



"Termite Hole (Brasilia, Brazil)." Kingsley Rothwell, 2009. Photograph courtesy of the artist

Interspecies

Julie Livingston and Jasbir K. Puar

“Animal studies” is all the rage. From numerous special journal issues to conferences, books, research seminars, journals (*Society and Animals*), and even degree programs, the explosion of scholarly interest in animality is undeniable.¹ Contemporary animal studies scholarship probes the shifting boundaries between humans and nonhuman animals, historicizing their production, maintenance, and reification. Seeking to dismantle the binaries of self and other and their attendant violences, the most compelling work in the field challenges the instrumentalization of animals that is driven solely by efforts to deepen the singularity of humanness or to enhance the capacities of human exceptionalism. The field thereby complicates notions of nonhuman agency by destabilizing the centrality of language, consciousness, and cognition (attributes constituted as singularly human) in favor of ontological irreducibility, and it navigates tensions between deconstructing anthropomorphism and the premature embrace of the posthuman. This growing body of literature traces the material effects of anthropocentrism (human exceptionalism), anthropomorphic projection (animals must mimic humans, are prosthetic extensions of humans), incorporation and invasion (animals can become us), transmutation (we can become animal), exotic alterity (aren’t they wondrous?), and anthropogenic obliteration (animals impede human capitalist endeavors) that characterize human/nonhuman interfaces.

We offer this special issue, “Interspecies,” as a moment of pause, of reflection on this rapidly growing field. We use the term *interspecies* to refer to relationships *between* different forms of biosocial life and their political effects. It is a capacious framing paradigm that names the articulation of human/nonhuman binaries and human/animal/plant taxonomies as interrelated even as these continue to operate in both congealed and dif-

ferentiated modes. As a scholarly rubric, *interspecies* aspires to transmit the character of political and social worlds that can no longer take the human subject as their dominant object of analysis. Interspecies relations form the often unmarked basis upon which scholarly inquiry organizes its objects, political interventions such as “human rights” stake their claims, and capitalist endeavors maneuver resources and marshal profit. From contemporary instances of torture at Guantánamo Bay to the uses of Jamaican slave labor in early modern botanical markets to future-oriented biotechnical efforts to develop replacement organs for humans from transgenic pigs, the topics of the essays in this issue engage human attempts to use both the idea of species-difference and the material characteristics of various forms of biological life to pursue economic, biopolitical, and intellectual aims. The analyses take the animal, the plant, and the microbial seriously as nonhuman actors and as racial and sexual proxies within actual, material, biological worlds.² The collected articles trace moments and processes of merging between different species. But they also demonstrate the inevitable rediscovery of the material conditions that aid in the naturalizing of taxonomic divides. Even as interspecies relations are acknowledged, affirmed, and hailed as fragile and precious, or fundamental and symbiotic, dividing animate life by species implies a whole series of boundaries—ontological ones—which are then ranked into hierarchies, shifted and manipulated for various capitalist and knowledge-making projects.

Posthumanism and the “Animal Turn”

“Interspecies” thus follows the generative insights of animal studies, but with some important qualifications. The productive tensions between animal studies and another critical contemporary scholarly development—posthumanism—are reflected in all of the essays presented here. While there is much overlap between the two, they are not immediately co-extensive or commensurate. Posthumanism seeks to destabilize the centrality of human bodies and their purported organic boundedness, foregrounding the technological productions of bodies and the indeterminate and often unacknowledged codevelopment of consciousness, tools, bodies, and culture. Within such webs the human becomes one of many nodes, certainly not the originator of categories, matter, or meaning. Donna Haraway’s generative theorization in 1985 of cyborgian encounters between bodies and technologies formed one early genealogical trajectory of the interest in going beyond the human flesh.³ With “A Cyborg Manifesto,” Haraway inaugurated posthumanist interest—also taken up by scholars such as Elizabeth Grosz, Karen Barad, Manuel DeLanda, and numerous others—in destabilizing the organic contours of the human body by accounting for inanimate objects, affective forces, and the performativity

of inorganic matter.⁴ Animal studies is a more diffuse field of knowledge, marking a scholarly recognition of the centrality and value of nonhuman animals and their experiences in understanding the world. Among the complex history of its intellectual trajectories, with roots in ethics, science studies, history, and feminist ecology, it also often implies an ethical imperative of rights advocacy.

