



Negative Ecologies

*Fossil Fuels and the Discovery
of the Environment*

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UNIVERSITY OF CALIFORNIA PRESS

*To William and Meredith,
for the revolutions they bring*

University of California Press
Oakland, California

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Library of Congress Cataloging-in-Publication Data

Names: Bond, David, 1979- author.

Title: Negative ecologies : fossil fuels and the discovery of the environment /
David Bond.

Description: Oakland, California : University of California Press, [2022] |
Includes bibliographical references and index.

Identifiers: LCCN 2021046117 (print) | LCCN 2021046118 (ebook) |
ISBN 9780520386778 (cloth) | ISBN 9780520386785 (paperback) |
ISBN 9780520386792 (epub)

Subjects: LCSH: Fossil fuels—Environmental aspects—North America. |
Ecology—Environmental aspects—North America. | Climatic changes—
North America.

Classification: LCC TD887.F69 B66 2022 (print) | LCC TD887.F69 (ebook) |
DDC 363.738/7097—dc23/eng/20211012

LC record available at <https://lccn.loc.gov/2021046117>

LC ebook record available at <https://lccn.loc.gov/2021046118>

Manufactured in the United States of America

3 1 3 0 2 9 2 8 2 7 2 6 2 5 2 4 2 3 2 2
1 0 9 8 7 6 5 4 3 2 1

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Introduction

The Promise and Predicament of Crude Oil

Crude oil is the world's greatest commodity. Whether by measure of revenue, trade, or even mass utility, for the past century crude oil has claimed an undisputed place atop the pedestal of first and foremost. Nothing else comes close. Every corner of the inhabited world bears the practical imprint of crude oil, as motorbikes, buses, ships, and planes now generalize an easy mobility of people and things. The professional buying and selling of oil, whether in barrels or in futures, outstrips every other market transaction, and private fortunes beyond the wealth of many nations now ride on the fluctuating price of oil. The staggering profits of crude oil have launched select governments and corporations into a new stratosphere of influence as the vested interests of oil charter a shadow empire defining exactly where the prerogatives of democracy must cease and desist. For fans and critics alike, the attributes of the commodity must ground any serious understanding of crude oil. Only occasionally is that ground sullied by events that disrupt the momentum of gain, but these disasters are always exceptions to the rule. The real story of crude oil begins and ends in the commodity form.

This book advances an inquiry in the opposite direction. Crude oil is the world's greatest disaster that only for the briefest of moments coheres in the commodity form. Destruction is the norm; the commodity is the event. Long apparent to residents of extractive frontiers and frontline communities, the ascent of the oil industry is a story of destruction rippling ever outward. This outlook, against a widening

backdrop of damaged life and planetary systems tipping into disarray, is becoming both more scientific and more commonplace. In rising seas and dead zones, in cancer clusters and superstorms, in rapacious histories and foreclosed futures, the disasters of crude oil routinely exceed any register of reasonable gain. While logics of accumulation buttress the business of fossil fuels and remain integral to their history, the cellular, social, and earthly disruptions unleashed by such a business grossly exceed the analytics of capital. In stunted forests, obstructed migratory routes, asphyxiated ocean layers, deformed animals, poisonous groundwater, and contorted elemental cycles, the negative ecologies of crude oil outweigh any accrual of profit or power.

Fossil fuels are destroying the world. Scientific estimations of the impact that our current consumption of crude oil is having outpace the most imaginative savants of apocalypse: entire landscapes rendered inhospitable, superstorms beyond our ability to withstand, wild infernos beyond our ability to contain, roving droughts in prime agricultural land, glaciers and permafrost awash in torrents of melt, flooding of the densely populated shoreline, entire oceans becoming acidic beyond the window of most marine life, and extinctions on a par with a meteor strike. As they have for generations, the world's poor will bear the brunt of these impacts. Yet the impact cannot be contained within the given structures of inequality. What happens after the commodity now threatens the biochemical and meteorological conditions of life itself.

Such destruction sets the stage upon which this book proceeds. From leaky refineries to extractive frontiers to contaminated landscapes, this book describes the manifold disasters of crude oil. Yet the central aim of this book is less documenting such destruction than examining the ways we've grown accustomed to cordoning off these casualties as a secondary matter of concern, the ways our apprehension of such destruction presumes something already within our ability to remedy. Whether in the environmental monitoring networks that encircle drilling pads or petrochemical plants or in the environmental planning documents that encase pipeline projects and drilling leases, the disastrous properties of the oil industry are rarely apprehended directly. Rather, they are first distilled into select representative problems, each atomized through thoroughly fenced off in administrated safeguards, engineered moderation, and the feeling of well-managed risk. Together, these protections pull select harms of the oil industry into a separate ledger while turning a blind eye to the wider fields of devastation underway. These protections can be quite effective at tempering destruction, and the deep

investments in their format often lead many advocacy campaigns and protests to ally their complaints with the official accounting of harm. Such protections also allow the fiscal properties of the oil to ascend into the commodity, as if weightless.

