

# 5

## The auger: A tool of environmental justice in Ecuadorian toxic tours

*Amelia Fiske*

The well platform is quiet in the afternoon heat of the Amazon. Two school-aged children in matching uniforms wander across the empty dirt rectangle carved out of the forest on their way home. I am with a group of photographers, on a “Toxic Tour” to document the pollution left in the soil after two decades of extraction by the Texaco Company<sup>1</sup> in Ecuador. Although Texaco left the country in the 1990s, oil extraction has since continued with the state and other foreign companies that operate in the region today. Donald, our guide, has brought the group to this site in order to illustrate the ways that residents’ lives are entangled with industry and struggles for justice. Here it is common to find houses that are immediately adjacent to, or sometimes even located on top of, waste pits of buried crude oil.

Heading toward the house bordering the well platform, we walk through a narrow passage in the fence. Signs of life – outgrown shoes, a stray tunafish can – litter the yard. A sheep bleats in the brush. Donald indicates with his hand a depression in the land just a few meters from the house; it is a rectangular indentation as though years ago an old swimming pool had been dug, filled in, and then overgrown with grass. This will be today’s operating theater, and we are the spectators. Setting up a small plastic table in one corner, Donald and his assistants begin to dig with a hand auger, a metal tool for extracting shallow, subsurface soil cores. At first, the dirt resists, and then gives way under their effort. One core sample is pulled up, then another, and another – each approxi-

mately 12 inches long. The samples are laid out, length-wise, in order of their extraction on a sheet of plastic prepared on the table. As each sample is added to the next, a color gradient begins to appear – from rocky gray to red to deep browns – as they probe deeper into the earth.

When the auger pulls up rock or soil, it scrapes loudly against the metal frame of the corer. But when the auger pulls up mud – or dirt that has been heavily contaminated with oil – the auger makes a sucking sound as it disengages from the hole. The next core slides out with a telltale squeak: *Aha!* There is an immediate, collective recognition of the contents. Camera shutters fire rapidly as Donald rights the auger and scrapes the core into position on the table. One of the participants leans in to smell the sample. Through whispers and photographs, smells and manual inspection with gloves, there is a public dissection of the remnants of oil extraction from decades before. It is a moment of reckoning, of realization that just a few feet beneath the land on which we are standing and upon which this family lived, are the buried contents of an old waste pit. At this site, one of many along the toxic tour, Donald exhumes traces of pollution for our collective confirmation. The auger allows for the shared recognition of the presence of pollution.

This chapter follows the use of the auger outside of official domains in regulatory inspections and lawsuits, in order to examine its role in matters of environmental justice. The use of soil coring tools in geology, archaeology, and other official regulatory domains is common; however, the work of the auger in the realms of social or environmental activism has been overlooked. Of particular interest is the way in which the auger enrolls participants as witnesses in the “discovery” of contamination through a range of visceral engagements on the toxic tour: the nostril-curling smell of the samples, the squish of oily muds between the fingers, or the telltale, incandescent sheen of hydrocarbons. In the process, the buried legacies of old industrial practices (such as the dumping of crude oil and industrial waste in unlined pits in the jungle) are brought to the surface in publically negotiated, personally convincing, acts of toxic revelation.

In a place marked for decades by a contentious lawsuit that has scrutinized the validity of various scientific, legal, and social means of apprehending environmental harm, what constitutes “evidence” of contamination and wrongdoing changes as we follow the auger out of official forums to the unofficial, collective moments of the toxic tour. In querying the multiple registers of evidence that the auger makes possible, and in an era where scientific expertise is increasingly under attack, what can we learn from citizen-led practices such as soil coring? At first blush, it might seem that the use of the auger is simply an expert tool that has been “borrowed” and applied to a sociopolitical cause. Yet, as I will show throughout this chapter, there is more to toxic tours than simply mock

exhibitions of expert practices. Rather, by taking a technique that normally exists within the domain of natural sciences or legal arbitration, and using it to publicly interpellate the soil as contaminated, soil coring emerges as a technique for sensing injustice. It demonstrates that “toxicity is not only about quantifiable concentrations embodied in bioscientific ways of knowing, but is also about cultural understandings of it” (Calvillo 2018). A scientific demonstration of the presence of toxicants in these soils cannot be divorced from the questions of injustice that such toxicity implies. The auger makes the toxic histories of oil extraction tangible for the lawyers, students, tourists, and activists present on the tours.