While *Primate Visions* (1989) initiated Haraway's major foray into animal studies, the 2007 publication of *When Species Meet* set the agenda by which posthumanism and animal studies converge.⁵ Yet not all study of animality achieves a posthumanist politics, as some threads of animal studies unwittingly reinscribe the centrality of human subject formation and, thus, anthropomorphism. And an overly optimistic posthumanist approach can produce yet another version of humanity, resulting in bodies that are less than human (creating new "human animals") as well as recentering a unitary version of humanity. The essays here emphasize the proclivity of some animal studies scholarship to resurrect humanism, but they also depart from a posthumanist romanticism of the encounter with the "post-" and the "other than human." They take up the posthumanist interest in technologies, biopolitics, "cynanthropes" (see Carla Freccero), and hybrid, cyborgian xenotransplanted bodies (see Lesley A. Sharp), but in service of situating an animal studies that is wary of such romanticism.

Further, much of posthumanist thought as well as animal studies suffers from an often unmarked Euro-American focus and through that, ironically, a philosophical resuscitation of the status of "the human" as a transparent category. "Interspecies" offers a broader geopolitical understanding of how the human/animal/plant triad is unstable and varies across time and space. This explicit desire to depart from typically privileged sites and subjects also impels our attention not only to companionate critters but also, significantly, "incompanionate" pests, microscopic viruses, and commodified plants—in other words, forms of life with which interspecies relating may not be so obvious or comfortable.⁶ By purposely bringing together a range of disciplinary and theoretical approaches to the topic across the sciences and humanities, a broad array of geographical locations and trajectories (from the California state prison to the postcolonial Zimbabwean state), and a variety of forms of biological life (microbes, viruses, insects, cacao, monkeys, pigs, human fetuses, canines, pests), we seek to complicate any easy narrative about "the animal turn"—the rise in interest in animal studies—that privileges certain sites, disciplines, and species.

Of particular importance to "Interspecies" are the interventions of critical race studies and postcolonial studies, fields that have continually sought to understand what it means and has meant to be human, given that much of slavery and colonialism operated through—not to mention foundered upon—legal, medical, intellectual, economical, and political

attempts to demarcate the boundaries among species.⁷ Critical race theory and postcolonial studies are brought into conversation with insights from science studies with its long-standing interest in nonhuman actors and their roles (indeed their agency) in knowledge production and technical activity. Historian of science James Delbourgo, for example, helps lay the post-structural historical foundations of modern species differentiation. Delbourgo follows Sir Hans Sloane, the early modern British naturalist, on his travels to the slave plantations of Jamaica, where Sloane classifies cacao as a species, and helps to develop chocolate—a new product thoroughly merged with the simultaneous commodification of Africans and sugar. Delbourgo’s article demonstrates how scientific knowledge production, class and racial anxiety, and the creation of global markets fit together to forge the boundaries between species, complicating any sense of the “natural” that might linger around the question of species. His analysis further articulates how race and commodification are so deeply sedimented in the biological categories through which humans organize relations with other species. The essays here by Neel Ahuja, Freccero, and Clapperton Mavhunga similarly demonstrate that what counts as “human” is always under contestation, thus cautioning against a hasty, uncritical embrace of posthumanist discourses.

Freccero’s theorization of “transpecies” becoming in the merging of man and dog, the “cynanthrope,” is one especially pertinent example of the influence of this convergence between posthumanism and animal studies. Freccero examines the horrific murder of Dianne Whipple in San Francisco almost ten years ago by a pair of dogs raised by a white supremacist prisoner group, presenting it as a dystopic instance of interspecies becoming. Here dog and man merge through consumerism and confinement. Freccero traces histories of racial and sexual desires made manifest through a commodified carnivorous virility to reveal forms of subjectivity, desire, and transpecies possibility that displace any presumption of a singular human subject. Dog and human merge in intimations of interspecies sexuality, in racialized tribalisms, and through “prison practice [that] deploys the mediatory metaphors of human-canine becoming to produce, discursively and materially, ontological uncertainty as a degradation of being.” Freccero’s use of the term *transpecies* in this instance is suggestive of forms of becoming, and becoming with—interspecies merging or clotting together—that transcend and potentially break down species taxonomies but remain nonetheless unstable and fleeting. Transpecies is thus a temporally delineated elaboration of interspecies, but not the totality of any relationship. The politics of these porous movements in and out of merging is what we seek to understand through the frame of “Interspecies.”

