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# Contamination in theory and protest

**ABSTRACT**

Contamination offers a new observatory for anthropological theory. But does it bring us closer to the world at hand? I have spent the past five years working with residents in Bennington, Vermont, and Hoosick Falls, New York, in pursuit of justice after the toxin PFOA was discovered in their drinking water. Turning from advocacy to writing, I've been struck by how prominent toxicity is becoming in certain currents of anthropological theory and how little those theories illuminate about the protests against contamination I participated in. As the theoretical dazzle of contamination surges forward toward experimental futures, planetary futures, and queer futures, toxicity can become an oracle whose ethnographic significance lies more in its prophetic intimation than in its present inhabitation. Staying close to the experience of a New England community protesting industrial pollution, I show how the ethnographic realities of contamination can orient theory for a better world without first resigning us to the loss of the present. [*toxics*, *materiality*, *futures*, *environmental justice*, *PFAS*, *plastic pollution*, *United States*]

## 1

Contamination offers an intuitive language for our present crisis, one that condenses into felt form so much of the unease, upheaval, and fierce aspiration that enliven our contemporary moment. Contamination carries the sense that boundaries may no longer hold, that the future is as open-ended as our lives have become, and that purity is no longer an option. As an enchanting theory and a widening experience, contamination captures the feeling that we've become unmoored from history, less from some epic storm blowing us off course than from the ordinary befuddlements of epic projects entering their terminal state. Contamination opens the worlds it describes to the overwhelming fact that something has to give.

Even as it distills something vital about our present condition, the lexicon of contamination carries divergent political commitments, relational densities, and horizons of responsibility. Under the charge of "environmental racism," some scholars trace out how the routes and accruals of toxicity conspire with historical inequality to inscribe contingent distinctions like race, class, and citizenship with more durable forms of disfigurement (Auyero and Swistun 2009; Checker 2005; Little 2021; Tousignant 2018). As Max Liboiron (2021, 1) insists, "Pollution is colonialism." This strand of research inspires analytical vigilance to the ways contamination breathes new life into long-standing inequities. While contamination pulls historical injustice into fresh relief, it also illuminates the emergent crucibles of the here and now. Recent ethnographic work demonstrates how toxicity upends revered distinctions of self and society, near and far, inside and outside, person and place, life and death, today and tomorrow (Agard-Jones 2014; Lamoreaux 2020; Lock 2019; K. Lyons 2020; E. Roberts 2017a; Wool 2017). This strand of research highlights how contamination provides a lived register of the contradictions that define the contemporary. Still others turn to the astounding proliferation of toxicity today as the final victory over the purified epistemologies still anchoring our world to hierarchal modes of occupation. Nicholas Shapiro and Eben Kirksey celebrate how "chemical exposures are catalyzing intersectional political projects" (Shapiro and Kirksey 2017b, 489), while Anna Tsing (2015, 27) lauds "contamination as collaboration." This strand of research productively describes how the figure and fact of contamination previews nonnormative social arrangements already at work among us. Yet

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**Figure 1.** Image from a state inspection of the ChemFab Plastics Factory in Bennington Vermont, January 1999. (Vermont Department of Environmental Conservation)

tensions are surfacing within these theoretical turns toward contamination, especially along the question of who we write for and why.

While many confront contamination as a sharp diagnosis of what's wrong (and can still be mitigated), others see in contamination an evocative opening to what we have already become (and have not fully realized). Contamination, we might say, holds together a residual field of embodied inequality *and* an insurgent field of abnormal equality. Rarely reflected on together, these diverging paths of significance help explain the unstable orientation of ethnographic critique around contamination. Under the banner of evocative critique, some prominent anthropologists converge on the physical properties of contamination as the great flood that can finally wash away the purified fantasies of modernity and prefigure the world to come. Collaborating with those living downstream of petrochemical plants, military bases, saturated farms, open-pit mines, nuclear test sites, and hazardous-waste incinerators, some anthropologists craft a very different critique, one intent on holding back the material spread of contamination and seeking amends for harms underway. These tensions raise difficult choices for anthropologists working on toxicity today. Should ethnographic critique align with the grassroots pursuit of justice in communities impacted by toxicity or with the disruptive properties of toxins themselves? What political endorsements are being made, intentionally or not, in anthropology's published understanding of toxicity today? Do our theories of contamination draw us closer to the broken world at hand, or do they primarily work to instantiate the better worlds to come?

## 2

Michael Hickey certainly stands out.[1] Raised in Hoosick Falls, New York, Michael is well known for wearing bright pink oxford button-downs in a town that lives in the faded palette of Carharts and blue jeans. When his father passed away from kidney cancer in 2014, Michael was devastated. In his grief, Michael realized he had seen far too many of his classmates diagnosed with cancers in their 20s and 30s. As the town doctor later told me, "There just always seemed to be a lot of cancers in this town." Although his father never smoked or drank, he worked in the Saint-Gobain plastics factory right up until his diagnosis. Late one night Michael googled "Plastics" and "Cancer" and started reading. He quickly zeroed in on PFOA, a synthetic petrochemical that became a key ingredient in the manufacture of plastics from the 1950s onward. He started compiling articles, many just published by the EPA, linking PFOA to a number of cancers. In Hoosick Falls the Saint-Gobain High-Performance Plastics plant sits about 300 meters from the well that supplies the town's drinking water. Michael wondered if it had been contaminated with PFOA. "I started staying up a couple of nights a week for three months reading up on it," he explained. Alarmed at what he was learning but unsure of its validity, he took his pile of articles and notes to his doctor and asked him to take a look. The doctor thought Michael might be on to something. Encouraged, Michael took his findings to the Village Board in early 2014 and suggested that the village test its drinking water for PFOA. "I thought it'd be a no brainer," Michael said.

Instead, it took two years of tireless work from a growing coalition of residents to bring these questions to light.

It took the rogue sampling of the town's drinking water to confirm Hickey's suspicions: alarming levels of PFOA were in the town's drinking water. Then it took an indomitable will to stand against the mayor, the county health department, and finally the New York State Department of Health, all of whom continued to insist that there was nothing to worry about, long after evidence to the contrary was overwhelming. Against tremendous headwinds, residents forced PFOA contamination into public light. I played a minor role in this work, and this article draws from five years of personal and professional involvement in this issue. In response to the work of Michael Hickey and other residents, I joined with Bennington College colleagues in chemistry (Janet Foley) and geology (Tim Schroeder) to figure out what a college can—indeed, what a college should—do in a situation of extensive regional contamination, real public health concerns, confused directions from state agencies, and well-heeled corporate subterfuge. One of the first things we did was offer a new class on PFOA. This class, free and open to the public, became a place where a core commitment of the university—teaching—was opened to a public desperate for reliable information on an unfolding environmental disaster.

As we now know, PFOA was willfully emitted for half a century from three plastics factories in Hoosick Falls; Petersburg, New York; and North Bennington, Vermont. These emissions continued for decades after corporate owners suspected that PFOA was harming the health of its workers and local residents (Therrien 2017). Yet these plastics factories chose not to share this information with workers or local residents, and they continued emitting PFOA by the ton annually. Today, it is estimated that these three modest plastics plants contaminated about 250 square miles of soil and groundwater, including my own home and the college campus where I teach (Schroeder, Bond, and Foley 2021).