This chapter brings the auger to bear on the public discernment of contamination and accountability, offering an opportunity to explore how questions of industrial contamination are adjudicated publicly, and what these tools of knowledge production illuminate and what they occlude (Murphy 2006). Following the auger from official to lay realms is instructive in a moment where expertise is increasingly scrutinized amid what has been debated as an era of “post-truth” (Sismondo 2017). Yet, rather than collecting robust scientific evidence, the use of the auger in the context of toxic tours aims to enroll the public in witnessing environmental injustice – an objective which sidesteps debates over the success or failure of scientific initiatives (including citizen-led practices) to focus on the continued production of toxic inequality in places like the Amazon. This move underscores the need for recognition of environmental justice struggles in the face of failed or incomplete attempts at distributional or procedural justice (Schlosberg 2007), a matter which is crucial given ongoing legal struggles over Texaco operations in the Amazon. The auger makes old contamination evident, and thus actionable, for participants in ways that buried crude is not. By exhuming contamination, participants grasp an essential part of residents’ stories of harm that has been obscured by the production of contested scientific evidence and stories of fraud and collusion in the legal case: the very *obviousness* of the contamination that residents encounter in their daily lives.

### Judicial inspections in the *Aguinda v. Texaco* lawsuit and toxic tours

Oil operations began in the northeastern corner of the Ecuadorian Amazon in the 1960s, through a joint venture between the Ecuadorian state and the Texaco Company. Over the course of twenty years of operations, Texaco drilled 339 wells and built 18 production stations, to extract an estimated 1.5 billion barrels of crude oil (Kimerling 2006, 449). Widespread dumping of crude oil and

production fluids into local rivers and streams and the routine burning of oil by-products from waste pits resulted in massive environmental contamination as well as health problems for indigenous and settler communities. In 1993, a group of lawyers filed a lawsuit against Texaco on behalf of 30,000 Amazonians who were living in the Concession area at the time (*Aguinda v. Texaco*). Claiming environmental, health, and cultural damages, the subsequently convoluted path of the lawsuit brought unprecedented international attention to the region. In 2011, the court found Chevron (which purchased Texaco in 2001) guilty and fined the company \$9.5 billion. Following Texaco's exit from Ecuador in 1993, national and foreign oil companies have expanded operations, and extraction emerged as an object of political and social controversy. After two decades of operations, in the 1990s Ecuador introduced its first comprehensive environmental regulations, resulting in new audit practices and increased state oversight of the industry. At the time of the fieldwork for this text, the government of Rafael Correa relied heavily on extractive industries to generate revenue for social and educational programs. Ongoing activism has called for cleanup, compensation, and conservation in light of continual problems with contamination.

Toxic tours started as a civic forum for educating the public and bringing about social change in the form of expeditions to polluted spaces in the United States. Tours were largely led by residents of communities that had been historically disadvantaged and thus carried an undue burden of industrial contamination (Pezzullo 2009). Emerging in conjunction with the environmental justice movement in the mid-1980s, activists began to articulate the associations between race, class, and environmental assault. The movement theorized the production of particular spaces as "appropriately polluted" (Higgins 1994) or as "human sacrifice zones" (Bullard and Benjamin 1999), pointing out the patterned siting of toxic waste sites in low-income communities of color (Commission for Racial Justice and United Church of Christ 1987). The idea of a toxic tour was to invite outsiders to places they would not normally go, forging connections across spatial, political, racial, and affective distance by giving participants an intimate experience in places where the "other" lived, worked, and played.

In 2003, the *Aguinda* lawsuit returned to Ecuadorian courts after nearly 10 years in the United States judicial system. With the arrival of the case, journalists, lawyers, and students began to arrive in Lago Agrio with questions, and asking to see the disputed Texaco sites. Often, they were referred to the Frente de Defensa de la Amazonía (FDA, Amazon Defense Front), the most prominent national nongovernmental organization supporting the case at the time. There they met Donald Moncayo, who had grown up in the first oil camp drilled by Texaco in Ecuador, just outside Lago Agrio. Donald knew the region intimately. As a child he had watched Texaco's early operations unfold. He knew which

streams had been contaminated by spills and which old waste pits had been covered over. At first his activities were largely informal, volunteering to show visitors around when someone arrived with questions. As he began to conduct tours more regularly, this task became his vocation. As Donald told me, one journalist suggested the name “Toxic Tour,” and that is the term by which these events are known now. Today, Donald’s principal role at the non-profit is to run the tours. There is no fee charged for the tour itself, and participants are only responsible for paying the transportation for the day. Donald conducts tours alone as well as with the collaboration of others, including indigenous leaders, plaintiffs in the *Aguinda* lawsuit, or in the company of his young daughter.

