INTRODUCTION

Interspecies Prattle

In Paris in 1798, an orchestra and chorus from the Conservatoire de Musique readied themselves for a performance of works by Rousseau and Haydn, among other composers. But if the performance and repertoire were standard for the time, the audience was not. Where an eclectic audience of Parisian music lovers would typically be seated, now stood two elephants newly arrived from Ceylon. The audience of humans at this particular concert, for there was indeed such an audience as well, had come not for the Rousseau or the Haydn, but rather for a much rarer spectacle of witnessing elephants respond to music. And what a spectacle it was. According to contemporary accounts, the elephants swayed their trunks rhythmically to the music and then, in a kind of bizarre denouement, began lustily caressing each other to the strident tones of a French revolutionary song. Go figure.

I am not the first to recount this tale. On the contrary, it is something of a staple in music histories of the period. James Johnson was perhaps the first to trot the story out in his now canonical book *Listening in Paris*, and the elephants have made multiple cameo appearances in the years since. And yet, as Nicholas Mathew and Maryann Smart observe, the story of the musical elephants only ever functions as a historical curiosity pressed into the service of some other purpose. For Johnson, the episode illustrates the capacity of music in post-Revolutionary France to civilize and regulate behavior in humans and animals alike. For another music historian, the story pithily captures the conjuncture of music and sex in late eighteenth-century Europe. In yet another recounting, the author John Deathridge presents a panoply of striking episodes (ranging from the elephants to a fabled musical spider that allegedly inspired Beethoven) to make an altogether different argument about musical community at the time. In short, the story of the elephants only ever appears as a brief, rousing episode, what Mathew and Smart describe as "a historical quirk."

As a quirk, its value lies primarily in the "thrill of encountering the unexpected thing."[1]

What would it mean to examine the story of the elephants not as a quirk, not as some titillating anecdote in a constellation of anecdotes, but as a central episode in music history? My project is motivated by this question, as well as by something that it brings to the surface: music's frequent use as a tool to overcome (or at least attempt to overcome) the putative boundary between humans and other beings. In other words, before matters of stylistic development, instruments, and other typical musicological concerns, musical modernity is arguably a matter of helping establish humanity's coordinates within the cartography of the cosmos. What do humans share with the various non-human entities that make up our planet and that exist in the wider universe? What are the possibilities for trespassing the border between ourselves and the world that surrounds us?

We know today that elephants do not and cannot respond to particular musical meanings, especially none as nuanced as those assumed by the Parisian audience in 1798. Here, it is important to not treat language too casually. In his recent book *Music, Math, and the Mind*, David Sulzer writes, "Do elephants have any comprehension of music? We read that they do. Rickye and Henry Heffner at the University of Kansas used a simple food reward experiment to elicit an Indian elephant's ability to distinguish simple, two-note melodies. They found that elephants could distinguish microtonal pitch gradations smaller than the half-steps of a piano."[2] That elephants can distinguish relative pitch with such precision is fascinating, but what musician anywhere in the world would describe a two-note sequence as a "melody"? The leap from a narrow, laboratory-based observation to a grand claim about animals and music is a common one in the literature, and one this book will carefully guard against. (Later in this introduction I will discuss how we can do better.)

If elephants cannot "comprehend" music, they certainly possess rich forms of sonic communication that are worthy of careful study—far more worthy, in my view, than making them listen to two sequential pitches, or trying to get them to play our musical instruments, as Sulzer has. We know today that elephants communicate by vocally emitting low sounds (below the 20 Hz range of human hearing) and that these rumbles can be heard by other elephants well over a mile away. Some scientists hypothesize that the infrasonic sounds are transmitted through the ground and detected by the soft padding of the animal's feet. Elephants use these rumbles, as well as other sounds, to communicate fairly specific

content (signaling the need to get going, attempting to quell anger, warning about approaching danger), much as many large-brained mammals do. Note well: this is a form of communication, but it is not language in the human sense. To say that this form of communication is "elephant language" is as meaningless as saying that the ability to detect the difference between two frequencies indicates an elephant's capacity for music. It is worse than meaningless: it needlessly anthropomorphizes animals who have their own stunning behaviors, and, in its sloppiness, it does a disservice both to serious scholarship and to elephants. A more rigorous account of music, language, and animal communication will be needed to say something meaningful.