The sundering of material harm from material gain is a work ongoing, a conceptual dissolution that is fully integrated into the design, function, and regulation of nearly every hydrocarbon installation worldwide. It is also fundamental to response efforts when something goes wrong. This work ongoing forms the central field site of this book, both in the "environmental crisis" of the 1960s that first catapulted the catastrophic impacts of fossil fuels into public prominence in the United States and the legislative struggles that then ranked those injuries as secondary to the energy economy, and in the contemporary institutional fields, scientific norms, and ethical tactics that work to reinstate this pernicious premise over and again: the reason of the commodity exceeds the reach of damaged life. Such an outlook saturates the infrastructure of oil, where loss is always a line item within the ledger of gain. Within extractive operations, regulatory actions, activist demands, and courtroom settlements, the damages of oil are often grasped and remedied by first placing them in subservient relation to towering profits. It has become common sense. No injury is possible beyond the market valuation of crude oil, no damage is credible beyond the ability of profit to compensate, no disaster is plausible beyond the technical capacity of the industry to contain its spread. In the bustling business of oil, additions are always greater than subtractions.

The opposite equation haunts the landscapes and livelihoods displaced by oil. The laments of those living near drilling sites or refineries or pipeline projects trip up the professional taming of risk and pedigreed hierarchies of profit and loss. Privileging such dissent enables ethnography to explore the tremendous categorical labor and scientific infrastructure required to render the open-ended injuries of the oil industry as a set of discrete and ordinary technical challenges, as something perpetually provincial to the tremendous wealth pouring forth. Jagged and unvetted as they are, these jeremiads form the methodological and theoretical starting point of this book. Such an orientation finds solid anthropological anchor in the righteous outrage of frontline communities beset by asphyxiating refinery emissions, of farmers realizing a nearby petrochemical plant has contaminated soil and groundwater tended for generations, of vibrant hunting and fishing communities suddenly severed from natural abundance by the poisonous runoff from oil



FIGURE 1. Haul road along the Trans-Alaska Pipeline. Photo by author.

drilling sites, of factory towns learning the carcinogenic residue of plastics manufacturing has been in the public drinking water for decades, of coastal communities devastated by oil spills and encroaching seas, and of residents reckoning with how the toxic fallout of fossil fuels is salting the corner of this earth they know best. Centering such outrage, this book refuses the prevailing premise that the ecological fallout of the oil industry is sensibly contained within the shadow of towering profits, that the destruction unleashed by oil extraction, refining, and combustion is always already dislodged from and deferential to its fiscal promise. Against a pervading logic of positive surplus, this book revolves around the negative excess of the oil industry. With a commitment to justice throughout, this book asks what comes into view when you allow for injury beyond immediate remedy?

Karl Marx once called the commodity the first “citizen of the world,” a pioneer in its ability to chart a world without borders. The rise of the commodity disciplined the world into a shared rationality of exchange, offered metaphysical endorsement of the upsurge in inequality, and introduced exploited labor as a more potent empirical basis for universal dissent. Today, the widespread resonance of ecological collapse charts out another landscape of common cause in the evening shadow of our most exemplary commodity. While those profiting from the oil industry

grow ever more rarified and removed, the toxic disruptions and climactic fallout of fossil fuels seep into every corner of the planet. We inhabit a contemporary moment of parched cities and scorched forests, desolate reefs and inundated coasts, contaminated neighborhoods and poisoned warfare, withered farms and ransacked landscapes, of the conditions of life coming undone as turbo-fueled accumulation resurrects ancient questions of basic survival. In the disastrous wake of the oil industry, the commodity may no longer be our elementary form so much as our terminal diagnosis. While anthropology has much to say about how our synthetic ecological collapse divides us even more forcefully into the hierarchies that first made the commodity possible, it has much less to say about how the ruins of the commodity are already drawing us together in new ways.

THE DISASTROUS HISTORY OF THE ENVIRONMENT

If untamed destruction sets the theoretical stage of this book, the environment takes the leading ethnographic role. The ordinary work of the environment is at the core of this inquiry, both in the disruptions it brings into technical coherence and the experience of disruption it evacuates in so doing. In design and in practice, the environment has an almost magical ability to tame the negative ecologies of crude oil and flatten earthly laments into mere superstition. Yet not only does the environment discipline destruction, such destruction may very well be the perennial well-spring of the environment itself.

This book describes the outsized role fossil fuels have played in making the environment visible, factual, and politically operable. This book draws historical and ethnographic attention not only to *what* we know of the environment but also to *how* we have come to know the environment. To a striking degree, the specific crisis the environment realizes, the forms of understanding and responsibility it authorizes, and the horizons of action and anticipation it routinizes all bear the imprint of destructive hydrocarbon afterlives. Whether by way of urban smog or petrochemical runoff or drilling frontiers or even oil spills, as fossil fuels unravel the conditions of life, they also instigate new authorities to monitor and police those conditions. Yet the resulting definition of the defensible environment, wedged in between hydrocarbon pollution and public outrage, has often been effective to the extent that it sidesteps the underlying petro-problems and focuses attention instead on stabilizing the mediums of exposure, like clean air and clean water, and

perhaps now a stable climate. Not only does the environment divorce measures of harm from measures of gain, but the category itself comes to configure the moderate contamination of life as completely natural and the incidents of verified harm as secondary to the fueled progress underway. Today, as the disruptions of fossil fuels snap back into focus around rising planetary concerns like global warming, ocean acidification, and the Anthropocene, hydrocarbons can appear as an unprecedented crisis bearing down on the present. This book documents the impacts, injuries, and disasters that have long accompanied fossil fuels and the manner in which our solutions have often been less about confronting the cause than managing the effects. This history of our present promises to resituate scholarly understandings of fossil fuels and renovate environmental critique today.

