

**Environment:
Critical Reflections on the Concept**

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The Occasional Papers of the School of Social Science are versions of talks given at the School's weekly Seminar. At these seminars, Members present work-in-progress and then take questions. There is often lively conversation and debate, some of which will be included with the papers. We have chosen papers we thought would be of interest to a broad audience. Our aim is to capture some part of the cross-disciplinary conversations that are the mark of the School's programs. While Members are drawn from specific disciplines of the social sciences—anthropology, economics, sociology and political science—as well as history, philosophy, literature and law, the School encourages new approaches that arise from exposure to different forms of interpretation. The papers in this series differ widely in their topics, methods, and disciplines. Yet they concur in a broadly humanistic attempt to understand how, and under what conditions, the concepts that order experience in different cultures and societies are produced, and how they change.

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Environment: Critical Reflections on the Concept

Is the environment worth the effort? The environment often seems far too easy, far too obligatory, and far too footloose a concept to warrant serious attention. It somehow evokes both bookish abstraction and populist rousing, it cobbles together science and advocacy only to blunt their conjoined insights, and it continues to elude fixed definition even while basking in stately recognition. The banalities of this mess can give the impression that the environment has no real history, no critical content, and heralds no true rupture of thought and practice. The environment, in the eyes of some, is mere advertising. If there is a story to the environment, others suggest, it's largely one of misplaced materialism, middle class aesthetics, and first world problems. Such has been the sentiment, such has been the dismissal.

In the rush to move past the environment, few have attended to the history of the concept. This is curious as the constitution of the environment remains a surprisingly recent achievement. 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 climate change¹ – the resulting synthesis was powerful. It was almost as if a light had been switched on to reveal a whole new world of toxic trespass. Such illumination – what historian Joachim Radkau (2014) has called “a New Enlightenment” – posed an unsettling provocation: perhaps progress was not achieved autonomy from the natural world but waves of profit and power undermining the very basis of life. As shorthand for the resulting crisis of life, the environment became an insurgent field devoted to understanding damaged life and taking responsibility for it. Despite scholarly attempts to bury the term within more established histories, the environment signaled something profoundly new for outraged citizens, concerned scientists, and savvy politicians.

The environment – a term “once so infrequent and now becoming so universal,” as the director of the Nature Conservatory commented in 1970 (Nicholson: 5) – soon came to monopolize popular and scientific understandings of damaged life and the states' obligation to it worldwide. Even as the environment has been immensely productive for research and policy in the following decades, the formation of the environment itself remains understudied. In the United States, this is particularly clear in two aspects of the environment: 1) the role of fossil fuels in making the environment visible, factual, and politically operable; and 2) the precocious if weightless critique authorized by the environment. In the following sections, I review two genealogies of the environment, one that takes shape around thresholds and one that takes shape around impact assessments. Each technology, in its own way, responded to the disastrous materiality of fossil fuels, and

each introduced a new form of critique into politics that, at the same time, placed a new limit on political action. Such work carries a warning for our vaunted entry into the Anthropocene: as the environment heralded a crisis of life, it paradoxically narrowed the grounds of a more transformative politics.

Thresholds of Toxicity

Peter Sloterdijk (2009:18) claims that the environment came into being on April 22, 1915 in Northern France. He writes: “The discovery of the ‘environment’ took place in the trenches of World War I” with the advent of gas warfare. For it was when the basic conditions of human biology like breathing were turned into weapons that “the primary media for life [...] became an object of explicit consideration and monitoring.”² Perhaps. But just as battlefield considerations were learning to wage war with air and water, new government agencies were learning to regulate the toxicity of those same mediums inside the factory. While the battlefield sought to mobilize toxicity towards military ends, new regulation of the workplace sought to hold toxicity within certain prescribed levels of acceptable exposure. Here, the environment was brought into political being not as a weapon but as an administrative domain that might better contain toxicity.

Like so many other stories of our present, much of this began in the factory. It was here, as historians like Christopher Sellers (1994, 1997) and Michelle Murphy (2006) have documented, that a new form of scientific expertise took shape around toxic exposures in industrial production that previews many of our contemporary environmental protections. Industrial hygiene, a medical science of the chemical hazards of the factory, worked out a novel theory of sickness that placed toxicity at the root of what was called “the industrial diseases” (Hamilton 1943). During World War I and in the years after, industrial hygienists came to usurp the role of the factory physician and the union health clinic, and inserted a new form of medical expertise whose authority rested on its independence from labor and capital.

Armed with new chemical detection devices, industrial hygiene transformed factories into an experimental field within which specific “industrial poisons” could be objectified for more exacting management.³ For industrial hygienists, the safety of the workplace was achieved not through staking out a policy position on toxicity, nor through advocating for a certain class of people, but by determining the exact boundary line at which key industrial ingredients became dangerous industrial diseases, whether called “toxic limits” (Schereschewsky 1915), “safe concentration” (Sayers et. al. 1922), “maximum allowable concentrations” (Cook 1945; Elkins 1948) or “threshold limit values” (Coleman 1955). Decoupled from class interest or even positionality in the world, these boundaries were presented as an objective bio-chemical fact. Displacing a longstanding point of friction between labor and capital, these thresholds helped transform the politics of working conditions into a simple matter of compliance.