I attended dozens of these tours between 2011 and 2013 as part of field research on the matter of harm resulting from oil production in the provinces of Sucumbíos and Orellana. Donald principally conducted tours in the Concession area that was previously operated by Texaco and the state company, PetroEcuador. Although each tour was designed to speak to the specific interests of the group participating (lawyers, students, tourists, or activists), in general, the tours had several key components that were always present. Opening with a historical narrative describing the beginning of oil exploration in the Amazon, Donald would then discuss the technical practices of Texaco operations and their resulting contamination of the surrounding soils and water. This narrative was interwoven with a review of the *Aguinda* lawsuit as groups visited different sites; sometimes he showed them the endless bookshelves of documents related to the lawsuit held in the plaintiff lawyer’s office, other times he indicated well-known photos of the region (Dematteis and Szymczak 2008), or recounted the stories of individuals who had lost family members or become ill from exposure to toxicants related to oil production. While the order of these different components would vary, the tours always included at least one, most often several, first-hand encounters with contamination. Tours were designed to include an itinerary of sites that would illustrate a range of infrastructure, from pipelines to waste pits, wells, spill sites, or gas flares. Whether observing the sheen of oil in streams, listening to the crunch under foot of thousands of dead bugs that accumulate beneath a roaring gas flare, or inspecting with a gloved finger the buried crude present in poorly remediated sites, going on a toxic tour was always an intense sensory experience. In the process, Donald and his collaborators worked to produce their own forms of evidence to convince viewers on the spot of the personal weight of toxic legacies – not evidence that could be entered into a court case, but evidence of the profound injustice borne in the name of corporate profit and the carbon-based present.

## The auger as a tool of justice

A central aim of the toxic tour is to provide an opportunity for those who do not have quotidian, personal knowledge of oil contamination to begin to comprehend what it is like to live alongside operations. To facilitate these encounters, Donald employed several objects to assist visitors in seeing, smelling, and touching oil pollution for the first time: a glove, a long stick, a large recycled water bottle, and a hand auger. These assorted tools work together to enable a direct engagement with the materiality of toxicity and legacies of extraction that would not otherwise be possible. In other circumstances, tools like the auger produce soil samples that are inscribed through calibrated forms of scientific testing, in order to produce scientific or legal evidence – a register that does not aim to produce a public response. Crucially, by unearthing contamination *in situ* in the toxic tour, the samples produced with the auger aim to convince observers through the tactility of toxicity rather than through official forms of inscription. It is in this manner that the auger moves from being a tool of scientific sampling to a tool of justice.

An auger is an instrument designed to bore a hole into the earth and bring up columns of soil in the form of soil cores. Generally used in the natural sciences, a hand auger is a relatively inexpensive technology (in the range of \$100–200 per device). It has a T-shaped body, with extendable lengths that can be added for deeper samples. A hollow encasement holds the soil sample, with a sharp pointed end. A remarkably fluid and adaptable technology (de Laet and Mol 2000), it is most useful at relatively shallow depths of a few meters – albeit with considerable sweat on the part of the operator! Augers are part of a repertoire of technical, expert-led practices, and results are usually recorded as part of regulatory documentation (such as an environmental impact assessment) or scientific studies (climatology, archaeology, geology), and rarely in sociopolitical or advocacy forums. In all cases, the auger makes it possible to see and analyze the layered sediments of the past.

In the mid-2000s, toxic tours emerged as an increasingly common means for the plaintiffs to communicate their story to outsiders. During this time, the *Aguinda* lawsuit moved into the “fact-finding” phase where the facts of contamination were generated. As part of the judicial inspections in Ecuador, the court-room became mobile: the judge, lawyers, technical experts, and administrative staff traveled to 54 former Texaco sites<sup>2</sup> (wells, production facilities, spill sites) across the Concession.<sup>3</sup> Both parties nominated sites to be scrutinized in front of the judge. In the inspections, technicians for the plaintiffs and the defendant took samples of soil and water, which each party later analyzed. Once concluded, a

panel of court-appointed experts reviewed the results that both parties submitted for the judge to consider. While a complete account of the *Aguinda* proceedings is beyond the scope of this chapter, here I would like to highlight the otherwise understated role that the hand auger played in these site inspections.