But Sulzer, almost despite himself, does make one interesting observation. In the course of an unsatisfying discussion, in which he describes how he and the scientist Richard "Professor Elephant" Lair built an orchestra for elephants to bang away at in rural northern Thailand, Sulzer adds as an aside: "Richard told me that the elephant's mahouts [i.e., people who tend elephants] know that elephants like to listen to music; they often sing to or play an instrument for the elephants as they walk together through the jungle, and the elephants are calmed."[3] We hear nothing from the mahouts themselves, nor do we have any evidence that the claim is true. (Maybe the elephants are calmed simply because the riders themselves are calmed by music—who knows?) But the mahout's claim, at least as relayed to us by Richard Lair via David Sulzer, is not farfetched either. If indeed elephants are calmed by the mahout's song, but if it is nonetheless meaningless to talk of elephants comprehending the nuances of human music, then what exactly is going on? This is exactly the kind of question that this book addresses. And it does so without claiming (and without having to claim) that other animals appreciate music, or that they have language just as we do. What an elephant experiences when a mahout sings is no easy thing to explain. But it is surely worth some serious effort.

Let us return now to those elephants in Paris, for to leave them prematurely would be to treat them merely as curiosities. Their story tells us much else about the relationship between humans and animals, not least of which is the historically fraught definition of humanity itself. Even a cursory look at the history of how humans have treated animals reveals that some humans—and particularly Europeans—have always treated other groups of humans as quasi-human, or as not-fully-human. The Paris elephant scenario, after all, took place at a time when the French were conducting similar kinds of experiments on their colonial subjects

in the very places where the elephants were captured. Europeans in the late eighteenth century wanted to know whether "natives" were capable of civilization and of reason, just as they had a few centuries earlier asked whether New World "savages" had souls and were capable of salvation. Elephants, of course, were more frequently killed for their tusks than treated to the music of Haydn. And Europeans of the time were far more likely to capture and sell a different commodity: an African slave.

The modern history of human/animal relations is mediated by, and saturated in, histories of colonialism and slavery. Questions about who and what is capable of language, reason, or the capacity for beauty have long encompassed animals, humans, and those humans deemed not-quite human.

Eighteenth-century European thought bequeathed to us many enduring ideas, one of which is the notion that climate—what would later be known as the "environment"—shapes behavior.[4] This idea was and is responsible for the racist notion that the frigid weather of Europe leads to increased rationality and decreased sentimentality, while the those living in hot or tropical climes lack rationality and are (over-) emotional. (Although few today would say this explicitly, the notion certainly persists.) But theories about climate influence were not limited to the domain of human culture. Bolstered by Enlightenment attempts to map out the entire world, and armed with a new emphasis on empiricism in science, European thought since the eighteenth century has attempted to comprehend all forms of life as products of the environment.[5]

Even before the eighteenth century, European writers had obsessively compared living forms ranging from humans and elephants to spiders and fish. Many such accounts appeal to the "worlds" in which those creatures live, with comparisons between humans and animals falling neatly beside comparisons between Europeans and non-Europeans. Consider, briefly, the work of Bernard le Bovier de Fontenelle (1657–1757), a French writer renowned for making scientific concepts accessible to a wider audience. In his *Conversations on the Plurality of Worlds*, he writes innocuously that "water is the atmosphere of fishes; they never pass into that of birds, nor the birds into theirs: they are not prevented by the distance, but the existence of both depends on their proper element."[6] If this is innocent enough, look now how effortlessly Fontenelle transposes those concepts both to people and outward across the cosmos: "What must the inhabitants of Mercury be? We are above twice the distance from the sun that they are. They must be almost mad with vivacity, like most of the negroes, they are without memory; never reflecting; acting by starts and at random: in short Mercury is the bedlam of the universe."[7]

Elsewhere in the same book, he notes that, while there are probably humanlike inhabitants (*habitants*) living on the moon, "I don't believe there are men [*hommes*] in the moon. We see how much all nature has changed even when we have traveled from here to China; different faces; different figures; different manners; and almost a different sort of understandings: from here to the moon the alteration must be considerably greater. When adventurers explore unknown countries, the inhabitants they find are scarcely human; they are animals in the shape of men."[8] Fontenelle is typical of a vein in European writing where a comparison between human and fish shifts frictionlessly in all directions, gathering up human difference and extraterritoriality in one fell swoop.