Industrial hygienists sometimes described how they would find a potentially dangerous factory in unfamiliar cities. They would look up, and follow the telltale smoky

emissions to the source. As historians like Joel Tarr (1996) have shown, the engineered solution to workplace toxicity was largely one of venting the problem out of the factory. Having mastered chemical afflictions inside the factory, industrial hygienists soon found themselves in the homes of workers where children and neighbors suffered similarly without having ever stepped into the factory.

As industrial ingredients drifted into adjacent neighborhoods, “pollution” took shape as an urgent municipal health crisis in the 1940s and 50s. This happened in acute events as with the coal smog disasters of Saint Louis, New York City, and Donora, and in more subtle ways with the growing awareness of the interplay between automobile emissions and respiratory ailments in Los Angeles, Denver, and Detroit. With the technical ability to monitor contaminants inside the factory, industrial hygienists were soon hired by municipalities to help them make sense of the urban problem of air and water pollution. As in the factory before, managing pollution was premised on first creating a new field of scientific legibility and standardized measurement that could then objectify the exact point at which industrial emissions or effluent became a human health concern. In many places, this took the form of setting abstract thresholds for urban air and water quality and deploying networks of devices to measure how reality stood in relation to those implemented baselines. Curiously, almost all of the thresholds that industrial hygienists helped establish for city air – carbon dioxide, sulfur oxides, soot, ammonia, nitrogen oxides, aerosols, ozone, hydrocarbons – shared one thing: they were the byproducts of hydrocarbon combustion.⁴ The established thresholds for these contaminants, neglecting the common source, turned attention instead towards stabilizing the medium of exposure within each city. Here, the management of urban pollution came to hold urban residents and industry at arm’s length and began policing the air and water that might bring them into consequential contact. And again, as in the factory before, this worked to the extent that a direct confrontation between citizens and industry was rendered illegible if not impossible.

The history of toxic exposure is also a history of analytic containers. In some ways, the emergence of “the environment” is the story of how the biological reach of petro-pollution came into focus outside the built mechanisms of control. Following the model of the factory and the industrial city, the turn to the environment established a national jurisdiction for the implementation and enforcement of thresholds. In the 1960s and 1970s, industries eluded regulations by designing bigger smokestacks or flushing waste downriver of the city or simply building new plants just beyond municipal jurisdiction. Quite predictably, soon the national dimensions of pollution became a national crisis. By the 1960s, pollution was polling second only to crime as the greatest threat to American wellbeing (Rosner and Markowitz 2002:155). At first, this formed a crisis without a constituency, a lack both Democrats and Republicans were eager to amend.⁵ In a flurry of one-upmanship, Democratic leaders in the Senate shepherded two major expansions of federal power into law – the Clean Air Act (1970) and the Clean Water Act (1972) – while President Nixon consolidated the tasks of enforcing these nationalized definitions of air and water quality into an emboldened and strikingly un beholden new agency: the Environmental Protection Agency.⁶

The challenges of enforcing national standards soon became apparent, especially around air pollution. In 1971, the federal government established enforceable national ambient air standards for five pollutants, all of them emissions from fossil fuels: sulfur dioxide, particulates, hydrocarbons, carbon monoxide, and photochemical oxidants. Initially, these standards attempted to balance historical emissions with health concerns, but a number of lawsuits compelled the EPA to privilege immediate health concerns over habitual emissions. As investigations began to show chronic harm from low-level exposure, federal standards for each of these pollutants was quickly ratcheted down. By 1973, there was growing debate about whether hydrocarbon emissions should be tolerated at all. Under pressure from the courts, the EPA called for drastic reductions in fossil fuel use in seventeen states and major cities like Denver, New York, and Pittsburgh. The EPA suggested that these cities build mass transit systems and start rationing gasoline to bring their air quality into compliance with the national standard. Los Angeles was ordered to reduce gasoline use by 82% during summer months while in Philadelphia and Pittsburgh city leaders were told to remove 200,000 cars from the road (Jones 1975:269-72). By the end of 1973 and with the OPEC embargo looming, President Nixon stepped in. Addressing the nation, Nixon demanded that Congress provide him the exceptional authority “to relax environmental regulations on a temporary case-by-case basis, thus permitting an appropriate balancing of our environmental interests...with our energy requirements, which, of course, are indispensable” (cited in Jones 1975:311). Around fossil fuels, this confrontation quickly formalized and vertically ranked what were now two entirely separate technical properties of fossil fuels: an external science of gain – the economy – and an internal science of harm – the environment.⁷ (Whether by the coercion of the U.S. led developmental loans or by the elective choice of national leaders, such thresholds soon became the basis of environmental governance in nations across the world.)

Thresholds of Toxicity. 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?

- 1) 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?” Noting the “concessional character” of thresholds, Ulrich Beck (1986:64-5) more recently reframed them as tools that while they “may prevent the worst” nonetheless should be seen as authorizing “the permissible extent of poisoning.”
- 2) 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 petrochemicals or radioactivity, but an exceptional event, a

momentary rupture, an accident. Thresholds transform the extremities of harm into the only thing that matters.

- 3) 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, 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.