This book builds on a decade of anthropological research on hydrocarbon projects and problems in North America. For most of the past century, the United States has been the world's largest producer, refiner, and consumer of fossil fuels and petrochemicals. As such, the imperial energy networks and scarred landscapes of the United States are central to this question of the environment. The book opens with a brief history of the category of the environment, showing how rising hydrocarbon pollution and petrochemical fallout convinced scientists, citizens, and policymakers that a new concept was needed to face up to the disconcerting breadth and intimacy of this new problem. As two leading public health officials wrote in 1955, the advent of the "the era of synthetics and the petroleum economy, when combined with epidemiological observations, indicate that a general population hazard is of more than theoretical significance" (Kotin and Hueper 1955: 331). It was around these concerns that the environment first found effective definition in the United States and soon came to monopolize popular and scientific understandings of damaged life and the state's obligation to it.

In the late 1960s and early 1970s, the environment shifted from an erudite emphasis on the influence of context to the premier diagnostic of a new world of manufactured precarity. As shorthand for the resulting crisis of life, the environment became an insurgent field devoted to understanding disrupted life and taking responsibility for it. The environment, a term "once so infrequent and now becoming so universal," as the director of the Nature Conservatory commented in 1973 (Nicholson 1970: 5), soon found official recognition in new agencies and ministries in governments across the globe. Pointing out the shortcomings of the nature/culture dualism long before such a thing was fashionable, the

resulting constitution of the environment pulled earthly mediums into national governance, foregrounded survival over nostalgia, moved past a politics of purity, and acknowledged a world alive beyond our conception of it. If the rise of the environment previews these contemporary themes, its history also carries a warning: the growing recognition of the crisis of life paradoxically narrowed the grounds of effective critique within it.

Reviewing the history of the category, this book also explores two possibilities of the environment that almost came to be: a more serious grappling with negative ecologies in the work of Rachel Carson, Barry Commoner, and others, and a brief moment at the UN Conference on the Human Environment in 1972 that insisted the ecological debts of colonialism be weighed alongside a "world-wide harmonization of standards" in establishing planetary environmental protections (UN 1973: 26). Each of these possibilities was blunted by the rise of two techniques that now instantiate the environment: toxic thresholds and impact assessments. In different ways, these techniques respond to the disastrous materiality of fossil fuels, and each functions by turning the injurious reach of hydrocarbons into a kind of field laboratory for the measurement and management of endangered life. Toxic thresholds and impact assessments both work to locate injuries within the register of pragmatic oversight.

Toxic thresholds have been extraordinarily effective at reining in air and water pollution within their jurisdiction (there is some evidence that they made things worse for those just outside such jurisdictions). Thresholds work. But what work do they do? First of all, thresholds authorize pollution, to a point. In 1958, ecologist Paul Shepard complained that thresholds "idealize life with only its head out of water, inches above the limits of toleration. [. . .] Who would want to live in a world which is just not quite fatal?" (395). Noting the "concessional character" of thresholds, Ulrich Beck (1993: 64–65) more recently described them as tools that, while they "may prevent the worst," nonetheless should be seen as authorizing "the permissible extent of poisoning." Second, thresholds turn toxicity into an event. Thresholds are the condition of possibility for toxic events. Harm is no longer a fundamental property of certain processes or products, like extractive operations or petrochemicals, but an exceptional event, a fleeting density in time and space. Thresholds turn attention away from material structures of harm and toward momentary ruptures in the official definition of harm. Thresholds transform the extremities of harm into the only thing that

matters. Finally, thresholds erase the embedded and embodied experience of toxicity. They carry a “body-blindness,” as Christopher Sellers (1999: 58) has put it. Thresholds build up an infrastructure of concern that displaces the “bodily archive” of lived toxic exposures in favor of abstract and discrete deviations from implemented norms (Brown 2016: 46). This not only sidesteps the colluding ecologies of toxicity that assail certain neighborhoods and certain landscapes, it also means the environment, by design, is unable to register the historical inflections of class, race, and gender so often wrapped up in the toxic problems it purports to address.

Impact assessments compel the fragility of life into decision-making. Introducing the conditions of life to decision-making has been hugely influential, yet impact assessments often work in unexpected ways. To the frustration of many citizens who participate in environmental impact assessments, voiced concerns are not akin to voting on a potential project. While environmental impact assessment meetings can provide a microphone for lived and livid concerns, all too frequently they do so only to deny those voices any means of amplifying themselves into a more transformative politics. They don’t so much refute critique as exhaust it. How? First off, impact assessments acknowledge impacts, only to co-op them. By claiming the perspective of potential harm, environmental impact assessments internalize what had previously been an external position of critique. Critique is drained of the capacity to confront extractive projects; it is instead drafted into an unpaid position in the very design and operation of those extractions. This process is often marked by an engineering hubris that believes every potential impact can be mitigated and managed with the right combination of planning and technology. Environmental impact assessment, then, may be one of the ethical stances that enliven contemporary capitalism, as suggested by Boltanski and Chiapello (2007). Second, impact assessments map the limits of legibility (Checker 2007). As Andrew Barry (2013) has shown, by making the potential impact of a project visible, environmental impact assessments “mark out—however provisionally—the limits of [of a company’s] social and environmental responsibility” (19). Finally, impact assessments reify the particularity of a place, not through history or ethnography but in abstract relation to the footprint of a project. Environmental impact assessments extract the moment just before disruption and project it as an authoritative definition of normal life. Such definitions erase chronologies of change, becoming inflexible measures that dictate the legitimacy of subsequent discontent and suffering. As

I have written elsewhere with Lucas Bessire, such work “narrows the areas of legitimate concern and widens the scope of acceptable disregard” (Bessire & Bond 2014: 441).