Described as more “theatre” (Tavares 2011) and “circus” (Barrett 2014) than legal proceeding, the judicial inspections were attended by an assorted flock of media, food vendors, environmental activists, security forces, and Chevron supporters, as well as lawyers, technical teams, the judge, and his assistants. In early inspections, technicians donned white Hazmat suits complete with facemasks to take soil cores and samples. The jungle heat quickly made wearing such suits untenable and they were later abandoned. When you look at images of these early inspections, the auger is often present – or, if not in the frame, one can spot its presence through the neatly encapsulated soil cores. In one photo, men covered in white suits, hard hats, and green surgical gloves sustain a soil core from an auger for inspection by the plaintiff and defendant lawyers (Tavares 2011, 102). Captured mid-examination, the technicians seem akin to surgeons, as though they were carefully extracting infected tissue in an operation. Like the scalpel, the auger is at once absolutely essential to the operation, and at the same time, totally absent from discussion of the evidence that results.

During the inspections, arguments by the lawyers went on at length, making for long days beneath the equatorial sun. Although there was no verbal testimony in the lawsuit, when residents were present for inspections on their land, they too offered accounts of operations and their comments were included in the court proceedings. During my fieldwork, I spoke with many such individuals who gave testimony of what was apparent to them from living in the Amazon: that oil exploitation had poisoned their water, land, farms, and those beings – human and animal – who lived there (Fiske 2016). For residents who lived through the first several decades of oil in Ecuador, no legal or scientific validation of the overwhelming presence of toxicity was necessary, even if it remained central to other forms of advocacy and legal dispute in the context of the *Aguinda* lawsuit. Thus, despite the long, convoluted trail of the lawsuit, replete with allegations of “made-up facts” (The Amazon Post 2015), for many living in this region the “proof” of contamination was never in question. It is this obviously harmful nature of contaminated sites, coupled with outrage at the resulting suffering and impunity with which companies operated, that is mobilized in the toxic tours today.

## Toxic tours and the theatre of inspection

It's another tour in the Amazon. The students are gathered around Lago Agrio 1, the first oil well perforated by Texaco in Ecuador 1967. This site marks the beginning of the commercial oil industry in the country. It's hot and the students have just gotten off the bus from their university in the Andes; for many of them it is their first time in the Amazon. It is also their first toxic tour. Donald directs the group to gather around the well, their shadows distorted against the oily water accumulated at its base. Emergildo, a member of the Cofán nationality, who often accompanies Donald in leading the tours, begins to tell part of his story:

Good morning, compañeros ... In 1964, we, the Cofán nationality, lived along the banks of the Aguarico river. We went everywhere; we weren't in the habit of living in just one place. So that's why we would travel upstream, downstream, spending one year, two years, three years, and that's how we lived. In 1967, the Company arrived here in the Amazon to drill this well, Lago Agrio 1. We saw the helicopter that arrived in the air, and we were scared. We hid in the jungle, because we had never seen a helicopter flying in the air. After a few months, then we began to hear noises, and we didn't know what it was that was making this noise here in the jungle. We walked over here to see, but it wasn't like this [as it is today]. It was 10 hectares that had been completely cleared of all the trees. Completely cleared.

When Emergildo and his family returned home to the Aguarico after that first encounter, it was only a few months before black crude began floating downstream from the Lago Agrio 1 well:

And a few months later, the oil spills started. The oil spilled down the Aguarico where we lived and our feet were stained because there was nowhere to walk because we would go to the edge of the river and you would step in the oil spill ... We tried to wash it off with water and we scraped it with sand, but that's how we lived, suffering for many years ... And then the diseases started, diseases of the skin, stomach pain, because all of the contamination went into the river. Before, when there wasn't any contamination, we got water directly from the Aguarico and drank it.

This is a story that Emergildo has told many times, not only to students, but also to lawyers, tourists, Chevron shareholders, politicians, and documentary film directors (Berlinger 2009). The students hold out their cell phones, recording as he tells them how his first child was born unable to develop properly and died a week after birth – which he explains was because his wife drank contaminated water while pregnant. This was an era, he says, when nobody knew that

petroleum was toxic. Nobody understood what oil operations would come to mean for the region.