The Conditions of Life

In the 1960s, concern over the reach of pollution exceeded the dimensions of human health as cascading events exposed how thoroughly the ingredients of modern industry and modern war were infiltrating earthly life. Smog disasters suffocated cities and farms. Rivers caught fire while lakes were declared dead. Mountains were shorn of vegetation as rain turned acidic. Contamination brought several bird and fish populations to the brink of extinction. Despite their fairly confined geographies of use, radioactive material and petrochemical pesticides showed up unsafely housed in most forms of life on earth. As so many writers, scientists, and policy-makers noted at the time, these new threats – what Barry Commoner (1958) called “the fallout problem” – threw the “life-support systems of Planet Earth” into question (see also Masco 2016). What was endangered was not human life, as one policy-maker put it in 1970 (Caldwell: 81), but “the ecological basis of life itself.”⁸

In 1963, a Professor of Government at Indiana University penned an essay entitled “Environment: A New Focus for Public Policy.” The paper was disarmingly straightforward: in response to the growing crisis of endangered life, the basic conditions of life should be administered as a distinct federal domain with its own institutional apparatus. Lynton Caldwell, the author, was soon invited to Washington, DC to draft the first federal environmental policy, the *National Environmental Policy Act* (NEPA) of 1970.

Preliminary attempts at stabilizing the conditions of life were proposed at the level of rights. One draft of NEPA stated: “Each person has a fundamental and inalienable right to a healthy environment” (Liroff 1976:16). As early as 1966, Lynton Caldwell (659) himself had broached the idea of instilling “public (or private) rights in environments-as-such,” that is, making the environment a rights-bearing subject.⁹ (This was not as far-fetched as it may sound: Supreme Court Justice Douglas’ 1972 dissent in *Sierra Club v. Morton* pointedly raised the possibility of granting the environment the same rights as a corporation).¹⁰

Unable to overcome questions of how such rights would actually work, and somewhat smitten with the rising role of economics in influencing federal policy, another position won out. Instead of an expansion of environmental rights, NEPA worked to interject environmental expertise into the everyday functions of governance. With the

viability of earthly life hanging in the balance, the management of the environment, as Caldwell (650) wrote in 1966, had to move beyond democratic debates to make those decisions “that a society knowledgeable of its own needs, interests, and potentialities *ought* to make.” This, for Caldwell and the authors of NEPA, involved explicating the contingencies of life and bringing that knowledge into decision-making.¹¹ Modelled on how the ‘the economy’ had come to inform, orient, and discipline policy, NEPA sought to introduce expert knowledge of life’s precarious balance into every aspect of governance (and, as with the economy, sought to do so not on the shoulders of popular sovereignty but by equipping technical expertise to override democratic practice).¹² If the economy introduced a scientific regime of scarcity into governance, the environment introduced a scientific regime of vulnerability. Even as the economy and the environment have come to stand in stark opposition to one another, they should be understood as mirror formations: each produced an expertise whose authority was realized in its achieved distance from embedded and embodied knowledge, each formatted life for state rule, and each sought to discipline the present according to its modelled vision of the future. (This conceptualization leans heavily on Timothy Mitchell’s incisive archeology of “the economy,” even as it should be noted that “the environment” was never able to shake the weight of materiality in the same way the economy was.)

NEPA advanced two methods of bringing this new science of vulnerability into governance: a new presidential council of environmental experts and, in what is likely “the most imitated U.S. law in history,” the environmental impact assessment (Yost 1992:6). The former brought a new kind of environmental expert into the White House¹³ while the latter distributed a new kind of environmental calculus to each and every governmental project. The environmental impact assessment was described by Caldwell (524) in 1966 as the “drawing up of a balance sheet of ecological accounts by which the true costs and benefits of alternative decisions might be compared.” This novel ledger of life has since become a ubiquitous technique and cultural icon mocked in *New Yorker* cartoons and late-night quips about the nanny state. Yet its intervention should not be discounted. It opened previously invisible decision-making processes and their implications to public inspection (while grossly limiting what the public might do about them), and soon became a bureaucratic lever upon which enormous fortunes might rise or fall. It also materialized a new field of fact production, modelled futures, and institutional morality.

As envisioned by Caldwell, the environmental impact assessments would usher in a new regime of “surveillance” that would produce untold data on the conditions of life.¹⁴ Taking stock of the likely effects of a project on nearby water quality, air quality, species habitats, ecosystems, and more, such impact metrics required an objective definition of normal as the baseline against which potential disruptions could be measured and managed. Impact assessments will, in Caldwell’s words, “establish ecological baselines – parameters, ranges, and gradients for sustaining life” (84). These baselines would not only help determine if a project should go forward; the resulting knowledge could also help manage those projects as they unfold, providing an early warning detection system if things start to go awry, and provide a roadmap for restoration if needed. Instead of coming up with a

universal or national baseline of life, NEPA distributed that task to the specific locales where disruption was anticipated. Each new project would require its own accounting of the localized conditions of life it might infringe upon, its own project-specific definition of vulnerable life. Crucially, such work does not unify an official understanding of precarious life, but causes it to proliferate. Each new project reifies the constitution of life in its shadow.

