

Soil Refusal: Thinking Earthly Matters as Radical Alterity

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Introduction

Olivia had been telling me about planting a magnolia tree for a while. She is an enthusiastic and skillful gardener and spends long hours among her plants. Every time I visit her, I return home with seeds, baby plants, lemons, and even small trees. She talks passionately about the cactuses, roses, and lavender bushes she nurses in her garden. The toxicity of La Greda, her hometown, hasn't discouraged her. La Greda is a small hamlet in the Puchuncaví Valley in central Chile, and adjacent to the infamous Centro Industrial Ventanas (CIV), one of the most polluted industrial compounds in Latin America. CIV hosts 27 petrochemical industries, including one copper-smelting complex and four coal-burning energy stations. Stories of ecological collapse abound in the area—and are dramatically evident after spending some time in La Greda. Actually, Olivia and her plants live just across from the now abandoned La Greda elementary school, closed down in 2012 after several children and teachers fainted owing to high levels of sulfur trioxide. Visible from almost all sides of her home, the abandoned building is a ghostly reminder of the chemical violence to which Olivia and her plants are constantly subjected.

For the last decade, I have been paying attention to soil–plant–human relations, in Puchuncaví and elsewhere. I'm interested in how people like Olivia establish deep ethico-practical commitments with plants and soils in a context of chronic industrial violence, and in the way these human–soil–plant embroilments allow for a politics of intimate resistance (Tironi 2018). I have also paid attention to how earth scientists relate to inapprehensible geological matter, including topsoil, and to what extent these engagements recompose *bio-geo* arrangements (Tironi 2019). Spending time with neighbors from Puchuncaví and with geophysicists as they relate, sound, remediate, and work upon soily things has allowed me to get a sense of the kind of alliances articulated among different kin for vital endurance and knowledge production.

One week after Olivia got the magnolia tree, I visited her so that we could plant it together. It was perfect timing, she told me, ideal for planting because of the full moon. When I arrived, she had already decided where the magnolia tree would be sited: a

corner of her front garden, where she already has ornamental flowers and cactuses, beautifully distributed among the panoply of stuff that inhabits her garden. To begin with, her flowers, but also the toxicants, chiefly particulate matter—carbon, arsenic, lead—that tarnishes the leaves and acidifies the soil, dusty reminders that Olivia and her vegetable companions spend their days in a sacrifice zone. And then there is the constellation of abandoned things. To plant the magnolia tree we had to maneuver through various kinds of rubble and trash. Truck tires, the skeleton of an old washing machine, and construction materials interfered in our task.

Neither this panoply of discarded junk nor the toxic layer sedimented on top of the soil hindered our gardening mission. We were fully committed to the task, and I was happy to join Olivia in her careful and laborious work of creating a space for human–vegetable companionship. But as I dug the hole for the magnolia tree, I cut my finger on a broken glass bottle buried in the hardened soil. It wasn't a bad cut, but it bled enough to dot the soil with a red stain. My thumb throbbed painfully, and suddenly a sense of resistance grew between my body and Olivia's garden. Previous feelings of communion transmuted into a sensation of distance. An aloofness. An indifference. As if the blood, the toxic chemicals, the dry soil, and the abandoned objects together were indexing an inhospitableness that my analytics hadn't rendered palpable before.

The somatic rejection I experienced in Olivia's garden was hardly new. In my fieldwork in Puchuncaví and collaborations with geoscientists, I've come to see and feel moments in which soils, plants, rocks, and other vegetable and mineral things did not respond to my call for friendship (Tironi et al. 2018; Tironi 2019). My analytics, however, often lagged one step behind, not fully grasping what was at stake. My accounts of the gardening practices I witnessed in La Greda, for example, had been attuned to a sensibility toward gardens as a *becoming together* between soils, plants, and humans. An analytics saturated with images of mutual flourishing where soils allowed themselves to affect and be affected in an ecology of connections and interdependences. My bloody thumb painfully confirmed a different form of relationality. Actually it made me consider whether plants and soils had an outside *outside* relationality—a form of existence that could not be exhausted in the pragmatics and ethics of entanglements, conviviality, and symbiosis. As I stood with my wound and the magnolia tree waiting to be planted amidst the ruins of industrial development, I wondered how to account for this and other pushbacks and what I might learn from them to find cues for renewed political practices in a time of enhanced ecological sensitivity.

