BODILY NATURES

SCIENCE, ENVIRONMENT, AND THE MATERIAL SELF

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Bodily Natures

> [Matter] is not little bits of nature, or a blank slate, surface, or site passively awaiting signification, nor is it an uncontested ground for scientific, feminist, or Marxist theories. Matter is not immutable or passive. Nor is it a fixed support, location, referent, or source of sustainability for discourse.
>
> —Karen Barad, *Meeting the Universe Halfway*

> And the word *environment*. Such a bloodless word. A flat-footed word with a shrunken heart. A word increasingly disengaged from its association with the natural world. Urban planners, industrialists, economists, developers use it. It's a lost word, really. A cold word, mechanistic, suited strangely to the coldness generally felt toward nature.
>
> —Joy Williams, *Ill Nature*

Karen Barad and Joy Williams alert us to the rather shabby theoretical and rhetorical treatment of "matter" and "environment" in the late twentieth and early twenty-first centuries. *Matter,* the vast stuff of the world and of ourselves, has been subdivided into manageable "bits" or flattened into a "blank slate" for human inscription. The *environment* has been drained of its blood, its lively

creatures, its interactions and relations—in short, all that is recognizable as "nature"—in order that it become a mere empty space, an "uncontested ground," for human "development."

If nature is to matter,[1] we need more potent, more complex understandings of materiality. Side by side, Barad's critique of the linguistic turn and Williams's appraisal of the word *environment* suggest a troubling parallel between the immateriality of contemporary social theory and a widespread, popular disregard for nonhuman nature. This book will address the dematerializing networks that cross through academic theory, popular culture, contemporary discourse, and everyday practices by focusing on the possibilities for more robust and complex conceptions of the materiality of human bodies and the more-than-human world. Specifically, *Bodily Natures* explores the interconnections, interchanges, and transits between human bodies and nonhuman natures. By attending to the material interconnections between the human and the more-than-human world, it may be possible to conjure an ethics lurking in an idiomatic definition of *matter* (or *the matter*): "The condition of or state of things regarding a person or thing, esp. as a subject of concern or wonder" (*Oxford English Dictionary*). Concern and wonder converge when the context for ethics becomes not merely social but material—the emergent, ultimately unmappable landscapes of interacting biological, climatic, economic, and political forces.

Potent ethical and political possibilities emerge from the literal contact zone between human corporeality and more-than-human nature. Imagining human corporeality as trans-corporeality, in which the human is always intermeshed with the more-than-human world, underlines the extent to which the substance of the human is ultimately inseparable from "the environment." It makes it difficult to pose nature as mere background, as Val Plumwood would put it,[2] for the exploits of the human since "nature" is always as close as one's own skin—perhaps even closer. Indeed, thinking across bodies may catalyze the recognition that the environment, which is too often imagined as inert, empty space or as a resource for human use, is, in fact, a world of fleshy beings with their own needs, claims, and actions. By emphasizing the movement across bodies, trans-corporeality reveals the interchanges and interconnections between various bodily natures. But by underscoring that *trans* indicates movement across different sites, trans-corporeality also opens up a mobile space that acknowledges the often unpredictable and unwanted actions of human bodies, nonhuman creatures, ecological systems, chemical agents, and other actors. Emphasizing the material interconnections of human corporeality with the more-than-human world—and, at the same time, acknowledging that material agency necessitates more capacious epistemologies—allows us to forge ethical and political positions that can contend with numerous late twentieth- and early twenty-first-century realities in which "human" and "environment" can by no means be considered as separate.

Two particularly striking movements of the late twentieth century—environmental justice and environmental health—mark significant material interchanges between human bodies and the environment. Thus, much of this book focuses on the literature, science, and popular culture of these two movements, quite broadly conceived, including the erotic early twentieth-century "environmental justice" writings of Meridel Le Sueur, contemporary accounts of environmental racism, environmental memoirs in which the material world becomes the very substance of self, and the volatile scientific and political struggles to define or dismiss the syndrome of multiple chemical sensitivity. As they promote substantial interconnections between humans and the wider world, environmental health and environmental justice accounts often reconceptualize material agencies—the often unpredictable and always interconnected actions of environmental systems, toxic substances, and biological bodies. Strangely, popular renderings of genetics ascribe agency to genes, but tend to disconnect genes from the environment and evolution. Thus, the final chapter envisions a posthuman environmental ethics in which genetics, evolution, and environment are imbricated in and affect the emergence as well as the unraveling of the human.

This chapter introduces some of the theoretical models, questions, and arguments of the book, focusing on how feminist corporeal theory, disability studies, environmental humanities, and science studies productively engage with the materiality of human bodies and nonhuman natures. Ironically, despite the tremendous outpouring of feminist theory and cultural studies of "the body," much of this work tends to focus exclusively on how various bodies have been discursively produced, which casts the body as passive, plastic matter. As Elizabeth Wilson puts it, "The body at the center of these projects is curiously abiological—its social, cultural, experiential, or psychical construction having been posited against or beyond any putative biological claims" (*Neural Geographies* 15). Bracketing the biological body, and thereby severing its evolutionary, historical, and ongoing interconnections with the material world, may not be ethically, politically, or theoretically desirable. Trans-corporeality offers an alternative. Trans-corporeality, as a theoretical site, is where corporeal theories, environmental theories, and science studies meet and mingle in productive ways. Furthermore, the movement across[3] human corporeality and nonhuman nature necessitates rich, complex modes of analysis that travel through the entangled territories of material and discursive, natural and cultural, biological and textual.

Throughout the book, I will examine how various models of trans-corporeality are emerging not only in a broad expanse of scholarship and theory, but in popular culture, literary texts, and social practices. My intention is not to conjure up a new theory so much as to work across separate fields, forging connections and suggesting ethical and political perspectives. If trans-corporeality were some sort of rarefied, new theoretical invention, it would not travel very well across intellectual, scientific, political, and popular domains. Moreover, the

fact that "bodily natures" are emerging across different domains suggests that the concept has the potential to perform potent cultural work. Although most of this book does not address cultural studies directly, cultural studies models—that take popular culture seriously, that trace peculiar but potent intersections, and that insist upon the political relevance of academic practice—deeply inform my approach. I find the many bodily natures discussed throughout this book—of science studies, environmental health, environmental justice, popular epidemiology, disability studies, corporeal feminism, film, photography, material memoir, science fiction, and evolution—to be both theoretically provocative and politically potent, as they recast our most basic understandings of self and world as separate entities.