In 1970, this “major revision of the administrative functions of the U.S. Government,” as the lone dissenting voice in congressional debates bemoaned, passed nearly unanimously, without much fanfare, and with little appreciation of the minor revolution in bureaucratic procedure it was instigating (Liroff: 30). Few perceived the sheer breadth of its implications, nor anticipated the entire industries of environmental law and consulting that would take shape in its guidelines. Indeed, interviewed years later, many key participants shared the sentiment of one Congressional staffer who commented, “If Congress had appreciated what the law would do, it would not have passed”(Liroff: 35). In the years since, the environmental impact assessment has proliferated worldwide as a basic tool of governance in cities, industries, nations, and international organizations. As Michael Watts (2005) has observed, perhaps no industry has become as heavily invested in environmental impact assessment as the fossil fuel industry.

Conditions of Life. Introducing the conditions of life to decision-making has been hugely influential, yet it has often worked in unexpected ways. To the frustration of many citizens who participate in environmental impact assessment, the process is not akin to voting on a project. Rather, impact assessments aim to gather concerns that can improve the project design. Environmental impact assessments rarely provide the satisfaction of a sparring partner, let alone a venue of effective civil disobedience. While they provide a microphone for lived and livid concerns, all too frequently they do so only to deny those voices any means of joining and amplifying themselves into a more transformative politics. They don’t so much refute critique as exhaust it. How?

- 1) Impact assessments acknowledge impacts, only to co-opt them. Environmental impact assessments internalize what had previously been an external position of critique. Critique no longer has the capacity to confront and beat back a project; critique is instead drafted into an unpaid position in the design and operation of the project. 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 (1999).
- 2) Impact assessments map the limits of responsibility. 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 [a company’s] social and environmental responsibility” (19).

- 3) Impact assessments reify 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 authoritative definition of normal life. Such definitions erase histories of place and disallow change, becoming an inflexible measure that dictates 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 and Bond 2014:441).

In sum: the environment has taken forceful shape around two instrumental genealogies: thresholds of toxicity and environmental impact assessments. Quietly orienting the state’s forceful considerations as well as its averted gazes, both have become vital technologies within contemporary politics and a technical limit to democratic practice. They also do crucial normative work. Thresholds and impact assessments work to establish the normative criteria for environmental critique. But here agreement on the normative basis of critique does not open up the possibility of a more transformative politics, it forecloses it (contra Habermas). I see this as displacing a politics of confrontation, as pushing effective action into the realm of standardized methods, certified results, acceptable levels, and codified assessment models.

Such work can be ruthlessly proficient, and instantiations of the environment along these lines have been instrumental in saving lives and reducing pollution worldwide. Yet the resulting definition of the environment has often been effective to the extent it sidesteps the underlying problem and focuses attention instead on stabilizing the mediums of exposure and reifying the conditions of life. Managing the effects becomes a separate matter of concern, an autonomous field of research and regulation. This has serious consequences, as the environment has found its most forceful definition through moralizing and managing an ahistorical, moderately contaminated, and exceedingly technical understanding of life.¹⁵

As told above, the first part of my current book project attempts to explain how the concept of the environment takes shape around a growing crisis of life (Fassin 2009; 2018), and what work it comes to do on the world (as told through thresholds of toxicity and impact assessments). The second half of the project consists of ethnographic accounts that describe the concept of the environment, paying special attention to how people live within and against thresholds of toxicity and the reified conditions of life. I take it for granted that peoples’ lived experience is nearly always in excess of these frames, even as they sometimes turn to these frames to give political potency to their impacted lives.¹⁶ The remainder of this paper consists of short glimpses of some resulting dilemmas.

BP Oil Spill

For two years after the BP Oil Spill, I attended meetings in communities along the Gulf Coast to elicit public input about environmental damages and restoration. The first meeting

I attended was in Grand Isle, Louisiana in early 2011. Although the wellhead had been capped for a few months, an industrial sand cleaning operation still occupied the closed beaches. It was a strange meeting, with office partitions awkwardly trying to give the gymnasium some intimacy. Under the rubric of an Environmental Impact Assessment, federal officials asked the audience to help them understand the disruption of the oil spill and what might be done to correct the damages. One official said, “We don’t have a manual for how to put everything back together again. We need your help, your input. Are there specific species you want to make sure we pay attention to? Are there specific sites you would like us to focus on?”

Most public input came from municipalities and NGOs, well aware of the coming resources of restoration. There was a pause when the meeting appeared to be over. Then a middle-aged woman walked up to the microphone. “Our animals are dying. The water and air are poisoned. We need medical care. A lot of us have medical issues. We weren’t involved in the cleanup efforts, we just live here. We are a part of the environment and are affected by it. I have trouble breathing now. We need help.” It was an uncomfortable scene.

At meetings from St. Petersburg, Florida to Galveston, Texas and everywhere in between, I witnessed something similar: First, an interested public hewing to a particular script. At one meeting, a number of suited men read from a memo entitled “Talking Points for Environmental Restoration,” authored by an industry group. Each reiterated the same project: scuttling old oil rigs to form artificial reefs. Representatives of environmental NGOs urged action on various topics close to their organization’s mission: endangered species, wilderness areas, hunting and fishing, or ocean conservation. Equally present were municipal and state officials, pitching projects like sprucing up a waterfront or building a boat ramp as key components of environmental restoration. Indeed, most of this public input struck me as pointedly private, consisting of various long-standing agendas repackaged to be newly persuasive within the rubric of environmental restoration.