Such capacious comparison continued into the second half of the twentieth century (as it has until the present day), when scientists in many parts of the world developed something of an obsession with intelligent life in the oceans and in space. In both the United States and the Soviet Union, Cold War–era scientists assumed a parallelism between outer space and the "inner space" of oceans, which were conceptualized as new frontiers of knowledge, as realms that had previously been inaccessible to empirical inquiry but had finally become open to scrutiny with the aid of new technologies.[9] Jane Goodall's research on gorilla communication in Tanzania, John Lilly's work on human/dolphin communication in the Caribbean, and the first symposium on SETI (Search for Extraterrestrial Intelligence) all took place during the first few years of the 1960s. All of this work, moreover, made constant appeals to human cultural difference—dolphins, for example, were frequently equated with "primitive" people, since they were thought to possess some form of consciousness yet remain uncorrupted by technology and tools. Animals were also frequently compared with aliens, who were, in turn, compared with non-European peoples. The American scientist John Lilly (a figure I return to repeatedly) was motivated to communicate with dolphins because it would prepare us for alien contact. Once communication with dolphins was established, he wrote, they would for a long time "be in the position of the Negro races in Africa who are attempting to become Westernized," and who must "prove their usefulness in those things which the human races in general attempt to achieve."[10]

From the preceding discussions, one can derive a few general ideas. It is impossible to speak about the animal without a set of assumptions about the human. It is impossible to attempt to communicate with an animal without an implicit understanding of who we are in the course of that encounter. And it is probably impossible to understand our relationship to animals without some assumed notions regarding the limits of

animal life: the alien, or at least the possibility of its existence, is always just beyond the horizon, shaping how we conceive who we are and who we are not. On this rocky terrain, language, music, and other forms of expressivity cross and double-cross lines that separate and ones that that connect. Those lines belie an impulse to trespass the border between the human and non-human, to discover humanlike non-humans either right under our own noses or at the far reaches of the universe.

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On the day that my mother died, my cat had a heart attack. I was sitting at the dining room table when my brother phoned to tell me that our mother had died. At that moment, my subjectivity seemed to crack, which resulted in my body letting out a wail. Helen, my partner, enveloped me in her arms. A few feet away from where I sat, Tigger went into cardiac arrest and toppled over—a soft, sideways thud. Everywhere, our lives and deaths are tangled with diverse kin. It was only a week earlier, after all, that Mom had phoned and, after a brief hello, asked to see Tigger on WhatsApp video. The vectors connecting us are multiple and tangled, moving in different (and sometimes opposite) directions, mediated by technology and history.

We humans form deep, needy, playful, generous, impatient, and violent relationships with the animals in our lives. We respond to them (when we know how to listen), and they—sometimes—respond to us, to our faces, our voices, our instructions. When we are lucky, they respond to our loneliness, and sometimes our devastation is too much for them to bear. But the range of human/animal communication is wide, from the spectacular to the quotidian and the instrumental.

Dogs synchronize their movements (including the pace of their gait and the direction of their gaze) with human companions. They also "recall their owner's face upon hearing the owner's voice." It seems that human yawns are "contagious" to dogs.

From the craggy alpine slopes to the plateaus of Central Asia, shepherds corral flocks using specific, sometimes ancient melodies. (Some of these melodies have been thematized, for example by Rossini and Berlioz.)

Parrots are wonderfully loquacious creatures and have proven treasured companions for seafarers out on silent, endless waters. People who spend time with these birds know that they are capable of far more than imitation. Some parrots are able to identify numbers, shapes, and colors when asked by doting owners; these same birds may ask to go home

when quizzed too many times. (These results remain controversial, however.)

Snake charmers neither charm nor mesmerize snakes. Instead, they compel snakes into a state of ongoing terror—the snake responds to the movements of the "charmer's" wind instrument as if the slender piece of wood is a predator that might attack at any moment.

In the northern most part of Mozambique, people know that a rather ordinary looking bird with a peach-colored beak will lead them to honeycombs when solicited. Human honey collectors call these birds using a specific sound (something like "brr-hm!"), and they seem to understand that the birds respond especially well to that particular vocalization.