Pheng Cheah, critiquing the disdain for nature and "the given" in contemporary cultural theory, argues that this "obsessive pushing away of nature may well constitute an acknowledgement-in-disavowal that humans may be natural creatures after all" (108). I think it is crucial to address this "obsessive pushing away of nature," which has not only dominated social theory and humanities scholarship, but also infuses everyday beliefs and practices, rendering environmentalism a distant, dismissible enterprise. Rather than arguing, however, that humans are natural creatures, that nonhuman animals are cultural creatures, and that the nature/culture divide is not sustainable (all of which I believe), I will locate my inquiry within the many interfaces between human bodies and the larger environment. Those particular sites of interconnection demand attention to the materiality of the human and to the immediacy and potency of all that the ostensibly bounded, human subject would like to disavow. Trans-corporeality, emerging in social theories, science, science studies, literature, film, activist websites, green consumerism, popular epidemiology, and popular culture, counters and critiques the obdurate, though postmodern, humanisms that seek transcendence or protection from the material world. Thus, *Bodily Natures* grapples with the ways in which environmental ethics, social theories, popular understandings of science, and conceptions of the human self are profoundly altered by the recognition that "the environment" is not located somewhere out there, but is always the very substance of ourselves.

Feminist Theory's Flight from Nature and Biology

Nature has long been waged as a philosophical concept, a potent ideological node, and a cultural repository of norms and moralism against women, people of color, indigenous peoples, queers, and the lower classes. In *Undomesticated Ground: Recasting Nature as Feminist Space*, I argued that because *woman* has long been defined in Western thought as a creature mired in "nature" and

thus outside the domain of human transcendence, rationality, subjectivity, and agency, most feminist theory has worked to disentangle *woman* from *nature*. Working within rather than against predominant dualisms, many important feminist arguments and concepts necessitate a rigid opposition between nature and culture. For example, feminist theory's most revolutionary concept—the concept of gender, as distinct from biological sex—is predicated upon a sharp opposition between nature and culture. Even as it would be difficult to overestimate the explanatory and polemical force of feminist theories of social construction, such theories are haunted by the pernicious notions of nature that propel them. Thrust aside, completely removed from culture, this nature—the repository of essentialism and stasis—nonetheless remains dangerously intact. Rather than fleeing from this debased nature, which is associated with corporeality, mindlessness, and passivity, it would be more productive for feminist theory to undertake the transformation of gendered dualisms—nature/culture, body/mind, object/subject, resource/agency, and others—that have been cultivated to denigrate and silence certain groups of human as well as nonhuman life (Alaimo, *Undomesticated Ground* 4–14).

Human corporeality, especially female corporeality, has been so strongly associated with nature in Western thought that it is not surprising that feminism has been haunted not only by the specter of nature as the repository of essentialism, but by, as Lynda Birke puts it, "the ghost of biology" (44). She charges that the "underlying assumption that some aspects of 'biology' are fixed becomes itself the grand narrative (albeit implicit) from which feminist and other social theorists are trying to escape" (ibid.). Nancy Tuana, noting a resurgence of popular belief in racial and sexual determinism, charges that "we feminists have been epistemically irresponsible in leaving in place a fixed, essential, material basis for human nature, a basis which renders biological determinism meaningful" ("Fleshing Gender" 57). Only by directly engaging with matter itself can feminism do as Tuana advocates: render biological determinism "nonsense." For instance, rather than bracketing the biological body, Birke insists upon the need to understand it as "changing and changeable, as *transformable*" (45). Cells "constantly renew themselves," bone "is always remodeling," and "bodily interiors" "constantly react to change inside or out, and act upon the world" (ibid.). Even with these few examples, it is clear that the notion of biology as destiny, which has long haunted feminism, depends on a particular—if not peculiar—notion of biology that can certainly be displaced by other models. Since biology, like nature, has long been drafted to serve as the armory for racist, sexist, and heterosexist norms, it is crucial that feminists recast the norms, values, and assumptions that permeate this field. For example, Hird in "Naturally Queer" offers an abundance of biological examples that make heterosexism seem utterly unnatural: "The *vast* majority of cells in the human body are intersex"; "most of the organisms in four

out of the five kingdoms do not require sex for reproduction"; and, marvelously, the Schizophyllum "has more than 28,000 sexes." She concludes by arguing, "We may no longer be certain that it is nature that remains static and culture that evinces limitless malleability" (85–86, 88). If this biology sounds queer, all the better.[4] As a "situated knowledge" (see Haraway, "Situated Knowledges"), this queer biology contests not only the content and the ramifications of normative hetero-biology, but its claim to objectivity and neutrality.

Perhaps the only way to truly oust the twin ghosts of biology and nature is, paradoxically, to endow them with flesh, to allow them to materialize more fully, and to attend to their precise materializations. The theories, literature, activist websites, photography, and other texts and practices discussed in this book perform exactly this sort of cultural work as they grapple with both apparent and seemingly apparitional materializations.

The Material Turn in Feminist Theory, Environmental Humanities, and Science Studies

Wondering whether it makes her a "survivor or a traitor of the age of (post)structuralism," Teresa de Lauretis boldly suggests:

> [N]ow may be a time for the human sciences to reopen the questions of subjectivity, materiality, discursivity, knowledge, to reflect on the *post* of posthumanity. It is a time to break the piggy bank of saved conceptual schemata and reinstall uncertainty in all theoretical applications, starting with the primacy of the cultural and its many "turns": linguistic, discursive, performative, therapeutic, ethical, you name it. (368)

What has been most notably excluded by the "primacy of the cultural" and the turn toward the linguistic and the discursive is the "stuff" of matter. Theorists within the overlapping fields of feminist theory, environmental theory, and science studies, however, have put forth innovative understandings of the material world. Some feminist theorists, such as Moira Gatens, Claire Colebrook, and Elizabeth Bray, have embraced the work of Spinoza and Deleuze as counter-traditions to the linguistic turn. Others have reread theorists at the heart of poststructuralism—for example, Jacques Derrida (Vicki Kirby and Elizabeth Wilson), Michel Foucault (Ladelle McWhorter and Karen Barad), and Judith Butler (Karen Barad). Together, these theorists, along with others, constitute the material turn in feminist theory, a wave of feminist theory that takes matter seriously.[5] Such radical rethinkings of materiality are difficult to sustain within a discursively oriented theoretical cosmos. For example, Donna Haraway's influential figure of the cyborg, which muddles nature/culture dualisms, has been

celebrated in most feminist theory and cultural studies as a figure that blurs the bounds between humans and technology—but, in this latest flight from nature, the cyborg is rarely embraced as an amalgamation of human and nature. Significantly, feminist cultural studies have embraced the cyborg as a social and technological *construct* but have ignored, for the most part, the *matter* of the cyborg, a materiality which is as biological as it is technological, both fleshy and wired, since the cyborg encourages human "kinship with animals" as well as with machines ("A Cyborg Manifesto" 154). Disturbingly, the critical reception of the cyborg as technological but not biological insinuates a transcendent cyber-humanism that shakes off worldly entanglements.