And then, slowly and often hesitantly, residents rose to reflect on the intimate destruction of the oil spill and submit their own bodily experience of harm into the official record. Their voices, unruly and unvetted, offered a far messier and almost nightmarish accounting of the oil spill. One woman interrupted a meeting by handing out lab reports on her blood: “I have poly-aromatic hydrocarbons in my blood. I need help.” One doctor stood and introduced two of his patients: “These men are extraordinarily ill. The oil was in the water and now it’s in our blood,” he said. “Feel free to question them.” For these residents, the imperiled ocean stretches into their bodies. Together, their voices offered an unsettling refrain: we live and work and eat in ways that confuse any hard and fast distinction between the environment and residents. Frustrated by official evasion, one woman asked, “Do you not think the health of environment is related to the health of the residents?”

In various ways, these residents asked the state to take account of the disrupted environment they lived alongside and with. While being empirically justified by many peer-reviewed accounts of the far-reaching trajectories of hydrocarbons during the spill, their concerns about poisoned air and water were rejected out of hand by federal officials. Federal

officials dismissed such concerns with the same polite refusal: “This meeting is about damages to the environment. Your concerns are best addressed elsewhere.” The parameters of the disaster had already been decided. Occasionally, officials would discreetly pass these residents a brochure entitled “Mental Health and the Oil Spill” with a 1-800 number on the back. The federal response to these local residents was often as insulting as it was mechanical: public opinion mattered only in so far as it aligned with the official rubric of the disaster. I asked the contractor tasked with summarizing public input at these meetings what she did with such comments. “Nothing,” she replied. “They don’t fit.”

Alberta Tar Sands

One of the more remarkable things about the tar sands in Alberta is how upfront oil companies are about their present 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 towards the huge investments the industry is making in their own ability to put it all back together again. With restoration projects that strive to join the best of environmental science with 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 northern ecosystem. Steve, the director of Aboriginal Relations at a major tar sand project told me: “We will make the landscape better than it ever was before.” Steve continued: “First Nation communities have no idea how good they have it with us.” For company officials like Steve, these projects to build a pre-modern future offer a compelling vantage point on present operations, one that can both recognize and redeem the disastrous qualities of tar sand extraction. “The Future – A Whole New Point of View” reads one sign on a hill overlooking a tailings pond and refinery.

From afar, critiques of the tar sands often center on the cinematic scale of devastation. “Hiroshima” was the phrase Neil Young lobbed at the tar sands. After I spent two summers in northern Alberta, such critiques seemed to miss their mark a bit. It’s not that the portrayals are inaccurate – the scale of destruction is shocking – so much that the companies have already conceded the point and are now presenting themselves as the best equipped to rebuild the worlds they themselves are destroying.

Part of this pivots on the new regime of transparency in the oil industry that Michael Watts (2005), Hannah Appel (2012), Andrew Barry (2013), and others have drawn to our attention. In the tar sands, this transparency takes a particular form. Not only do oil companies operate an “Oil Sands Museum” – as if extractive operations are already worthy of historical commemoration – but they also employ armies of environmental scientists to help alleviate the destruction of their operations. These environmental scientists consider themselves experts in the restoration of the boreal forest, although they willingly concede they are not the true authorities on the northern boreal forest: First Nations are. This fact is widely shared with inquiring visitors and is prominently displayed in some of the more curated sections of this devastated landscape.

A few tar sands operators provide guided tours of their mining operations. Before the tour starts, a scripted narration anticipates the destruction that will be witnessed. “When we use energy from the oil sands to make our lives more pleasant, it has an impact and an environmental cost. New research can help us avoid some of the problems and limit others, but we cannot use energy and have no impact at all.” Although it begins at the mine, the tour ends at a restoration site where, as the guide explained, Indigenous wisdom, engineering whiz, and the abiding commitment of the company collaborated to transform a tailings pond into a more perfect Native ecosystem. “Renewing the landscape” was the phrase the guide used. We were told how plants were carefully selected by tribal elders, and then propagated and planted in mass by environmental scientists. And we were told how the traditional knowledge of First Nations helped map out places for piles of rocks and dead trees that would help bring back the biological and spiritual life-force of the landscape.

(It is worth noting: against the nuanced and often quite diverse terrain of Native identity in this region, for the company “Indigeneity” has been standardized into a single vision of the primordial boreal forest.)

These sites – and each major tar sand operator seems to have at least one – are designed to imagine the landscape post-oil (and are built with asphalt walking paths and parking lots capable of hosting tour buses). The resulting vision of ecological alterity does crucial temporal work for the oil companies. These company-sponsored “Indigenous environments” are used by oil companies to condense the wound they are inflicting on the landscape into the fixed dimensions of a Modern Event. That is, the “Indigenous environment” provides the essential before *and* after. These temporal coordinates are key, as it often leads to a paradox commonly experienced in the tar sands: Oil companies routinely invest tremendous sums to better understand and care for the “Indigenous environment” of the past and future while at the same time neglecting the rising chorus of Indigenous voices concerned about their environment in the present-tense.

In 2013, Alberta shut down large portions of its monitoring of air and water quality around the tar sands in order to build a more robust infrastructure of environmental governance (funded entirely by tar sands operators). From the get-go, First Nation leaders pushed to be involved in the technical details of what pollutants to look for, where to measure them, and how to set thresholds for toxicity. These efforts were rebuffed. First Nation leaders, it was reported, “felt they were being pigeonholed into providing solely traditional and cultural knowledge.” Before the process was complete, all five First Nation groups withdrew in protest from the program. Each complained of the strange resistance the program had to instituting regular air and water quality monitoring in First Nation communities. While making tremendous investments to understand and safeguard the timeless “Indigenous environment,” oil companies were actively uninterested in First Nation concerns over their environment today.