Birds, of course, are excellent students. They learn intricately structured "songs" from their parents (a few sparrows have been taught new songs by humans, as well). For centuries, humans have been mesmerized by the vocal abilities of our soaring companions, who have been the subject of musical compositions, art, and theoretical treatises. In Surinam, men enter their songbirds into competitions held in parks: the bird that sings longest wins, and their owners spend untold hours trying to figure out how to nurture vocal endurance.

From Australia to Mexico, horse riders and horses attune themselves to each other's micro-movements since, as one writer famously put it, "Every muscle twitch of the rider will be like a loud symphony to the horse."[11]

All over the world, people communicate with animals—at least if we understand communication in its most basic, etymological sense as partaking of something in common.[12] The above are all examples of vernacular knowledge, instances of "know-how" rather than "know-that": shepherds know how to call flocks, honey hunters work cooperatively with honeyguide birds, and so on, but these relationships are seldom subjected to explicit theorization, and even less often to controlled empirical study.[13]

What happens when we consider the scientific field of animal cognition, where knowing-that always trumps knowing-how, and where a revolution has been taking place since the second half of the twentieth century? Researchers have discovered that animals are far more cognitively complex than dominant scholarly paradigms have assumed, and today it is not uncommon for researchers to insist that many species of non-human animals possess a rich array of cognitive capacities, or even consciousness. Although baboons can vocalize only a few sounds (three or four kinds), they live in hierarchical social structures, so even

an exchange of two simple sounds requires complex interpretation since the matter of *who* is responding to *who* with *which* sound matters. Cuttlefish seem to be able to delay gratification when something better is on offer down the road. Humpback whales transmit complex "songs" across the ocean, and they continually modify those songs in ways that we are only beginning to understand.[14] The startling world of animal behavior is coming increasingly into focus, even if much of it remains downright mysterious.

What is the connection between the vernacular know-how of dog lovers or horse riders and the scientific jargon of academic journals? In many instances, discoveries about animal behavior made by scientists at the Princeton Neuroscience Institute, the Max Planck Institute for Animal Behavior, and Cape Town's African Institute of Ornithology are only affirming what people who interact with animals in their everyday lives already know. This, indeed, is a point often emphasized by animal researchers. Here is Jane Goodall speaking at a recent, highly publicized event at MIT:

> The subject of animal intelligence is so absolutely fascinating. And of course, as all of you probably remember, it was when I went to Cambridge University in the early '60s—I was told animals didn't have minds that could solve problems. And that we humans were completely unique. So, as I had a wonderful teacher when I was a child, I was able to stand up to those professors—which was pretty brave of me because I hadn't even been to college. And there I was doing a PhD. [Goodall reaches over to pick up a photo of herself as a young women seated next to a dog.] And this was my childhood teacher, Rusty. And, as all of you know, animals are intelligent.[15]

The sentiment behind this story (which Goodall has repeated countless times over the years) is a common one. A number of scientists have attributed their basic recognition of animal intelligence to a childhood relationship with a pet or another animal.[16] Animal intelligence, in other words, is less a recent *discovery* than the overturning of a particular intellectual tradition in the name of animal lovers everywhere, and in the name of animals themselves. While Goodall is able to make pronouncements about animal intelligence only after rigorous study, she nonetheless continues to pay tribute to Rusty, not as her primary research subject, but as her most important teacher.

In sum, we know that animals are intelligent, and we know that communication with them is possible. But intelligence and communication

are two of the least precise and most loaded words in the English language. The difficulties start when we try to define intelligence and when we try to explain what is happening between animals and ourselves in the course of "communication." One of the central tenets of this book is that attempts to describe or explain human/animal communication often fall back on, lead to, or even generate other, more flexible (and often more elusive) concepts. Having spent the past several years immersed in this topic, I have noticed several concepts that frequently emerge in or from attempts to characterize our communicative endeavors with animals. One is music. Another is love. (I will talk about a couple of others in the course of this book.)

Recall the quote above about "every muscle twitch of the rider be[ing] like a loud symphony to the horse." Another writer insists on a "silent language" that exists between riders and their horses.[17] Because they cannot say what it is actually like to communicate with a horse, these writers resort to metaphors—of music (symphonies), on the one hand, and of (silent) language, on the other. Whatever happens between horse and rider is some strange form of communication sandwiched between music and language but not equivalent to either.