An engineered chemical of herculean properties, PFOA is unfazed by any natural degradation process. One regulator told me PFOA is "redefining the concept of environmental persistence," and advocates now call PFOA a "forever chemical" for its sheer indestructability. Once emitted, PFOA moves through air, soil, and water systems with surprising ease and has an affinity for living creatures. When consumed, PFOA accumulates in the human body, where trace exposure is strongly linked to developmental disorders, immune dysfunction, infertility, and a host of cancers. These disconcerting properties of PFOA were abundantly clear to the plastics industry in the 1970s and to the EPA since at least 2005 (Bilott 2019; Blake 2015; Lerner 2015). Until quite recently, however, it was not clarity but confusion that met communities like Hoosick Falls when they discovered PFOA in their drinking water.

At one public meeting in Hoosick Falls in December 2015, a citizens group—a collection of furious mothers joined by local doctors, lawyers, and bankers from the town—staffed a table in the back of the auditorium. They handed out an EPA fact sheet that, in highly technical language, summarized growing concerns over the "toxicity, mobility, and bioaccumulation potential of PFOA" at the levels found in the town's drinking water. At the front of the room, state health officials gave a presentation that explained that while PFOA had been detected in the public water of Hoosick Falls, "health effects are not expected to occur from the normal use of the water."[2] A mother interrupted, "We all know we've got a problem. Our aquifer is poisoned. What are you going to do about it?" In between, the mayor told everyone within earshot that drinking the water was "a personal choice," and while he understood why some people were choosing not to drink the water, he would continue to drink it.

PFOA was discovered in this white, downward-drifting hinterland the same year Donald Trump was elected president. In 2016 many commentators turned to poor rural whites as first author of America's lurch toward authoritarianism. Yet the ways this maligned demographic came to protest PFOA contamination cuts against the grain of prominent dismissals of rural America and trending theories of toxicity. These concerns strike home for me: not only has PFOA contamination reached into my own life, but I grew up in a similar world. The sophisticated disregard for these worlds can too easily consign ethnographic critique to predetermined subjects and undermine the shared grounds of rising dissent. My own engagement with PFOA in this region draws inspiration from the collaborative research of anthropologists who take seriously the complicated ways that marginal communities live with and against toxicity today (Agard-Jones 2014; Akese and Little 2018; Hoover 2017; Liboiron 2021; Montoya 2018; E. Roberts 2017b; Shapiro 2015; Tironi 2018; Wylie 2018). Drawing anthropology and advocacy into alliance without reducing one to the other, these scholars craft new ways for ethnography to inhabit the indeterminant worlds of toxicity without resigning themselves to description without outrage, theory without justice. In conversation with such scholarship, my own work reflects on how ethnography can help residents pull the toxicity of PFOA into more effective forms of political accountability while remaining attentive to how PFOA contamination exceeds the given legal registers of injury and recompense (Bond 2020; see also Cordner, Richter, and Brown 2019).

## 3

"Everyone carries a history of contamination; purity is not an option," writes Tsing (2015, 27). Heterodox mixtures are the theoretical calling card of so much of contemporary ethnography. Irreverent networks, transgressive subjects, mutant problems, and other unfazed anomalies have become both the home address and speculative privilege

**Figure 2.** Bennington College students analyze water from a residential well in Hoosick Falls, New York, in October 2016. (David Bond)

of ethnography today. Much of this builds on a revered strand of scholarship that revitalized materialist concerns in anthropological theory, less to emancipate labor from the political power of capital than to emancipate life from the philosophical power of modernist categories. Truly disruptive scholarship, argued Donna Haraway (1985, 66) in her "Manifesto for Cyborgs," should take "pleasure in the confusion of boundaries."[3] Experimenting with heretical mixtures might undo the order of the day less by frontal assault than by showing how empirically impoverished that order was to begin with (Latour 1993).[4] Whether through cyborgs or hybrids or ontologies, ethnographically inhabiting such motley worlds destabilizes the reigning format of objectivity and illuminates fertile grounds where different ways of relating still flourish. Such an intervention has been hugely productive in anthropology, and it continues to inspire groundbreaking ethnographies on the practices of science, infrastructural politics, the entanglements of life, and the categorical conceit of modernity.

Today, many anthropologists working in this vein are moving from documenting the underlying hybridity of the modern world to aligning ethnographic inquiry with problems or subjects that might propel more radical transgressions beyond modernity. Perhaps no topic tracks this unfolding shift like toxics. "Toxicity forces us to reveal the ways in which we are multiply composed," writes Heather Davis (2015, 244). In these troubling times, a growing number of anthropologists have found renewed theoretical optimism in the chemical capacity of contamination to scramble modernist strictures and inject experimental hybrids into our now unprecedented future. Andrea Ballestero (2020) aims to "recuperate the pollution plume" as "an attunement towards form shifting" that helps anthropology break with genres of fixity and stability. Describing how rusty chemical weapons in Panama author new multispecies assemblages, Eben Kirksey (2017) calls for anthropology to learn how to "experience the dangerous pleasures of intoxication" (see also Kirksey 2015). As chemical exposures erode the boundaries of individuality and species distinctions, Michael Marder (2019, 189) embraces "ontological toxicity" to reveal and revel in what will come next. Impinged on by rising seas and feral toxicity, Elizabeth Povinelli (2017, 509) imagines that "our bodies are stew pots cooking up a new form of posthuman politics." Toxics physically upend purified epistemologies and their staid political forms, and in so doing they open the door for ethnographic critique to root itself in transgressed boundaries, denaturalized relations, and the gathered anticipation of worlds to come. Contamination is a fait accompli, and critical anthropology can help spur the creative possibilities of this condition by seizing on its world-making possibilities.

## 4

Keith built his modest house on the ridge above the plastics plant. A skilled carpenter, he sometimes spoke of building his home as a kind of college degree, an investment in his future. In the past few years, his home has been cast in a different light. After PFOA was discovered in the town water of Hoosick Falls, extensive sampling of private wells

in rural homes across this part of upstate New York and southern Vermont in 2016 and 2017 found extensive PFOA contamination. The PFOA levels in Keith's well were 100 times over what the state of Vermont deemed safe. It was a real puzzle, though, since the houses around him had barely detectable levels of PFOA. Every time I'd come for a sample, he'd follow me to the basement to chat. "My boys still won't drink the water," he told me one afternoon. "I tried to explain it to them, but they just won't do it. Won't even use the water to brush their teeth. They are still afraid of it." He didn't find their fear silly, he said. He understood it. But he wasn't sure how to square it with the filtration system Saint-Gobain had installed in his house. So he kept buying his children bottled water, on his own dime.

When PFOA was discovered here, state agencies limited their investigation to neighborhoods adjacent to the plastics plant. Residents suspected contamination further afield, whether by memories of errant trucks driving chemical barrels to abandoned lots in the dead of night or by the scent of burning plastic routinely drifting into homes miles away. Taking these concerns seriously, I helped organize a collaborative project between anthropology students and environmental scientists to offer free analysis of water and soil at suspected sites. This helped provide impacted communities with data calibrated to residents' questions. Sites of industrial contamination are rarely deprived of data, but the reams of facts at such sites are often produced in strict alignment with the legal agenda of the state or the corporation. The resulting arms race of bureaucratic objectivity plows away the experience of residents as a matter of routine. Yet local communities can help illuminate the source, transport, and fate of toxics. Taking residents' hunches seriously, we soon identified several sites where PFOA had been illegally dumped, and we amassed overwhelming evidence that the contamination of groundwater and soil was far more extensive than state models initially allowed for (Bond, Foley, and Schroeder 2018; Schroeder, Bond, and Foley 2021). This work introduced us to the primary venue of many residents' outrage: the family home. When I met Emily, she had a hand-painted sign staked on a knoll overlooking her driveway: "Cloud Nine," it proclaimed. A few weeks later, the sign leaned up against the shed. A few months later it was replaced with a For Sale sign. "It's no longer my house," Emily said. "It's theirs." She pointed at Taconic Plastics, just down the road. "Once they poisoned my water, they took away my home."