Yet for the company, the future restoration of the “Indigenous environment” trumps present complaints. In interviews, some company officials argued that by removing the bitumen sands from the landscape in the present, oil companies are actually doing a great service to Indigenous communities: the companies are purifying the boreal forest so

that it can finally align with the timeless Indigenous conception of it. One told me: “Our operations are actually cleaning up nature by removing that dirty stuff from the landscape.” In these ways, tar sands operators use their scientific investments in the “Indigenous environment” to override contemporary Indigenous voices and to assert the moral authority of the corporation over the landscape they themselves are destroying.

PFOA

In 2014, the chemical Perfluorooctanoic acid (C8 or PFOA) was discovered in the public drinking water in the Village of Hoosick Falls, NY, and then in the public drinking water system of Petersburg, NY and soon after in thousands of private residential wells in the area around Hoosick Falls, Petersburg, and Bennington, VT. Once a key ingredient in the plastics manufacturing that dotted the region, PFOA is a wholly synthetic petrochemical that is persistent, mobile, and toxic. Once released, it is durable on the order of centuries with no known natural degradation process. It moves through water and air, and has been found just about everywhere we’ve thought to look for it. And exposure to PFOA in drinking water has been linked to a number of ailments, including thyroid disease, kidney cancer, testicular cancer, and a host of immune disorders. After New York State refused to acknowledge the problem and continued to encourage residents to drink contaminated water for nearly two years after PFOA was first discovered, I became involved in the issue.

With support from the National Science Foundation, I organized a project that opened the doors of Bennington College’s science classrooms to this nearby environmental problem. This happened primarily in two ways. One, we put together a new science class on PFOA that we offered to the public free of charge to help bring communities up to speed on the complicated chemistry, environmental pathways, and health concerns of PFOA and, two, we sent out teams of science faculty and students into the local communities to produce independent data on PFOA contamination in conversation with community questions.

This involvement catapulted me into playing a minor public role. And in the past three years I’ve met lawyers, senators, and governors, I’ve testified in statehouses, I’ve regularly appeared in local media, and I have had the great honor to work with local residents. These are some of their stories.

We arrived at a local gas station convenience store a few minutes early, and got coffee as we waited for Sarah to arrive. Sarah had worked multiple jobs until she could pull her children out of a two-room trailer and into her dream house: as Sarah described it, “a 3 bedroom, 2.8 acre, American Dream. Did it before I was thirty, and while I was single. I loved it.” In 2011, Sarah was informed that PFOA had been detected in her well at levels over 30 times the federal health guidance level. Taconic Plastics, a modest plastics plant, was just down the road from her house and the suspected source. She was devastated. State officials asked her to wait patiently while they worked something out with the company. She didn’t, and as she tried to bring attention to the issue, friends rebuffed her. The former town supervisor cornered her: “Do you really want to cost 200 people their jobs over this?” She prevailed, and against tremendous headwinds forced the issue into the light of day,

much to the embarrassment of company leaders and local officials who had been sitting on the problem for decades without telling anyone. It's a story she's recounted many times for television crews and legislative hearings in the past two years, and on that morning at Stewarts she recounted it for my students as we introduced ourselves.

As we rose to leave Stewarts, Sarah flashed a grin and said she had a surprise to share: "I'm pregnant." As I offered my tentative congratulations, she interrupted me: "Does anyone need any breast milk? Cause I don't." And as her tone changed, she said, "My blood levels are too high. I'm not going to pass it on to my baby."

For many anthropologists, contamination has become a kind of master narrative of our present. Contamination shows us just how porous our cherished categories are, and how open we already are to the world. Recent work by Eben Kirksey (2015), Donna Haraway (2016), and Anna Tsing (2017) takes up toxic contamination as a quasi-emancipatory position, one that proves the porous nature of modernist categories. Yet the theoretical merits of such a position seem increasingly distant from – if not tone deaf to – the actual experience of toxic contamination. The experience of toxic contamination is not always the epochal rupture it is sometimes made out to be, nor does resistance to contamination rest on the politics of purity it is sometimes charged with.

Looking back, for many PFOA was always there. Those summer evenings where a light blue fog drifted across the golf course, and members of the country club quickly moved indoors to finish their meals. Those crisp winter mornings when farmers woke to find their fields painted in a blueish hue. There were the recurrent migraines and bloody noses among those living in the new development on the ridge just above the plant. "Some days, I couldn't even go outside," more than one resident told me. Workers called it the "Teflon Flu," an onset of aches and pains after inhaling too deeply while loading the mixers or forgetting to change clothes after getting it on you. Sometimes, of course, you just came down with it for no good reason, other than that you worked at the plant. An electrician told me he dreaded getting contract work in the plant: the pay was great, but something stuck with you when you left, something you couldn't shake for days. The high school principal told me how the company used to donate industrial barrels for Apple Bobbing at the school's annual Halloween party. The faint marking of "PFOA" still visible on the barrels. A mother spoke of the nights when she could smell the plant emissions. "The ceiling was alive, and it was dripping down and dissolving everything. I could smell it. Do you think I'm crazy?" "In the summer," another resident explained, "you had to remember to close your windows in the evenings. That's when they fired up the stacks." The nights, I heard again and again, smelled of burning plastic.