Toxic thresholds and impact assessments are not neutral technical innovations. The historical development of both toxic thresholds and impact assessments is deeply tied up with the oil industry. In various ways, each was developed in technocratic efforts to rein in the destructive reach of fossil fuels without disrupting their profitability. Toxic thresholds and impact assessments can be ruthlessly proficient, and instantiations of the environment along these lines have been instrumental in not only authorizing entirely new fields of science and law but also saving lives and reducing pollution worldwide. Yet the resulting definition of the environment has often been effective to the extent that it sidesteps the underlying cause of the problem—the oil industry—and focuses attention instead on stabilizing the mediums of exposure and reifying the moral boundaries of their operations. In so doing, thresholds and impact assessments cleave matters of harm from matters of gain. Managing the degenerative effects of fossil fuels becomes an autonomous field of research and regulation, a separate and secondary matter of concern.

Toxic thresholds and impact assessments also do crucial normative work. Thresholds and assessments establish the normative criteria for environmental critique in science, law, and advocacy. But here widespread agreement on the normative basis of critique does not open up the possibility of a more transformative politics, it forecloses it (contra Habermas). Displacing a politics of confrontation, toxic thresholds and impact assessments push effective action into the realm of standardized methods, certified results, acceptable levels, and codified assessment models. Quietly orienting the state’s forceful considerations as well as its averted gazes, thresholds and impact assessments have become vital normative technologies within contemporary politics. Instantiating the official definition of defensible life, such scientific and legal norms also introduce a technical limit to democratic practice around fossil fuels. Overriding any popular consensus about the source of harm and what might be done, the primary lever of state attention instead shifts to certified deviations from the norm. The environment, here, comes into historical and ethnographic focus not as the answer to the crisis of life engendered by fossil fuels but as a way of governing the resulting contradictions. It is no coincidence that the rise of the environment mirrors the unbound consumption of fossil fuels in the United States.

And it is no coincidence that the environment has not so much checked our addiction to fossil fuels as provided acceptable parameters for that addiction to deepen and expand.

FIELDWORK IN DISSONANCE

It was somewhere along the Gulf Coast at the height of the BP oil spill in 2010 that it first struck me, the tremendous dissonance between how the state spoke about the disaster and how the residents experienced it. I was following a caravan of federal officials as they drove from city to city. Each evening the same information booths would be set up in different high school gymnasiums and the same PowerPoint presentation would explain the deepwater blowout to a new coastal community and how its impact was already being resolved. Afterward, when asked if they had any questions, residents would find their way to the microphone and talk about how the oil spill was reaching into their bodies, stealing what little stability they had built up, and upending their lives. State officials never quite knew how to respond. They would thank residents for sharing before reiterating plans for various studies of marine life, millions of dollars in wetland restoration, and new public access points to the shoreline. Almost uniformly, these plans had nothing to do with how residents experienced the disaster. For state officials, the oil spill was a reasonable problem suited to environmental governance, a momentary rupture easily amended by dipping into the perennial fortunes of the industry. And for those who knew the script and how to place their own agendas within it, the oil spill proved quite the boon. For many residents, however, the oil spill veered past the edges of technical reason. Their ragged experiences refused the instruments of feasibility, opening a wound that reached past available measures of injury and recompense. In these encounters, the promise of fueled progress that underlies so much of the contemporary world fell to the wayside as the balanced architecture of profit and loss came undone.

I've witnessed variations of this scene all across North America, in polished industry campaigns for environmental stewardship in offshore developments along the Gulf Coast and in the museum of tar sands of Alberta, in routine impact assessment meetings in midwestern towns along the Keystone XL route and in Alaskan villages adjacent to wildlife refuges opened for drilling, and in angry information sessions about the risks of living near refineries in the Caribbean or plastics factories in New England now saturated with petrochemicals. Again

and again the encounter is repeated: company representatives and state officials describe the problems of oil as well within the enhanced environmental capacities of the industry and the state, while nearby residents voice a destruction pulling life away from any practical criterion of control. This ethnographic dissonance forms the theoretical stance of this book.

Such fraught scenes are far from novel, and highlighting their longer history in policy and scholarship forms a key part of this inquiry. Yet in contemporary scholarship, the disastrous reach of the oil industry is often understood in one of two ways: by either taking up the outlook of the state as the normative basis of justice or anchoring critique to a conceptual horizon untouched by present destruction. Environmental justice scholarship often works to bend the jarring scenes described here into official legibility, while ontological scholarship often strives to more fully inhabit the theoretical redemption of such inharmonious scenes. Both aim to resolve the dissonance of petro-destruction, one through juridical means and the other through conceptual means. There are many merits to both approaches: the former builds an effective moral and legal case against the oil industry, while the latter crafts new tools of critical renewal not already complicit in the ransacking of the planet. Environmental justice scholarship advances real change within the system, helping pull long-standing injuries into irrefutable claims for stately recognition and desperately needed compensation. Ontological approaches refuse the system entirely, and by locating alternative grounds for theory such approaches can help realize the possibility of a world beyond profit and power into being. And while each has added crucial insight to our scholarly critique of the oil industry, neither seems sufficient to the crucible of the present moment. Environmental justice scholarship struggles to contest the conceptual architecture of profit and loss that underlies the oil economy, while ontological scholarship struggles to advance practical justice in the present-tense.