He recounts the story of a second child, who, after bathing in the Aguarico river following a spill, began vomiting uncontrollably. The child died the following morning before they were able to get him to the closest health center, which was then staffed by the missionaries at Limoncocha. His story condenses decades of suffering, colonization, and industrialization into several minutes. Yet, he is quick to remind the students that his story, while personal, is not singular: “I’m not the only one,” he says, “many other families suffered as well. Not just Cofanes, but Secoyas, Sionas too.”<sup>4</sup> The students are silent. It’s an intimate narrative crafted from a lifetime spent alongside oil development; an account of a survivor of this toxic legacy (Fassin 2008). For some, the recounting of these painful histories has become an additional burden of toxicity that comes with life alongside extraction (Fiske 2018). During my research, there were often several toxic tours in any given week. Over the years, people like Emergildo and Donald have become accustomed to telling their story to visitors. First-person accounts like this give participants an impression of the lived experiences of loss and sickness that are intertwined with the history of this industry, providing essential narratives for those who come to visit the waste pits and observe the extraction of soil samples. Soil samples, like the ones we opened with, would not carry the same weight without these first-hand accounts of guides.

Motioning for the students to follow him, Donald leads the group across the cleared area of the platform, crossing over the smaller tubes that connect the storage tank to the ubiquitous pipelines that follow nearly all Amazonian roads here. The suspended tubes are wobbly – giving beneath your weight just enough to make you wonder if they might rupture. Lean your ear close enough and you can hear the contents hissing by, with the pipe hot to the touch. Just beyond the pipelines, on the other side of a low bank, lies an old pit. An abandoned gas flare is located toward one end of the pit – a rusted triangular configuration of pipelines used to burn off excess gas produced from the well.

The pit is overgrown with dead grass and pondweeds, the pooled water tinted here and there with the bluish sheen of oil. The tour participants are lined up along the pit’s bank, as though standing along the steps of an improvised amphitheatre, with Donald below. The pit has been covered over with dirt, so it is firm enough to stand on. Picking up the auger, he announces to the group: *Here I am going to dig down one meter deep to start to take out what is hidden below. You all will realize what it is when you see it.*<sup>5</sup>

The auger screws clockwise into the mud, scraping rocks, and sucking reluctantly as Donald pulls out the first mud core. Knocking the auger on the ground, he dumps out the surface mud and screws it in deeper. Inspecting the second

core, he looks up: *Get your noses ready!* Less than a meter down, the cores of mud begin to take on a dark tint. He removes a clump of mud, and with gloved hands passes it off to the student on his left. The students lean in to inspect the mud. *You can smell it from all the way over here!* says one, reluctant to get closer. Donning gloves, the students pass the mud around, smashing it between their fingers, holding it up for friends to smell or take pictures of. The mud is black and iridescent, glinting in the light.

Taking out an old 5-gallon water bottle that he has brought along for this purpose, Donald cuts it in half with a machete to form a makeshift bowl. *Now this you can see, he says, is clear plastic. And the water here is clean too.* Picking up a clump of mud taken from the sample of the pit, he drops it in the water, mixing it until it dissolves. The water turns a dark black, leaving a rainbow stain as it sloshes up the sides of the bottle. The students lean in to get a better look. With a clean, gloved hand, Donald skims the surface of the water with his palm, holding it out to face the students. The glove is black and shiny with oil. *This, he says, is the remediation done by Texaco.*<sup>6</sup>

The auger is a tool for uncovering what lies below now covered-over pits; of excavating, as an archaeologist might, the material remains of Texaco activities. As he holds out the oily mud for inspection, Donald states unequivocally: *This is the discovery of the lie told by Texaco.* The act of screwing the auger down and pulling up oily mud for participants to examine is to continually “rediscover” – as though for the first time, for audience after audience – contamination. In doing so, the tour reveals the stratigraphy of toxicity: how toxicants in the soil are intertwined with histories of injustice, with operational practices used in Ecuador that were outlawed in Texas, legal battles, and stories of children lost. Acts of sampling in the context of toxic tours resist simple bifurcations of science and advocacy: these contaminated soils are products of profit, intentions, and neglect. Soil coring shows us that all scientific facts, just like first-hand witness accounts, are situated. Sampling with the auger is informed by personal experience of life alongside the oil industry and of the suffering it has brought; indeed, Donald knows where to dig because he knows the industrial history of these sites. Likewise, the auger is able to enroll the audience as witnesses because they are present, on the banks of this pit, in the moment that the sample is extracted. Yet, sampling with the auger in toxic tours cannot be reduced to spectacle alone: the presence of crude oil in the soil samples refutes any simplistic negation of the material presence of contamination through this palpable, evidentiary, moment of toxic discovery.

