after meeting Thomas Cochrane and distilling kerosene from bitumen in 1850. This is, you write, the moment that “energy lost its conscience” (54). What does it mean to say energy lost its conscience? And why was it at the point that Stollmeyer discovered bitumen that he changed his mind about work and leisure, that he transformed hydrocarbons into “an energy form truly without conscience”, around 1860?

DMH: The short answer is that Stollmeyer became actively racist. He went to Trinidad in the 1850s as a firm abolitionist. He had been a vocal member of an abolitionist society in Philadelphia. He believed that all manual labor degraded the individual; it should be abolished. In the course of observing post-emancipation freedmen, however, his values flipped. He saw them as lazy and dissolute, in need of the dignity and responsibility earned through work. So, when he found a substance that could actually replace labor with leisure, he diverted it from that purpose. It was a win-win for the late Stollmeyer: African-Caribbeans worked hard, and he made maximum profits.

Labban

ML: This is more of a speculative question, so please indulge me. How do you compare present schemes to save the planetary environment with the utopian schemes of the 17th and 18th centuries? The question really is: why are there no utopian schemes similar to those of the 17th and 18th centuries? Or are people like Elon Musk the present incarnation of people like Stollmeyer and Etzler? Musk, however, certainly has no interest in abolishing labor, judging by the state of labor in his Tesla factories. In most grand schemes concerning climate change and energy the question of labor is entirely absent. How do you explain that? Or is it not? (Geo-engineering; carbon capture and storage; enhanced oil recovery; etc.)

DMH: Well, I think one of the cultural consequences of capitalism is an incredible narrowing of vision. Or, you might say, capitalism has replaced all alternative utopias with one hegemonic one: the myth of infinite growth. I wouldn't actually call geo-engineering and other techniques you mention utopian. They are fantastical, of course. But, to be utopian, I would say, they have to envision a New Man, or new person. Stollmeyer's Fourierist "Paradise without labor" – the reader will have to read about this in the book because I don't have time for all the background here – envisioned different social relations based on sharing and community. Capitalism and liberalism suggest an atomized, competitive individual. Post-fossil fuels, we might imagine, we might *need* to imagine, different ideals of work, property, and beauty. You could call them utopian. I don't get into that question in the book, since it is really about fossil fuels in the here-and-now. My next project is going to deal directly with the Left political values that facilitate or obstruct an energy transition to renewables. *Boston Review* just published my first article on wind power in Spain entitled "A jobless utopia."

ML: I couldn't formulate the following as a question so I'm going to put it out there and see where it takes us. Throughout the book you refer to energy as "capacity to do work"—this is the traditional, current, textbook definition of energy. I find this conception of energy problematic for two reasons: it obscures the labor that goes into the production of energy and it imputes labor capacity to inanimate things. The problem is compounded by a double reduction: the equation of labor with energy, and the equation of workers with fuel, occasionally with machines that consume fuel. You describe slaves as fuel, as stores of "somatic power" or "somatic energy" (39), hence replaceable by other fuels (e.g. "Plantation slaves flowed like fuel—indeed, as the first transoceanic global fuel commodity" (144). On one occasion you draw a direct, quantitative equation between fuel and labor: "One U.S. gallon of crude oil contains the equivalent of nearly six hundred person-days." (58).

This double reduction is the effect of the energy concept understood as "capacity to do work": it effaces the work consumed in its production. In the equation above you are clearly not referring to the labor socially necessary to produce that gallon of crude oil, its labor value, but the labor it can supposedly replace, the "labor equivalent", and imputes productive capacity to the thing. Certainly, a gallon of crude oil cannot do any of the work that 600 people perform in one day, or that one person performs in 600 days. Labor is irreducible to expenditure of energy because it is, above all, a purposeful activity, activity that has a purpose and that is conscious of its purpose. Neither oil, nor any fuel, could replace labor, except perhaps the very specific labor that produces mechanical power, labor reduced to pure, mindless motion.

Labban

Indeed, the conception of energy as “capacity to do work” contradicts your apt critique of Latour and Bennett, notions such as actants and vibrant matter that ascribe agency and volition to matter or energy and thus shift responsibility for climate change to hydrocarbons from “sentient actors” and “obscures [the] political and economic relations” that undergird climate change (15–16).

This, to me, sounds like a neat refutation of any conception of energy as “capacity to do work”.

In other words, once we posit the question of labor it is no longer sufficient to ponder energy with conscience; we are compelled to think about energy with consciousness, more precisely consciousness that is conscious of itself.