Emily worked three jobs until she could pull her children out of a decrepit two-room trailer and into her dream house: as she described it, "a three-bedroom, 2.8 acres, American dream. Did it before I was 30, and while I was single. I loved it." In 2016, Emily was informed that PFOA had been detected in her well at levels over 30 times the federal health guidance level for short-term exposure. 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?" he said. She prevailed and, against entrenched resistance, forced the issue into the light of day, much to the embarrassment of company leaders and state agencies that had been sitting on the problem for decades without telling anyone. (In 2006, Taconic Plastics told New York State officials that it had detected PFOA at 152,000 parts per trillion in the groundwater beneath the plant; the state did not investigate.) It's a story that Emily recounted many times for television crews and at legislative hearings, and when I arrived with students to sample her water, she'd always recount it. One morning she flashed a grin after telling her story. She said she had a surprise to share: "I'm pregnant." As I offered my hesitant congratulations, she interrupted me. "Does anyone need any breast milk? 'Cause I don't. My blood levels are too high. I'm not going to pass these chemicals on to my baby."

Each of these towns has lived with plastics manufacturing for decades. In the 1970s, for example, my adopted hometown of Bennington rebranded itself "Teflon Town" in celebration of the new hub of plastics manufacturing sprouting up in the old mills that dot the region (Therrien 2017). For just as long, residents in towns like Bennington have lived with the contamination of their lives. For them, PFOA contamination was not exactly a revelation—it had long been registered in a blue-tinged fog on winter mornings, chronic nose bleeds, the acrid smell of plastic burning in the summer, tap water foaming as if already soapy, and cancers among family and friends. Memories of "before" were not colored with innocence. In 2016 the work of Michael Hickey and other residents suddenly pricked the "everyday praxis of not noticing" (Ahmann 2018, 145) in these communities, drawing the long-standing chemical milieu of plastics manufacturing into the density of a moral event (see also Shapiro 2015). Residents broke with the cognitive and bureaucratic investments in "toxic uncertainty" (Auyero and Swistun 2009, 140) and demanded answers to questions that had long hung in the air.

For many residents the shape of injustice gathered into felt form around the two remaining social safety nets in rural America: family and home. In these white working-class communities, family and home are often talked about more in terms of reciprocity than gain: folks pour their labor into their families and homes with some hope that they will eventually return the favor with care, meaning, and stability in regions otherwise bereft. PFOA smuggled profound harm into the two vestiges of well-being left in these downwardly mobile communities. And that's where long-tolerated risk snapped into welled-up fury over PFOA contamination. Michael Hickey later reflected, "I'm not a doctor or a lawyer or even an environmentalist. But I knew

something wasn't right. I started as a heartbroken son and quickly turned into a scared father." Residents organized as mothers and fathers. They protested as homeowners. At public meetings, residents explained the impact in terms of children now carrying a lifetime of medical uncertainty, and in terms of their meager lifesavings, wiped out in collapsing real estate prices. These two ledgers of loss formed the basis of how residents drew long-standing exposures into demands for justice.

As they organized, residents worked together to minimize exposures to PFOA going forward, to secure medical support adequate to the lifetime of worry their families now carried, and to advocate for robust regulatory protections from toxins. Contamination was not total, and what justice remained was found in efforts to limit PFOA exposure and find redress for injuries already underway.

## 5

"We take as our starting point a permanently polluted world," write Max Liboiron, Manuel Tironi, and Nerea Calvillo (2018, 332). Facing up to this reality, some anthropologists stand resolutely with communities protesting and prosecuting the contamination that threatens their lives. Other anthropologists rally around a programmatic call for "anthropological toxic worlding" to draw ethnographic writing into considerations of how contamination prompts life otherwise (Nading 2020, 219). Part of this divide between actively protesting contamination or methodologically identifying with it lies in the political sedimentation of the term itself. The vocabulary of pollution, exposure, and contamination carries echoes of colonial histories that are still with us and still at work on us. The semantics of contamination are overlaid with the colonial policing of racialized bodies, with genocidal programs of state purification, and with ongoing humanitarian hierarchies sorting out what kinds of lives are worth saving and for whom (Fassin 2009; Liboiron 2021). And yet since at least the 1960s, these terms have also been effectively mobilized to account for how thoroughly two icons of modern power—fossil fuels and the atomic bomb—have infiltrated and injured life on earth. With the dawning recognition of a world of consequence in gross excess of its founding form, the lexicon of contamination found new purpose in naming, studying, managing, and prosecuting the negative ecologies of modern power (Bond 2022).

On the one hand, we have "contamination" as an affective technology built into the design and defensive operation of empire, the state, and humanitarianism. On the other hand, we have "contamination" as an emergent recognition of chemically induced precarity in the contemporary, a recognition that provides new scientific and regulatory grounds on which to confront that problem. One etymology is married to enduring fantasies of racial purity, the other brings civil suit against the egregious excess of fossil fuels, petrochemicals, and radioactivity. These tensions—conceptual tectonics within the definitional drift of contamination—are frequently mobilized, if rarely reflected on, in current scholarship on toxicity.

Can we distinguish the eugenic anxieties clustered within the term *contamination* from the scarred landscapes and cancerous bodies that grapple for some explanation within it? Can we separate the racist terror bound up within the term *pollution* from the stilted efforts to call out regimes of slow violence today? Can we protest toxicity without falling back on a politics of purity? Can we evoke "toxicity" as proof of the failure of binary categories without endorsing the corporations and militaries that profit from it?

## 6

It took me a while to note the absence most in need of accounting: the corporation. Saint-Gobain was regularly talked about but never physically present in every public venue engaging PFOA contamination. I met with Saint-Gobain officials only once, early on. Two officials wrote, wanting to meet: the manager of the Hoosick Falls plant and the corporate head of environmental governance (both lived in Vermont). After pleasantries, they got to the point. They felt residents were getting a bit too up in arms about this. Perhaps the college could encourage more viewpoints about "the complexity" of the issue. And would I be interested in partnering with Saint-Gobain to do more research on PFOA? There could be significant resources available for such a partnership, they said. I never spoke to them again. Nor did I ever see them again at the dozens of public meetings I attended.

But offstage the corporation strung together a web of influence that reached into all aspects of the problem (including purchasing the domain names BenningtonWater.com and HoosickWater.com that emphasized how attentive the company was to the environmental needs of the region). Saint-Gobain, a global plastics conglomerate, invested huge sums to broadcast its responsibility to this region. At the same time, Saint-Gobain deployed armies of lawyers and consultants to shirk that same responsibility in the details of how contamination was measured.[5] The interests of the corporation were everywhere, yet so often they felt just out of reach ethnographically. And it would be easy, as many residents and activists did, to concede the corporation total authority in everything behind the scenes. Against the mood of "resignation" (Benson and Kirsch 2010) in liberal politics and anthropological theory, I am interested in how ethnography can call these shady webs of corporate interest to public account (Appel 2019; Fortun 2001; Jain 2007; Kirsch 2014; Rajak 2011; Welker 2014; Wylie 2018).