Biopolitical Anthropomorphism

The concept of interspecies necessarily relies in part on the work of western biological taxonomy, while acknowledging that there are many other ways to sort and categorize forms of life. It accepts an ontological distinction between different forms of biological life (species), but probes the limits of this distinction, the fuzziness of the borders between species, and the social and affective processes when barriers are breached and pays careful attention to moments when the hierarchical classificatory system is subverted or reworked. Such moments of classificatory tension reveal how political and economic logics historically sedimented in biological taxonomy are redeployed for new ends. As historians of science have established, this taxonomy is a historical product, founded upon and through early modern and modern racial, class, and gendered politics.⁸

So while the term *interspecies* necessarily implies putative acceptance of species difference, we join this surging scholarly interest in the human and the posthuman by querying the taxonomic project itself from moments of its emergence (Delbourgo, Freccero) and its threatened collapse (Ed Cohen, Sharp, Freccero). Bearing in mind the lessons of critical race and postcolonial scholarship, we are particularly attentive to the political and economic significance of taxonomy. We question, following Michel Foucault in *The Order of Things*, whether a naturalized, rational, and secular Enlightenment project such as that implied by the biological term *species* is the best way to organize and inhabit our world. Along with our desire to complicate the rigid taxonomies that make up species (human, plant, animal) we also seek to situate the notion of species among other taxonomic frames. “Interspecies” is thus a partial, initial effort to *go beyond species* by emphasizing relationships over types and by joining a politics that queries the origins, products, and uses of classificatory hierarchies.

Taxonomy is central to biopolitics. Foucault argues that “biopower” arises precisely at the moment human bodies are being rendered available for biological qualification through population construction. Biopolitics is “the set of mechanisms through which the basic biological features of the human species became the object of a political strategy, of a general strategy of power, or, in other words, how, starting from the eighteenth century, modern Western societies took on board the fundamental biological fact that human beings are a species.”⁹ Biopolitics, as Foucault explains, is the process by which humans become a species (and in fact, specimens) to join all other biological species. This becoming is also the process by which anthropomorphic frames of the human thus take force and are consolidated. As he writes in *Security, Territory, Population*, “the dimension in which the population is immersed amongst the other living beings appears and is sanctioned when, for the first time, men are

no longer called ‘mankind (*le genre humaine*)’ and begin to be called ‘the human species (*l’espèce humaine*).’”¹⁰ A paradox occurs: the animalism of humans—“the life of the body and the life of the species”¹¹—is taken up as a project of population construction, and humans join species. The (androcentric) human is thus rearticulated as an exceptional form of animality within an anthropomorphized category: “humanity.” Therefore, although Foucault’s own humanist leanings perhaps prevent him from further exploring the implications of this in terms of interspecies relating, his theory of biopolitics understands anthropomorphism as a defining facet of modernity.