The use of an auger in toxic tours mimics scientific and legal techniques for producing evidence of contamination in the *Aguinda* case, in which experts also used augers for sample collection. As an instrument usually employed in

scientific practices, and retaining a specific history within the legal case that has defined oil operations in this region, the auger operates in a space on the toxic tours between what is evident (in the sense of being viscerally apparent to observers) and what is evidence (the figures, studies, maps, measures, and other official forms of legal or scientific proof) of pollution in this region. Recall, for instance, the soil samples that were extracted on the tour that opened this chapter: as the auger sucked away from the mud of the hole, there was a collective recognition of the contamination of the soil. The contamination was evident to those watching, indicated by their audible gasps, wrinkled noses, and outraged comments. Yet, soil that smells of petroleum to the human nose is not scientific or legal evidence until it has been sampled according to specific procedures, submitted to a series of laboratory protocols, evaluated, compared to other samples, and interpreted for the court by an appropriate expert. In the process of becoming a scientific fact admissible in a courtroom, many things are excluded. By the end of this chain of transformations, those initially telling features of that soil – its smell, its consistency, its iridescent glint under the Amazonian sun, the story of the family that lived alongside it – are no longer relevant. Yet, in the toxic tour, the stink, stickiness, or sheen of the muds, and the narratives that accompany them, are retained as central features of this public evidentiary process.

The process of sampling is what Latour refers to as the creation of “inscriptions,” whereby something like a soil sample is transformed into an object that can be acted upon: extracted from the earth, transported under specific conditions to a laboratory, and then compared, analyzed, interpreted, and circulated as a number, figure, or map in a court record, newspaper article, or scientific study (Latour 1986, 2004). Attending to inscriptions is a reminder that the making of scientific and legal evidence requires a great deal of coordinated effort that extends far beyond the “collection” of naturally existing objects. It also points our attention to what is lost when the inscriptions become mobile, released from the ground in which they were extracted. Yet, for the farmer whose crops grow in that soil, or for the family who lived on top of the pit that opened this article, pre-inscription elements such as the smell of the earth already are evidence of contamination. The same is true for the observer on the toxic tour. If these samples weren’t so heavily contaminated with the visible, smellable presence of crude oil, perhaps they wouldn’t be so convincing. But here, the blackness of crude or the sensations of nausea after walking beneath a gas flare convince through their viscerality; no further testing is necessary in order for contamination to be apparent.

The soil cores discussed in this chapter were never carefully bagged, labeled, or taken to a lab to be measured for TPH, HAPs, pH, salinity, or heavy metals

– although hundreds of other samples were tested and found to be well above the legal limits (Zambrano Lozada 2011). They weren't compared to other mud samples, or written up as part of a scientific study or a legal complaint. But the contaminated samples extracted by the auger did travel in other ways. In the process of seeing, smelling, and touching on the tours, harm took shape with increasing clarity. Captured on smartphones, written up in blogs, newspaper articles, and school reports, recounted verbally in interviews or to families and friends when participants arrived home, the results of sampling with the auger on toxic tours were carried far beyond this one spot in the Amazon. In the process, witnesses were made and a sample taken in one spot was made to speak to broader histories of environmental injustice.

## Conclusion

Science and law purportedly adjudicate matters of fact, establishing truth and, in the case of law, ascertaining wrongdoing. *Aguinda* was expected to determine if Texaco was responsible for harm to the environment and people who lived in the Ecuadorian Amazon during its twenty years of operations. Yet, more than two decades after the lawsuit was initiated, the matter of who to hold responsible for contamination, or how to document and measure contamination remain fiercely contested despite the proliferation of scientific and legal evidence. These disputes are part of a broader narrative in which scientific expertise on the effects of extractive industries is increasingly suspect, or held to unreasonable standards of certainty in light of demonstrated harm. As others have demonstrated, industry mobilizes disagreements over the “facts” to create the perception that no consensus exists (Oreskes and Conway 2011) or to insist on “high-proof” positions of certitude on contested environmental matters (Edwards 1999; Sismondo 2017). As I have argued here, corporate and state denials of toxic responsibility are in tension with the obviousness of contamination in this highly industrialized region, a pattern which holds true across the globe – whether for survivors of disasters like Bhopal or those suffering from the long-term effects of air pollution in Pennsylvania (Fortun 2001; Davis 2003). The presence of contamination is a persistent, undeniable reality. Given the contested space in which both public and expert forums seek to determine accountability for extensive environmental damage, citizen-led practices such as soil coring on toxic tours have an important role to play, not only in advancing struggles for environmental justice through the mobilization of ordinary tools, but also as a critical counter to calls to divorce science from advocacy. Importantly, the auger emerges a tool for achieving recognition in a broader struggle for environmental justice in the

region, even in spite of a continued lack of distributional justice following the *Aguinda* lawsuit. By turning to the context of injustice – present in the stories of Emergildo or the scent of contaminated muds beneath a family’s home – rather than narrowly focusing on verifying the presence of hydrocarbons and toxicants where they should not be (Fraser 1997), the making of evidence in these toxic tours retains the crucial component of what is deeply *evident* for those living with decades of oil contamination.