In this chapter, I pay attention to those moments in which soils, in close proximity to plants, chemicals, and animals (human and otherwise), emerge as radical alterity—as a sovereign Other not fully amenable to relationality. I coin the phrase “soil refusal” to indicate situations of human–soil encounters in which the form and content of the encounter itself are alien to what “encounter” is supposed to be and do. Soil refusal does not imply rejection of the “encounter” as the critical concept for thinking multispecies worlds; neither is it an attempt at disposing from “relation” as a phenomenological cue for engaging with more-than-human realities. Rather, soil refusal points at situations that force us to open up what “encounter” and “relation” mean when thinking about soil–human interactions—and *geo*-human exchanges more amply. Borrowing from

Mario Blaser and Marisol de la Cadena (2009), what interests me is to think about the *unthinkable* in and of soil–human encounters—which is not the possibility of the encounter itself, but the terms upon which this encounter has been conceptualized.

My aim in this chapter is to draw the contours for a conceptual framework able to render visible the manifold moments of entanglement, symbiosis, and interdependence in soil–human relations, while accounting for the potency of soils and their *inhuman* capacity for non-concurrence as a possible form of these relations. So while ethnographically grounded, the notion of soil refusal emerges from a conceptual disaffection with the way soil–human relations are thought and theorized in certain quarters of science and technology studies (STS), geography, and anthropology. It grows also from a broader discomfort with how calls for engaging with the geological, including soils, in the perspective of planetary catastrophe conceal entrenched anthropocentric logics and analytics. By exploring the limitations of the relational approach to soils, in this chapter I challenge soil scholars to think human–soil or human–geological encounters by being attentive to the categories of existence demanded by soils or other geological things, instead of projecting the parameters of the One into the dynamics of the Other.

In the next section, I summarize the literature on soils, particularly the work that has focused on soil as relationality. I then turn to two ethnographic instantiations of soil refusal. They are drawn from different settings and are led by different protagonists, but they both index the soil alterity I'm looking for. What I attempt with these two vignettes is rather simple: to show chemical processes and lived experiences in which soil does not accept the biontological invitation for communion, and hence where the encounter between soil and humans needs to be redrawn. I then engage with discussions coming from feminist geophilosophies to explore how they can help us knit a conceptual alternative for thinking soil–human encounters.

Relational Soils

Soil has become a charismatic entity. While relatively marginal within the natural sciences (Puig de la Bellacasa 2015), it has grown in relevance in many discussions in STS, anthropology, and geography, particularly at the intersection between the “material turn” and feminist approaches to the politics of knowledge production.

Critical at this juncture is the power of soil to invoke, represent, and energize relational ethics and theories in social engagement with more-than-human worlds. Countering a positivist–objectivist position according to which material realities exist beyond and despite practices and relations (see Mol 1999; Law 2004), interactions with the soils of scientists (Latour 1999), amateurs (Puig de la Bellacasa 2014), and farmers (Shiva [1999] 2016; Lyons 2014) render visible the multifarious practices that bring soil and soil ecologies into being. Soils are relational materialities that are entangled in complex webs of thought and action.

This ontological dynamism is not restricted to the constitution of soil. Soils are also the medium and the site of generative provocations and entanglements. They issue forth flows of life that flourish, intersect, and die in open webs of co-dependency and

symbiosis. Soils, as put by Puig de la Bellacasa, are “a lively *beingness*” that manifest “a world of ‘companions’ sharing the trouble” (2014: 33).

Soil is hence also a point of departure for conceptualizing *elementally* relational ontologies and ethics in a time of extended crisis. Its exuberance points to the ecological sensitivities needed to live and die well on a damaged planet. Particularly, soil’s generative capacities and potencies confront us with the task of recognizing that “we require each other in unexpected collaborations and combinations, in hot compost piles. We become-with each other or not at all” (Haraway 2016: 4).

Thinking with Donna Haraway is helpful for drawing the relational condition of soils. In her speculative fabulations, Haraway takes the figure of compost and composting—as “theory in the mud, as muddle” (2016: 31)—to think about humanness and worldliness more broadly as a messy tentacular “become-with each other” in processes in which we “compose and decompose each other, in every scale and register of time and stuff in sympoietic tangling” (Haraway 2016: 97). Compost is a metaphor for reimagining and empowering the meaning and practice of togetherness (Abrahamsson and Bertoni 2014), conviviality (Hinchliffe and Whatmore 2006), cordiality (Tironi 2014), or friendliness (Bingham 2006)—that is, for celebrating the political apertures made possible by those beings and collaborations that “make attachments and detachments” in multiple, open, and situated ways, weaving “paths and consequences but not determinisms” (Haraway 2016: 31). Importantly, the togetherness invoked in composting involves a “cooking” process (Lynes and Symes 2016), both in the sense of a hands-on and worldly practice and in that of a transformational mesh that provokes life into being. Like life itself, compost is prepared with sticky and ordinary stuff and requires our bodily, affective, and sentient engagement with an alchemy that cannot be fully controlled. Compost is the result of various beings—soil, vermin, fungi, bacteria, oxygen, plants, and humans—collaborating in a continuous process that has no teleological framing. Compost and composting, and by extension soils and soil ecologies, are ways of attending to the material yet always relational condition of life.