Foucault’s formulation of racism as “caesuras within the biological continuum” is his preemptive critique of a posthumanism that does not acknowledge race as a critical threshold of demarcation.¹² His infamous claim that the homosexual first emerged as a species is also suggestive of a continuum of homosexuality with animality and homosexual sex with bestiality and raciality.¹³ Both of these formulations, while marking how racial and sexual distinctions among humans acquire import, still posit biological difference as created through, cleaved to, and invested in the human form. We thus use the term *biopolitical anthropomorphism* to highlight two phenomena: the biopolitical processes that bring about the centrality of the human and of certain humans; and the tendency of biopolitical analyses to reinscribe this centrality by taking human species as the primary basis upon which cleavages of race and sex occur. Arguing for a broader biopolitics that accounts for racism not only as a “caesura within the biological spectrum” but also as a form of species differentiation, Mavhunga’s article here demonstrates the limits of any (Western) biopolitical formulation of population that does not take nonhuman animals into account. Describing a set of violent continuities between colonial southern Rhodesia and postcolonial Zimbabwe, Mavhunga connects the history of pesticides to the history of racial aggression through a shared “ontology of pesthood” or “vermin being”—both human and nonhuman animal—in need of elimination. He explicates the contemporary biopolitics of postcolonial warfare in which colonial obsession with controlling pests extends to human animals that are treated as vermin, incisively demonstrating that the notion of “the colonized as pest” can hardly remain at the level of metaphor. Arguing that the “reduction of humans to pests justifies the elimination of pests, sanctions policies of elimination, and blurs the division in weapons required to police people and to police nature,” Mavhunga details how scientific innovation is imbricated in these processes. In the process he extends our understanding of biopolitics by pursuing a capacious understanding of population—one that can account for this cross-cutting taxonomy of a nonaffirmative vermin speciation.

Another cautionary perspective on “posthumanist discourses that

celebrate the alterity of animal bodies as a signpost for an affirmative biopolitics” is offered by Neel Ahuja. Analyzing the implications of the Bybee memo that authorized the use of insects in the torture of an entomophobic “enemy combatant,” Ahuja contemplates instances of human torture that hinge on the violent interplay of logics around race, sexuality, disability, and affect. Here the insect is weaponized in the face of the Muslim monster-terrorist—in order to produce truth in the torture chamber and efficacy for the security state. Ahuja traces intersecting legal, psychological, and poetic discourses that constitute the “affective economy of security.” His analysis complicates contemporary posthumanist turns invested in “transpecies” affinities by demonstrating that biopolitical logics of warfare already anticipate such encounters—in this case, between human and caterpillar—in order to capitalize on them for securitization purposes. Both Mavhunga’s and Ahuja’s contributions convey the speed with which interspecies exchanges can be reinscribed to resurrect humanism as well as how posthumanist leanings can be appropriated by the state, for example as the descriptor detainee slips from a marking of status to one producing a further racially and sexually demarcated humanism.

Relationships of Incorporation

By offering studies of mutually constituted, co-emergent, cohabitative interspecies encounters, riddled with hierarchies of power and the complexity of incommensurate ontologies, “Interspecies” complicates the many politics of interface that produce a meta-, domination-versus-victim narrative about the human exploitation of nonhuman animal life. Philosophical interest in advocacy, ethics, and rights of animals emphasizes how to live in a diversely speciated world, understanding the rationale by which the rights of *some* humans are elevated above those of nonhuman animals.¹⁴ We do not disavow that the human exploitation of nonhuman animal life has been and remains an urgent issue, but rather here we suggest that before the question of ethics can even be approached we must interrogate investments in a metaphysics of the “human/nonhuman” animal divide. “Interspecies”—less place-bound than the concept of ecology—offers ontological rethinking of the realms of the philosophical, legal, and human already highlighted by ecocriticism (be it feminist, queer, or otherwise) that emphasizes relationships between species.¹⁵

Several contributions trace the permeability of interspecies relations and the modes by which one species attempts to incorporate another through intimacy, familiarity, wonder, and pleasure, offering at times radically new perspectives on the familiar. Differing forms of biological life also cultivate, create, tinker with, and mess with each other. Philosopher Alphonso Lingis helps us to contemplate *how* interspecies recognition pro-