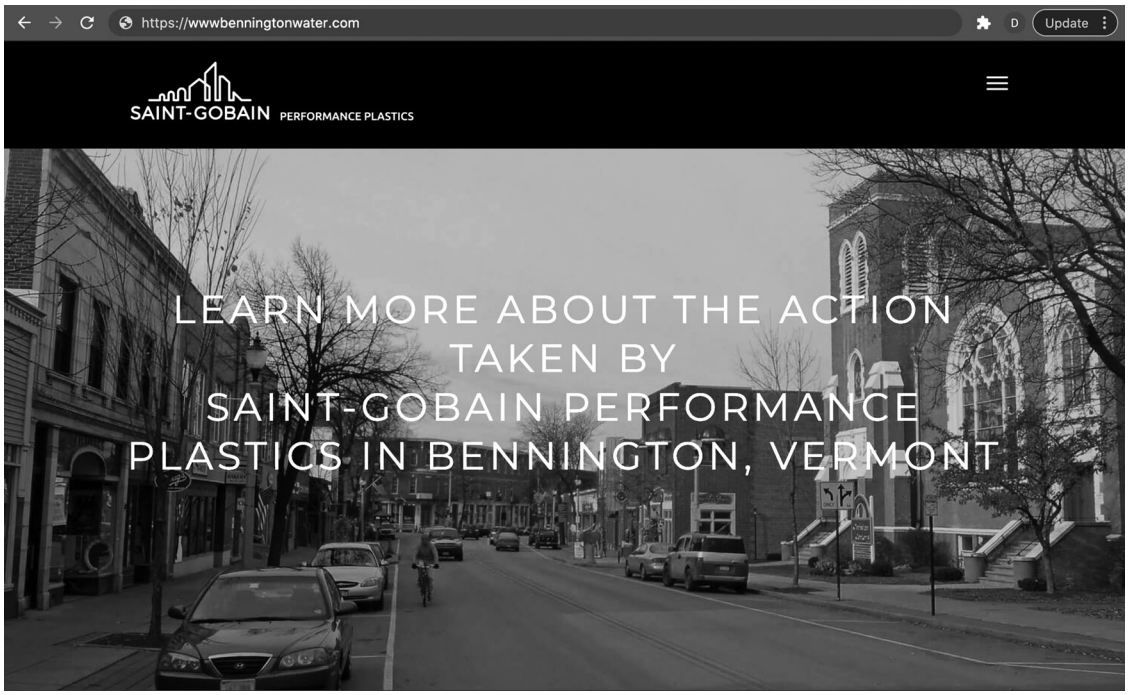


**Figure 3.** A website created by Saint-Gobain Performance Plastics to showcase corporate social responsibility around PFOA contamination in Bennington, Vermont. (David Bond)

In the United States, corporations are granted a leading role in the investigation of their own environmental crimes. Environmental laws—especially several state statutes and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA, or the "Superfund" law)—task the "responsible party" with documenting the source, extent, and trajectory of the contamination they have been charged with releasing. Acting as a kind of scientific editor, state agencies assess the data and can request further research, but corporations (and their contractors) conduct the actual research. The resulting scientific definition of contamination sets the factual foundation for subsequent debates over guilt, damages, and reasonable remediation plans. In contrast to a more academic process of producing scientific facts (Latour and Woolgar 1979), here broad acknowledgment of a conflict of interest is the engine of fact production. When asked, state officials often discussed the resulting facts as becoming "scientific," less from any pretense of being disinterested than from being pulled taut between the flexed interests of the corporation and the state (a process many participants considered more rigorous than scholarly peer review). The epistemic stability of environmental facts comes not from being outside political disputes but from being pinned down on the front line of that battle. This also meant that the questions residents were asking in the present tense—how bad is it?—were brushed aside in anticipation of the coming courtroom. In the state's refusal to share health data with the community and in environmental research constrained by what would count in the courtroom, the tactics of the legal case overrode the voiced concern of exposed residents and determined how the state organized its knowledge of PFOA contamination.

In March 2018, Saint-Gobain submitted its investigative report on PFOA contamination in southern Vermont. Weighing in at a hefty 7,377 pages and claiming to be the final word on the matter, the report offered a deeply technical (and deeply cynical) definition of PFOA contamination. Many local news organizations ignored the report, and when I asked why, they said they couldn't navigate the ocean of laboratory reports, field logs, and technical details. Yet the report was quite consequential, and if uncontested, it would severely constrain the scope of both remediation and responsibility. The report showed that PFOA emissions from the factory were modest and geographically contained: all emissions fell back to the ground in the neighborhood immediately around the plant. Yet the report also found that PFOA contamination was extensive across the entire region. How did this make sense? Saint-Gobain argued that the region had high background levels of PFOA through emissions from distant industrial sources and from local residents' irresponsible waste-disposal practices.[6] Against these high background levels, Saint-Gobain's specific contribution was exceedingly

small, if not entirely negligible (as would be its liability). Since PFOA contamination is so extensive, the report argued, who can say who is responsible?

It was a fiendishly clever argument, and state agencies struggled to contest it within the already agreed-on scope of the investigation. Collaborating with students and colleagues, I worked to pull this argument and its significance into public light through environmental research and op-eds (Bond and Rose 2018; see also Fortun et al. 2016). We learned that it's also an argument with some pedigree in the petrochemical and plastics industry. Almost from the time they started producing PFOA in the 1950s, manufactures had serious concerns about its toxicity and its spread. 3M and DuPont, for instance, both raised questions about the dangers of exposure in the 1960s. As early as 1961, DuPont's head of toxicology said PFOA was likely toxic and should be "handled with extreme care" (Lerner 2015). The next year, industry commissioned experiments with animals and found exposure provoked a host of serious health issues. The implications were clear, and both DuPont and 3M started monitoring the health of workers exposed to PFOA and quickly noted disturbing medical patterns among those workers. Both companies also learned that just about any worker who interacted with PFOA, whether on the production line or in the laboratory, had alarmingly high levels of it in their blood. By 1976, 3M and DuPont also became aware that most Americans had detectable amounts of PFOA in their blood, suggesting universal exposure after only 25 years of commercial use. In vain, 3M searched blood banks across the US for a blood sample uncontaminated with PFOA. Some 30 years after it was first synthesized, the two companies that produced PFOA established acceptable background levels for PFOA in blood (and found its workers were "1,000 times normal"; Lerner 2018a). Owing to regulatory blind spots and outright corporate deception, this industrial science of PFOA never gained traction within toxic regulations (C. Lyons 2007; Richter, Cordner, and Brown 2018). In 2005 a lawsuit over poisoned cattle downstream of a DuPont landfill in West Virginia finally opened this archive of regulatory neglect and corporate malfeasance to public inspection (Blake 2015; Lerner 2015).

In the past few years, state investigations into PFOA contamination have commenced in nearly every state (and around the world). In response, major PFOA emitters like DuPont, 3M, and Saint-Gobain have landed on a novel argument: PFOA contamination is so vast and wide-ranging that it's impossible to blame anyone in particular. And now corporate defense attorneys for the plastics industry are hard at work nominating PFOA to the welcoming committee of a new world of total contamination. It's a planetary future they cast as inevitable, surprisingly democratic, and lacking any liable author.