Rather than immediately trying to resolve the material incongruity of crude oil, this book stays close to it. The dissonance between the promise of oil and its ecological unrest is in itself immensely generative, for environmental science and policy no less than for ethnography. Scholarship that too quickly moves to resolve such dissonance can miss the governing institutions, analytical technologies, and corporate investments working in the same direction. Theoretically pausing in scenes of dissonance brings this ordering work of the environment into stark ethnographic focus.

Centering this book on the disastrous excesses of the oil industry displaces the commodity as its definitive form and opens up new ground for ethnographic critique. Foregrounding the negative ecologies of crude oil and the social dissonance around them provincializes the overbearing logic of gain without ever leaving the scene of its crime. It provides a way to neither innocently inhabit nor wholly refuse the official accounting of harm but instead attend to the tremendous epistemic and infrastructural labor involved in disciplining broken worlds into such accounting, as well as seeing what does not add up. Ethnographic attention to negative ecologies is not a form of theoretical despair and even less a call for political resignation in the face of overwhelming destruction. Negative ecologies brought me closer to the battered world at hand with an aim to do something about it. Ethnographic attention to negative ecologies allowed me to see close up all of the scientific work being done to reorder the world without either taking up the teleology of that work or refusing its significance entirely. The borderlands between mastery and destruction are prolific, for regulatory science no less than for political refusal. Not only are the negative ecologies of crude oil at the forefront of innovations in environmental science and policy, but their growing recognition leads many frontline communities to refuse offers of managed risk and instead stand more forcefully against the oil industry itself. Allowing destruction to reach beyond reason of the commodity, this book joins with these protests to advance a critique aiming to dismantle the oil economy from within the conceptual grounds of its operations while also advancing the claims of those injured by it.

From extractive frontiers in Canada to entrepôt refineries in the Caribbean, from oil spills to the toxic fallout of plastics manufacturing, these chapters describe the scientific and ethical work that is disciplining these worlds into the legibility of the environment as well as how nearby communities come to live within and against toxic thresholds and impact assessments. Each of these communities is more than an intellectual curiosity. At each, I was drawn into the struggles of nearby residents against fossil fuels, sometimes volunteering my time with existing organizations and sometimes playing a more active role in tactical pursuits of justice. Some of these sites were visited for short periods; others involved extended fieldwork. One of the sites is my current home, where petrochemical carcinogens were discovered to have extensively contaminated the region's soil and groundwater in 2016, including my own backyard.

The theoretical arc of this book first took shape in my growing ethnographic sensitivity to the operational gravity of the environment. Talking with those living on the destructive edges of the oil industry and with those scientists and agencies tasked with managing such zones, I became attentive to the ways in which the terms and technologies of the environment pulled shocking harm into the form of a reasonable problem, smoothed out the jarring edges of angry residents and wounded landscapes, and measured what seemed to defy measurement (while discarding what didn't fit). In some of these engagements I found myself aligned with the environment, demanding lower thresholds or better impact assessments, arguing with disembodied facts, or even inhabiting the bureaucratic procedures of the environment with the hopes of slightly enlarging their reach. In other engagements, I found myself refusing the logics of thresholds and impact assessments, demanding recognition of what Kate Brown (2016: 46) calls the "bodily archive" of contamination and loudly criticizing the institutional limits of the environment. This book, in many ways, is my attempt to gather together these experiences to reflect more clearly on what work the environment does, how it came to exert such influence over us, and how we might reclaim its founding prompt while shedding its more complicit forms. The chapters move progressively from cases in which toxic thresholds and impact assessments effectively cordoned off the disastrous properties of fossil fuels to cases in which the negative ecologies of crude oil overwhelm thresholds and assessments, suggesting alternative scientific and political arrangements.

ORGANIZATION OF THE BOOK

Environment

The environment often seems far too easy, far too obligatory, and far too footloose a concept to warrant serious attention. In the rush to move past the environment, few have attended to the history of the concept. This chapter brings new attention to this neglected history. In the late 1960s and early 1970s, the environment shifted from an erudite shorthand for the influence of context to the premier diagnostic of a troubling new world of induced precarity (whether called *Umwelt*, *l'environnement*, *medio ambiente*, *huanjing*, *mazingira*, or *lingkungan*). While the resulting recognition of the environment largely consisted of bringing existing problems together under one umbrella—factory pollution, urban sewage, radioactive fallout, automobile emissions,

garbage disposal, and even global warming—the resulting synthesis was powerful. As shorthand for the resulting crisis of life, the environment became an insurgent field devoted to understanding contaminated life and taking responsibility for it. This introductory chapter traces two techniques that work to instantiate the environment: toxic thresholds and impact assessments. In different ways, each responds to the disastrous materiality of fossil fuels, and each functions by turning the injurious reach of hydrocarbons into a kind of field laboratory for the standardized measurement and management of endangered life. Toxic thresholds were nationalized in the United States around the emissions of hydrocarbon combustion and perversely provide a novel means of authorizing emissions up to the exact point of harm. Displacing efforts to expand environmental rights, impact assessments instead brought scientific attention to stabilizing the conditions of life. By many accounts, the fossil fuel industry is the most heavily invested industry in impact assessment. Quietly orienting the state’s forceful considerations as well as its averted gazes, thresholds and impact assessments became both a vital object of contemporary politics and a technical limit to democratic practice. My sketch of this history is less a finished project than a preliminary effort to brush away the accredited non-sense clamoring to contain the frontline laments of contamination and to provide a much deeper historical and theoretical credence to their complaints. Such work is not aimed at getting away from the present but at providing new coordinates for ethnography to come closer still to the ecological crisis of now.