ceeds, and where its limits might lie. Evoking the sheer range of biological possibility, Lingis reminds us of the open-ended sensorial and affective occasions of interspecies relating that knit together the collectivity of animate life. His essay suggests how interspecies phenomenology exceeds the cognitive and tends to hinge on the interplay between the inside and the outside, the revealed and obscured dimensions of corporeality. The surfaces of bodies, their skin, their plumage, provide one aesthetic dimension of interspecies recognition, while the internal, the felt, the kinesthetic, provide another. And yet, using the box jellyfish as an example of nonhuman life whose corporeality poses a radical form of phenomenological alterity, Lingis also contemplates the limits of mutual recognition, suggesting that such mutuality may be a function of a romantic posthumanism (as well as humanism) enabled only through keeping repulsion at bay. And the work of photographer Kingsley Rothwell in “Termite Hole” (see page 1) throws in flux any solidity of what is known when something is seen, teasing and discomfiting sensibilities of human-insect distinction. Indeed, the embodied knowledge, the sensory capacities, the temporalities of other species, be they mushrooms, fireflies, spruce trees, or rabbits, provide novel means to contemplate the limits of human perception and agency as well as a radical path to alternative ontologies of nature and politics.¹⁶

To that end, “Interspecies” explores the porous nature of the human/nonhuman animal divide as a way to question fundamental aspects of biologically mediated human self-perception and to consider what kinds of worlds they create—in dystopic, utopic, and quotidian terms. For example, Cohen’s essay uses the recent swine flu pandemic (as just one historical instance of anxiety about epidemics) to contemplate what he terms the “paradoxical politics of viral containment”—the human desire to contain the movement of viruses we deem threatening, even as humans physically contain viruses within our cells. Species can be nested inside one another, constitute one another, and depend upon one another—even as they might destroy one another. The paradox of viral and microscopic entities is that an interdependent relationship is acknowledged only through the epistemological oversimplification of the virus as an “intruder,” thus revealing viral “illness” to be an anthropomorphic qualification dependent on the understanding of the human body as a unified, bounded, political whole *that must survive any threat to it*. This paradox is a problem of scalar dynamism that taxonomy somehow fails to capture. Though biological taxonomy separates and marks distinctions between cellular beings, this distinction is unimportant from the perspective of viruses. Those that jump species (like swine flu or avian flu) thus trouble the human exceptionalism encoded in biological taxonomy. In imagining viruses as either parasites or capitalists building cellular factories for the production of viral DNA,

humans anthropomorphize viruses in managing the ironies by which scale comes to matter, as microscopic life produces global consequences.

While Cohen reminds us of the multiple species that compose *any* body, arguing for a politics of curiosity and vulnerability, Sharp offers a different view of scientific curiosity fueling failed efforts to mitigate human vulnerability. Sharp examines biomedical attempts to harvest primate and pig organs for xenotransplantation into human bodies. She articulates a demand for interspecies merging that is produced as scientifically plausible but is actually ontologically fraught. Despite billions of dollars and the anticipatory temporality of venture sciences, xenotransplantations continue to fail. Sharp details the relations of sameness and difference, intimacy and proximity—human dependency on their “primate ‘cousins’”—that allow monkeys to become human surrogate recipients to test porcine xenografts after monkeys are no longer deemed compatible organ donors. While the majority of essays presented here still focalize a binary relationship between human and nonhuman actor-capacities, the triangulation that Sharp’s essay demonstrates so well is not the desire merely for human bodies to assimilate and conquer species difference but also for other animals to become proxies for humans. Sharp’s essay also signals that biotechnological interventions create new orderings of species distinction—orderings that undermine the human/nonhuman binary—as certain gene pools and bodies (across human/nonhuman boundaries) are constituted as worthy of experimentation and others as not.¹⁷

Sarah Franklin’s interview with bio-artist Suzanne Anker probes fetal specimen collection and display as part of the process of species-making in historical and contemporary terms. Focusing in particular on forms of biological life frozen in a moment of potential—human fetuses as they are simultaneously human and animal as well as a companionate object—Anker and Franklin locate these specimens in a long history of collection, display, and wonder at the monstrous, the grotesque, and the potential—the borderlands of species, where taxonomic separation is realized. In the process they raise ethical and philosophical questions about how a modern epistemological emphasis on the scopic distorts interspecies relationships and obscures the phenomenology of viewing, of wonder. Even as the specimen itself operates as a synecdoche for an entire species, a collectivity, it congeals an assemblage of thought, institution, and action—or its enabling politics. At the end of the interview (as on the cover of this issue), the reader is given the opportunity to consider interspecies visually through Anker’s intelligent and stunningly beautiful art.

