Energy Humanities

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Energy Humanities
An Anthology

Edited by Imre Szeman and Dominic Boyer

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Introduction: On the Energy Humanities

Imre Szeman and Dominic Boyer

Energy Humanities: An Anthology brings together research that attends to the social, cultural, and political challenges posed by global warming and environmental damage and destruction. As the title suggests, the pieces collected here focus on a specific issue in relation to today's environmental challenges: energy. The use and abuse of energy have had a significant impact—perhaps *the* most significant impact—on the shape in which we find the planet today. This is especially the case when it comes to the use of fossil fuels—first coal, and then oil and natural gas. The pieces brought together here address the social as well as environmental consequences of energy once it gets industrialized across the globe. This volume makes a strong case for why it is essential to better understand the import and impact of energy when it comes to trying to puzzle out how we might address global warming. It does so not by pointing out that we remain dependent on forms of dirty energy that continue to increase the level of CO_2 in the atmosphere—or not only by doing so: for most of the planet's inhabitants, this is no longer a mystery.[1] Rather, *Energy Humanities* draws critical attention to the fact that energy is absolutely necessary for modern societies. To be modern is to depend on the capacities and abilities generated by energy. Without the forms of energy to which we've had access and which we've come to take for granted, we would never have been modern. We are citizens and subjects of fossil fuels through and through, whether we know it or not. And so any meaningful response to climate change will have to tarry with the world and the people that have been made from oil.

This strong equation of energy and modernity has two consequences. First, it necessitates a fundamental reconsideration of our understanding of the forces that have given shape to modernity. Our dominant narrative of the modern combines the expansion of rights and freedoms, the advent of scientific insights and technological innovations, and the ballooning of capitalist economies, holding these very different spheres of social life together under the sign of "progress" in a powerful way. The work of critical theory in the humanities and social sciences has been to pull apart the clunky (albeit effective) apparatus of an enlightened modernity, exposing the multiple fictions of this narrative and bringing to light the truths of the modern buried beneath the shiny drama of progress that proclaims that each year is better (richer, bigger, freer) than the one before it. That rights and freedoms—when and where they exist at all—have to take place through a process of Kantian maturation, rather than being enabled all at once, points to the limits of a liberalism born in the Industrial Revolution rather than speaking to its sup-

posed self-evidence; and as critics of colonialism and postcolonialism have repeatedly shown, the progress and growth of the global North have been made possible only by centuries of exploitation of the people and resources of the global South.

As the contributions to this book highlight, these invaluable, important critiques of modernity have nevertheless left a key element out of our understanding of the modern—energy. Economic growth, as well as the expansion of access to the goods and services we have come to associate with the experience of modernity, is a *direct* consequence of the massive expansion of energy use by human communities, especially (though not only) in the global North;[2] the capacities and freedoms that are connected to the modern, from the opening up of leisure time to expectations of almost unfettered mobility, are similarly the consequence of a world awash in the kilocalories generated primarily by fossil fuels. While the story of modernity isn't reducible to the use of energy on an ever-greater scale, an account of its developments, transgressions, and contradictions that fails to address the role played by energy in shaping its infrastructures (cities designed around automobiles) and its subjectivities (mobile consumers with near-infinite powers—such as communicating with someone across the globe), and everything else in between, can't help but misrepresent the forces and processes shaping historical development, especially over the past two centuries. That access to and the struggle over energy have had a role in shaping modern geopolitics is evident; witness the protracted struggle over power in Africa and the Middle East and the role played by access to oil in shaping conflict in World War II.[3] What is less evident, however, is the degree to which the energy riches of the past two centuries have influenced our relationships to our bodies, molded human social relations, and impacted the imperatives of even those varied activities we group together under the term "culture."[4]