Governing Disaster

One of the hardest things about studying the largest oil spill in US history was finding it. On the ground, the BP oil spill was not always obvious. A television crew I met had been on the Gulf Coast for days looking for the disaster. All they found were tar balls and anecdotes, nothing spectacular. “Where is the spill?” they asked me. This chapter describes how scientists and federal officials scrambled to bring the unprecedented properties of this sprawling deepwater blowout into analytical and regulatory focus. Embedded in university laboratories and emergency response teams, in chapter 2 I describe how the BP oil spill went from a sprawling mess into a manageable problem by first transforming the ocean into a sort of scientific laboratory. For marine scientists who responded to this

unprecedented deepwater blowout, making sense of the disaster rested on first stabilizing an unwieldy field of inquiry, codifying novel analytical techniques, and then cultivating a new ethos of scientific objectivity under duress. The disaster did not begin as a clearly defined event; it became one through this tremendous labor of science and technology. For one, techniques of measuring the oil spill instigated a new understanding of the baseline conditions of life in the Gulf of Mexico and posed new questions about our political, scientific, and ethical relationship to that baseline. That is to say, the oil spill materialized a new version of the environment itself. Here, the newly coordinated environment not only objectified the oil spill, it also quietly defined what knowledge of the disaster and what relations to it could have credibility. The environment fully contained the disaster, insulating the biological reach of this oil spill from human consideration and rendering personal accounts of sickness implausible and illegible. Techniques of sequestering and inspecting the oil spill came to underwrite a new regime of disconnection between the disaster and the public.

Ethical Oil

One of the more remarkable things about the tar sands in Alberta is how upfront oil companies are about their impact on the landscape. On local billboards and in interviews, tar sands operators regularly acknowledge that they are going to destroy the place. After all, they say, this is “the real cost of energy today.” Such acknowledgments, however, quickly pivot toward the huge investments the industry is making in its ability to put it all back together again. With restoration projects that strive to join the best of environmental science and the most traditional Indigenous ways of life, oil companies proudly tout their unique ability to engineer a more culturally informed boreal forest, to build a more cosmologically attuned ecosystem. Drawing on ethnographic research on corporate social responsibility in the tar sands of Alberta, chapter 3 describes how energy companies objectify the Indigenous environment to selectively manage the impacts of tar sand extraction and to redeem their ongoing petro-destruction from the perspective of a premodern future. Here, the Indigenous environment comes into focus neither as the dated epistemology of anthropology nor as the ontological footing of radical alterity but rather as a novel moral technology for redistributing hydrocarbon risks and responsibilities in space and time.

Occupying the Implication

Chapter 4 presents a pivot of the book. Before this chapter, the negative excess of fossil fuels is described as a frontier of state power and corporate responsibility. Tracking pipeline protests, this chapter shifts the direction of inquiry to how the negative excess is opening new fields of contestation and demand. Today, pipeline protests have become a common occurrence. Whether in national flashpoints like Keystone XL and Dakota Access Pipeline or in more regional protests around the Addison Natural Gas Pipeline in Vermont and Kinder Morgan Pipeline in Massachusetts, the rather bureaucratic process of permitting a new pipeline has opened up a formal venue to air grievances over histories of extraction and the foreclosed futures they herald. These protests not only puncture scholarly arguments about how petroleum infrastructure evades democratic accountability (Mitchell 2011), but they also have become a front line in a conflict so immense that many have struggled to sort out where to begin: the fight to hold back the worst of climate change. This chapter focuses attention on the formulaic process that sets the stage for so many contemporary pipeline protests: environmental impact assessments. Planetary crisis, in these sites, comes to matter as both the inevitable endpoint of destructive logics and the spark that might ignite a more radical accounting. This reckoning is philosophically attuned to the impact assessment process, even as the demands being made wildly exceed its legal and institutional capacity. If such protests rarely seize control of the pipelines, they nonetheless seize the implications.

Petrochemical Fallout

In 2014, the chemical perfluorooctanoic acid (C8 or PFOA) was discovered in the public drinking water in the Village of Hoosick Falls, New York, and soon after in residential wells around Hoosick Falls, New York, and Bennington, Vermont. Once a key ingredient in the manufacture of high-performance plastics like Gore-Tex and nonstick kitchenware, PFOA is a synthetic petrochemical that is persistent, mobile, and toxic. Synthesized by American chemical manufacturers in the 1940s before being banned in the United States in 2015, PFOA has spread worldwide, is durable on the order of centuries, and is now found in the bodies of most living creatures on Earth. Yet the near-universal reach of

the problem is at odds with the lived dimensions of it: the experience of PFOA toxicity remains confined to drinking water disasters near plastic manufacturing hubs in the United States. Chapter 5, drawing on three years of involvement with the discovery of PFOA in my adopted hometown, asks how anthropology might recognize the haunted landscapes of petrotoxicity in conversation with the embodied experience of them. In doing so, this chapter reflects on how ethnography can take stock of contamination without getting swept up in the evocative purchase of the term today. Against recent theorizations of contamination as a kind of emancipatory release from modern categories, this chapter follows three communities as they struggle to secure clean drinking water and grapple with a legacy of contamination that routinely exceeds the available levers of environmental justice.