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In presenting this collection of articles, with its wide array of contexts, disciplinary orientations, and geopolitical emphases, we trust that read-

ers will recognize new political possibilities offered by close attention to the continual and dense interplay of different forms of biological life. What “Interspecies” aspires to transmit is, finally, the buoyancy of these emergent intellectual trajectories. What kinds of new reading practices, interdisciplinary knowledge formations, political projects, and forms of sociality are possible through interspecies thinking? How will ways of seeing, being, feeling, qualifying, and quantifying alter in the face of such acknowledgments? “Interspecies” thus seeks to upturn normative modes of thinking, of methods, of scholarly production, reflecting the excitement of this crucial intellectual and historical moment. Interspecies is a capacious analytic paradigm. The essays here are in no way exhaustive of its possibilities. Rather, they point to new ontologies, new politics, new ethics of noticing, marking, and attending to the ways in which the world is an interspecies one.

Notes

We thank Brent Edwards, Anna McCarthy, and Carla Freccero for their feedback on the introduction. We are especially grateful to Elena Glasberg, who read many iterations of this essay with good humor and intellectual foresight.

1. The literature that comprises animal studies is now vast. For an overview of the recent development of animal studies across disciplines, see Jennifer Howard, “Creature Consciousness,” *Chronicle of Higher Education*, 18 October 2009, <http://chronicle.com/article/Creature-Consciousness/48804/>. See also the introduction to Cary Wolfe, ed., *Zoontologies: The Question of the Animal* (Minneapolis: University of Minnesota Press, 2003); and Wolfe, “The Changing Profession: ‘Animal Studies,’ Disciplinarity, and the Posthumanities,” *PMLA* 124 (2009): 546–75.

2. Michel Callon, “Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fishermen of St Brieuc Bay,” in *Power, Action and Belief: A New Sociology of Knowledge*, ed. John Law (London: Routledge, 1986), 196–233; Bruno Latour, *Science in Action: How to Follow Scientists and Engineers through Society* (Milton Keynes, UK: Open University Press, 1987).

3. Donna Haraway, “A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century,” in Haraway, *Simians, Cyborgs, and Women: The Reinvention of Nature* (New York: Routledge, 1991), 149–181.

4. Elizabeth Grosz, *Volatile Bodies: Toward a Corporeal Feminism* (Bloomington: Indiana University Press, 1994); Karen Barad, *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Meaning and Matter* (Durham, NC: Duke University Press, 2007); Manuel DeLanda, *War in the Age of Intelligent Machines* (Brooklyn: Zone Books, 1991). Also see Cary Wolfe, *What Is Posthumanism?* (Minneapolis: University of Minnesota Press, 2009).

5. Donna Haraway, *Primate Visions: Gender, Race, and Nature in the World of Modern Science* (New York: Routledge, 1989); Haraway, *The Companion Species Manifesto: Dogs, People, and Significant Otherness* (Chicago: Prickly Paradigm Press, 2003); Haraway, *When Species Meet* (Minneapolis: University of Minnesota Press, 2007).

6. We are not alone in such a move. In particular, see the work of the Matsu-

take Research Group, “A New Form of Collaboration in Cultural Anthropology: Matsutake Worlds,” *American Ethnologist* 36 (2009): 380–403; and Hugh Raffles, *Insectopedia* (New York: Pantheon, 2010). See also Lance Van Sittert and Sandra Swart, eds., *Canis Africanis: A Dog History of South Africa* (Leiden, NL: Brill, 2007); Nancy Jacobs, “The Intimate Politics of Ornithology in Colonial Africa,” *Comparative Studies in Society and History* 48 (2006): 564–603; Vincanne Adams and Warwick Anderson, “Pramoedya’s Chickens: Postcolonial Studies of Technoscience,” in *The Handbook of Science and Technology Studies*, 3rd ed., ed. Edward J. Hackett et al. (Cambridge, MA: MIT Press, 2007), 181–204; Londa Schiebinger, *Plants and Empire: Colonial Bioprospecting in the Atlantic World* (Cambridge, MA: Harvard University Press, 2004); Cori Hayden, *When Nature Goes Public: The Making and Unmaking of Bioprospecting in Mexico* (Princeton, NJ: Princeton University Press, 2003).