The material turn is by no means exclusive to feminist theory. New conceptions of materiality that are neither biologically reductive nor strictly social constructionist are emerging in many disciplines: environmental philosophy, corporeal feminism, disability studies, transgender theory, science studies, animal studies, new media studies, race theory, and other areas. The work of Gilles Deleuze and Felix Guattari, especially *A Thousand Plateaus*, and of Brian Massumi, who criticizes cultural theories of the body in which "matter, bodily or otherwise, never figures into the account *as such*" (4), presents palpable models of materiality. The body, "as such," is also essential to disability studies. Tobin Siebers, for example, in his essay "Disability in Theory: From Social Constructionism to the New Realism of the Body," contends that the "disabled body seems difficult for the theory of social construction to absorb: disability is at once its best example and a significant counterexample" (740). Transgender theory, according to Bernice L. Hausman, must examine the body as "a material entity, beginning with an interrogation of those categories, like gender, that have contributed to the body's contradictory status by serving as an alibi for a notion of identity that exists as pure information" (212). Scholars are even beginning to consider the dangerous proposition—given the virulent history of racial essentialism—that analyses of race need to attend to materiality. Michael Hames-Garcia in "How Real Is Race?" argues:

> [T]here are important reasons not to eliminate all considerations of biology and the body from our discussions of race, provided we understand biology as mutually constituted with culture and as significantly less determinate than it is often taken to be. In particular . . . an important dimension of what race is and how it functions results from the interaction of social ideologies of race with visible human difference. (324)

While it is still crucial to analyze and critique how "nature" and the "environment" circulate as potent discursive formulations, many of us would like to find ways to complement and complicate that sort of analysis with investigations that account for the ways in which nature, the environment, and the material

world itself signify, act upon, or otherwise affect human bodies, knowledges, and practices.[6] Notwithstanding the fact that theories of social construction have performed invaluable cultural work by critiquing the naturalized and oppressive categories of race, class, gender, sexuality, and ability, from an environmentalist perspective, such theories may bracket or minimize the significance, substance, and power of the material world. David W. Kidner, in an essay in *Environmental Ethics,* argues that social constructionism "colludes with commercialism in the long-term industrialist project of replacing the natural by the artifactual, defining a form of human existence which claims independence from natural processes and rhythms. Social constructionism therefore provides a model of nature which fits seamlessly into the industrialist view of the world" (352). Not surprisingly, many environmentally-oriented scholars seek to engage with the material world as something more than a humanly made concept or a plastic resource for human use. Charles E. Scott, in *The Lives of Things,* critiques the word *nature* in part because the meanings of the word "often draw us to an abstracting process rather than to the lives of things in their nondiscursive, dynamic interactions" (23). Scott uses the term *physicality* instead in order to evoke how "the lives of things show a considerable excess to meaning and sense" (73). Environmental phenomenology, such as that of Edward Casey and David Abram, locates human experience and perception within specific places. Casey asserts that "places serve as the *condition* of all living things" (15; emphasis in original). Similarly, Lawrence Buell contends that insofar as "human beings are biocultural creatures constructing themselves in interaction with surroundings they cannot not inhabit, all their artifacts may be expected to bear traces of that" (*Writing* 2). Thus, ecocriticism must develop modes of analysis that do not continue to emphasize the "disjunction between text and world" (Buell, *Environmental Imagination* 84), but instead reveal the environmental traces within all texts. Environmental historians, such as Richard Grove, Carolyn Merchant, William Cronon, Richard White, Ted Steinberg, and others, trace how the natural world impacts human history. Steinberg contends that "viewing nature as an active, shaping force in the past can help us change our understanding of some conventional topics in American history" ("Down to Earth" n.p.). He urges us to consider, for example, "how the ecological consequences of eating and flushing become so invisible, so enmeshed in the wish to forget" (ibid.). Forgetting that bodily waste must go somewhere allows us to imagine ourselves as rarefied rational beings distinct from nature's muck and muddle.

Such comforting distinctions are often challenged by science studies scholars who work at the crossroads of cultural formations and material worlds. Science studies, because it is informed by social and political theories and yet also contends with material substances, actions, and agencies, puts forth provocative, even jolting, methodologies and reconceptualizations. Bruno Latour, in *We Have Never Been Modern,* contends that our "intellectual life is out of kilter" due to the severing of scientific, sociological, and textual knowledge practices: "We may glorify the sciences, play power games or make fun of the belief in a reality, but we must not mix these three caustic fields" (5, 6). And yet the multitude of nature/culture "hybrids" that surround us cannot be understood in such segregated terms:

> The ozone hole is too social and too narrated to be truly natural; the strategy of industrial firms and heads of state is too full of chemical reactions to be reduced to power and interest; the discourse of the ecosphere is too real and too social to boil down to meaning effects. Is it our fault if the networks are *simultaneously real, like nature, narrated, like discourse, and collective, like society*? (6; emphasis in original)

Networks, then, require analyses that can grapple with their reality, narrativity, and collectivity—which is surely no small feat, given that scholars are trained, for the most part, to engage in only one of these three modes of investigation.

Drawing upon Latour, Susan Squier, in *Liminal Lives: Imagining the Human at the Frontiers of Biomedicine,* urges us to "examine the notion of social construction as critically as we do the notion of the natural, realizing that there is a material base to even the most seemingly socially constructed experiences or entities. It further counsels us to remember that the material world exercises a shaping effect on 'the literary,' as well as 'the scientific'" (46). Departing from the standard practices of literary studies, Squier insists not only that "language helps structure our sense of possibilities," but that "material conditions shape and reshape what we can put into words" (57). Scholarly analysis may reveal those material conditions; at the same time, the producers of various works of literature, art, and activism may themselves grapple with ways to render murky material forces palpable or recognizably "real." As the next chapter will demonstrate, Muriel Rukeyser, in her early twentieth-century poem *The Book of the Dead,* documented the medical, environmental, and social devastation wrought by silicosis in one particularly infamous industrial disaster. Rukeyser, determined to disclose the substantial nature of this disaster, turns to scientific and medical technologies capable of tracing the often invisible, but nonetheless material, flows of substances and forces between people, places, and economic/political systems.

Even as my desire to find more robust modes of analysis that make space for materiality is, in large part, motivated by my own environmentalist stance, there are no guarantees that emerging models of materiality will cultivate environmentalisms. Some recent models of materiality do not, in fact, value nature, nonhuman creatures, or ecological systems. Many make the cut so familiar to humanism, severing the person from all that surrounds them. "The body," meaning the human body, of course, may be endowed with agency and substance,

but the critical interest ends at the skin. Pamela Moss and Isabel van Dyck, for example, in "Inquiry into Environment and Body: Women, Work, and Chronic Illness," aim to "situate body both in its material and representational form" (746) and to analyze the environment in both material and discursive terms. Even as they open up significant questions regarding the "spatiality of body and environment" (749), "environment" appears as a "socially negotiated space inclusive of its material aspects" (746). They use the term *environment,* rather than *place,* not because it invokes the natural world but "because it incorporates more widely the multiple positions individuals occupy in the various sets of relations they engage in and cautions against individualistic conceptions of place as in humanistic definitions" (739). Even as people are embodied within this analysis, the term *environment* is used for its analytical convenience: the material world vanishes into a humanly made, abstract calculus of power and identity. Such a formulation not only renders nature invisible but forecloses possible alliances between disability activism and environmentalism, as well as a consideration of how various toxins may exacerbate or cause chronic illnesses. By contrast, in chapter 5, I argue that reading multiple chemical sensitivity as a mode of trans-corporeality forges productive alliances among environmentalism, disability activism, and an ethical and political conception of the "deviant agencies" cutting across bodies and places.