Relationality helps me understand the lively and messy imbrications between soils, plants, and humans that I have witnessed doing fieldwork with geologists or spending time with farmers. But the focus on abundance and extension—on the profusion of life rather than on its scarcity (Yusoff 2012)—blurs the pragmatics of many situations in which relations could not be taken for granted: situations in which relations were not absent, but forced me to rethink the ontological politics of “the relation” between soils and humans. In the next sections, I offer two ethnographic vignettes that may help illustrate the form of these situations.

Barren Life

We meet Miguel and Rafael in a sunny morning in March 2015. They are longtime activists and the founders of the Consejo Ecológico de Puchuncaví (Puchuncaví Ecological Council), the first environmental organization in the area. I’m accompanied by a colleague visiting from Catalonia, and I try to keep hidden my chemical caveats. Although I’ve been doing fieldwork in Puchuncaví for several years, my body still feels

a kind of sensorial hesitancy. I always feel *enveloped* in Puchuncaví, atmospherically conditioned—however minimally—by suspended toxicants and energies. I’ve grown to experience Puchuncaví as a mood (Tironi et al. 2018).

Miguel and Rafael want to show us what they call “environmental passives,” the technical name for those sources of pollution that were not properly dealt with and continue to cause harm. They have identified 21 illegal dumping sites for chemical residues used by the copper smelting plant and at least two carbon-burning electric plants over the last five decades.

After driving around Campiche, the site of an infamous conflict over the approval for a fourth fossil-burning energy plant, we park in a hilly patch of land surrounded by wire fences, yellowish bushes, and plenty of bare, grayish land. After slipping over the wire fence, we begin climbing a small hill. The soil below our feet feels extremely dry and dusty. Our boots slip and each step kicks up a trail of suspended material. We climb surrounded by a phantasmagoric cloud. Fifteen meters away there are *malvavisca* (*Sphaeralcea obtusiloba*) and romerillo (*Baccharis linearis*) bushes delimiting the exposed and acidified land we walk through, among the few plants capable of living in highly polluted soils in Central Chile (Ginocchio et al. 2004). I feel a bit dizzy.

We are walking over a large “industrial barren” (Kozlov and Zvereva 2007). The term was coined to call attention to ecologies in which, due to extreme pollution, soil services and reproduction capacities are severely curtailed. Life is not (and can never be) completely absent within and across these barren soils, but in industrial barrens soil deterioration reaches “its nearly final point” (Kozlov and Zvereva 2007: 232). Industrial barrens can be defined as extreme habitats characterized by land that is open and bleak due to the deposition of airborne pollutants, sparsely vegetated (coverage of 10% or less), severely eroded, and with acidic (pH < 4.0) and metal-contaminated soils. Industrial barrens often develop near non-ferrous smelters and refineries, primarily those of factories producing copper, nickel, zinc, or lead. Several areas around the CIV in Puchuncaví, including the one I visited with Miguel and Rafael, are categorized as industrial barrens (Ginocchio 2000). The term helps me to situate the chemical and ecological refusal of soils. Life finds its way. Pure excess: left on its own, nature folds and unfolds exuberantly as a “potency, insurgency, and unstoppable force” (Myers 2018). Soils are not outside this ongoingness. They also expand, connect, embroil, multiply, decompose, and issue forth. Although sometimes they don’t. Sometimes soils disconnect. Sometimes they reject or become rejectable. Sometimes, for example in Campiche, they are not hospitable to the ever-expanding motion of nature, or at least to that form of “nature” that we assume is always engaged in an endless movement toward expansion and entanglement.