The turn toward such concepts typically arrives at the end of an attempt to explicate the mechanism of interspecies communication. In some cases, a concept like music acts as a kind of quasi-explanatory aid, naming what has happened in an intuitive and only partially satisfying manner when all other attempts have failed. But concepts like music (or love) are not *merely* stand-ins for proper explanations; they do not merely fill in a lack. Rather, we might say that any attempt at interspecies communication—whether it is "successful" or not—generates something else, something more. For years, researchers attempted to communicate with cetaceans (that is, dolphins and whales). They didn't succeed in the way that they had hoped, but they "discovered" in the process that whales sing. While scientists continue their attempts at simple interactions with captive marine mammals (dolphins are large-brained mammals, so it comes as no surprise that basic communication is possible), the experience of listening to recordings of whale song has proved far more impactful and profound. It is not uncommon, either, for researchers working with dolphins to declare their love for the animals, even when those same researchers have no lexicon whatsoever to explain their passion. So, too, with dogs and cats. Every dog lover knows that a vast world of communion exists beyond instructions to sit or fetch or rollover. (Pet owners may intuit some of what scientists are only recently proving about our canine companions—for example, that dogs differentiate between human

words, or that they synchronize their gait to our own.) But despite struggling in vain to describe communication beyond basic instructions, many dog owners would admit their love and devotion to the canines in their lives. How can we understand this tremendously complex terrain? Let's look at a few approaches to the topic. Although the field is still underdeveloped, several strands of inquiry do exist.

One strand consists of narrow, highly controlled scientific studies. Studies of animal pitch perception are a case in point. "Humans Identify Negative (But Not Positive) Arousal in Silverfox Vocalizations" reads the title of another recent article.[18] Another (slightly earlier) study observes that shepherds use "short, rapidly repeated notes, with a tendency to rise in frequency" when attempting to stimulate Border collies and that, because non-human primates and birds use similar "acoustic structures," employing those structure/s may increase the likelihood that canines will respond as desired by herdsmen.[19] This strand, in brief, focuses on small pieces of the puzzle—like much of the best scientific research. And because the field is still in its infancy, researchers in this area typically refrain from making strong claims. The authors of the silverfox study, for example, admit to not knowing why humans respond to negative but not positive arousal. The conclusion of the shepherd article is tentative, relying as it does on a flimsy comparison between the calls of herdsmen and birds. It goes without saying that this kind of patient, narrow work will continue unabated for a while yet.

The most eye-catching work is that where non-human animals are taught "artificial" languages. The best-known examples are apes who are taught sign language, with Koko the gorilla and Washoe the chimpanzee reaching near-celebrity status.[20] Another famous example is the African grey parrot Alex, whose ability to detect shapes and colors (for example) seemed to overturn the long-held belief that parrots are merely imitative creatures. These studies—along with work on dolphins, cephalopods, and other animals—have been crucial in cracking claims that animals are mere automatons. (Once again, this belief is more prevalent among scientists and academic philosophers than it is among people who share everyday experiences with animals.) But these cases have also generated a number of other concepts that have spilled or fallen out of scientific inquiry.

At the MIT event mentioned above (the one where Goodall talks about her dog-teacher, Rusty), opening remarks were provided by none other than British musician Peter Gabriel. Gabriel began by showing a video of a performance with a chimp: the chimp hits a bunch of white

notes on a piano that sometimes seem to make musical sense with Gabriel's ethereal C major synth backing. (To anyone who knows anything about music, it's obvious that there's no way this effect could *not* happen.) Following the video, Gabriel makes some remarks that illustrate how flexible concepts are often used to bolster claims for, or to serve as a quasi-explanation for, human/animal communication. He begins by speaking about the chimp-pianist: "It blew me away. And then watching the way that they were using symbols for communicating and then, with Penny [Patterson] and Koko [the gorilla], seeing how the sign language was used. And the sort of poetry came out [of] the combination of words. It led me to think that you'd have to be deaf, blind, and very dumb not to notice language taking . . . being used. So I got very excited about that."[21]

While (and perhaps because?) the capacity for combinatorial complexity among gorillas remains a highly controversial issue, Gabriel invokes the notion of poetry, which obviously functions as a metaphor for something he is not able to adequately name. And then, after his strangely ableist comments, he launches into a rant that touches on the Kabbalah, consciousness-raising, and his interactions with wise "indigenous people." Discourse around human/animal communication is frequently a mélange of narrow, positivist claims (recall those silverfoxes) and the conjuring of other concepts.[22]