Elizabeth Grosz, whose influential book *Volatile Bodies* is a founding corporeal feminist text, argues for the significance of Darwin in her more recent books, *Time Travels: Feminism, Nature, Power* and *The Nick of Time.* Grosz calls for philosophers and social theorists to reconsider Darwinian theory and, more generally, to attend to biology and materiality. She asks, provocatively, "what would a new conception of culture, one which refuses to sever it from nature, look like?" (*Time Travels* 52). Many of her analyses underscore materiality. For example, she reveals that *The Nick of Time* was "written as a remembrance of what we have forgotten—not just the body, but that which makes it possible and which limits its actions: the precarious, accidental, contingent, expedient, striving, dynamic status of life in a messy, complicated, resistant, brute world of materiality" (2). Pertinent to my focus on trans-corporeality, she insists that "we need to understand the body, not as an organism or entity in itself, but as a system, or series of open-ended systems, functioning within other huge systems it cannot control through which it can access and acquire its abilities and capacities" (3). At first glance, Grosz's project would seem allied with other environmentally-oriented theories, as she advocates "reconceptualizing the relations between the natural and the social, between the biological and the cultural, outside the dichotomous structure in which these terms are currently enmeshed" (*Time Travels* 30). Grosz, however, clearly distinguishes herself from "eco-feminist and eco-philosophy," which she characterizes as "offshoots" "of the ecology movement" (34, 47). Resisting "an ecological understanding of the natural order," her reading of Darwin corrects outmoded notions of ecological equilibrium or stasis. But her philosophical vision does much more; it calls up a perspective that transcends any sort of environmentalism: "If an ecology that values not only the living—the present—but also the future could be possible, it would be very close to the (non)moral ontology of Darwinism, which mourns no particular extinction and which waits, with surprise, to see what takes the place of the extinct" (ibid., n. 4, 220–221). Grosz projects a Darwinian philosophy that is rich with both a recognition of materiality and a sense of wonder—yet dismisses environmental concerns. The subject here, oddly, is not a person but "Darwinism" itself, "which waits, with surprise, to see what takes the place of the extinct." In this strange moment, Darwinism becomes a disembodied, transcendent, omniscient observer, reinstalling a rather humanist, even deified subject. This disengaged philosophical platform is uninhabitable for anyone with ethical and political commitments to environmentalism and environmental justice. By contrast, trans-corporeality, as a descendant of Darwinism, insists that the human is always the very stuff of the messy, contingent, emergent mix of the material world.

Maps of Transit

In a book review entitled "'The 'Environment' Is Us," Harold Fromm gives this arresting image of what I'm calling trans-corporeality: "The 'environment,' as we now apprehend it, runs right through us in endless waves, and if we were to watch ourselves via some ideal microscopic time-lapse video, we would see water, air, food, microbes, toxins entering our bodies as we shed, excrete, and exhale our processed materials back out" (2). Fromm argues that the "environment" "looks more and more to be the very substance of human existence in the world" (ibid.). Edward S. Casey, drawing upon Merleau-Ponty, makes a similar argument: "my body and natural things are not just coterminous but continuous with each other. . . . The fibers of culture and nature compose one continuous fabric" (255, 256). The recognition that bodies and places are continuous incites transit across traditional disciplinary boundaries. Christopher Sellers argues "for an environmental history of the body and for a more embodied environmental history," contending that environmental historians can "encourage and extend mediation between naturalist and culturalist perspectives" ("Thoreau's Body" 504, 501). Linda Nash places "the human body at the center of an environmental history" in her book *Inescapable Ecologies: A History of Environment, Disease, and Knowledge.* She asks, "Where does the body end and 'nonhuman nature' begin?" asserting that "environments have shaped human flesh in minute and profound ways," thus it is a mistake to write the history of human health without considering the envi-

ronment (8, 9). Disability studies, in particular, may reject medical models of the enclosed body in order to trace material/social interchanges between body and place. Rosemarie Garland-Thomson explains, "Disability studies reminds us that all bodies are shaped by their environments from the moment of conception. We transform constantly in response to our surroundings and register history on our bodies. The changes that occur when body encounters world are what we call disability" (524). If, as Garland-Thomson argues, "all bodies are shaped by their environments from the moment of conception," then there is never a time in which the human can be anything but trans-corporeal. Moreover, disability studies may be enriched by attending not only to the ways in which built environments constitute or exacerbate "disability," but to how materiality, at a less perceptible level—that of pharmaceuticals, xenobiotic chemicals, air pollution, etc.—affects human health and ability.

What are some of the routes through person and place? What ethical or political positions emerge from the movement across human and more-than-human flesh? Perhaps the most palpable trans-corporeal substance is food, since eating transforms plants and animals into human flesh. While eating may seem a straightforward activity, peculiar material agencies may reveal themselves during the route from dirt to mouth. Ladelle McWhorter, in *Bodies and Pleasures: Foucault and the Politics of Sexual Normalization,* boldly undertakes a genealogy of her own body. Although her book focuses on sexual orientation, it also includes accounts of "becoming white" as well as a rather surprising philosophical account of "becoming dirt." She tells how her quest to grow a real, flavorful tomato ends not only with a "high regard for dirt," but with a sense of kinship to this degraded substance. Munching on a bag of Doritos, she is about to toss the crumbs in her composting trench but stops:

> "Nope," I thought, "can't feed that crap to my dirt." I threw the crumbs in the trash and reached for that one last chip. It was halfway to my mouth before I was struck by what I'd just said. I looked out the kitchen window at my garden, my trenches, my dirt, and then my gaze turned downward toward my Dorito-stained hand. Dirt and flesh. Suddenly it occurred to me that, for all their differences, these two things I was looking at were cousins—not close cousins, but cousins, several deviations once removed. I haven't purchased a bag of Doritos since. (167)

As that last Dorito hangs—in midair—the epiphanic narrative surrounds it with a humorous recognition that this precarious sense of kinship between dirt and flesh may not only elevate dirt to the status of family member but, in this case, elevate the very substance of the self into something worthy of proper care and feeding. A queer, green, ethical family, indeed. We can trace the literal route though which dirt becomes flesh via the tomato, but McWhorter doesn't belabor that point, perhaps because dwelling on food, rather than on dirt, the very matrix of life, serves up nature as an ingestible morsel. True, we are transformed by the food we consume (as the film *Supersize Me* attests), but for the most part the model of incorporation emphasizes the outline of the human: food disappears into the human body, which remains solidly bounded.