When we reach the hilltop we get the full view and experience of an industrial barren. Not inert. Not dead—actually “dead” would be too easy an adjective. As I scrutinize the soil under my feet I keep thinking that nothingness—the complete absence of life—would be much more soothing than what I have below—and above and in front of—me. The soil is still soil, as I can identify some organic elements, at least in aspect. Some dry but at least slightly brownish soil lies a few centimeters below the surface. There is some nitrogen left here, I say to myself. But the very top layer is a thick clay-looking coat. Arsenic, I think automatically, propelled more by the anxieties of my

body in interaction with this landscape than by my biochemical expertise. But I'm not too far off. Industrial barrens show systematically high levels of toxic pollution. In all cases reviewed by Kozlov and Zvereva (2007), the concentration of at least one pollutant in the uppermost soil layer exceeded 1,000 micrograms per gram (that is, 1 gram of pollutant per kilogram of soil). In Campiche, it might not be arsenic, but maybe lead, sulfur dioxides, and definitely copper. Research in Puchuncavi has shown that copper increases significantly at sites near the CIV, such as the place we visited with Miguel and Rafael, compared to sites as far as 5.5 km from the CIV. Sulfur concentration follows the same pattern, which is four times higher nearer to the CIV (Ginocchio et al. 2004). Inversely, organic matter decreases by half and nitrogen concentration by 1.7 times from the furthest surveyed point to the one closest to the CIV.

Since most of the heavy metals accumulated in soils are non-soluble, their complete leaching from upper soil horizons takes centuries—for example, 100–200 years for copper. These long-term conditions have a negative effect on fundamental processes for soil enrichment. An example is biodiversity, which in industrial barrens is one-third of that observed in undisturbed habitats (Kozlov and Zvereva 2007). Having lost their protective vegetation cover, industrial barrens suffer from extensive erosion, and most are devoid of topsoil, sometimes even showing acute loss of subsoil (McCall et al. 1995). This is associated with a reduction in microbiota, which in industrial barrens has been shown to lose its resilience to disturbances and its ability to perform normal processes of nutrient cycling, assimilating organic residues, and maintaining soil

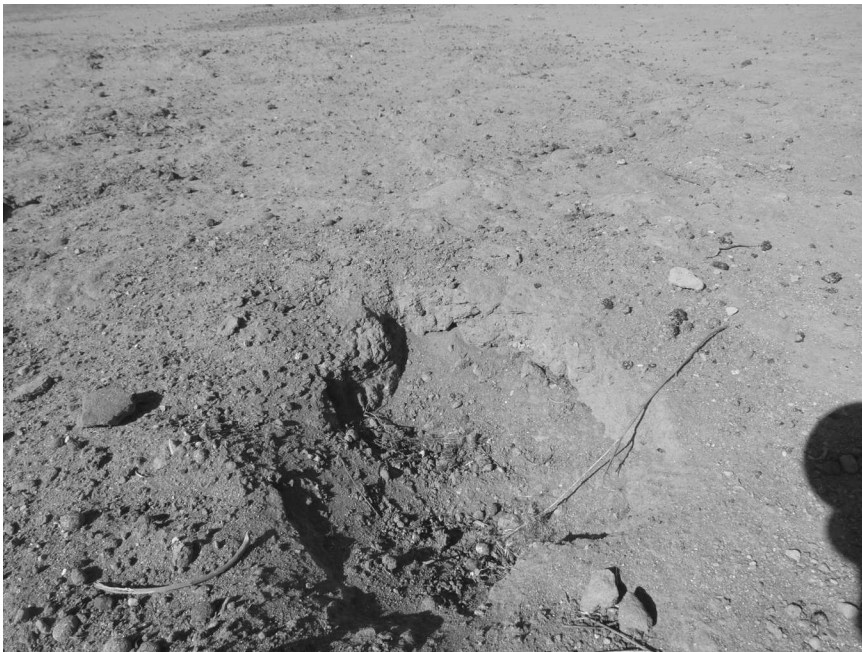


Figure 11.1 Barren soil in Campiche, central Chile. Photo by Manuel Tironi.

structure. The thick clay-looking layer under our feet renders these biochemical (un) processes brutally real.

But the soil is not completely unfriendly to vegetable life. In addition to romerillo and *malvisca* bushes, we can see here and there *dondiego de la noche* (*Oenothera chilensis*) and *chinitas* (*Noticastrum sericeum*), herbaceous plants that have proved resilient to industrial violence in Puchuncaví (Ginocchio et al. 2004). Further away, like a bad omen, we can see some eucalyptuses, those water-insatiable trees that have become the symbol of extractivism, water scarcity, and climate change in Chile. The presence of these plants and trees doesn't attenuate my feeling of being unwelcomed by the soil under our feet. The problem in industrial barrens, warn Kozlov and Zvereva (2007), is not the elimination of vegetable life but the impossibility of conducting a fundamental ecological function, that of *restoration*. In fact, the scant vegetation that manages to survive in intensely contaminated sites is often able to produce viable seeds, and sometimes even in larger amounts than at unpolluted sites. However, due to heavy concentrations of toxicants in the uppermost soil layers that stunt radicle growth, natural regeneration is absent or nearly absent in industrial barrens. Even when seeds manage to germinate, their root growth is so inhibited that seedlings quickly dry up and die off completely (Winterhalder et al. 2001; Kozlov 2005). In Puchuncaví, plant abundance decreases by 59.5% toward the CIV, and seed species richness is 1.5 times greater 5.5 km away from where we are with Miguel and Rafael. And maybe this what is at the root of my discomfort: not the fact that "life" is absent (it is not), but that "life" in an industrial barren, against our bioimagination of exuberance and continuity, is finite and astringent. The feeling that any relation with this soil would work against my will to connect and engage—hard, frictional, and not devoid of pain. A place for extremophiles.