7. See, for example, Stephanie Smallwood’s work on the commodification of human beings, *Saltwater Slavery: A Middle Passage from Africa to American Diaspora* (Cambridge, MA: Harvard University Press, 2008); Andrew Zimmerman, *Anthropology and Antihumanism in Imperial Germany* (Chicago: University of Chicago Press, 2001); Ian Baucom, *Specters of the Atlantic: Finance Capital, Slavery, and the Philosophy of History* (Durham, NC: Duke University Press, 2005).

8. Londa Schiebinger, *Nature’s Body: Gender and the Making of Modern Science* (Boston: Beacon, 1995); Harriet Ritvo, *The Platypus and the Mermaid, and Other Figments of the Classifying Imagination* (Cambridge, MA: Harvard University Press, 1998); Londa Schiebinger and Claudia Swan, eds., *Colonial Botany: Science, Commerce, and Politics in the Early Modern World* (Philadelphia: University of Pennsylvania Press, 2007).

9. Michel Foucault, *Security, Territory, Population: Lectures at the Collège de France 1977–1978*, trans. Graham Burchell, ed. Michel Senellart (New York: Picador, 2008), 1.

10. Foucault, *Security, Territory, Population*, 75.

11. Michel Foucault, *The History of Sexuality*, vol. 1, *An Introduction* (New York: Vintage, 1990), 146.

12. Michel Foucault, “*Society Must Be Defended*”: *Lectures at the Collège de France, 1975–1976* (New York: Picador, 2003), 255.

13. Foucault, *History of Sexuality*, 43. Much of queer animal studies focuses on the justification of queer human sexuality through the exemplary non-hetero or -gender normative facets of animal reproduction and sexual activities. There has been a long-standing interest in non-identity-based agency in queer studies that has led to an interest in non-hetero and non-gender normative facets of animal reproduction and sexual activity. For an overview, see Susan McHugh, “Queer (and) Animal Theories,” *GLQ* 15 (2009): 153–69. Also see Jennifer Terry, “‘Unnatural Acts’ in Nature: The Scientific Fascination with Queer Animals,” *GLQ* 6 (2000): 151–93.

14. Peter Singer, *Animal Liberation* (New York: Ecco, 2001 [1975]); Cass R. Sunstein and Martha C. Nussbaum, eds., *Animal Rights: Current Debates and New Directions* (New York: Oxford University Press, 2005).

15. Beyond the work of Haraway, critical works in the genealogy of feminist ecology (which bridge science studies, feminist philosophy of science, and the history of science) include Rachel Carson, *Silent Spring* (New York: Mariner, 2002 [1962]); Carolyn Merchant, *The Death of Nature: Women, Ecology, and the Scientific Revolution* (New York: HarperOne, 1990); Sandra Harding, *Sciences from Below: Feminisms, Postcolonialities, and Modernities* (Durham, NC: Duke University Press, 2008); Kavita Philip, *Civilizing Natures: Race, Resources and Modernity in Colonial*

South India (Piscataway, NJ: Rutgers University Press, 2003); Michelle Murphy, *Sick Building Syndrome and the Problem of Uncertainty: Environmental Politics, Technology, and Women Workers* (Durham, NC: Duke University Press, 2006).

16. Raffles, *Insectopedia*; Matsutake Research Group, “A New Form of Collaboration”; Haraway, *When Species Meet*.

17. Pertinent work on biotechnology and race includes Melinda Cooper, *Life as Surplus: Biotechnology and Capitalism in the Neoliberal Era* (Seattle: University of Washington Press, 2008); Eugene Thacker, *The Global Genome: Biotechnology, Politics, and Culture* (Boston: MIT Press, 2006); Kaushik Sunder Rajan, *Biocapital: The Constitution of Postgenomic Life* (Durham, NC: Duke University Press, 2006); Catherine Walby and Robert Mitchell, *Tissue Economies: Blood, Organs, and Cell Lines in Late Capitalism* (Durham, NC: Duke University Press, 2006).