In the modern era, the rapid expansion of humans on the planet, from an estimated population of 1 billion in 1800 to 7.3 billion in 2016, has been facilitated by (perhaps even animated by) growth in the availability and accessibility of energy. And these increases in human population and energy consumption have had, in turn, a decisive impact on the state of the environment.[5] The second consequence of adding energy to our accounts of the modern experience is that it offers us a new vantage point on global warming and environmental crisis. One of the principle causes of global warming has been the emission of CO_2 produced by the burning of large quantities of fossil fuels. The problem of global warming is, at its core, an energy problem. The link between energy use and global warming may seem to be an obvious-enough point: the operations of industrial capitalism and the civilization it has brought into existence have had a deleterious impact on the global environment. It makes sense that there would be a focus in environmental studies on shifts in how we employ fossil fuels (e.g., switching from coal and oil to natural gas) or on the transitions away from fossil fuels to other forms of renew-

able energy. Too often, however, these changes are envisioned as narrowly technical ones. Much of the contemporary discussion about energy in relation to the environment imagines energy as an input into modern social and material processes that doesn't alter their character or nature very much, if at all: it's seen as little more than the gas that runs the engine of a society whose shape and form are largely independent of it.[6] But just as energy is essential to a fuller understanding of modernity, its critical role in shaping existing social structures, lived and material infrastructures, and even cultural practices points to those sites in which changes will *have* to take place if we are to address global warming. Even if it envisions difficult, large-scale shifts in the dominant source of energy, the existing language of energy transition is most often defensive, insisting on changes in input in order to preserve global capitalism and its systems of property and profit.[7] The texts in *Energy Humanities* move beyond the limits of such affirmations of the present state of things and speak instead to the widespread social, cultural, and political changes that are necessary if we are to truly address global warming and its multiple consequences.

As an increasing number of researchers have insisted, the challenge of addressing global warming isn't fundamentally a scientific or technological one.[8] Environmental scientists have played a crucial role in identifying the causes and consequences of global warming, including projections of what might occur if we fail to keep increases in global temperature to less than 2.0°C, as it appears we are poised to do.[9] However, the next steps in addressing environmental crisis will have to come from the humanities and social sciences—from those disciplines that have long attended to the intricacies of social processes, the nature and capacity of political change, and the circulation and organization of symbolic meaning through culture. This constitutes an enormous challenge and is one that we have barely begun to take up. What we need to do is, first, grasp the full intricacies of our imbrication with energy systems (and with fossil fuels in particular), and second, map out other ways of being, behaving, and belonging in relation to both old and new forms of energy. The task is nothing less than to reimagine modernity, and in the process to figure ourselves as different kinds of beings than the ones who have built a civilization on the promises, intensities, and fantasies of a particularly dirty, destructive form of energy. It is a large enough challenge that many engaged in research in the energy humanities wonder whether we have the conceptual, affective, material, and collective capacities to take it on.

The refigurations to which the work of energy humanities draws attention go beyond changes to driving habits or the establishment of stricter policies on emissions and the energy efficiency of new homes. The more difficult changes are those that are harder to see, name, or grasp, those zones of experience and expectation generated by our energy systems that we take as equivalent to normal life—what might well be described as the energy dimension of the "spontaneous consent" of

hegemony. The sharpest critics working today on the concatenation of oil and culture explore the depths of being-in-relation to our era's dominant form of energy. "Energy systems are shot through with largely unexamined cultural values, with ethical and ecological consequences," writes Stephanie LeMenager.[10] Frederick Buell argues that "it has become impossible not to feel that oil at least partially determines cultural production and reproduction on many levels." "Nowadays," he writes, "energy is more than a constraint; it (especially oil) remains an essential (and, to many, *the* essential) prop underneath humanity's material and symbolic cultures."[11] The degree to which energy has shaped modern forms of life and ways of being means that the energy humanities have to be seen as more than just a specialist field of study—a subset of environmental studies, for instance. The claim being made by this volume is a much stronger one. "The mansion of modern freedoms stands on an ever-expanding base of fossil fuel use," writes Dipesh Chakrabarty. "Most of our freedoms are energy intensive."[12] Anyone interested in understanding the material, social, and symbolic operations of an issue as important as (for instance) human freedoms *must* take into account the significance of energy in enabling the very possibility of these freedoms, and must certainly do so if they want to grapple with their continuation or extension in an era of environmental challenges and diminishing energy resources.[13] Every evocation of Rousseau or Jefferson today needs to be accompanied by information on per capita energy use and knowledge about the sources and implications of this energy configuration for the operations of politics at every scale, from personal politics to geopolitics.[14]