At some point in our visit, Miguel connects this site with the larger history of toxicity in Puchuncaví—a history of soils that became hostile to vegetable and microbial life. He remembers the time when, in the 1970s, the cattle began to die, their insides green as a result of copper sulfates. "And then agriculture began to die—in this part [Los Maitenes and Campiche] it died," he continued. "Nowadays it is practically a desert, a desert with a few trees, with a few plants and nothing else." He scrapes the dusty soil with his foot, as if looking for something buried in this industrial barren. "Nothing grows here," he adds with a tone of sorrow and realism in equal amounts.

(Un)Diggable

One year later and it is also a sunny morning. I'm in Cáhuil, 200 km south of Santiago. I'm doing fieldwork with a team of geophysicists led by Elías. He is characterizing the Pichilemu-Vichuquén seismic fault (P-V fault) from Cáhuil near the Pacific coast all the way to the Teno Valley in the Andes using a technique called magnetotellurics (MT). This technique involves a complex apparatus that requires the deployment of a 100 × 100 meter, north-south/east-west-oriented matrix of bobbins, dipoles, and magnetometers. MT draws upon the Earth's electromagnetic fields, which constantly interact with solar winds on the one hand and thunderstorms worldwide on the other.

When this external energy reaches the Earth's surface, part of it is reflected back while the rest penetrates the earth, where it encounters rocks and minerals with different physical properties, from highly resistive crystalline igneous rocks to highly conductive saline-filled sedimentary rocks. The interaction of this energy with variegated geological structures produces electric currents (known as telluric currents), which in turn produce a secondary magnetic field. MT measures, at ground-level sites, time variations between the magnetic field and the electric field, with the ratio of the electric and magnetic variations providing a measure of electrical resistivity. In turn, electrical resistivity is associated with factors such as rock composition, porosity, and permeability, as well as rock fluid composition and temperature. Since low-frequency signals can penetrate deep into the subsurface, MT is able to measure the electromagnetic features of geological structures at depths of hundreds of kilometers. The functioning of the apparatus is, it became evident working with Elías and his team, rather uncertain. To begin with, MT requires a plot of land large enough to accommodate the apparatus. After installation it has to be secured in place to avoid being stolen. And since some drilling is needed to deploy the bobbins and electrodes, hard, rocky soils are problematic.

Elías had located by GPS all the points along the P-V fault where magnetotelluric measurements were required for his project. After an hour driving around looking for the third spot of the day, which was proving extremely elusive, we entered what seemed like a forestry allotment. "F**k it, here is fine," said Elías. As he had told us, when undertaking geophysical fieldwork it is not unusual to find vigilantes or nervous landowners carrying rifles to make sure their land is protected. We were not scared, but an intense energy was palpable. Once we trespassed into the field, I felt a shot of adrenaline circulating through my body—and through the bodies of my colleagues, whose heightened energy I could see and sense.

We drive two pickup trucks. One is filled with digging materials, including an industrial auger. I wondered why such heavy equipment was needed. Once we began the installation of the MT apparatus I understood. The dried and acidified soil was so hard to drill that even the auger proved completely ineffective. *Pinus radiata*, the industry-introduced species that ubiquitously covers this region, had done its erosive work. The site had been filled with *Pinus* not long before, as the remaining stumps and the unfriendliness of the soil made evident. The soil was not rendering itself available for scrutiny. Dry, hard, rocky. Our efforts to engage with the lithosphere was encountering nothing but resistance in its uppermost layer.