In this chapter I have marshaled one object – the auger – in order to tell a story about the contingencies involved in building an evidentiary assemblage, in which the scientific and the social, senses and memory, are entangled in the production of knowledge of environmental harm. By contingencies, I mean that knowledge is produced through relations with other human and nonhuman actors (that can fail or surprise in a variety of ways) that form social-material engagements that give the world specific material form (Barad 2007, 91). Attention to contingencies – to relationships, technicalities, and unknowns – emphasizes the positionality, coordination, and the fragility of such engagements. What emerges in this case is one account of how the presence of contamination is established through toxic tours. Here a common tool, when assembled with narrative accounts from residents, within the context of a place with abundant soil pollution from oil operations that is open for the inspection of participants on the tours, becomes a means of producing evidence of harm and inspiring political action.

In bringing the auger to bear on the matter of contamination in toxic tours, questions of justice are brought to the fore. In the toxic tour, the act of digging up old crude oil and inviting participants to smell, touch, and see it with their own eyes makes it impossible to ignore questions of why ordinary people have been made to bear the burden of contamination in the name of corporate or state profit. The questions that augers were brought to bear on in other contexts like the judicial inspections (Is there contamination on this site? How much? Has it migrated outside the boundaries of the waste pit? Who is responsible?) materialize in the toxic tour with new saliency. These demands remain at the forefront rather than becoming submerged in ongoing allegations of fraud and bribery which have diverted attention away from matters of environmental justice in this case (see Barrett 2014). Just like the soil that retains its smell when inspected by students on the toxic tour, the soil also retains matters of suffering, responsibility, and justice that are bifurcated when soil is “inscribed” as a statistic to be debated.

Questions of justice are embedded in scientific questions. What to sample, where to sample, how to interpret evidence of contamination in relation to broader inequalities of wealth, power, and pollution are also present in the

judicial inspections of the *Aguinda* lawsuit – but in the toxic tour they retain a remarkable lucidity. Perhaps what the toxic tour leads us to ask is: How we can use our tools – augers, samples, senses – for good? “The point,” following Haraway, “is to make a difference in the world, to cast our lot for some ways of life and not others” (Haraway 1997, 36). The toxic tour invites us all to take a turn at screwing the auger into the mud, and in so doing to throw our weight behind struggles for justice in the Amazon and beyond.

## Notes

- 1 In 2001, Texaco and Chevron merged to become ChevronTexaco.
- 2 Originally 122 sites were named, but ultimately only 54 sites were inspected because the process took too long and the plaintiffs petitioned the judge to conclude the inspections and move to an appraisal by an independent expert. The resulting “Technical Summary Report” (2008) by Engineer Richard Cabrera Vega was subsequently thrown out after Chevron alleged inappropriate collaborations between Cabrera and the plaintiff team.
- 3 “The Concession” refers to the area operated by the consortium of Texaco and the Ecuadorian state between 1972 and 1992.
- 4 The region opened for oil operations under the first concessions is the ancestral territory of the Indigenous nationalities of Cofán, Sekoya, Siona, and Waorani, and home to the Kichwa.
- 5 Speech in italics indicates text reconstructed from footnotes. While I have done my best to accurately recreate the content and feel of Donald’s tours, direct quotations should not be taken as such unless indicated.
- 6 The most iconic image of the toxic tour is the extended, crude-covered hand. Donald’s picture, face out of focus and obscured behind his black hand, regularly accompanies articles in newspapers and magazines and has made countless appearances on activist websites and blogs. The dirtied hand makes contamination – which, when sitting in the mud at the bottom of a stream or distributed across the surface of water can be evasive – visible for the viewer. It is a striking, personal gesture that denounces the legacy of oil (Fiske 2018).

## References

Barad, K. 2007. *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*. Durham, NC: Duke University Press.

Barrett, P. M. 2014. *Law of the Jungle: The \$19 Billion Legal Battle Over Oil in the Rain Forest and the Lawyer Who’d Stop at Nothing to Win*. New York: Crown.

Berlinger, J. 2009. *Crude: The Real Price of Oil*. DVD. New York: First Run Features.