Energy humanities is a burgeoning field, with a huge amount of research developing over the past decade.[15] The work collected here emerges out of the specific coordinates of our contemporary environmental crises and struggles over the use and abuse of energy that have made the broad social significance of energy increasingly difficult to avoid. Like any new area of research, recent explorations of energy and society build on earlier studies that have addressed the social and cultural import of fossil fuels. Lewis Mumford's influential *Technics and Civilization* (1934) was among the first books to attend to the social impacts of shifts in energy, recognizing the broad changes produced by (for example) the movement from coal-fired steam power to the electric motors that were emerging in the 1930s.[16] In "Energy and the Evolution of Culture" (1943), anthropologist Leslie White linked cultural development directly to the amount of energy available to human communities; his attention to the link between the ever-greater use of fossil fuels and the expansion of social systems was repeated in anthropological studies following the 1973 oil crisis, and again in the past few years in the wake of the 2008 financial crisis.[17] In early environmental studies, E. J. Schumacher's influential *Small Is Beautiful: A Study of Economics As If People Mattered* (1973) begins by noting the short- and long-term consequences of the ever-expanding use of fossil

fuels—a source of fuel that isn't renewable, generates pollution, and reinforces capitalism's insistence that "bigger is better."[18] The connections that have been repeatedly drawn between the growth in the size of human communities and the growth in their economies has a long tradition of critical analysis—another work we might mention in this vein is Jean-Claude Debeir, Jean-Paul Deléage, and Daniel Hémery's *In the Servitude of Power: Energy and Civilization through the Ages* (1986)[19]—although one whose force and effectivity have ebbed and waned along with the price of energy and the difficulty of keeping the social import of fossil fuels front and center for academics and publics alike.

What distinguishes contemporary critical attention to energy and fossil fuels is the growing recognition that we now fully inhabit the difficult circumstances of which Mumford, White, and other critics forewarned. As the energy source around which we have shaped our social and economic development, the fact that fossil fuels are in ever-greater demand at a moment when there are anxieties about their long-term availability, as well as growing environmental challenges to their necessity and legitimacy, means that energy is on our minds as never before. While there are fluctuations in the demand for oil at any given moment, even in the best-case scenario outlined by the World Energy Council, we can expect to use 27% more energy in 2050 than today.[20] At the same time, the most recent report from the Emission Database for Global Atmosphere Research suggests that annual global emissions of CO_2 have increased *significantly* since the UN Framework Convention on Climate Change in 1992, an agreement whose aim was to have had the opposite outcome.[21] The difficult coordinates of our own circumstances do not stop there. Access to energy is a key component of development. Those countries whose citizens currently use significantly less energy than the average European or North American have expectations of using more, so as to gain the capacities and opportunities that attend the expanded use of energy.[22] While some of this energy will come in the form of renewables, the infrastructures and mechanisms supporting global modernity demand the use of fossil fuels, which means that, in large part, the development of the global South requires the increased use of fossil fuels.[23] In the tension established between North and South, and between oil producers and consumers, the opening decades of the twenty-first century are unwittingly establishing the conditions for an expansion and intensification of the geopolitical conflict around energy—something about which a global political and economic elite seem aware, but about which they seem inclined to do relatively little.

This gap between knowledge and action is important in how we figure the next steps in environmental politics. Despite ample evidence to the contrary, there continues to be belief and expectation that scientific evidence will, of its own accord, communicate—and hence trigger—the social and political changes needed to address climate change. This is one of the hoped-for outcomes of such expan-

sive collections of scientific expertise as the Intergovernmental Panel on Climate Change (IPCC), whose fifth iteration brought together the work of thousands of scientists and reported that it is "extremely likely" (95%–100% probability) that humans are the dominant cause of global warning. And yet, as more and more scholars are coming to recognize, quantification of global environmental threats through scientific research has, on its own, "failed to effect anything resembling the radical change likely to be required in order to avert environmental catastrophe."[24] The frustrating impasses that have appeared in naming environmental problems have characterized the communication and analysis of energy as well. In *Carbon Nation: Fossil Fuels in the Making of American Culture* (2014), historian Bob Johnson remarks that "we industrial peoples have preferred to keep our energy dependencies out of sight."[25] One of the issues explored by many of the contributions in *Energy Humanities* is the structure and function of what might be termed "energy epistemologies."[26] Not only energy in general but also fossil fuels in particular have been surprisingly hard to figure—narratively, visually, conceptually—as a central element of the modern. Petroleum firms have been among the biggest companies in the world since the modern advent of oil, and they remain so even in an era of computers and social media. An alarming array of everyday goods, without which we might find it hard to live, are made up of petroleum by-products.[27] And the geopolitics of the modern era—and especially of the period following World War II—have been shaped by the struggle over access to and control over fossil fuels. Despite this, recent critical scholarship has had to account for the ways in which fossil fuels have managed to hide in plain sight/site, evading inclusion in our economic calculations as much as in our literary fictions.[28]