Elías was starting to lose his temper. He commanded us to use shovels to dig the holes for the bobbins and electrodes. The shovels were also useless against the hardened soil. We begin digging with our bare hands. The land was just rocks, abandoned lumber, and thorny bushes. I felt intense pain in my fingertips as I tried to make a dent in a yellowish soil that was utterly unresponsive. A remoteness stood between us and the earth we were supposed to be interacting with. I felt frustrated. But I could also sense something similar to excitement, as if the impenetrable soil we were confronted with invited us to a game of strength, a peculiar joust between our shovels and the Earth's crust. In the field, says Frodeman, "the scientist must adjust herself to nature's patterns, cultivating a disposition of alert repose and anticipating the moment when the world



Figure 11.2 Doing magnetotellurics in Cáhuil, central Chile. Photo by Manuel Tironi.

reveals itself” (2003: 68). I second this observation, but digging the soil in Cáhuil with my lacerated hands I also felt that the human–lithic choreography of geophysics was as much based on adjustment, anticipation, and revelation as it was on fragmentation, negativity, and withdrawal.

The summer sun was punishing, and we had at least one more station ahead of us. We were exhausted. The undergraduate members of the team joked about the infernal working conditions imposed by Elías. “Come on, guys! Really?” he responded half-jokingly, half-seriously, “Do you *really* want to be geophysicists? Toughen up!” Elías’s scolding was partly aimed at the masculine bravado that surrounds geosciences, but also at invoking what anthropologist Tim Ingold (2000) calls “enskilment,” or the necessary entanglement between perception, body, and environment in the process of acquiring a skill. Forty minutes later the holes were dug. We were all covered in dirt and sweat, hungry and worn out, but also fully physically committed to the task. We had managed to place and bury all the dipoles and electrodes, and with our hands still painful, or maybe *because* our hands were feeling the perilousness of rocky animosity, we were energized. A rush, an enchantment, an impulse, perhaps a variation on what Jeffrey Jerome Cohen (2015: 25) calls *geophilia*, or the “material magnetism” to the petric. Inhospitability, instead of weakening our excitement, was intensifying our engagement with the soil, as if our bodies had found a way to stay with the trouble (Haraway 2016).

Alongside Soils

The two vignettes presented above are nothing more than that: two moments, two situations, two anecdotes even. And they are different. Different settings, actors, and dramatic arcs. But they intersect at one critical point, at least in the perspective of my engagement with soil and soil ecologies. They both point to a situation in which soil becomes *unavailable*: unavailable to extension, to connections, to engagement.

Not completely, of course. The point is not whether the soils of Puchuncaví and Cahuil I have presented are without life. They are not. As suggested by Helmreich (2016: xii), life “is in a volatile state, pragmatically and theoretically,” and thus its abundance or absence is more an issue of scale, situated conditions, and the efficacy of the materials upon which it is made visible than it is a zero-sum game. In Puchuncaví and Cahuil, soil–human relations were not lacking either: on the contrary, my encounter with these soils was full of affection and apprehension. All ecological relations have their own complexities and frictions, their own mode of defining the demarcation between excess and scarcity. Relations, in brief, were not absent.

But they were different, and this is what interests me: to what extent the soils of Puchuncaví and Cahuil – and elsewhere for that matter – instead of being readily amenable to ecological relations sometimes make them difficult, frictional, or painful. How to think about soil–human relationality when soil does not render itself relatable?

Debates around the geological articulated in and around feminist geophilosophies seem apt points of departure for exploring this question. As stated earlier in this chapter, ontological theories, particularly those of a material-semiotic bent, have made it possible to draw connections between geology (including soils) and larger ethical projects for ecological perseverance. This is sustained, on the one hand, through the possibility of granting agential sovereignty to otherwise inert matters and things, and, on the other, integrating them into the compositional processes making up diverse worlds. By interrupting stubborn demarcations between the animate and its opposite, “[l]ife is liberated from its confinement in living beings to become a general property of relationality,” as observed by Kai Bosworth (forthcoming).

However, geological matter sits uncomfortably within the compositional and animist narrative. Geological things, abysmally withdrawn from human sensoria, temporality, and imagination, render problematic the normative grammar of relation, assemblage, and entanglement (Clark 2010). The brute and dark matter of earthly interiors, “the fractured and the inorganic” (Bosworth, forthcoming) that sustains our existence on Earth, is completely indifferent from human endeavors—from microbacterial dynamics to the molten rocks of deep geology, indeed all the way to cosmic processes, the geological is not always readily available for connections (Harman 2010). Actually, violence is a fundamental mode of being in biotic and non-biotic worlds, and a constitutive part of our relation to the diversity and dynamism of life on Earth (Yusoff 2012). The issue at stake in this line of thinking is not the inexistence or redundancy of the multifarious spaces in which heterogeneous elements gather, relate, and act in complex webs of interdependence. It is rather to pause the proclivity of certain vitalist or new materialist discourses to overlook the excess, recalcitrance, and radical autonomy of earthly matter.