I raise this point because the main argument of the book hinges on the notion that the modern energy concept was born from failed colonial experiments in the tropics which resulted in two things: the abstraction of energy from the landscape and its profanation, transformation from a sacred, divine attribute into a measurable and exchangeable commodity (the “invention of fuel”); and the turn to the combustion of fossil fuels as the primary source of energy to replace labor. All of this was mediated by the import of people into the Caribbean and turning them into slaves for the production of sugar. This, you write, “established the conventions under which we now extract oil and ship it across oceans by the boatload”, a term you use twice to draw comparison between slaving ship and oil tanker.

I’m not convinced, and it is difficult to tell, when you invoke the equivalence, whether you’re interpreting your historical sources or reading into them. You qualify such statements with “although no one phrased it in this way”, or “without intending to do so”, or “although he never

Labban

used the term energy”, but the implication is this that is what the person in question meant or intended that this is the logical consequence of his action.

Nevertheless, I want to argue that the very conception of energy is at stake, and radical critique must move beyond the conception of energy as capacity to do work and start pondering what work the concept of energy does for capitalism and other violent structures of power like colonialism and racism.

DMH: Where to start? I agree that to call workers or labor “energy”, in the modern conception of energy, does great violence to their will and creativity. But that is of course what markets and the commodity form have done from the beginning: making things which should function distinctly and mean distinct things nevertheless circulate as equivalents. So, in defining energy as “the capacity to do work,” I use energy as an *emic* term, that is, as a concept within the culture of capitalism, throughout the second half of the book. In this way, I write of the planters having faced an “energy crisis” with the emancipation of their slaves. That was how they saw it. Over time, owners of means of production have replaced workers with different kinds of workers and, to an extent, with fuels and machines as well. But, as you say, the replacement is never one-to-one. Because the particular genius of the human cannot be substituted, or maybe not yet, since we don’t have artificial intelligence.

I’m not sure how saying or admitting all this amounts to a less thorough critique of capitalism. Perhaps, you and I are talking past each other because I don’t see fossil fuels and capitalism as entirely coterminous. One could imagine using oil as a disenchanting object – with all the environmental consequences – before, after, or beyond the reach of markets in land and labor.

Labban

Certainly, the Soviet Union extracted and burned hydrocarbons. Perhaps, what is at stake in the term “energy,” is an earlier and deeper transformation. I drew the notion of “disenchantment” from Weber and his interpretation of the Protestant Reformation. In *Technics and Civilization*, Lewis Mumford goes back to medieval monasteries, where the schedule of prayers first measured and partitioned the passage of time. These simplifications could facilitate capitalism or other kinds of total systems. So I might agree with James Scott in pointing the finger at “authoritarian high modernism.” Maybe such systems that regulate production on a grand scale rely upon the fuel-like concept of energy. Although the use of fuel, understood as merely an energy source, is as old as the human control of fire.

As far as colonialism and racism go, I think they predate both hydrocarbons and the modern concept of energy. In the book, I mention Josef Gumilla, a Jesuit entranced by the fertile and motive power of sunlight in Venezuela in the 1730s. He advocated Spanish settlements as a buffer against “savage” Arawaks. And, the *colonos* would plant crops that then grew under the sun on their own. Gumilla, then, advocated a solar-powered imperialism. Ocean crossings, including those of slaving ships, were wind-powered until the 19th century, of course. Not all forms of damage co-produce each other. Think of all the harm that nature-loving and conservation have done to indigenous people. In renewable energy, a solar or wind farm could easily displace smallholder farmers.

But because they are transportable, modern fuels actually do something to the notion of the world. They enable the spatial separation of the production and consumption of oil, and many other things. The Gulf of Mexico produces oil, and, say, Las Vegas burns it. From that vector, a host of hierarchies, prejudices, and forms of exploitation ensue.

Labban

ML: At several points you draw attention to the tension between global concerns about climate change and more immediately local risks; parochial vs universal concerns; “obsession with place” vs “consensus about the planet”; “sense of place” vs “sense of planet”; you seem to lean towards the universal and the planetary, the “need for an ecological politics of the planet” in your critique of your informants’ “petro-pastoral sensibilities” or sense of victimhood. I understand planet here in terms of Gayatri Spivak’s notion of planetarity, not simply a question of scale, but in terms of appreciating our collective being in the world and responsibility in inhabiting one planet as planetary subjects. But then, at the end of chapter 5, you argue that Trinidadians might appreciate their responsibility in contributing to climate change, their responsibility as planetary subjects, “if they considered the place, rather than the planet”. Such awareness of self-destruction might spring from “the core of a new carbon consciousness” (139.) How would you describe concern about place as a starting point for developing a planetary environmental consciousness and “an ecological politics of the planet”? And as a question of representation, how do you make the case to someone with historical memory of slavery, indentured labor, landlessness, that it is worth giving up their land to reduce their country’s CO₂ emissions by 1%, with practically no significant effect on total world carbon emissions, for example in the Rapid Rail megaproject (139)?