Afterwards – after everyone knew – the long living with it took on a disconcerting question. What hadn't we done? The everyday avoidance of certain smells, of certain confrontations, or certain explanations was recast as outrage and complicity, all at once. "We always just had a lot of cancers," one doctor told me, himself recently diagnosed with cancer. "No one really thought about it all that much."

This conjoined sense of outrage and complicity haunts my own thinking, and will be central to my own working on these issues in the politics of our present.

Conclusion

I opened this paper with the question: Is the environment worth the effort? Here, nearing the end, I might revise the direction of that query: What effort does the environment exert on us? In advocacy and scholarship and public policy today, the environment has become a potent (if sometimes obligatory) point of reference. Remarkably little ethnographic and conceptual attention, however, has focused on the emergence of the environment itself, on the stabilization of the environment as a coherent object for science, ethics, and statecraft and on the consequence of that objectification for people and politics. Very often, the “environment” itself is taken up as the premier explanation of its own field of intervention, or as the ground within which urgent forms of enlightenment and engagement might take root and remake into our present. The environment is not so much accounted for as it is allied with. Not only have nation-states around the world taken up the environment as a vital responsibility of governance, but activists and corporations alike increasingly mobilize and moralize their activities through the rubric of the environment.

In this paper, I have reflected not only on *what* we know of the environment but also on *how* we come to know the environment. I have done so to bring the concept of the environment into historical and ethnographic focus, not to fully capture its meanings – to define it once and for all – but to document the instrumental genealogies that work to instantiate the environment and to describe the kind of projects and experiences that take shape around the environment today, as well as those that get left out. The technical alliances and cultivated absences of the environment, of course, include not just the lives of people but also the source of the underlying problem.

Throughout, I have suggested that fossil fuels have played a key if long-neglected role in the formation and consolidation of the environment. Over the past century and already spilling into our future, fossil fuels have instigated new landscapes of vulnerability, new mappings of harm, and new authorities to take responsibility for those domains. Whether in coal smog or hydro-chlorinated pesticides or automobile emissions or acid rain or oil spills or even now in global climate change, the disruptive afterlives of hydrocarbons have instigated new knowledge of and new obligations towards life. So much of what we know of and how we’ve come to care for clean air and clean water, the conditions of life, and perhaps now a stable climate, rest on how hydrocarbons first disrupted them. And yet again and again, the environment has not served to illuminate that vital relationship so much as to obscure it. As the environment worked to recognize a new class of petro-problems, it has also worked to remove them from the plane of our outrage and our fierce visions of a more just society. Historical and ethnographic attention to those constitutive petro-problems helps draw into relief the shaping of the environment and its limitations today. Not only could this bring the gradients of human difference newly expressed in the horizons of petro-risk into clearer ethnographic focus, it might also help us see the negative ecologies of fossil fuels not as accidents isolated in time and space but as the fertile soil within which new political theologies of life are taking root today. This is not, as Foucault

once quipped, to use the keywords of our present to understand how we got here, but to understand the contingencies, commitments, and confinements that gave rise to the reality of those keywords. The task now is to enact a politics that breaks free of these brittle forms, that reconnects cause and effect, and that will equip us to confront the petro-perversions that surround us and to chart a more equitable way past them.

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ENDNOTES

- 1 James Hansen's 1988 testimony is widely celebrated as a watershed event, introducing climate change to federal governance. Ten years prior, the second EPA Administrator Russel Train (1978:322), who was appointed by Nixon, wrote in *Science*: "There is growing scientific concern over the buildup of atmospheric carbon dioxide from the combustion of fossil fuels with potentially significant impacts on global temperature and climate. All of this suggests that coal (sometimes described as America's energy 'ace in the hole') may be a very uncertain foundation upon which to base long-term energy policy. [...] The world will have to turn away from fossil fuels long before usable coal reserves are exhausted" (1978:322). Indeed, climate change was also on the docket in congressional hearings about the National Environmental Policy in 1968 and 1969, where "the contrary possibilities of rising world temperatures as a result of carbon dioxide build-up or falling temperatures as a result of smog and jet contrails" were introduced as possible fields of responsibility for federal governance (McCloskey 1969:15486).
- 2 Naming the resulting methodical and systematic attention to air "the climatology of combat," Sloterdijk (2009:19,30) argues that this was "the first science to provide the 20th century with its identity papers."
- 3 In this, industrial hygienists no longer needed to conduct medical fieldwork or worker interviews inside the factory. Research on working conditions took the form of brief inspections, a series of measurements, and a checklist of required safety features. Once the dangers were fixed as objective things, managing the risks of the factory became a technical operation.
- 4 Scientific thresholds for drinking water, it should be noted, emerged slightly earlier and in relation to the industrial city (Gurian and Tarr 2010). By and large, early thresholds were focused on micro-organisms in drinking water, not toxic chemicals.
- 5 As Senator Edmund Muskie (D-Maine) and President Richard Nixon squared off over the environment in anticipation of the 1972 presidential election, both were convinced the environment provided an effective route to a new winning constituency. Neither strategy was without cynicism. While Muskie saw the environment as the next unifying issue for the Democratic Party (neatly sidestepping Civil Rights), Nixon hoped the environment might deflect attention from the war in Vietnam among younger voters. Ultimately, the upstart McGovern bested frontrunner Muskie (after Nixon's henchmen forged a letter in which Muskie seemed to be mocking ethnic communities, the key to the Democratic coalition) in the Democratic primary and Nixon walloped McGovern

in one of the most lopsided presidential elections in American history (with McGovern winning just one state: Massachusetts).