Recent film, fiction, and visual arts have also explored the character of our energy epistemologies, with the aim of grasping the curious invisibility of such a powerful substance as oil, while also trying to render fuels nameable, readable, and visible. One of the takeaways of this volume is a broader understanding of the peculiar, if hitherto unremarked, philosophical characteristics of fossil fuels, and perhaps, too, of the dominant energy source of any given era.[29] If it has been so difficult to grasp and grapple with so important an element, it is in many respects because fossil fuels are saturated into every aspect of our social substance. The dark black, inky liquid that we sometimes encounter as oil is in fact a ruse: it gives away this obvious sign of itself, dead and harmless, so that it might all the more powerfully inhabit and shape the modern under the cover and with the force of its own darkness.

How might we use the critical insights provided by research in energy humanities to develop a different relationship to energy, to fossil fuels? One beginning point is to consider how we have imagined our relation to history.[30] We've tended to allow history to just happen to us. In the modern period, this is in part due to our faith in the forward and upward pull of technology, and in part because the

calculus of progress insists that we will, by the forward march of time alone, of necessity be better off than our predecessors. This is not to say that history hasn't also been shaped and guided by those with a vested interest in retaining or attaining power, and equally by those who have wished to challenge and unnerve social, political, and economic privilege. What we haven't done—or perhaps haven't had to do before now—is take on the collective challenge of planning what comes next, and in the fullest way possible.

In the context of a now almost universally accepted faith in free markets, the suggestion of something akin to central planning can't help but invoke images—and fears—of failed, clunky, Soviet-era plans to increase collective prosperity and reshape subjectivities at the same time. Yet it is difficult to see how we might engage in the energy transition we need without plans that bring together scientific knowledge about the causes and consequences of global warming with social and cultural insights into the shape and character of our oil subjectivities. To date, the hope has been that market forces will, if managed properly, address the self-same problems they have generated. This has been, in large measure, the official response to climate change, as represented by the Kyoto Agreement and the follow-up series of international climate summits that resulted in the UN Climate Change Conference in Paris in 2015. Assigning a cost to CO_2 emissions might well help to slow down the increasing warmth of the atmosphere, at least somewhat. But placing one's faith in environmental change in a market system built around growth and profit, endless expansion, and the bottom line, and one, furthermore, premised in a fundamental way on disavowing or negating the value of natural systems, is questionable, to say the least. At the heart of the energy humanities is a political project unlike any we've encountered before. There may have been coal capitalism and oil capitalism; there *cannot* be solar or wind capitalism.[31] As we figure out how to no longer be oil subjects inhabiting destructive petrocultures (and it is worth remembering that the Soviet system was as much a petroculture as the capitalist variant of modernity), we will need to undertake a sociopolitical revolution that is both necessary and unavoidable.

But what will that revolution look like?[32] Energy provides us with a vector to newly imagine societies defined by an equality of opportunities and capacities—communities in which, for the first time in history, we are always already attuned to our relations to natural systems. For instance, what if our political freedoms were to now come with a material component—an equity of kilocalories or British thermal units (Btu) assigned to each individual, determined in part by how much energy the planet could bear? Are there ways in which newfound attention to energy might reinvigorate our politics, allowing us to position our material demands and impact on the planet at the core of social equity?