DMH: You are asking two powerful questions there: What spatial identity is appropriate or useful for combating fossil fuels, and why would poor and marginalized people adopt such an identity?

Regarding spatial identity, Carola Hein draws the distinction between “place” and “planet.” If I have to choose, I would prefer the planet. Many of our most selfish environmental politics –

Labban

summarized as NIMBY – stem from an attachment to small locales. Certainly, such an obsession does not illuminate the spill everywhere. By the end of the book, though, I come around to more creative ways of overcoming the local versus global distinction. If I had more space in the book, I might have described the limitations of any Euclidian form of political solidarity or opposition. By Euclidian, I mean based on the proposition that the shortest distance between two points is a straight line. I call that “thinking like a clod of dirt.” It is a helpful method when you are investigating land distribution, eviction, property, and so on, as I did in Zimbabwe, but it doesn’t tell you much about how liquids and, especially, gases move. A gigatonne of CO₂ added to the atmosphere in, say, Houston will change the climate everywhere, including in Houston. Can we imagine a form of caring that follows these planetary currents and biogeochemical processes? In doing so, though, I would want to avoid the tired, imperialist forms of planetary consciousness. I would advocate a spatial imaginary that accumulates humility, rather than hubris, as it expands in latitude and longitude.

So, as to your second question, what has all this spatial imaginary got to do with the sugar cane smallholders slated to be displaced by Trinidad’s rail project? First, they never fully understood how narrow a rail corridor can be. More deeply, and I would have to do a lot more research to do more than throw out a wild speculation here, intellectual currents such as the Black Atlantic and the South Asian diaspora give us something to grapple with. In other words, even the most dispossessed people have, under certain conditions, expressed care and solidarity with distant Others. I hope climate change presents such conditions again.

ML: You argue that putting an end to “domination by fossil fuels” requires “cultural reform”: re-moralizing energy (“filling the moral void around energy”) and “re-enchanting energy”,

Labban

venerating fossil fuels (149); i.e. reversing the “shift of values”, the “turn from the sacred” by which energy lost its anchor to tropical landscapes and its divine quality, its embeddedness in particular landscapes and in ethics (39, 40). This sounds like a call for the de-instrumentalization (to borrow from Horkheimer) of our thought and attitude towards energy and fossil fuels. Is this possible without radical transformation of our societal goals, in other words, a complete social transformation and abolition of capitalist, colonial, racist forms of hierarchy? Assuming we manage to put an end to the use of fossil fuels — keep them in the ground — what happens to other ecological problems and other forms of environmental violence: land and soil degradation, water pollution and drought, deforestation, species extinction and loss of biodiversity, growth of inorganic waste, salinization, toxicity, etc. not to mention intensification of labor exploitation and violence against workers; dispossession of peasants and indigenous people; etc.?

DMH: Yes, you are right about the importance I place upon cultural and symbolic representations of fossil fuels and energy generally. To a great extent, people consume energy for what you might call symbolic reasons: pleasure, status, insecurity. People often drive a car rather than take the bus because: one, they want to be alone; two, they consider 8-lane freeways to be natural part of any city; and three, they have no idea that the oil comes from, say, a tar sands strip mine polluting indigenous land. All those conditions are cultural and can be changed. The change need not involve some deliberate deprivation. Rather, a kind of attentiveness or mindfulness to energy would involve us more meaningfully with each barrel of oil, and therefore use less of it.

But such a cultural re-investment is not enough. On the more materialist question, I waver between advocating the hard and the easy path to decarbonization. The hard path requires us to

Labban

solve all the other environmental and social problems simultaneously. A lot of folks on the Left, who may never have cared a great deal about climate change before, are now jumping on the bandwagon. In *This Changes Everything*, Naomi Klein virtually admits to exploiting climate change as another means to fight capitalism. The easy path involves simply swapping out fossil fuels for solar and wind power. Technically, that is entirely feasible. The light bulb and the electric car do not care who generates their electricity. Panels, turbines, and energy storage devices of the 1970s, including pumped hydro and flywheels, are probably sufficient. So, in theory, the world could decarbonize within capitalism and while retaining most of other forms of pollution we know. If that road is faster than the hard way, I'll take it, for the sake of survival in Bangladesh.