- 6 The independence of the EPA was a crucial achievement. Many Republicans, especially those from oil producing states, urged Nixon to create a new agency that balanced natural resource development (i.e. extraction) and environmental protection. As Walter Hickel (1971:243), tireless promoter of Alaskan oil and Secretary of the Interior under Nixon, explained, “I reasoned that it was self-defeating to separate resource development from environmental protection.”
- 7 My indebtedness to the work of Timothy Mitchell (1998; 2011) on this comparison should be clear.
- 8 As several contemporary observers noted, the widening sense of generalized vulnerability that these threats instigated found condensed form in a new problem: coastal oil spills (Llewellyn and Peiser 1973; see also Morse 2012; Bond 2017). Televised coverage of the 1967 Torrey Canyon tanker spill off the coast of England and of the 1969 blowout of a well off the coast of Santa Barbara became stories that provided spectacular aesthetics to the growing sense that the world was drowning in contamination (see Dunaway 2015). Contemporary observers did not mince their descriptions (nor did they get lost in the technical mediations between the material problem and its impact). “Petroleum has become a devil in our civilization,” an essay on the Torrey Canyon spill reported in the *New York Times Magazine* in 1967, “whether in a single dramatic incident or slowly, by default – it is [...] creating a survival issue both for sea life and for man himself” (Rienow and Rienow: 25).
- 9 Today, the notion that Nature might be recognized as a rights-bearing subject is often taken up as a decolonizing project emerging from the Indigenous edges of modernity. Yet here such a notion is present at the very center of modern power.
- 10 Christopher Stone sparked much of this debate with his 1972 provocation, “Should Trees Have Standing?” Later, when challenged by a colleague over how the interests of the natural world could ever be represented in court, Stone replied: “If you listen very, very closely, a tree will make the exact same sounds as a corporation” (cited Mosk 1976:231).
- 11 Cultivating such enlightened decision-making was actively contrasted to that other genealogy of the environment: thresholds. While thresholds provided an “external policing mechanism” to protect the environment, NEPA aimed to “internalize” the environment within federal decision-making (Liroff 1976:18-9). In a division of labor Foucault may have found fitting, a threshold threatened punishment while NEPA disciplined from within.
- 12 Parts of NEPA were literally copied and pasted from the *Full Employment Act* of 1946, which introduced ‘the economy’ into federal governance and brought a new cadre of economists into the White House in the form of the Council of Economic Advisers. As Timothy Mitchell (1998), Donald MacKenzie (2008), Koray Caliskan and Michel Callon (2009) have all argued about the economy, it

is often the methods of fact production and genres of interpretation that instantiated the socio-material field (not the other way around). Here too perhaps, the methods and genres of the environmental impact assessment came to instantiate the socio-materiality of the environment itself.

- 13 The Council of Environmental Quality was modelled on and sought to counterbalance the Council of Economic Advisors.
- 14 If the Foucauldian overtones of Caldwell seem striking, they may not be entirely out of place. Before he left Indiana to draft NEPA, Lynton Caldwell wrote a short reflection on the new science required to hold together the insights of research, advocacy, and regulation that the crisis of life brought into lively intersection. Noting the “inadequacy of conventional political mechanisms to deal with the problems of the new age of biology” – that is, biology as the study not of life but of altered life –called for a “new machinery in governance” Caldwell (1964:28, 29). Such governance would coordinate the emerging science of life’s precarity and the moral discontent it gave rise to into an effective federal governance of the natural world. At that “meeting point of science, ethics, and politics,” Caldwell saw a pressing need for a new discipline to hold everything together, a discipline he named “biopolitics.” Biopolitics, he argued, could finally turn the tide and counter the biological perversions of the hydrocarbon and radioactive present with a more informed, more unified, and more forceful defense of the precarious conditions of life itself. I don’t have the space to fully explore the implications of this curious convergence, but perhaps the environment, and impact assessments in particular, might be a site to reconsider the relentlessly normalizing tendencies of Foucault’s theory of biopolitics (despite at least one interlocutor’s suggestion that Foucault’s biopolitics had nothing to do with the environment [Lemke 2011]).
- 15 Today, many scientists and critical theorists claim the Anthropocene represents a profound break with ‘the environment’ (Bonneuil and Fressoz 2016). Yet so many of the approaches being advanced to hold back the worst of climate change, from “planetary boundaries” (Rockstrom et al. 2009) to the IPCC’s emissions scenarios, seem not to break with toxic thresholds and reified conditions of life so much as to deepen and widen their scope beyond the state.
- 16 Indeed, I presume that many of the social movements that have cohered around the environment in a variety of local, national, and international contexts 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 (Bullard 1993; Guha 2000; Cole and Foster 2001; Joan Martinez-Alier 2002).