The Ecological Mangrove

Chapter 6 links up the colonial history of fossil fuels with the celebrated ecology of mangroves in the Caribbean. Building on ethnographic and historical research in Puerto Rico and St. Croix, it outlines the often neglected but quite consequential place of crude oil in the Caribbean. After discussing the construction of what became the second largest refinery in the world, I describe how the imperial energy networks of the United States first came to the Caribbean. Troubling a popular origin story of the Caribbean, colonial and industry leaders voiced a robust critique of the plantation in order to justify the introduction of these enclave refineries. Imperial energy networks welcomed an unprecedented problem to the region: coastal oil spills. The scientific and legal response to these spills first worked to provisionally extend the logic and operations of the environment to this colonial setting. Yet what they discovered soon exceeded those forms: namely, the vital relationality of mangroves. Rather perversely, the destruction of coastal ecosystems in the Caribbean—in which crude oil played the leading role—opened mangroves up to new forms of knowledge and care. While many claim that fossil fuels helped cultivate a modern disregard for the natural world, I show how the negative ecologies of fossil fuels also instigated new scientific and political appreciations for the liveliness of the natural world. And soon the figure of the mangrove was used to ground political possibilities that not only advanced new critiques of the empire of oil in the region but also envisioned new ways of living beyond it.

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These chapters stay close to the slow violence that coheres around hydrocarbon infrastructure in the United States and the fields of calculation and care that both recognize such violence only to abstract it from social history. While the United States figures prominently in this account, my book notes the circulations and conjectures that layered this concept of the environment onto other nation-states, whether by exporting the US model as a stipulation of developmental funds, as the dawning of commensurable problems like radioactivity that borrowed from existing expertise, or as the preferred method for extractive industries to delineate narrow responsibility for harm while authorizing intensified production. Moreover, my research and writing presume that many of the social movements that have cohered around the environment in a variety of local, national, and international contexts (e.g., Guha 2000; Martinez-Alier 2002; Radkau 2014) have long tripped up and exceeded the technical constitution of the category, even as the state-backed objectification of the environment has animated the analytical and ethical justification of those movements.

Attentive to the material dissonance of the oil industry, this book is less an ethnography of a single place than of a problem shared across hydrocarbon frontiers in North America. As these chapters demonstrate, negative ecologies offer a different way to ethnographically apprehend and theoretically assail the oil industry today.

THE NEGATIVE ECOLOGIES OF CRUDE OIL

Today, many critical scholars are bringing new attention to how the physical properties of fossil fuels helped consolidate some of the most consequential social forms of our present: from the state (Coronil 1997) to transnational corporations (Coll 2012), from neoliberalism (Harvey 2007) to the economy itself (Mitchell 2011). While this scholarship is instructive, the main thrust of its critique rests on linking the material force of hydrocarbons to positive iterations of capital and power. This book turns the question of the materiality of fossil fuels in a different direction, reflecting on how the negative ecologies of fossil fuels draw injured webs of life into new empirical and ethical focus. Here, the ongoing substitution of hydrocarbon efficacy for coerced labor offers a tragic twist to the analytics of historical materialism. The telling tensions of our contemporary era are not only ordered along the contradictions of

accumulation or power but also in accordance with the contractions of life, whether in rising rates of cancer or rising levels of seawater. Every human on Earth and most of the animals now host petrochemicals and other molecular traces of the fossil economy in their bodies. This “wonder world” of hydrocarbon innovation, as Rachel Carson (1962: 11) once called it, now heralds uneven worlds of broken landscapes, asthmatic populations, dead zones, and distorted atmospheric systems.

From the afflictions of frontline communities to the collapsing thermal boundaries of the planet itself, the destructive reach of the oil industry haunts the limits of mastery. When the Caribbean was swept up in the promise of becoming the world’s premier oil refining hub in the 1970s, the destruction of mangroves in the construction of hydrocarbon ports was widely celebrated as evidence of modern progress. While oil refining has largely come and gone in the Caribbean, the decimation of coastal mangroves continues to ripple outward in shoreline erosion, storm surges, and still collapsing fisheries. In St. Croix, which was home to the largest refinery and petrochemical plant in the world for a number of years, the refinery laid waste to the island’s freshwater aquifer and rendered large parts of the island unsuitable for farming or housing before filing for bankruptcy at the first sign of a real investigation into these damages. And then another aftershock of oil arrived: superstorms. In 2017, two back-to-back category 5 hurricanes slammed into St. Croix, battering an already broken island.

Or consider the toxic fallout of plastics. Engineered to be impervious to every natural degradation process, the petrochemical PFOA was used extensively in plastics manufacturing and emitted in shockingly large amounts without regard to what happened next. Even though these chemicals never break down, their geological stability is far from benign. Despite immense corporate efforts to bury the evidence, trace exposure to these chemicals has been sickening workers in plastics plants for decades and now assails the health of communities around plastics factories. First synthesized by American petrochemical companies in the 1940s, these “forever chemicals” now blanket entire landscapes and are found in most cellular forms of life on Earth, introducing a scale of petrochemical contamination far beyond our capacity to remediate even as we learn more about the harms already underway.