However, I 'm finding in my new Spanish research that a fully capitalist wind energy sector may provoke so much resistance that it will never power more than, say, 25% of the grid. Denmark has stalled at 40% or less, depending on how you measure it. You see, turning the landscape into an energy platform, which we had when we burned trees, can be radically unequal, essentially feudal. So, at least in the energy sector itself, I think a successful decarbonization, at the level of 80% or more, is going to require forms of socialism within that sector. I'll know more and write more about this as the fieldwork in Spain progresses.

ML: From the beginning, you write that the climate justice movement and movements like 350.org motivate you to "anticipate an energy transition that will happen" (x). This not only expresses hope but also intimates some certainty about the event of a comprehensive energy transition. How do you see this transition happening, and by what means? and what part do the

Labban

climate justice movement and 350.org play in the transition? How do you see your book contributing to those movements and to the energy transition? What do you hope it will achieve?

DMH: Bill McKibben, whom I admire enormously, was very shrewd. In focusing on the Alberta tar sands, he found a way to highlight a local spill and the spill everywhere – as well as the rights of indigenous people and ranchers – all in the same movement. So, as I write in the book, 350.org began the anti-fossil fuel movement in North America. Who would have thought that 300,000 or more people would ever march against gasoline in a US city?

The people who say we cannot turn the political-economic ship of oil around did not anticipate that. Many of those people believe that society functions like a physics experiment, according to laws of inertia and friction. That is just not the case. People can turn on a dime. This country found a trillion dollars and thousands of American lives to sacrifice in failed scavenger hunt for nuclear bombs in Iraq. Rwandans murdered 800,000 of their neighbors in a matter of months. Unfortunately, negative examples of sudden change come readily to mind than positive ones. Still, think what we can do as part of political movement when motivated by a sense of emergency.

Energy without Conscience may help lay the groundwork for that moment, principally by challenging the assumption that oil is destiny. We have choices; many people lived well without oil, and we could all live well without most of it again. The duty of a cultural anthropologist is to make the strange familiar and the familiar strange. Oil is strange. We wouldn't use nearly so much of it now if certain historical and cultural contingencies had gone the other way, if

Labban

Stollmeyer for example had stuck to his ideals. Once you see that, you realize that a flip of the switch here or there – by, say, 300,000 people – could change our course entirely.

ML: You conclude your book on a note of optimism (“I write with a bias for optimism”, 152).

Are you still “biased for optimism”, with the advent of the Trump administration and its outright assault on all sorts of environmental legislation and hostility to international climate agreements; its support for the Keystone XL and North Dakota pipelines, and the automobile industry?

DMH: Well, that’s a grim way to end. The absolutely final copy of the manuscript was due one day after the election. I just couldn’t bear to think about Trump and incorporate him into the text. And he may not be as relevant as we fear. Those who follow the energy markets in the US believe we have turned a corner. Coal is too expensive. The cost of renewables is falling rapidly. We’ve still got to fight against the argument that natural gas is an environmentally responsible bridge to some better place. Data are coming out on the devastating leakage from gas wells and pipelines. And China is beginning to turn its ship around far faster than the US.

Let me also finish my answer to your last question properly. Writing a book – especially a book that you want people without PhDs to read – is largely a question of actually writing it. I mean you have to sit down in front of the computer and say 50-100,000 words in your head that you think many other people will want to hear in their heads. And, meanwhile, the words have to strike you as true. After finishing the manuscript, I realized that I had written parts of it as a kind of manifesto against *Learning to Die in the Anthropocene* by Roy Scranton. His book is said to be “bracing” and “clear-eyed” because he begins by writing, “we are fucked!” And then he continues to say that the struggle against fossil fuels – to which he apparently never contributed

Labban

— is over and lost and that everyone should prepare for the worst by studying the humanities. Tell that to the good people of Bangladesh. To my mind, his book is almost too dismal to read. It undercuts the emotional and empirical grounds for hope.

In truth, it is never too late to cut carbon emissions, because climate change can always get worse. Even so-called runaway climate change can run faster or slower. So a treatise of hope is both more accurate and more of a page-turner than one of despair (although Scranton's book is probably selling better than mine). I'm only writing now about climate change and the energy transition because I know there is a chance that the world will get this more right than wrong.