Moreover, the propensity to look for relations, vitality, and entanglements in human–geology encounters is mediated and fueled by a transubstantiation in which the human structure of being becomes the analytics for *reality*. “Western ontologies are covert biontologies,” asserts Elizabeth Povinelli (2016: 5), in the sense that they have imposed “the qualities of one of its categories (Life, Leben) onto the key dynamics of its concept of existence (Being, Dasein)” (2016: 18). “Relation” might be a critical mode of inter- and intra-action and being-in-adjacency for existents inhabiting a reality in which “life” is predicated upon the life/death binary, but may be inconsequential for those partaking in the realm of Nonlife, existents that have never been alive and thus can never lose their lived condition—existents for whom the absence of life does not mean “death”: things and processes that “cannot merely be included in the ways we have understood the qualities of being and life but will need . . . to displace the division of Life and Nonlife as such” (2016: 15).

These threads inspire a mode of attention to soils that I find helpful for thinking about what I observed in Puchuncaví and Cáhul. Soils can, at least in part, be included in the geological insofar as they point us toward mineral and chemical processes and elements that cannot be easily framed under the arc of the *bios*. Soils are in this sense *inhuman*, elements intimately necessary for human earthly existence but radically and even violently other to humanness (Cohen 2015). Thinking soil as an inhuman matter allows for an analytics in which soil existence, borrowing from Yusoff, “is necessary for life, but its force is not *for* life, inasmuch as its teleology is not that of the organism” (2015: 206).

The challenge is how to think of soils as elements that are *both* obliged into relationality *and* exceed it. Here I am at one with Kathryn Yusoff. In her reflection on the ethico-political programs enacted in discourse and action around biodiversity loss, Yusoff invokes the notion of the *insensible* as a way “into an expanded realm of relationality that queries the exclusions that govern the sphere of intelligibility, and might help us think *between natures* to promote a noncontemporaneous ethics of apprehension of the biotic world” (2013: 208). Crucial for Yusoff is the political openings made possible when biodiversity loss is apprehended from a “radical nonrelationality,” that is, “modes of recognition beyond ‘our’ abilities to make nonhuman worlds intelligible” (2013: 209).

Following the lead of Yusoff’s proposition: what are the consequences of engaging with soils without imposing a human-centered phenomenological program of visibility, recognition, and existence? Maybe, as radical non-relationality, soils demand alternative ways for conceptualizing how two or more things connect or are relevant to each other. Maybe radical otherness requires modes for *staying alongside* rather than *becoming with*. Joanna Latimer defines *alongsideness* “as a form of intermittent and partial connection [which] eschews the obfuscation of difference entrenched in contemporary emphasis on connectivity” (2013: 77). Being alongside is thus a mode of relationality among different kinds that stresses “the possibility of dwelling with non-humans as preserving division and alterity as much as connectivity and unity” (2013: 98). In Campiche’s industrial barren, the polluted soil proposed relations hard to follow without harm; interdependence and collaboration were implausible without physical damage, but the inhospitable condition of the soil was in extension (Latimer 2013)

with our presence – not intermingling, not becoming together, but being alongside each other. As we lay on the eroded ground of Cáhul, cheeks against the dirt to remove rocks and cover holes with our bare hands while thorns and horseflies punctured our skin, we were being alongside earthly matters. A sort of ecological intimacy between our bodies and the acidified soil had flourished. Intimacy, to be sure, that did not rely on a vital connection or sharing, or on a hybridizing wholeness, but on a *proximity* between divergent existents that encountered and even exchanged propensities, yet always equivocally and asymmetrically.

Maybe what was at play in Puchuncaví and Cáhul was not a “relation” proper but something closer to what Emmanuel Levinas (1969) calls *enjoyment*, or the amalgamation of feelings, sensitivities, and pleasures that emerge from the bodily openness to the sheer world: a sheer world that can be refractive, and hence an openness that is always risky and not without pain. Being-with is not always a story that culminates in symbiosis. It is, however, this partial and even violent encounter with divergent and inhuman things, and not its exhaustion through entanglement, that might be defining “relationality.” What I’ve learned in Puchuncaví and Cáhul is that relating to soils that resist and withdraw requires not just *becoming* with them—adapting to, sensing with, and being transformed by their forces and specifications—but also assuming a background of relentless abjection and indifference: the fact that in spite of our attempts at engaging with soily things, they can, and will, always exert an inhospitable resistance. Soils are part of that indifferent Gaia that Myra Hird (2010) has brought to our attention: a living Earth sustained by processes, whether microbial or geological, that are profoundly indifferent to human life.¹