In their revealing article "Incorporating Nature," Margaret FitzSimmons and David Goodman argue for a model of incorporation "as metaphor and as process—as a useful way of bringing nature into the body of social theory and, more literally, into the body of living organisms, including ourselves" (194). FitzSimmons and Goodman's complex model, which accounts for the agency of nature, as well as social, economic, and political forces, promotes the notion of incorporation "to capture the relational materiality of ecologies and bodies that characterizes agro-food networks" (216). While this formulation provides an illuminating way of thinking through the productions of nature/culture, ultimately the production of food is a rather one-sided affair, as the model of incorporation is only one bite away from capitalist consumption. Although McWhorter begins with a simple desire for a tomato, her scenario moves in the opposite direction, extending her own flesh to the dirt, rather than merely incorporating the fruits of the dirt into herself. McWhorter's Foucauldian analysis of corporeality, which for most of the book concerns not ecological issues but the regulatory regimes of sexual identity, reaches into the ground, becoming a thorough redefinition of the stuff of matter.

Drawing upon Spinoza rather than Foucault, Moira Gatens similarly describes human bodies that open out into the more-than-human world. The identity of the human body "can never be viewed as a final or finished product as in the case of the Cartesian automaton, since it is a body that is in constant interchange with its environment. The human body is radically open to its surroundings and can be composed, recomposed and decomposed by other bodies" (110). Whereas in a model of incorporation, the human self remains the selfsame, in Gatens's reading of Spinoza, the human body is never static because its interactions with other bodies always alter it. Gatens explains that these "'encounters' with other bodies are good or bad depending on whether they aid or harm our characteristic constitution" (ibid.). Oddly, Spinoza's understanding of the body seems particularly akin to some twenty-first-century models of corporeality, such as that of the environmental health movement, which warns that particular "interchange[s] with [the] environment" may result in disease, illness, or death. Indeed, the many protests against genetically modified foods warn that these engineered substances may not be benignly incorporated into the human body. Genetically modified foods may have unintended effects, on humans or other creatures, that science may not discover for decades.

While the gastronomical relations between earth and stomach exhibit a digestible example of trans-corporeal transit, Vicki Kirby presents a counterin-

tuitive account of how human corporeality opens onto the more-than-human world. Kirby, in *Telling Flesh: The Substance of the Corporeal,* interprets Jacques Derrida's famous dictum "there is no outside of text": "It is as if the very tissue of substance, the ground of Being, is this mutable intertext—a 'writing' that both circumscribes and exceeds the conventional divisions of nature and culture" (Kirby 61). Kirby considers the possibility "that nature scribbles or that flesh reads": "For if nature is literate, then the question 'What is language?'—or more scandalously, 'Who reads?'—fractures the Cartesian subject to its very foundation" (127). She extends the poststructuralist model of textuality to such a degree that its most basic terms are radically rewritten:

> What I am trying to conjure here is some "sense" that word and flesh are utterly implicated, not because "flesh" is actually a word that mediates the fact of what is being referred to, but because the entity of a word, the identity of a sign, the system of language, and the domain of culture—none of these are autonomously enclosed upon themselves. Rather they are all emergent *within* a force field of differentiations that has no exteriority in any final sense. (ibid.)

Kirby's critique transforms poststructuralism into a truly posthumanist horizon, as it refuses to delineate the human, the cultural, or the linguistic against a background of mute matter. Nature, culture, bodies, texts all unravel into a limitless "force field of differentiation." For McWhorter, Gatens, and Kirby, that which had been exclusive to the human opens out into a wider realm in which the substance of human corporeality and, in Kirby's case, even human linguistic systems are not ultimately separable from that which it is difficult not to call "nature." These theorists can be read as a sort of postscript to feminism's many invocations of nature as an undomesticated, literally nondomestic, space. For the walls of domestic enclosure that would separate human from nature and define the human as such are nowhere to be found, as human corporeality and textuality effortlessly extend into the more-than-human world. Word, flesh, and dirt are no longer discrete.

Nancy Tuana's remarkable essay "Viscous Porosity: Witnessing Hurricane Katrina" captures similar indiscretions—as it swirls together wind, rain, floods, flesh, racism, politics, psychology, hydrology, poverty, and PVCs, arguing that Hurricane Katrina must be understood as "a complex interaction" of both "social practices and natural phenomena" (193). This interactionist ontology is encapsulated by her conception of "viscous porosity." She asserts that there is "a viscous porosity of flesh—my flesh and the flesh of the world. This porosity is a hinge through which we are of and in the world. I refer to it as viscous for there are membranes that effect [*sic*] the interactions. These membranes are of various types—skin and flesh, prejudgments and symbolic imaginaries, habits and embodiments" (199–200).

Significantly, Tuana's notion of viscosity allows her to highlight "distinctions" as ethical and political matters. Even as she argues that Katrina demonstrated

that "there is no sharp ontological divide" between the natural and social factors that caused the hurricane, "but rather a complex interaction of phenomena," she insists upon accountability:

> This does not mean that we cannot attempt to determine the extent to which human factors increased the intensity of a hurricane or some other weather related phenomena. Indeed issues of distributive justice may require that such a distinction be made in order to determine how to apportion responsibility across nations for harm from human-induced climate change as may be done if we adopt a "polluter-pays" principle of responsibility. Again, distinctions can be made, which is why I employ the phrase "viscous porosity," rather than fluidity. (193)

Viscous porosity, then, with its emphasis on mediating membranes, which may be biological, social, and political, is a powerful model for understanding material interactions in scientific/ethical/political terms and epitomizes the trans-corporeality that I advocate throughout *Bodily Natures.*

Trans-Corporeality and Environmentalism

Because trans-corporeality brings the human body into focus, it is possible to charge that it reinstalls anthropocentrism. Jhan Hochman, for instance, would probably condemn trans-corporeality as another sort of "creeping metonymy," in which "culture invades nature by calling itself *natural* or *part of nature*" (171). Hochman asserts that "what nature needs is not a bond with culture but a separation or divorce, some autonomy, at last some protection through 'shelters' (preserves); offering sanctuary from culture's constant battering and stalking" (188). The personification of nature as a battered wife is creepy, but worse, it doesn't begin to convey the complicated dynamics between cultures and environments. It is true that the survival of many species depends on protecting ecosystems and habitats from plunder and degradation, but sustainable human practices within particular environments can also help maintain environments. At this point in time, with global climate change proceeding even more rapidly than was projected, we hardly have the luxury of imagining any expanse of land or sea as beyond the reach of humanly-induced harm. Matters of environmental concern and wonder are always "here," as well as "there," simultaneously local and global, personal and political, practical and philosophical. Although trans-corporeality as the transit between body and environment is exceedingly local, tracing a toxic substance from production to consumption often reveals global networks of social injustice, lax regulations, and environmental degradation. I agree with Ursula Heise, who argues in *Sense of Place and Sense of Planet: The Environmental Imagination of the Global* that "what is crucial for ecological awareness and environmental ethics is arguably not so much a sense of place as a sense of planet—a sense of how political, economic, technological, social, cultural, and ecological

networks shape daily routines" (55). Heise advocates "eco-cosmopolitanism," which is "an attempt to envision individuals and groups as part of planetary 'imagined communities' of both human and nonhuman kinds" (61). My project may be allied with Heise's in that recognizing trans-corporeality may incite inquiry into global networks. Thus, although the notion of trans-corporeality may seem anthropocentric, ultimately the ostensible center is extended throughout multiple, often global, networks. Moreover, inquiry as a sustained practice is as crucial for trans-corporeal environmentalism as it is for Heise's notion of eco-cosmopolitanism, which, she argues, values "the abstract and highly mediated kinds of knowledge and experience that lend equal or greater support to a grasp of biospheric connectedness" (62). This book makes a somewhat similar argument: an understanding of the material interchanges between bodies (both human and nonhuman) and the wider environment often requires the mediation of scientific information.