The revolution that energy could produce would need to attend to more than just the sharing of kilocalories. In "Nature and Revolution," Herbert Marcuse

writes, "Our world emerges not only in the pure form of time and space, but also, and *simultaneously*, as a totality of sensuous qualities—object not only of the eye (synopsis) but of *all* human senses (hearing, smelling, touching, tasting). It is this qualitative, elementary, unconscious, or rather preconscious, constitution of the world of experience, it is this primary experience itself which must change radically if social change is to be radical, qualitative change."[33] Critical theory has sought to draw our attention to the multiple ways in which we are other than we imagine ourselves to be—for instance, as revealed by Marx's critique of capitalism, Freud's analysis of the liberal subject, and Nietzsche's assault on morality and philosophy. To this, the essays in this volume add an account of the energy unconscious. Our everyday practices and activities have been shaped by energy in a way that we have never fully understood. If we are to be able to address the environmental challenges we currently face, we need to understand that something like "primary experience" in Marcuse's account has been constituted by fossil fuels. If one aspect of our revolutionary transition will concern social uses of energy, another will refigure the coordinates of our primary experience, doing away with (for instance) the fundamental divide between human and nature on which the modern has been built.

To move forward, our critical work will also have to push past our inherited categories of analysis and action. Bruno Latour has noted, for example, that the critique of Enlightenment rationality that once fueled critical theory has inadvertently played into the hands of climate change deniers and racial essentialists.[34] Other scholars have noted how our epistemic tools for revolution and redemption are deeply entangled with the magnitudes of energy promised by fossil fuels.[35] Still more unsettling questions have been raised by materialist feminist scholars who argue that even terms like "Anthropocene" can reproduce the conditions of anthrocentrism they purport to analyze. Stacy Alaimo writes, for example, that we should consider how easily Anthropocene "becomes enlisted in all too familiar formulations, epistemologies, and defensive maneuvers—modes of knowing and being that are utterly incapable of adequately responding to the cataclysmic complexities of the anthropocene itself." "Anthropocene" even contains a "veneer of species pride" in its geo(onto)logical formulation, which is figured around an implicit sense that no other species could affect the lifeworld of all other species. And Claire Colebrook asks whether even the posthuman embrace of living systems might not be "a way of avoiding the extent to which man is a theoretical animal, a myopically and malevolently self-enclosed machine whose world he will always view as present for his own edification."[36]

One generative response to such concerns, as Donna Haraway has recently suggested, is to further diversify our critical conceptual resources for interrogating our current ecological condition—engaging our situation in the Plantationocene,

Capitolocene, and even Chthulucene as well—while also resolutely committing ourselves to "join forces to reconstitute refuges, to make possible partial and robust biological-cultural-political-technological recuperation and recomposition, which must include mourning irreversible losses."[37] We view the rise of energy humanities as part of this project of recuperation and recomposition. As fragile rather than omnipotent creatures, *Homo sapiens* have long sought to harness other forms of energy to magnify and extend their capacities. As that harnessing intensified with the mastery of the enormous energic potentiality of fossil fuels, human industry accelerated, creating more and more machines, institutions, expectations, and practices dependent on new energy magnitudes.[38] That acceleration has, as discussed above, led us to the brink of ecological catastrophe. Not all humans share equal culpability in this process, of course. We must interrogate the "we" that is the subject of climatological and ecological responsibility. Only certain populations in the world drove the globalization of fuel-intensive life, and they did so through centuries of colonizing violence. More than that, northern white masculinity continues to epitomize the apex species logic of entitlement that has brought us to our current situation; the Anthropocene has, in other words, always been the Andropocene.

Energy humanities thus retains a deep kinship and intimate conversation with environmental humanities, particularly with the pathbreaking efforts of materialist feminist thinkers to deliver new critical intellectual resources for understanding and remediating the biotic, social, cultural, and political dimensions of human and nonhuman life. The point of energy humanities is not to constitute a new explanatory causal monopoly (in the manner of Leslie White's argument that all life can now be reduced to energy) that can then be used to dominate other analytics into submission. The point is rather to turn phenomena such as global warming, species extinction, and environmental degradation inside out, so as to reveal how the use and abuse of energy have contributed to the making of what Anna Tsing terms the "damaged planet." We wish to shed light on the fuel apparatus of modernity, which is all too often invisible or subterranean, but which pumps and seeps into the groundwaters of politics, culture, institutions, and knowledge in unexpected ways. Moreover, energy humanities aspires to provide a speculative impulse as well as critical diagnostics. The works included here by artists and writers such as Margaret Atwood, Paolo Bacigalupi, and Marina Zurkow schematize the futures that beckon if our current trajectories remain uninflected. They also probe and surface the contradictions of our contemporary condition, materializing and communicating them in new and provocative ways. There is a place for sober criticism and discussion in the enterprise of energy humanities; there is also a place for surreal vision and wild imagination. It will take all the capacities of the arts and humanities to help transform this modernity. We hope only that

this volume contributes a step in that direction, toward conversations and collaborations we've long waited to have with one another about what we want this century to become.