## 7

"Toxicity is now a planetary force," writes Joseph Masco (2015, 144). Michelle Murphy (2008) outlines the "chemical regimes of living" in which the pathways of industrial emissions, agricultural pesticides, and synthetic hormones now alter the molecular composition of life worldwide. From the rippling fallout of nuclear statecraft to the torn ecological fabric of petrochemical prosperity, contamination has gone global and should be acknowledged as such. In the 1960s and 1970s, the afterlives of DDT and strontium 90 provoked a new age of environmental reason and responsibility (Radkau 2014). Today, wider arrays of contamination convincingly mark out our epochal lurch into planetary and cellular instability. The near universal imprint of radioactive waste, automobile exhaust, plastics, farm runoff, industrial smog, and acid rain works to index the geological coordinates, historical rupture, and embodied precarity of our emergent reality. Toxicity, writes Gabrielle Hecht (2018), is one of the "foundational categories" of the Anthropocene. Indeed, toxicity may be the charter entanglement of our planetary crisis (Tsing et al. 2017).

Across wide bodies of scholarship, unbridled toxicity brings the worsening planetary condition into crisp empirical and conceptual focus. Yet so often the political edge of this work is found in its ability to highlight just how feeble modernist sovereignty and liberal governance are when placed on a more planetary stage. Radioactive fallout, writes Masco (2015, 144), unleashed "invisible injuries" whose legibility relied deeply on national security infrastructure and yet whose affective texture and ecological reach always exceeded the operations of the increasingly dated political form of the nation-state (indeed, whose very "datedness" partially resulted from planetary toxicity). Describing how pollution and other toxic exposures defy the modern state, Bruno Latour finds a new politics beckoning from our rising collective insecurity. "The new universality consists in feeling that the ground is in the process of giving way," Latour (2018, 9) writes, before pondering how we might regroup in the free fall. Describing how contamination haunts landscapes, Tsing et al. (2017) are more hesitant about universal invocations, describing how feral toxicity can help us learn to inhabit the ruins of capitalism with posthuman humility and multispecies solidarity. The open-ended spread of contamination today demonstrates the fatal shortcomings of market progress and the liberal social contract while suggestively tracing out a more encompassing politics. (Here, the future of contamination is replacing the history of empire as the main stage for reckoning with liberalism's built-in blind spots.) While hugely generative for social theory, this turn toward what exactly our contaminated planet portends so often begins by first placing its back to the jurisdictions required to prosecute the injuries of toxicity today.

"Even if we have never really been modern," Kim Fortun (2014, 312) has quipped, "we still have a modernist mess on our hands."

So many iterations of contamination remain painfully located within the political present. In the United States, this includes the clustering of waste sites and petrochemical facilities in communities of color (Bullard 1990; UCC 1987); Indigenous homelands recast as "sacrifice zones" for thermonuclear flexing (Johnson and Barker 2008; Voyles 2015); the rural poor dispossessed of subsistence landscapes to ease the American addiction to fossil fuels (Scott 2010; Wylie 2018); marginal workers in fields and factories shorn of protections as caustic chemicals join the workforce (S. Holmes 2013; Horton 2016); and hazardous-waste incinerators now dangled out to downwardly mobile neighborhoods as their last economic lifeline (Shevory 2007). This scholarship finds resonance in "environmental inequalities" (Hurley 1995) or "environmental racism" (Checker 2005) and the conviction that toxicity conspires with historical geographies of dispossession (Liboiron 2021). Justice, here, begins by recognizing that collusion and building a case against it. Collaborating with frontline communities, ethnography continues to play a vital role in how citizen science, popular epidemiology, and environmental justice movements confront the lived inequities of toxicity today (Brown, Morello-Frosch, and Zavestoski 2011; Bullard 1990; Fortun 2001; Hoover 2017; Ottinger 2013; E. Roberts 2017b).

These framings—planetary futures and historical inequalities—are not exclusive domains of toxicity. Quite obviously, contamination unfolds in both directions at once. Yet it is curious how anthropological theory often privileges one frame over the other and, in so doing, places ethnography on diverging tracks of critique. Anthropological reflections on how toxicity charters emergent planetary futures has garnered much theoretical excitement. Yet such work struggles to reflect on the strange bedfellows such a stance may be making. As contamination reaches into nearly every facet of planetary life, some scholars recuperate toxicity as a founding property of the impending future, one that cannot be so easily dismissed as an entirely negative condition. "So, too, has the chemical industry," notes Max Liboiron (2017, 143). Today, currents of critical theory and counsel for the petrochemical industry have come to share the conviction that total contamination is the starting point of the contemporary. While theoretically generative, this view of planetary futures can tune out uneven geographies of exposure and more exacting histories of liability. Toxicity *is* a planetary issue. But it is one so often profited and fielded, disavowed and inhabited in grossly unequal ways: contamination is "a condition that is shared, but unevenly so, and which divides us as much as binds us" (Murphy 2017, 497; E. Roberts 2017a). Moreover, the rising invocation that we must learn to live with toxicity shifts primary responsibility for toxicity away from the states and corporations that profited from it and onto the people who must now make their peace with it (Boudia and Jas 2013, 14–17). How can anthropology acknowledge unbridled contamination while working to hold those who have profited from toxicity accountable? How might ethnography become better attuned to the historical inequities and planetary futures that haunt questions of toxicity today, in full awareness of the political stakes at work in these scales of reckoning?

## 8

Wendy Brown's (2019) most recent diagnosis of our planetary crisis ends with a stinging condemnation: "No Future for White Men." It's not an unpopular sentiment, especially among progressive intellectuals. At a recent distinguished talk at Bennington College, one prominent theorist summarized the Anthropocene: "White men are the problem, both as individuals and as a subject position. They need to be eradicated from the planet if we have any hope to survive." At a conference, I was explaining how faint exposure to PFOA inflicts lasting injuries on the male reproductive system. Smiling, a colleague interjected, "Maybe that's a good thing, especially in rural America. There's too much white masculinity out there anyway." The room filled with laughter.

The house sat at the end of a long unmarked dirt driveway. When I drove up, he was standing outside, working on a tractor. I walked over and introduced myself, but he cut me off. He asked me to leave. "That's my wife's business," he said. I handed him a card with my cellphone number before getting back in my car. His wife called a few hours later. "Our son died of testicular cancer," she said. "I know we can't prove PFOA did it. But it made me so mad when New York State said there was no testicular cancer in this town. Our son died of testicular cancer. He had just turned 21."

Health concerns first brought PFOA to light in Hoosick Falls. Trace exposure to PFOA can cause immune disorders and a host of cancers. For reasons that are still dimly understood, PFOA also seems to hijack the male reproductive system and is linked to collapsing sperm counts and spiking rates of testicular cancer. Hoosick Falls is not alone. Petrochemical contamination has been linked to rising rates of testicular cancer and infertility in men at manufacturing hubs across the United States (Bohme 2015; Langston 2010; Lerner 2018b). After PFOA was discovered in the drinking water of Hoosick Falls, the community asked about its health impact. In response the New York State Department of Health (NYSDOH) released *Cancer Incidence Investigation, 1995–2014: Village of Hoosick Falls*. Released in May 2017, the report found "no statistically significant elevations of cancer . . . for any of the cancer types associated with PFOA exposure" (NYSDOH 2017, i), including zero cases of


**Figure 4.** A press conference at the New York State Capitol's press room, August 2018, addressing the PFOA Community Health Questionnaire. *From left*, Dr. Chip Freed, David Bond, and former EPA regional administrator Judith Enck. (David Bond)

testicular cancer.[7] Community meetings, now a year into the state's response, had been moved out of the town hall and into the old armory to better handle the crowds and television crews. Announcing the results, NYSDOH told residents that their worries about the health impact of PFOA were not supported by data. With such findings, NYSDOH told the community that additional research and medical resources were unwarranted. Yet many of those gathered that night knew friends and family members with cancers linked to PFOA, including a number of young men stricken with testicular cancer. As residents pored over the report, they found questionable shortcuts and what seemed to be an arbitrarily constrained inquiry.[8] As one local doctor told me, "This was a study designed to not find any cancer."