The need to cultivate a tangible sense of connection to the material world in order to encourage an environmentalist ethos is underscored by the pervasive sense of disconnection that casts "environmental issues" as containable, eccentric, dismissible topics. Even as environmental health, environmental justice, popular epidemiology, and green consumerism gain strength, they remain peripheral movements. The most pervasive assumption within the United States would seem to be that people are separate from nature, the environment, and other material substances and forces. Witness, for example, the blasé use of dangerous pesticides and herbicides at home (the attitude may be offhand, but the poison isn't). Observe, as well, the multitude of horror movies that shock us with the prospect of monstrous human-animal hybrids (the giant cockroach that looks like a man, the seductive woman who is really a cat-beast), only to conclude with the triumphant transcendence of "man."[7] Or consider the astounding right-wing denial of global warming, which casts it as a matter of personal "belief." It seems we have been granted the right to choose whether or not we "believe in" global warming, as if (quasi-religious) beliefs or personal opinions could insulate us from the emergent processes of material/political realities.[8] Indeed, huge McMansions, giant trucks, and gas-guzzling SUVs (all of which contribute to the vast amounts of carbon being emitted into the atmosphere) serve to insulate their inhabitants from the world.[9] Attention to the material transit across bodies and environments may render it more difficult to seek refuge within fantasies of transcendence or imperviousness.

If the predominant understanding of environmental ethics has been that of a circle that has expanded in such a way as to grant "moral consideration to animals, to plants, to [nonhuman] species, even to ecosystems and the Earth" (Light and Rolston 7), trans-corporeality denies the human subject the sovereign, central position. Instead, ethical considerations and practices must emerge from

a more uncomfortable and perplexing place where the "human" is always already part of an active, often unpredictable, material world. Many of the subjects of *Bodily Natures* are akin to the "ecological subjects" so beautifully elaborated by Lorraine Code, subjects that are "well placed, collectively and singly, to own and take responsibility for their epistemic-moral-political activity" (5). Code advocates "ecological thinking," which "relocates inquiry 'down on the ground' where knowledge is made, negotiated, circulated," and which "proposes a way of engaging . . . with the implications of patterns, places, and the interconnections of lives and events in and across the human and nonhuman world, in scientific and secular projects of inquiry" (5, 4). She argues that, in ecological thinking, "knowers are repositioned as self-consciously part of nature, while anthropocentric projects of mastery are superseded by projects of displacing Enlightenment 'man' from the center of the universe" (32). This explains how an epistemological shift can become an ethical matter; trans-corporeal subjects must also relinquish mastery as they find themselves inextricably part of the flux and flow of the world that others would presume to master.

Code proposes a coherent conception of ecological thinking, which she sees as "infusing, shaping and circulating throughout the social-material-intellectual atmosphere(s)" (28).[10] Even as I endorse the epistemology she advocates, my purpose here is not to propose a particular epistemology, but instead to trace how trans-corporeality often ruptures ordinary knowledge practices. *Bodily Natures* analyzes particular moments of confusion and contestation that occur when individuals and collectives must contend not only with the materiality of their very selves but with the often invisibly hazardous landscapes of risk society, which require scientific mediation. Moreover, the cultural artifacts I investigate do not yield one consistent sort of epistemology, but instead reveal that a recognition of trans-corporeality entails a rather disconcerting sense of being immersed within incalculable, interconnected material agencies that erode even our most sophisticated modes of understanding.

Toxic Bodies, Science, and the Material Self

One of the most vivid examples of this immersion in often unpredictable material agencies is the now all too familiar idea that human bodies are toxic. The *Onion* lampooned this clichéd figure in a mock news story:

> The Environmental Protection Agency issued a bulletin Tuesday warning the bodies of American citizens, with their large concentrations of artificial, synthetic, and often toxic substances, have been reclassified as industrial waste. "The average human body is now only 35 percent organic," EPA chief Ralph Johnson

said. "Due to changes brought about by modern detergents, silicone implants, and processed cheese food product, it is no longer safe to allow human tissue to come into contact with our nation's topsoil." ("EPA Warns" n.p.)

Classifying human bodies as dangerous hazardous waste is a striking example of what many people already know but either cynically accept or try to deny—that all that scary stuff, supposedly out there, is already within. Consumer products manufactured to do what they are supposed to do—taste like cheese yet squirt out of a bottle—may do other, unwanted things as well, such as cause cancer or litter the planet. When McWhorter thinks she'd better protect her dirt from the very Doritos she happily consumes, and the imagined EPA pronounces it must protect the U.S. topsoil from the bodies of its citizens, these bizarre moments tear through conventional conceptual landscapes that allow us to take refuge within the outlines of an impermeable, even disembodied, human figure.

The existence of toxic bodies, both human and nonhuman—however clichéd, however repressed or denied—still mixes things up. Since the same chemical substance may poison the workers who produce it, the neighborhood in which it is produced, and the web of plants and animals who end up consuming it, the traffic in toxins reveals the interconnections among various movements, such as environmental health, occupational health, labor, environmental justice, popular epidemiology, environmentalism, ecological medicine, disability rights, green living, antiglobalization, consumer rights, and children's health and welfare. The traffic in toxins may render it nearly impossible for humans to imagine that our own well-being is disconnected from that of the rest of the planet or to imagine that it is possible to protect "nature" by merely creating separate, distinct areas in which it is "preserved." In other words, the ethical space of trans-corporeality is never an elsewhere but is always already here, in whatever compromised, ever-catalyzing form. A nearly unrecognizable sort of ethics emerges—one that demands that we inquire about all of the substances that surround us, those for which we may be somewhat responsible, those that may harm us, those that may harm others, and those that we suspect we do not know enough about. A trans-corporeal ethics calls us to somehow find ways of navigating through the simultaneously material, economic, and cultural systems that are so harmful to the living world and yet so difficult to contest or transform.