Notes

1. Even in the United States, which once remained an exception, a survey released in October 2015 indicated that 70% of Americans believe the science behind global warming—the highest since 2008. See Emma Howard, "Rising Numbers of Americans Believe Climate Science, Poll Shows," *Guardian*, October 13, 2015. Available at http://www.theguardian.com/environment/2015/oct/13/rising-numbers-of-american-believe-climate-science-poll-shows.

2. See, for instance, Edward Renshaw, "The Substitution of Inanimate Energy for Animal Power," *Journal of Political Economy* 71, no. 3 (1963): 284–92; William McNeill, *Something New under the Sun: An Environmental History of the Twentieth-Century World* (New York: Norton, 2000); and Astrid Kander, Paolo Malanima, and Paul Warde, *Power to the People: Energy in Europe over the Last Five Centuries* (Princeton, NJ: Princeton University Press, 2014). The last makes a strong case that, without the energy available from fossil fuels, modern economic growth would have been impossible.

3. On the latter, see Daniel Yergin, *The Prize: The Epic Quest for Oil, Money, and Power* (New York: Free Press, 1991).

4. See, for instance, Imre Szeman's claim that "instead of challenging the fiction of surplus—as we might have hoped or expected—literature participates in it just as surely as every other social narrative in the contemporary era. Ever more narrative, ever more signification, ever more grasping after social meaning: what literature shares with the Enlightenment and capitalism is the implicit longing for the plus beyond what is." Imre Szeman, "Literature and Energy Futures," *PMLA* 126, no. 2 (March 2011): 324. In a similar fashion, Frederick Buell has mapped how a dialectic of exuberance and catastrophe characteristic of modernity has found its way into culture: "In popular and also high cultural discourse, people's bodies and psyches are refigured as oil-electric-energized systems, and avant-garde artists become the experts who most aggressively convert these energetics into new styles, new aesthetics, new poetics." Frederick Buell, "A Short History of Oil Cultures: Or, the Marriage of Catastrophe and Exuberance," *Journal of American Studies* 46, no. 2 (2012): 286–87.

5. In its 2015 *Oil Market Report*, the International Energy Agency estimated global demand for oil for the fourth quarter of the year to be 95.47 million barrels per day. In 1980, by comparison, total world oil consumption was 59.93 million barrels per day—a 63% increase over this period. Over 1 year, this constitutes a difference of more than 13 billion barrels of oil.

6. While the work of Vaclav Smil on oil and fossil fuels is exemplary, for him, too, energy has relatively little impact on society and culture. For Smil, "the amount of energy at a society's disposal puts clear limits on the overall scope of action" and little more. "Timeless literature, painting, sculpture, architecture, and music," he writes, "show no correlation with advances in energy consumption." Vaclav Smil, *Energy in World History* (Boulder, CO: Westview, 1994), 252.

7. Jonathon Porritt's *The World We Made: Alex McKay's Story from 2050* (2013) offers a prime example of this defensive view of transition. Porritt narrates a prospective end to the age of oil via a carefully managed global retreat from the use of 76 million barrels per day in 2017 to only 4 million in 2048. Once very cheap and easily accessible, delivering huge amounts of energy per unit of volume, in Porritt's story governments react (all of a sudden) to a 2016 Intergovernmental Panel on Climate Change (IPCC) report, as well as to the growing cost of oil (!), and begin to actively make use of alternative energy sources such as solar power and biomass, as well as substituting algae-based materials for the "plastics, pharmaceuticals, paints, lubricants and so on" (171). "Of all of the projections I've used in this book," Porritt writes, "I suspect it's this one [the drop in energy use] that may cause more eyebrows to be raised than any other" (176).