Fossil fuels, in this reckoning, appear as a haunting gift, and perhaps it is Marcel Mauss more than Marx who offers the most exacting conceptualization of the materiality of fossil fuels. Fossil fuels are a negative gift. When consumed, hydrocarbons do not disappear but can come

to structure relations of obligation that may exceed the capacities of life itself. Yet this destruction has carried its own rippling creativity. In sharp and subtle ways, as fossil fuels assail the underlying relationality of life, they open those vital ecologies to new forms of understanding and responsibility. While the rising prominence of the Anthropocene solicits rapt attention on the impending foreclosures heralded by hydrocarbon emissions, such a project frequently sidesteps the longer history of acknowledging and managing the disastrous qualities of fossil fuels. The disasters of oil are more than a looming catastrophe; they are also a fractured history of our present, the “shadow kingdom” that haunts the modernist order of contemporary, as Ulrich Beck (1993: 72) described it. These concerns not only offer a crucial correction to our understanding of fossil fuels, they also offer a generative site to engage new insights on vital materiality and to reflect on the often-observed relation of non-human agency to questions of social justice and critique.

Ethnographic attention to the negative ecologies of the oil industry provides a novel entry point into the changing status of materiality in anthropology today. So many of the dizzying reformations of materiality unfolding in anthropology emerge from incisive ethnographic encounters: laboratory science, built infrastructure, Indigenous cosmologies, multispecies collaborations, and feral ecologies, to name a few. All of these crafted new sensitivity to the capacities of other species, landscapes, and technologies to shape the world at hand (even as such profound influence was rendered illegible by enlightened frameworks of the real). Analytically attuning to these more-than-human capacities provided scholars a fertile place to begin anew, an insight that almost seemed capable of giving birth to a new world already latent within our own.

Much of this revival of materiality proceeds by allying ethnographic curiosity, political practice, and critical theory with the underappreciated agencies of the natural world. Collaboration with the effervescent physicality of plants and animals, rivers and mountains becomes a more potent form of critique, at once derailing the tyranny of humanist understandings and lifting alternative arrangements into new significance as theory and template. Whether by cyborgs, domesticated microbes, companion species, channeled rivers, or cacophonous rain forests, it is striking how many of the field sites that are revitalizing materiality in scholarship stay firmly within the positive attributes of the material world. With strikingly few exceptions (Farmer 2001; Masco 2006; Stoler 2013; Fortun 2014; Gordillo 2014; Bessire 2021; Khayyat 2022),

ethnographic encounters with the negative ecologies of the contemporary have been held at arm’s length in the more pronounced theoretical reformation of materiality in anthropology. Part of this, I think, has to do with how this renewed optimism of the physical sits uneasily with a growing pessimism of the political. Against the colonial complicity of liberal democracy and the complete failure of modernist epistemologies to face up to the worsening condition of most, autochthonous ecologies promise an empirically rich ground to fundamentally break with the irredeemable history of the present in order to chart out more equitable ways of living together. As methodological tactic, concrete heuristic, and incipient revolution, ecology is drawn into ethnographic significance by the positive theoretical vision of the world to come that it advances. Wedding anthological curiosity and critique to these heterodox ecologies becomes both prophecy and proof that a better world is possible. What about negative ecologies?

Whether in the destructive afterlives of nuclear weapons, land mines, toxic dumps, fossil fuels, or petrochemicals, some feral material is not so easily channeled or co-opted. Nor does the oil industry—and its ransacking of the planet—seem particularly troubled by theories of an ecological otherwise. Indeed, as I show about the tar sands, such heterodox ecologies are now at the forefront of corporate remediation plans in a manner that authorizes intensified extraction under the promise finally allowing landscapes to align with more radical ecologies once the taint of oil is removed. Negative ecologies open the door for ethnography to grapple with the destructive legacy of modern progress without first domesticating it into complicit institutions or theoretically departing from its contingent history. And it is from such a contingent history that justice in the present tense remains possible without fully endorsing the colluding techniques that have sprouted up to manage the problems without ever solving them. Such a stance—at once analytical and political—insists on practical assistance for those whose lives have been upturned by fossil fuels without ever losing sight of the revolutionary break with fossil fuels that alone will make a better world possible. Negative ecologies turn ethnographic attention back to materialism, but less as a utopian departure from history than as an effective way to trip up the conceit of that history from within the inhabited ground of its operations. In so doing, this book hews close to what so many living on the front lines of the fossil fuel industry have long known: real justice necessarily involves toppling the system that renders their lives secondary to the fiscal fantasies of fossil fuels.

In conversation with the anthropology of science, questions of vital materiality, and new social research on fossil fuels, this book describes how the deleterious afterlives of fossil fuels gain scientific definition and to what political effect. This book is particularly attentive to the ways in which (1) the material force of fossil fuels is not fully expended in the moment of combustion but often comes to haunt life with sociochemical traces and attritional violence; (2) environmental protections do not precede the disasters of fossil fuels but often emerge from them; (3) the objectification of the environment can gloss over embedded and embodied histories of harm; and (4) the empire of oil has not done away with nature but unloosed new scientific and political desires for the natural world. Drawing these fields of inquiry and insight together, this book displaces the reason of the commodity and the eschatology of the non-human as the methodological and conceptual basis for taming the deleterious properties of the combustible present. This book approaches the negative ecologies of the oil industry not as accidents condensed in time and space but as the fertile soil within which new political theologies of altered life take root. Gathering these concerns together, it advances a reappraisal of the environment for anthropological research and social theory, one that locates its critical capacities not as the best means of guarding against the rising disasters of oil but as a complicit project of those very disasters. What forms of research, critique, and mobilization, the book asks, may now be needed not only to more forcefully confront the deathly properties and looming foreclosures of fossil fuels but to envision ways of living beyond them? And how can we aspire to those new worlds while not losing sight of the injuries already sustained, the justice long overdue?