Residents were rightly frustrated. They soon asked a former EPA regional administrator and myself if we might collaborate with them to give the community's knowledge of its own health more prominence in ongoing discussions. With the help of several public health professionals and the mayor of Hoosick Falls, we organized a community health questionnaire. Our team of anthropology students from Rensselaer Polytechnic Institute and Bennington College would often meet at the local diner before going door-to-door on brisk fall weekends that soon turned snowy. We'd start downtown, with the modest homes clustered along the river and around the factories—paint peeling on every side of the house but the one facing the street—before following the roads up into the hills through cookie-cutter developments and farmhouses sagging under the years. Almost everyone we spoke with was older, white, and struggling to make ends meet.

It was a simple questionnaire, asking if anyone in each household had been diagnosed with any of the six illnesses most persuasively linked to PFOA. Residents welcomed us with mugs of coffee, sharing their PFOA blood levels and what they knew of the factory before we even started down our script. "We know several people that used to work at the plant that got cancer. Young guys." "Everyone around here knew when the plant was fired up. The whole neighborhood smelled like burning plastic." "The company must have suspected something was happening. They must have known." "I have cancer. Thyroid cancer. Is that related to PFOA?"

After a few months we had amassed a sizable data set, one documenting far more cancer cases than the state acknowledged. Before releasing the results, a local doctor and I confirmed the details of every positive cancer case. Going down the list, I phoned each case and asked them to tell me about their diagnosis. When one positive case finally called me back, I was driving down the highway. Blinkers on, I pulled over to take the call on the shoulder. "Can you tell me about your diagnosis?" I asked. He replied,

> I felt a lump on my testicle on January 18. I remember the date because it was my 24th birthday. I went to see my doctor a week later, and about a month after that I was scheduled for surgery. They were only supposed to remove one testicle, but they told me if they found any evidence that the cancer had spread, they might have to remove the other testicle. When I came out of

> surgery, I learned they had to remove both testicles. I was 24.

He was trying to finish college at the time. Now he works three jobs and has a GoFundMe campaign to pay off his medical debt.

In August 2018, we held a press conference at the state capital in Albany. With a quick desktop search of the cancer registry, NYSDOH concluded that there were no testicular cancers in Hoosick Falls. In their report, NYSDOH noted that more than two testicular cancers in Hoosick Falls would warrant concern. Our questionnaire identified 11 cases of testicular cancer among those exposed to PFOA, including four within the arbitrarily narrow parameters set by the NYSDOH report. (The deputy commissioner of NYSDOH later admitted to me that his agency had evidence of several diagnoses of testicular cancer from health surveys they conducted in the community but chose to exclude them.) Residents were furious. I wrote in an op-ed at the time,

> Four years after PFOA was discovered in their drinking water, families exposed to the toxic chemicals have valid and still unaddressed questions about the long-term health consequences they now face. Polluters, not taxpayers, must be required to fund the new health care needs PFOA has introduced into our communities. (Bond 2018)

Some 75 years after it was first synthesized, PFOA is found everywhere we've thought to look for it: in shallow soils and deep aquifers, in rain and snow, in penguins and polar bears, and in every major human population on earth. With PFOA, one toxicologist told me, "we all have body burdens now." Despite the universal reach of PFOA contamination, the experience of PFOA toxicity remains largely tied to communities adjacent to plastics manufacturing hubs in the United States and Europe. Whether as lighthouse or harbinger, these Rust Belt communities now bear the weight of PFOA contamination as injuries gather in that much-maligned demographic: the white working class (Bond 2021). In falling sperm counts, hormonal imbalances, and testicular cancer, PFOA further erodes the crumbling edifice of breadwinner masculinity, inflicting harms that seem to echo popular progressive critiques of the irredeemable body of white rural America. Toxic masculinity, by other means. And what's the difference, really? Flying in for a weekend, a senior colleague told me his next book would be on how rural white Americans learn to build walls to keep immigrants out by first building walls to keep carcinogens out of their drinking water. And could I introduce him to any victims of PFOA? When I gave an early version of this article at a department colloquium, disciplined disregard for these worlds surfaced with ease: In a time of resurgent racist violence and renewed colonialism, why should anthropology have any empathy for a case like this? Isn't this just an example of where the founding violence of chattel slavery and settler colonialism necessarily leads? Although never stated succinctly, the implication was clear: Aren't these people just getting their due?

## 9

"Toxic environments are animating transgressions," writes Kirksey (2017). Many prominent theoretical voices in anthropology today are converging on contamination as a physical rupture with the epistemic habits that underwrite modernity, as a kind of revolutionary release from the categorical reason that got us in this mess. Instead of protesting contamination, perhaps anthropology might join in these toxic disruptions. All too often, bemoaning the harms of toxins ascribes yet another deficit to marginalized groups. This is the case with scholarship that further "surveils and pathologizes already dispossessed communities," as Murphy (2017, 496) warns, echoing hesitations in anthropology regarding the suffering slot (Robbins 2013). Moreover, environmental justice scholarship around toxicity often pivots on "a hopeful relation to the state" (Murphy 2008, 699) that can paradoxically work to morally legitimize the very agencies that permitted contamination in the first place. Against such damaged complicity, perhaps anthropology should embrace the insurgent possibilities of contamination.[9] Kirksey (2017) calls for "toxic methods" in anthropology that are more attentive to the world-making capacities of chemically "altered abilities and subjectivities" in contaminated worlds. New ethnographic research on toxics, Alex Nading (2020, 209) rightly notes, is less about making the case for "detoxifying the world as for making it otherwise." The orientation of ethnographic critique is shifting from documenting injustice within impacted communities to realizing the new worlds of disorderly toxins.

Much of this work in ethnography draws explicit inspiration from a branch of queer theory that is convinced of toxicity's emancipatory possibilities (cf. Di Chiro 2010).[10] Antke Engel and Renate Lorenz embrace the widening reach of toxicity "as a means of queering subjectivity and sociality" (Engel and Lorenz 2013, 5) and of "destroying the system from within" (10). According to Morgan Holmes (2000, 103), petrochemicals and synthetic hormones "threaten the hegemony of heterosexuality," concluding that toxic contamination "is a quite promising kind of troublemaking." Noting how plastic pollution incites "queer futures," Heather Davis (2015, 237) outlines the scholarly project taking shape in the "inadvertent allegiance between certain forms of queerness and the petrochemical industry." Toxicity, write Malin Ah-King and Eve Hayward, now outpaces "social or political movements" in advancing queer politics by way of "metabolizing pollutants, xenotransplanting toxicants, and intravenous banes" (Ah-King