Tracing the traffic in toxins, for example, may allow us to notice that carcinogenic chemicals are produced by some of the same companies that sell chemotherapy drugs. This may be a useful thing to notice, but not an easy thing to remedy. It is certainly difficult, in a world of simulacra and slick public relations campaigns, to shift our focus from image to substance. Breast Cancer Action, the "bad girls of breast cancer," attempt just that. They expose corporations that "pinkwash" their products by claiming they "care about breast cancer by promoting a pink ribbon campaign, but manufacture products that are contributing

to the epidemic" (Breast Cancer Action website). Cosmetics companies, food manufacturers, automobile manufacturers, and others decorate their complicity in the (breast) cancer epidemic with that ubiquitous pink ribbon. Significantly, that pink ribbon, which is a symbol without substance, is pasted on myriad consumer goods and services for fundraising and "awareness." Breast Cancer Action, however, focuses attention on the ingredients within the products, revealing their carcinogenicity and thus provoking recognition that these things that surround us are not benign—the pink ribbon suddenly becomes sinister!—but are substances that betray human permeability and vulnerability. This disturbing sense of trans-corporeality is a universe apart from the glib call of the Susan G. Komen Foundation for people to join "Passionately Pink for the Cure": "You'll help raise awareness among your friends, family or co-workers; and help end breast cancer forever!" (Susan G. Komen for the Cure website). The women in the photographs on the Komen website are inexplicably happy, perhaps because "awareness" is a comforting, mental, even ethereal, state; it is magical thinking to protect us from harm. Being aware of breast cancer will not, however, do anything to end it, especially since the actual content of this awareness is vague, at best, and blatantly ignores the role that toxicants in food, air, water, cosmetics, and other consumer products play in causing cancer.

True awareness eludes most, if not all, members of risk society. As Ulrich Beck asserts, the "risks" of modernization are difficult, if not impossible, for individuals to apprehend without access to scientific technology or institutions. Understanding the risks requires "the 'sensory organs' of science—*theories, experiments, measuring instruments—in order to become visible or interpretable as hazards at all*" (27; emphasis in original). The trans-corporeality of environmental health and environmental justice that I examine in this book emerges from exactly this sense of risk society, in which individuals require scientific knowledge not only to assess risks but to survey the landscape of the self.

Environmental activism and green consumerism have emerged from and contribute to the recognition that our material interconnection with the wider world puts us at risk. Greenpeace, for example, launched a campaign during 2004–2005 against mercury, which encouraged people to send in a sample of their own hair to be tested for mercury contamination. Such an action renders palpable one's own corporeal connection to global economic, industrial, and environmental systems as well as to global environmental campaigns, especially since Greenpeace, in turn, informed the participants of the levels of mercury in their bodies, explained the significance of that number in terms of possible health effects, and discussed how to minimize mercury exposure through both dietary and political means. Someone who participated in this campaign may well have considered how her own body was literally enmeshed within the wider world. When I received my results, I imagined various routes that mercury may have taken to my

body (tuna sandwiches in childhood? Dallas air pollution?), but I was also struck by the bare number on the page (.35) and the process by which scientific testing transformed my hair into a chunk of data (not unlike Latour's "circulating reference").[11] It is more than a little unnerving, I think, not only to receive scientific data about the toxicity of one's own body but to consider how this particular bit of knowledge appears only after traveling through contingent networks that intermesh science and activism. Not only did I not have access to this number before I happened to open a random letter from Greenpeace, but I did not know that I would want such a number or even that such a number could exist. Traveling through the mail as well as through networks interlacing power and knowledge, this chunk of hair became a primer for trans-corporeal risk society.

What I argue throughout this book is that understanding the substance of one's self as interconnected with the wider environment marks a profound shift in subjectivity. As the material self cannot be disentangled from networks that are simultaneously economic, political, cultural, scientific, and substantial, what was once the ostensibly bounded human subject finds herself in a swirling landscape of uncertainty where practices and actions that were once not even remotely ethical or political matters suddenly become the very stuff of the crises at hand. This is especially evident in the case of global climate change: an individual, household, business, university, city, state, nation, or continent can calculate the carbon footprint left by the stunning range of human activities that emit carbon.[12] I think it is crucial to emphasize, however, that trans-corporeality, as it emerges in environmental health, environmental justice, web-based subcultures, green consumerism, literature, photography, activist websites, and films, is a recognition not just that everything is interconnected but that humans are the very stuff of the material, emergent world. Thus, the pursuit of self-knowledge, which has been a personal, philosophical, psychological, or discursive matter, now extends into a rather "scientific" investigation into the constitution of our coextensive environments. Science, however, offers no steady ground, as the information may be biased, incomplete, or opaque and the ostensible object of scientific inquiry—the material world—is extremely complex, overwrought with agencies, and ever emergent.

Take, for example, the state of knowledge about xenobiotic chemicals. Obviously, powerful entities, such as the chemical and pharmaceutical industries, greatly influence what knowledge is produced and how it is delivered to the public. As Robert N. Proctor argues in *Cancer Wars: How Politics Shapes What We Know and Don't Know about Cancer:* "ignorance and uncertainty can be manufactured, maintained, and disseminated" (8). But even after bracketing the intentional production of ignorance, uncertainty, and blatant misinformation, the fact remains that it may not even be possible to predict the staggeringly vast number of chemical interactions that may occur as a result of the "*billions* of

pounds of toxic chemicals being routinely emitted" in the United States alone (Steingraber, *Living Downstream* 102). The problem is not only that, as Sandra Steingraber informs us, "[t]wo-thirds of the most widely used chemicals have still not gone through basic carcinogenicity tests," but that far less is known about how various chemical combinations inter- and intra-act in bodies and environments (281, 258). The interactions of chemicals may be understood within the wider onto-epistemology of Karen Barad, which stresses both material agency and the nearly inconceivable concept of intra-action. Barad's concept of intra-action, which she develops from quantum physics and particularly from the work of Niels Bohr, rejects an ontology whereby "things" precede their relations. Instead, "relata" (as opposed to discrete "things") "do not preexist relations; rather, relata-within-phenomena emerge through specific intra-actions" (Barad, *Meeting the Universe Halfway* 140). Understanding the material world as agential and considering that things, as such, do not precede their intra-actions are, I think, crucial for twenty-first-century environmentalisms in which the existence of anything—any creature, ecosystem, climatological pattern, ocean current—cannot be taken for granted as simply existing out there. Even though Barad's theory, based on quantum physics, is a timeless onto-epistemology, it strikes me as being particularly relevant for our contemporary state of environmental crisis in which elaborate, colossal human practices, extractions, transformations, productions, and emissions have provoked heretofore unthinkable intra-actions at all levels. If the material environment is a realm of often incalculable, interconnected agencies, then we must somehow make political, regulatory, and even personal decisions within an ever-changing landscape of continuous interplay, intra-action, emergence, and risk.

Ulrich Beck notes that an "implicit ethics" exists within risk society, as the question "how do we wish to live?" arises against a "normative horizon of lost security and broken trust" (28). Beck argues that the determination of risk is itself a form of ethics and that such determinations are an "unrecognized, still undeveloped symbiosis of the natural and the human sciences, of everyday and expert rationality, of interest and fact" (ibid.). Many of the texts discussed in *Bodily Natures* struggle with implicit and explicit ethical matters, as they document what it is to know, to live, and to act within risk culture. Steingraber, whose work is considered further in chapter 5, advocates that the "precautionary principle" guide us within these landscapes of risk. The precautionary principle states, "When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relations are not fully established scientifically. In this context, the proponent of an activity, rather than the public, should bear the burden of proof" (*Living Downstream* 284).