In Porritt's account, the global shift away from oil is driven by the increasing cost of getting it out of the ground—a fact that in the real world seems to have had relatively little impact on oil production, and certainly not to the degree he suggests. Porritt views the infrastructure of the "world that we made" as being able to sustain a transition to other forms of energy over a short period of time without any major disruptions in global capitalism, the size of populations, transportation systems, or other elements of the infrastructure of modernity. The aim of the view from the future he offers is to highlight energy input changes that need to be made in order to *sustain* existing politico-economic forms and the beliefs and practices that accompany them, rather than drawing attention to their implications for both environmental futures and social justice. Indeed, in Porritt's view of things, even if oil is an incredibly important fuel source, there is in many respects nothing special about it. It is a source of energy—one of many such sources—and while its impact on the form and character of contemporary life might well be large, it has not played an especially determinate role in shaping modern life. Rather, for Porritt (as for many others who try to outthink or think past the limits of oil availability), oil is a neutral substance that can be replaced in time by other forms of energy; the task of environmentalists is not to address the expectations and structures of modernity that are enabled by and also sustain oil cultures, but to work to generate new energy inputs so that modernity can continue along unabated. See Jonathon Porritt, *The World We Made: Alex McKay's Story from 2050* (London: Phaidon, 2013).

8. See, for instance, Andrew J. Hoffman, *How Culture Shapes the Climate Change Debate* (Stanford: Stanford University Press, 2015), one of an increasing number of books making this case.

9. See Robin McKie, "World Will Pass Crucial 2C Global Warming Limit, Experts Warn," *Observer*, October 10, 2015. Available at http://www.theguardian.com/environment/2015/oct/10/climate-2c-global-warming-target-fail.

10. Stephanie LeMenager, *Living Oil: Petroleum and Culture in the American Century* (Oxford: Oxford University Press, 2013), 4.

11. Buell, "Short History of Oil Cultures," 274.

12. Dipesh Chakrabarty, "The Climate of History: Four Theses," *Critical Inquiry* 35 (2009): 208.

13. See Ian Morris, *Foragers, Farmers and Fossil Fuels* (Princeton, NJ: Princeton University Press, 2015).

14. Stephanie LeMenager notes, "I became frustrated while writing *Living Oil* by how much of what I think of as progressive modernity—feminism, environmentalism even, as it has been expressed in the U.S. in particular—is actually tied to assumptions, but also objects and paths, that have been created by fossil fuel energy." The politics of energy reaches across the political spectrum, as well as across scales of the political. See Brent Ryan Bellamy, Stephanie LeMenager, and Imre Szeman, "When Energy Is the Focus: Aesthetics, Politics, and Pedagogy: A Conversation," *Postmodern Culture*, forthcoming.

15. In addition to those in this volume, contributors to the field include Lynn Badia, Gretchen Bakke, Ross Barrett, Ericka Beckman, Brent Bellamy, Amanda Boetzkes, Frederick Buell, Cara Daggett, Mona Damluji, Jeff Diamanti, Danine Farquharson, Sarah Fredericks, John Bellamy Foster, David Haberman, Dan Hackbarth, Jacob Darwin Hamblin, Peter Hitchcock, Matthew Huber, Naomi Klein, Kairn Klieman, Toby Lee, Jenny Lin, Ernst Logar, Andreas Malm, Arthur Mason, Ellen McLarney, John-Andrew McNeish, Marty Melosi, James Nisbet, Wendy Parker, Claire Pentecost, Fiona Polack, Doug Rogers, Peter Shulman, Rebecca Slayton, Janet Stewart, Michael Truscello, Ilana Xinos, Eric Winsberg, Daniel Worden, and Natasha Zaretsky.

16. Lewis Mumford, *Technics and Civilization* (New York: Harcourt, Brace, 1934).

17. Leslie White, "Energy and the Evolution of Culture," *American Anthropologist* 45, no. 3 (1943): 335–56. For an overview of the history of energy in anthropology, see Dominic Boyer, "Energopower: An Introduction," *Anthropology Quarterly* 87, no. 2 (2014): 309–33.

18. E. J. Schumacher, *Small Is Beautiful: Economics As If People Mattered* (New York: Perennial, 2010).

19. Jean-Claude Debeir, Jean-Paul Deléage, and Daniel Hémery, *In the Servitude of Power: Energy and Civilization through the Ages*, trans. John Barzman (London: Zed Books, 1991).

20. World Energy Council, *World Energy Insight 2013* (World Energy Council, 2013), https://www.worldenergy.org/publications/2013/world-energy-insight-2013/.