**Figure 5.** Midnight emissions from the Taconic Plastics Factory in Petersburgh, New York, October 2018. (David Bond)

and Hayward 2013, 7). Reveling in how "toxicity releases life from an absolute need to protect it," Mel Chen asks if we might recenter our research, ethics, and politics on "the queer productivity of toxicity and toxins" (Chen 2011, 279). Thumbing through the harms of toxicity today—breast cancer, prostate cancer, lowered fertility, intersex characteristics, and deformed children—Anne Pollock (2016, 183) asks why "no one is celebrating the queer here."[11]

This is not a pointed critique of queer theory and even less a call for its wholesale rejection. Queer theory can be instrumental in advancing an ethnography of toxicity without losing a sense of outrage over its profitable complicities, as S. Lochlann Jain (2007) demonstrates. Indeed, queer theory has been key in displacing the structural binaries that tether the world to tyrannical hierarchies and in cultivating a nonnormative ethics for anthropology (Boellstorff 2007; Dave 2012). This particular branch of "queer toxicity" (Davis 2015), however, has drawn controversy for its explicit alliance with the material properties of toxicity. Toxicity may be queer, writes Fortun (2012, 449), but "queer in a way that cannot be applauded." Celia Roberts (2003, 206) bemoans how such work has become insulated from "the keen suffering" and "active pursuits" for justice by those impacted by toxicity. Surely, writes Roberts, our theorization of contamination "requires a more sophisticated response to claims about the end of sexual reproduction than celebration" (206).

As Judith Butler (1994), Eve Sedgewick (1993), and others argue, queer is a critical disposition that unsettles power rather than an institutional project to consolidate power (Weiss 2016). The current theoretical embrace of toxins as an almost imperial agency for queering the world moves well beyond this understanding. Here, the properties of pollution coerce queerness over and above the avenues of informed consent, principled dissent, democratic practice, and even mass mobilization. In celebrating how contamination physically instigates heterodox mixtures and a nonnormative scrambling of biology, these scholars are coming to see toxics as not just acceptable but almost messianic: the arrival of our own multiplicity, a revolt against the structural binaries of the modern world without the bother of historical struggle. In this, scholars readily cede the fact of total contamination so that they can then get to work preparing for the nonnormative life that might flourish in the coming world. While perhaps philosophically stimulating, such a move begins with a concession: the political struggle for the present is lost.

## 10

Looking back, PFOA was always there. Those summer evenings when 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 cobalt. 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 you just came down with it for no good reason, other than you worked at the plant. An electrician told me he dreaded getting contract work in the factory: the pay was great, but something stuck with you when you left, something you couldn't shake for days. A parent told me how the company used to donate industrial barrels for apple bobbing at the town's annual Halloween party, the faint marking of "PFOA" still visible on the barrels. A mother spoke of the nightmares that racked her sleep on nights when she could smell the plant emissions. "The ceiling was alive, and it was dripping down and dissolving everything. I could smell it." Another resident explained, "In the summer 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.

From the beginning, state agencies in New York and Vermont promised to "make everyone whole again." It's a familiar refrain from state officials, one that works to set a retrospective baseline before pollution as the technical goal of remediation. For many residents, their longer familiarity with contamination, the injuries they carry forward, and the unique chemical properties of PFOA pointed in a different direction. Many know: there is no going back. It was not nostalgia that drove their protests but their determination to secure a better world today. Residents organized themselves to advocate for clean drinking water (while recognizing that there were no perfect options) and to help one another pay their medical bills for ailments linked to PFOA exposure (recognizing that they will carry a lifetime of risks). Residents' pursuit of practical justice also reoriented their understanding of their place in the world. Over the past three years, the largely white, working-class communities of Hoosick Falls and Bennington have hosted mothers from Flint, Michigan; sent care packages to the water protectors at Standing Rock; collaborated with high schoolers from East LA working on drinking-water issues; published op-eds in communities around the US discovering PFOA in their water; and reached out to communities around similar plastics plants in India and China. In 2018 the congressional district representing Hoosick Falls flipped from Republican to Democratic, largely on the issue of water protections. Their confrontation with PFOA has keyed them in to the wider struggles against contamination today and demands for justice in the present tense.

## 11

> [Our] self-alienation has reached such a degree that [we] can experience [our] own destruction as an aesthetic pleasure of the first order.
>
> Walter Benjamin (1969 [1935], 242)

Contamination offers anthropological theory a new observatory from which to prefigure the world to come. Whether enlisted as heuristic, metaphor, agent, or condition, toxics help provincialize the present order and inaugurate the desired futures of progressive critique when cast in the right conceptual light. Preempting frustrations with the existing levers of change, toxics are recast as insurgents raising an army of renegade hybrids, post-state solidarities, and dissolved structural binaries. As the theoretical dazzle of contamination surges toward experimental futures, planetary futures, and queer futures, the problem of toxicity becomes an oracle whose ethnographic significance lies more in its prophetic intimation than in its present inhabitation. As many anthropologists converge on contamination as the preeminent theory of our present crisis—rupturing the contemporary into what is passing and what is to come (Roitman 2013)—it is striking how little these marquee theories consider marginalized communities protesting toxicity. What does it say about the state of anthropological theory when the people living the very problem taken as emblematic of the coming future are rendered irrelevant in the resulting theory? How has anthropology become so attached to the theoretical optics of contamination and so detached from its lived realities?

Part of this, I think, has to do with the changing status of materiality in anthropology, especially in how a renewed optimism of the physical conspires with a growing pessimism of the political. So many of the dizzying reformations of materiality in anthropology emerged from incisive ethnographic encounters: laboratory science, infrastructure, Indigenous cosmologies, multispecies collaborations, and feral ecologies, to name a few. All these sites crafted new sensitivity to the capacities of other species, landscapes, and technologies to quietly shape the world at hand. Analytically attuning to these more-than-human capacities provided scholars a place to begin anew, an insight that almost seemed capable of giving birth to radical new worlds already latent within our own. Whether by cyborgs, companion species, channeled rivers, or cacophonous rain forests, it is remarkable how many of the field sites that oriented anthropology toward insurgent possibilities stayed firmly within the positive attributes of the material world. With few exceptions (Farmer 1999; Gordillo 2014; Petryna 2015; Stoler 2013), ethnographic encounters with the negative ecologies of the contemporary have been held at arm's length in the theoretical reformation of materiality in anthropology.

As the state of the world deteriorates, anthropology's rising material optimism has found new hope in the proliferating disorder of disasters, pandemics, and toxins. This drift seems to come less from any sustained ethnographic engagement with worlds besieged by physical destruction than by the conceptual advantage that such depopulated worlds provide. While existing political institutions and

social movements seem incapable of breaking down the obscene inequality, resurgent hate, and proliferating dispossession that define our dismal present, tumultuous things like disease and pollution are being recast as the real revolutionaries. Tipping the world beyond fixtures of calculation and control, negative excess refuses the normative structure of the present while illuminating new grounds of becoming beyond normativity itself. The viral, untamed, and disruptive properties of contamination inspire ethnographic critique and anthropological theory to align with the very forces overrunning the present order so as to seize on the heterodox futures already among us. "While chemical exposures enfeeble bodies and minds, they can also create ongoing possibilities for life," writes Kirksey (2020, 24), attenuating the futures such altered lives gesture toward. While theoretically generative, this advance in anthropology so often proceeds at a safe distance from the tremendous suffering that disasters, pandemics, and toxins inflict.