The recognition that material agencies can be neither adequately predicted nor safely mastered encourages caution. The precautionary principle serves as a

practical, commonsensical procedural map and as a manifestation of how trans-corporeality demands more responsible, less confident epistemologies. It dramatizes how early twenty-first-century peoples require scientific knowledge in order to navigate through the many invisible dangers that surround us and, simultaneously, how our scientific understanding of unpredictable material agencies will never be sufficient to protect us from unforeseen harms.[13] As a particularly vivid example of trans-corporeal space, toxic bodies insist that environmentalism, human health, and social justice cannot be severed. They encourage us to imagine ourselves in constant interchange with the environment and, paradoxically perhaps, to imagine an epistemological space that allows for both the unpredictable becomings of other creatures and the limits of human knowledge. Toxic bodies may provoke material, trans-corporeal ethics that turn from the disembodied values and ideals of bounded individuals toward an attention to situated, evolving practices that have far-reaching and often unforeseen consequences for multiple peoples, species, and ecologies.

Chapter Summaries

Bodily Natures continues with two chapters that foreground environmental justice models of the corporeal manifestations of race, class, and gender, asking what it means to posit such a thing as a "proletarian lung" or to insist that someone's blood is not his own. As in other instances of trans-corporeality, biology and politics merge as people, places, and substances amalgamate. The environmental justice struggles in chapters 2 and 3 raise questions about the nature of evidence, the activists' need for science and technology, and the scientific refusal of dispassionate objectivity. Chapter 2, "Eros and X-rays: Bodies, Class, and 'Environmental Justice,'" explores the work of two early twentieth-century writers, Meridel Le Sueur and Muriel Rukeyser, who construct radically different relations between working-class bodies and the environment. Le Sueur's startling portrayal of erotic, corporeal natures, imbued with working-class vitality and values, contrasts with Rukeyser's depiction of miners dying of silicosis, their illness rendered visible by X-rays. Le Sueur's and Rukeyser's work manifests conceptions of "environmental justice," avant la lettre, and, at the same time, prefigures discord between anthropocentric and ecocentric ethics. This chapter illustrates the movement from cultural studies models of discursive contestation to more materially-oriented modes of analysis. I contend that, in order to understand the political aims of both Le Sueur and Rukeyser, it is necessary to invoke corporeal theories that push through the bounds of discursive paradigms in order to understand the imbrication of culture and matter.

NOTES

1. Bodily Natures

1. I allude to the remarkable conference "Nature Matters," organized by Catriona Mortimer-Sandilands and Megan Salhus of York University, held in Toronto during October 2007. I regret that a broken ankle kept me from speaking at this important interdisciplinary event.

2. See Plumwood, *Feminism and the Mastery of Nature.*

3. Shannon Sullivan, in *Living across and through Skins: Transactional Bodies, Pragmatism, and Feminism,* also focuses on the relations between human bodies and their environments. She argues that, to think of bodies as "transactional" is to "conceive of bodies and their various environments as co-constituted in a nonviciously circular way" (1). She also argues for a "nonreductive recognition of the significance of bodily materiality to human lived existence" (2). Despite these striking parallels, I should note that *Living across and through Skins* focuses on pragmatism, bodily activities, and lived experiences, whereas *Bodily Natures* focuses on how the movement across bodies and environments necessitates engagements with scientific understandings of materiality. In a fascinating account of the reception of her book, Sullivan tells how she was surprised that the Library of Congress categorized her book under "ecology." But, she then reflects, "one of the main things the book does is present an ecological ontology, and as ecological, it is an ontology that intimately concerns social, political, and ethical issues. It is an ontology in which organisms and their various cultural, political, and physical environments co-constitute one another in dynamic, ongoing ways" (Sullivan, "Pragmatist Feminism" 202). Sullivan's work offers rich possibilities for environmental philosophy and material feminisms.

4. For more on queer ecologies, see Mortimer-Sandilands and Erickson, *Queer Ecologies.*

5. For a more extensive discussion of a wide range of material feminisms, see Alaimo and Hekman's introduction to the volume *Material Feminisms.* See also, of course, the other essays in that collection.

6. See, for example, the excellent collection of essays edited by Noel Castree and Bruce Braun, *Remaking Reality: Nature at the Millennium*, including their piece in that collection, "The Construction of Nature and the Nature of Construction."

7. See Alaimo, "Discomforting Creatures: Monstrous Natures in Recent Films" and "Endangered Humans? Wired Bodies and the Human Wilds."

8. This idea surfaced in conversation with Jeanne Hamming.

9. I discuss this in more depth in the essay "Insurgent Vulnerability: Masculinist Consumerism, Feminist Activism, and the Gendered Sciences of Global Climate Change."

10. Notwithstanding the allied aims of our projects and the feminist epistemologies that inform them both, *Bodily Natures* interrogates material interchanges and material agency as they emerge within risk society, environmental health, and environmental justice movements, whereas Code applies the concept of "ecological thinking" more broadly to epistemological situations that are unrelated to ecology or environment per se. I regret that I do not have the space here to undertake a more thorough analysis of Code's rich and provocative work, let alone to adequately chart the intriguing connections and divergences between her project and my own. It may be helpful to note one obvious difference, however: Code constructs a sustained philosophical elaboration of an epistemology, while my own work undertakes a more cultural studies analysis that explores the ethical and political ramifications of a jumble of theories, literature, cultural artifacts, activist sites, and scientific accounts.

11. See "Circulating Reference: Sampling the Soil in the Amazon Forest" in Latour, *Pandora's Hope: Essays on the Reality of Science Studies*. Against an ontology that assumes a "gap between words and the world," Latour argues that phenomena within scientific practice are "what *circulates* all along the reversible chain of transformations" (24, 71). Latour emphasizes the long chain of mediations from matter to form.

12. After reading Mark Lynas's *High Tide: The Truth about Our Climate Crisis*, the students in my spring 2009 Literature and Environment class had a keen sense of our collective complicity in climate change. The class periods subsequent to the discussion of that book were conducted without the benefit of electric lights.

13. Jeff Howard underscores the need for precautionary thinking by proposing the wonderful term "nasty surprise" to describe environmental catastrophe.

2. Eros and X-rays

1. For more on environmental justice, see Hofrichter, *Toxic Struggles: The Theory and Practice of Environmental Justice;* Bullard, *The Quest for Environmental Justice: Human Rights and the Politics of Pollution;* Pellow and Brulle, *Power, Justice, and the Environment: A Critical Appraisal of the Environmental Justice Movement;* Shrader-Frechette, *Environmental Justice: Creating Equality, Reclaiming Democracy;* and Stein, *New Perspectives on Environmental Justice: Gender, Sexuality, and Activism.*

2. See chapters 3 and 4 in Alaimo, *Undomesticated Ground*. For more on Hornaday, see ibid., 94–95.

3. See chapter 5 of this book for an analysis of a similar model of corporeal resistance, that of multiple chemical sensitivity or environmental illness.

4. See Alaimo, *Undomesticated Ground*, 102–105.

5. Indeed, in my earlier book *Undomesticated Ground: Recasting Nature as Feminist*