Conclusion: Soil Refusal

By way of conclusion, I want to return to soil refusal as a framework for engaging with soils as sovereign existents. While the term emerged in close connection with polluted and degraded soils, it indexes a resistance to relationality that can be found in soils everywhere. Soil refusal is not a type of soil or an exceptional condition, but an attunement to that otherness always present as soils engage with animals, minerals, and vegetables. Soil refusal is an analytical gesture toward the visibility of that non-reducible excess of soils, that radical difference that at some point always emerges in our relationship with soil ecologies.

As I have tried to suggest, soil refusal is not the rejection of relations with and within soils. It is rather speculating about the possibility of implicating non-relationality in relationality—or to think soils as both being part of relations and resisting them. Inspired by feminist geophilosophies, soil refusal attempts to situate soil–human relations in the context of soil’s inhumanness: matter always preserving a part that has not been and cannot be counted—a part withdrawn from engagement, a negative prehension, as A.N. Whitehead (1929) would have it.

To clarify. This does not mean that soils in refusal are outside relations. It means that “relationality” might be just one form of beings-in-proximity. Actually, my encounters

with soils' resistances abounded in intensities, emotions, and chemical reactions. The question, hence, is not whether the soils I encountered rendered possible a relation between them and my body, or which soils allow for more relations or less. Rather, my question is to what extent "life" sometimes presents itself in a form different to the imaginary of thrive-ness and continual entanglement. My exploration is about how to think soil relationality accounting for those moments in which soil resists the relational gesture and emerges as radical alterity. And my argument is that soils in refusal modify the parameters of what "relation" means, and for whom. They point to moments in which soil-human energetic exchanges are painful, fragmented, or even deadly—that is, outside the usual grammar of friendship and solidarity. Elsewhere I have referred to these energetic implications with inhuman matter as *geo-affect* (Tironi 2019). Here I have borrowed from Latimer (2013) the notion of alongsideness to think about these reverberances without resorting to images of unity and co-becoming that may occlude the radical alterity at play. The alterity of soils demands, I have argued, another mode of togetherness, one that does not imply embroilment or communion. It demands being in extension, being at unison, in proximity, exchanging intensities without any further commitment, without an ethical project other than being together in divergence.

The pragmatic and theoretical program behind soil refusal is critical, I suggest, in a time of enhanced ecological sensitivity. Modern enlightenment has accounted for critters, landscapes, and the elements only insofar as they are introduced into the dramaturgy of the human. They are brought into sharp relief when they need to be mobilized for industrial development or capitalist expansion, or when they are called upon for our enjoyment in gardens and "conservation areas," or when they get mixed up in our political disputes, or when they need to stand as bearers of our identities, imaginations, and anxieties. But on their own, mountains, rivers, trees, polar bears, and rocks are little more than the setting of History, secondary actors trapped in a plot whose arc is indifferent to their proclivities and needs. The Other shines only under the spotlight of the One.²

This modern contract is at the root of our current ecological crisis, and the recognition of nonhuman Others *as such* is, many have asserted, a critical condition for resisting planetary catastrophe (Hird 2009; Ginn et al. 2014; Van Dooren 2014). For all its complexities and limitations, the so-called "Anthropocene" has summoned the need for a new pact of conviviality with earthly things and processes, and critical thinkers have stressed that this call will be futile if it does not involve a serious and profound attempt at thinking *with* nonhumans, and not only for them.

Soil refusal is an attempt at taking this call seriously. What does it mean to account for soils *as such*? Recently, Anna Krzywoszynska (2019) has invoked the relevance of *attentiveness* for generating more ethical relations with soils and nonhumans at large. I heed this call, while adding that attentiveness can only be fully attentive to the existence of more-than-human entities if human modes of attention are not imposed onto them. The relational program needs to be expanded to include non-relationality as one of the terms that need to be included, with the consequent risk of transforming "relationality" into a floating signifier—but gaining the possibility of including soils, rocks, air, rivers, and biota into relational experiments in their full ontological capacities.

Notes

- 1 I thank Anna Krzywoszynska for pointing out this connection.
- 2 Viveiros de Castro's discussion on native epistemologies and equivocal relationality provides apt reflection for this discussion. As in the challenge posed by Viveiros de Castro (2014), the problem is not how to account for the Other but to what extent the Other is able to define what Otherness means.

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