21. Netherlands Environmental Assessment Agency, *Trends in Global CO_2 Emissions: 2014 Report* (The Hague, 2014).

22. The figures detailing per capita energy usage offer a stark reminder of the planet's discrepancies. The US Energy Information Administration reports that in 2012, a resident of the United States used 313 million Btu of energy per capita; in Haiti, the figure is 3.13—a 100-fold difference.

23. See, e.g., Akhil Gupta, "An Anthropology of Electricity from the Global South," *Cultural Anthropology* 30, no. 4 (2015); and John-Andrew McNeish, Axel Borchgrevink, and Owen Logan, eds., *Contested Powers: The Politics of Energy and Development in Latin America* (London: Zed Books, 2015).

24. Sverker Sörlin, "The Changing Nature of Environmental Expertise," *Eurozine*, November 19, 2013, n.p.

25. Bob Johnson, *Carbon Nation* (Lawrence: University Press of Kansas, 2014), xxix.

26. For an elaboration of the idea of energy epistemologies, see Imre Szeman, "How to Know about Oil: Energy Epistemologies and Political Futures," *Journal of Canadian Studies / Revue d'études canadiennes* 47, no. 3 (2013): 145–68.

27. The list of products made from petroleum includes ink, tires, vitamin capsules,

eyeglasses, footballs, detergents, parachutes, fertilizers, panty hose, aspirin, dyes, yarns, nail polish, plastics, dentures, bandages, linoleum, hair coloring, surfboards—in a word: everything.

28. For a discussion of energy and economics, see Philip Mirowski, *More Heat than Light: Economics as Social Physics, Physics as Nature's Economics* (Cambridge: Cambridge University Press, 1989); and Timothy Mitchell, *Carbon Democracy* (New York: Verso, 2011). For a discussion of energy and literature, see Amitav Ghosh, "Petrofiction," *New Republic*, March 2, 1992, 29–34; and Patricia Yaeger et al., "Literature in the Ages of Wood, Tallow, Coal, Whale-Oil, Gasoline, Atomic Power and Other Energy Sources," *PMLA* 126, no. 2 (2011): 305–26.

29. Antti Salminen and Tere Vadén, *Energy and Experience: An Essay in Nafthology* (Chicago: MCM Prime, 2015).

30. For an elaboration of the complex relation of energy to history, see Jennifer Wenzel, introduction to *Fueling Culture*, ed. Imre Szeman, Jennifer Wenzel, and Patricia Yaeger (New York: Fordham University Press, 2016).

31. As Daniel Tanuro points out, "generalized commodity production has brought humanity so close to the abyss that a new long wave of growth—whether 'green,' 'selective,' or 'left-wing'—would result in a dreadful climate shift" (100). Tanuro argues that the demands of energy transition and global warming necessitate that Marxists, too, have to abandon productivist accounts of development in imagining post–fossil fuel societies and economies. Daniel Tanuro, "Marxism, Energy, and Ecology: The Moment of Truth," *Capitalism Nature Socialism* 21, no. 4 (2010): 89–101.

32. Dominic Boyer, "Revolutionary Infrastructure," in *The Promise of Infrastructure*, ed. Hannah Appel, Nikhil Anand, and Akhil Gupta (Durham, NC: Duke University Press, forthcoming).

33. Herbert Marcuse, "Nature and Revolution," in *The Essential Marcuse: Selected Writings of Philosopher and Social Critic Herbert Marcuse*, ed. Andrew Feenberg and William Leiss (Boston: Beacon, 2007), 237.

34. Bruno Latour, "Why Has Critique Run Out of Steam?," *Critical Inquiry* 30, no. 2 (2004): 225–48.

35. Boyer, "Revolutionary Infrastructure"; Mitchell, *Carbon Democracy*.

36. Claire Colebrook, "Not Symbiosis, Not Now: Why Anthropogenic Climate Change Is Not Really Human," *Oxford Literary Review* 34, no. 2 (2012): 198–99.

37. Donna Haraway, "Anthropocene, Capitalocene, Chthulucene: Making Kin," *Environmental Humanities* 6 (2015): 159–65.

38. Karen Pinkus, *Fuel: A Speculative Dictionary* (Minneapolis: University of Minnesota Press, 2016).