Bullard, R. D. and Benjamin, C. 1999. *Confronting Environmental Racism: Voices from the Grassroots*. Boston, MA: South End Press.

Cabrera Vega, R. 2008. *Technical Summary to the Court of Nueva Loja*. Available at [chevronxico.com/assets/docs/cabrera-english-2008.pdf](http://chevronxico.com/assets/docs/cabrera-english-2008.pdf) (last accessed January 27, 2020).

Calvillo, N. 2018. Political airs: From monitoring to attuned sensing air pollution. *Social Studies of Science*, 48(3), 372–388.

Commission for Racial Justice, and United Church of Christ. 1987. Toxic Wastes and Race in the United States: A National Report on the Racial and Socio-economic Characteristics of Communities with Hazardous Waste Sites. Public Data Access, Inc. Available at <https://www.nrc.gov/docs/ML1310/ML13109A339.pdf> (last accessed January 27, 2020).

Davis, D. 2003. *When Smoke Ran Like Water: Tales of Environmental Deception and the Battle Against Pollution*. New York: Basic Books.

de Laet, M. and Mol, A. 2000. The Zimbabwe bush pump. *Social Studies of Science*, 30(2), 225–263.

Dematteis, L. and Szymczak, K. 2008. *Crude Reflections / Cruda Realidad: Oil, Ruin and Resistance in the Amazon Rainforest*. Bilingual. San Fransisco, CA: City Lights Publishers.

Edwards, P. N. 1999. Global climate science, uncertainty and politics: Data-laden models, model-filtered data. *Science as Culture*, 8(4), 437–472.

Fassin, D. 2008. The humanitarian politics of testimony: Subjectification through trauma in the Israeli–Palestinian conflict. *Cultural Anthropology*, 23(3), 531–558.

Fiske, A. 2016. *Crude Assemblages: Oil and Harm in the Ecuadorian Amazon*. Chapel Hill, NC: University of North Carolina at Chapel Hill.

Fiske, A. 2018. Dirty hands: The toxic politics of denunciation. *Social Studies of Science, Toxic Politics*, 48(3), 389–413.

Fortun, K. 2001. *Advocacy after Bhopal: Environmentalism, Disaster, New Global Orders*. Chicago, IL: University of Chicago Press.

Fraser, N. 1997. *Justice Interruptus: Critical Reflections on the “Postsocialist” Condition*. Abingdon: Routledge.

Haraway, D. J. 1997. *Modest\_Witness@Second\_Millennium.FemaleMan\_Meets\_OncoMouse: Feminism and Technoscience*. New York: Routledge.

Higgins, R. R. 1994. Race, pollution, and the mastery of nature. *Environmental Ethics*, 16(3), 251–264.

Kimerling, J. 2006. Indigenous peoples and the oil frontier in Amazonia: The case of Ecuador, ChevronTexaco, and *Aguinda v. Texaco*. *New York University Journal of International Law and Politics*, 38, 413.

Latour, B. 1986. Visualization and cognition: Drawing things together. *Knowledge and Society*, 6, 1–40.

Latour, B. 2004. *Politics of Nature: How to Bring the Sciences into Democracy*. Cambridge, MA: Harvard University Press.

Murphy, M. 2006. *Sick Building Syndrome and the Problem of Uncertainty: Environmental Politics, Technoscience, and Women Workers*. Durham, NC: Duke University Press.

Oreskes, N. and Conway, E. M. 2011. *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues from Tobacco Smoke to Global Warming*. New York: Bloomsbury.

Pezzullo, P. C. 2009. *Toxic Tourism: Rhetorics of Pollution, Travel, and Environmental Justice*. Tuscaloosa: University Alabama Press.

Schlosberg, D. 2007. *Defining Environmental Justice: Theories, Movements, and Nature*. Oxford: Oxford University Press.

Sismondo, S. 2017. Post-truth? *Social Studies of Science*, 47(1), 3–6.

Tavares, P. 2011. Murky evidence: Environmental forensics in the age of the Anthropocene. *Cabinet*, Fall (43 Forensics), 101–105.

The Amazon Post. 2015. When Steven Donziger doesn't find evidence against Chevron ... he creates it. *The Amazon Post*, September 15. Available at <http://theamazonpost.com/donziger-quote-1/> (last accessed January 27, 2020).

Zambrano Lozada, N. 2011. *Aguinda et al. v. Chevron Corporation* 188. Provincial Court of Justice of Sucumbíos.