Cultivating a politics for the impending future, anthropology recuses itself from the political struggle of now. The most radical task for anthropology today, writes Anand Pandian (2019, 4), is "to conceive of the humanity yet to come." As Matthew Wolf-Meyer (2019, 15) writes in *Theory for the World to Come*, "Wiping the slate clean makes imagining the future so much more possible." Celebrating anthropology as the privileged seer into more accommodating futures can obscure the dissenting fights and collaborative projects striving to secure a better world today. In a programmatic review of the anthropology of toxics, Nading (2020, 219) shows how ethnographic engagements with contamination are shifting from "a politics of correction or mitigation" of toxic sites to "creative and ecological rearrangement" within a dawning world of toxicity. Forging an obligation to these futures, ethnographic critique turns its back on struggles to slow the damages being done to this world. As Haraway (2016, 4) warns, "There is a fine line between acknowledging the extent and seriousness of the troubles and succumbing to abstract futurism." This echoes Gary Wilder's (2012, 3) point that critical theory increasingly treats "the present as one-dimensional and unsurpassable," turning to "post-political understandings" of vital materiality as "the only way to think outside or against existing conditions." Ethnographic divinations of unruly things may envision better worlds to come, but must it always come at the cost of pausing outrage and postponing justice?

It sometimes seems as if the front lines of critique in anthropology are shifting from political economy to ecological eschatology. Systems of domination—now often parsed as a theoretical elaboration of original sin—have drifted toward something both totalizing and just out of ethnographic view. Yet these systems of domination nonetheless frame the profoundness of ethnography, in part by injecting ethnographic description of the physical world with the texture of a refuge holding back the horrors of history and birthing new emancipatory futures. Ethnographic critique, as a genre, seems to be moving from demonstrating the befuddled operations, partial subjectivities, and ordering violence of empire, state, and capitalism toward ceding those historical projects full and furious authority over everything just outside the ethnographic embrace of ecological possibility. For many, ethnography no longer documents the contingencies of empire, the state, and capitalism; ethnography *is* that contingency. Insulated from the imprints of plunder, this ethnographic exceptionalism casts disorderly materiality as the template for more radical futures unencumbered by the present order. With a guiding commitment to worlding these futures, some anthropologists are drawn to the negative ecologies of destruction as a more principled and promising form of ethnographic critique. Bracketing history and harm as complicit with power, this version of critical anthropology instead aligns itself with how the untamed relationalities of toxicity, pandemics, and climate change implode any modernist teleology of progress while still previewing what might come next. Convinced of the rapturous properties of negative excess, this congregation of ethnographic critique tunes out the lived predicaments of the present in the sincere hope of glimpsing the great beyond.

Such work takes a political stand, to be sure. Its politics reside not only in how it ignores present struggles "but also in the way that it 'figurates' the future in its very enactment" (Holbraad, Pederson, and Viveiros de Castro 2014). But such futures can be realized only after the present order fades away. And such work has very little to say about how that might occur other than by washing one's hands of the worsening experience of most. As Walter Benjamin (1969, 242) warned, a fashionable infatuation with our total destruction was not an effect of fascism but the very condition of its possibility. As we take stock of the contemporary, it is easy to grasp the urgency of radical change. But surely such a revolution must come out of the struggle for a better world today, not in the withdrawal from that struggle. How might ethnography hold together the shortcomings of the present and the alternatives that these wanting worlds gesture toward? How might ethnography pull toxicity into sharper moral legibility and political accountability while remaining attentive to how toxicity exceeds the given registers of affliction and amends? How might ethnography take up the negative ecologies of the material world without too quickly presuming their positive theoretical purchase? How might anthropology work toward emancipatory futures without first resigning itself to the loss of the present? Reconciling ethnographic accounts of communities protesting contamination with the theoretical vistas opened by contamination seems a generative place to begin.

## Notes

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1. Michael Hickey prefers to go by his own name. All other names are pseudonyms.
2. PFOA was detected in Supply Well no. 7 at the level of 642 parts per trillion (ppt). At the time, guidance from the EPA for short-term exposure to PFOA in drinking water set a threshold of concern at 400 ppt (revised to 70 ppt a few months later; many states have since set guidance levels in the range of 20 ppt to 8 ppt). It is unclear why the New York State Department of Health encouraged residents of Hoosick Falls to continue drinking the water.
3. Although "A Manifesto for Cyborgs" is often celebrated for its programmatic turn toward the confusion of boundaries, it may be worth recalling the full quote: "This essay is an argument for pleasure in the confusion of boundaries and for responsibility in their construction" (Haraway 1985, 66).
4. The defining quality of scholarship on "new materialism," according to one review (Coole and Frost 2010, 8), "is its antipathy towards oppositional ways of thinking." In a moment of profound and proliferating inequity, Andreas Malm asks, should the task of progressive scholarship really be so bound up with dissolving contrasts? Today, "one cannot afford *not* to draw lines of separation," writes Malm (2018, 189), bemoaning how hybridity so often ignores the analytics and politics of class.
5. At some point I realized Saint-Gobain was spending significantly more money to undermine the science of PFOA regionally than it would cost to provide clean drinking water to every impacted home. I asked the state official leading the investigation why. She explained, "Saint-Gobain knows there are thousands of communities just now discovering PFOA in their water. We're the first. Whatever settlement we arrive at will be the basis of what every one of those communities demand." Saint-Gobain, she added, would spend extraordinary sums on this case to establish a precedent of minimal responsibility.
6. In what is called "desktop research," the report used Google street view to explore the community. Any garden, workshop, compost bin, or scrap metal pile that was spotted was listed as a potential source of PFOA, as were many local businesses and farms.
7. The C8 Science Panel study (C8 was the industry moniker for PFOA) enrolled over 70,000 people to study the health impacts of PFOA in communities downriver from a DuPont PFOA production facility. The largest epidemiological study ever conducted in the US, the C8 Science Panel study persuasively linked exposure to trace amounts of PFOA to six health impacts, including kidney cancer, testicular cancer, and thyroid disease.
8. The study was conducted with a computer search of the New York State cancer registry. Relying on a computer search meant records were limited to those with digital files. The factory had been emitting PFOA since the 1960s. Digital files are only available from 1995 to 2014. Moreover, the cancer registry often lists each person's place of residence when they were diagnosed rather than when they were exposed (a problem for a number of young men from Hoosick Falls who were diagnosed with testicular cancer when away at college).
9. Eve Tuck (2009) calls for "suspending" damage-based research on dispossessed communities. Against ideologies of deficiency, some scholars call for more attention to how Indigenous, Black, and Brown communities advance creative possibilities beyond the colonial science of toxicity (Murphy 2017). Refusing the imperial objectivity required to format toxic harm into the legibility of neoliberal health care, these scholars argue that ethnographic critique should instead align with and amplify how these communities exceed what they are exposed to. Such work suggests that the interpretive dimensions of toxicity may be as damaging as the health impacts of toxins. Yet parts of this argument seem to overlap with the deep investments of petrochemical and fossil fuel industry in rendering the real injuries of their operations invisible.
10. Much of this scholarship draws inspiration from Lee Edelman's (2004) claim that queer politics necessarily withdraws from any claim to "reproductive futures" as the basis of social life. As this insight percolates into social research, it has become a stance guided less by the situated politics of refusing reproduction than by a generalized alignment with the physical capacity of toxins to inaugurate a future without reproduction.
11. Pollock's (2016) argument about the emancipatory promise of toxicity forms a core part of the programmatic call for "chemo-ethnography" in a special section of *Cultural Anthropology* (Shapiro and Kirksey 2017a).

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