A related strain appears in the social scientific model pioneered by Donna Haraway, Bruno Latour, and others. This work has an ambiguous relationship to science: while it selectively deploys claims made by lab-based researchers and ostensibly supports mainstream scientific practice, it is also *about* science in a manner that some interpret as critical or even skeptical. Perhaps the strongest and most general argument by authors working in this area has been that the human is hopelessly entangled with non-human Others. Indeed, we ourselves are partially made up of and sustained by microbes. Even more intriguingly (and more complexly), endogenous retroviruses constitute as much as 5% of the human genome, which suggests a significant presence of non-living or only quasi-living retroviruses in our deep evolutionary development. In a recent article on retroviruses and stem cells, Jennifer Johung writes provocatively, "Becoming attuned to the processes that generate and re-differentiate life also leads to the recognition that non-life is dependently attached to the very hallmark of renewable life, in all of its complexities and varieties."[23] The message, in short, is that any attempt at separating humans from non-humans only results in further human/non-human hybrids. We cannot live without the splendid universe of animals, plants, bacteria, and other

biological entities that make up our bodies and world—we can only ever live in and with relation, in and with connection.

Haraway in particular has focused on the ethical and political consequences of this insight, and has long insisted on our responsibility to and for the creatures who co-constitute our lives. Similar to people like Peter Gabriel, yet in a different way, Haraway mixes discourses—because she is so committed to hybrids and entanglement, this could hardly be otherwise. Communication, then, never takes center stage in her work but vies for attention with other concepts in a way that should by now sound familiar. Consider, for example, Haraway's discussion of *My Dog Tulip*, a book by British author J. R. Ackerley. In keeping with her style, Haraway begins off-center, with a nod in an entirely different direction:

> The Dutch environmental feminist Barbara Noske, who also called our attention to the scandal of the meat-producing "animal-industrial complex," suggested thinking about animals as "other worlds" in the science fictional sense. In his unwavering dedication to his dog's significant otherness, Ackerley would have understood. Tulip mattered, and that changed them both. He also mattered to her, in ways that could only be read with the *tripping proper to any semiotic practice, linguistic or not*. The misrecognitions were as important as the fleeting moments of getting things right. Ackerley's story was full of the fleshy, meaning-making details of worldly, face-to-face love. Receiving unconditional love from another is a rarely excusable neurotic fantasy; striving to fulfill the messy conditions of being in love is quite another matter. The permanent search for knowledge of the intimate other, and the inevitable comic and tragic mistakes in that quest, commands my respect, whether the other is animal or human, or indeed, inanimate. Ackerley's relationship with Tulip earned the name love.[24]

In this bracing passage, Haraway moves from environmentalism to a science-fiction-like notion of other worlds, before making a brief stop at the pun "significant otherness" on the way to a tentative destination: semiotic (but not linguistic!) practice. (Having read the book many times over the years, I still trip over the phrase "the tripping proper to any semiotic practice"—what does Haraway mean here?) But semiosis is a brief≈stopover, at best, for Haraway takes off again, touching on misrecognition before arriving at what seems to be the real subject of this passage: worldly, face-to-face love. This grounded, unabstract love commands respect, says Haraway, before adding that this kind of love

(as well as the respect it commands or perhaps even demands) is possible even with inanimate things (as a reader, the last term surprises and intrigues me).

For better and worse, Haraway's writing does not say much about communication itself, because it does not and cannot dwell on that (or any) topic for long enough to produce a sustained analysis. This, of course, is deliberate, and it is somewhat effective (which is why I said both better *and* worse). But, and here I take Haraway as a paradigmatic figure of the field, the social science literature on human/animal communication typically leaves me wanting, in large part because communication itself remains somewhat elusive and undertheorized.

I take two lessons from the brief reading of Haraway. First, a more robust analysis of human/animal communication—one that does *not* immediately jump to love and respect and other issues—could be fruitful. Second, even though Haraway's writing is pretty extreme in this regard, it is true that *most* writing on human/animal communication seems to veer off, at some point, into alien territory. As I have suggested, the topic of human/animal communication provokes or incites a restlessness, a pull toward a theme like music, or poetry, or love, or ethical commitment.

In the preface, I pointed out a similar tendency in the work of John Durham Peters, who values notions like cooperation and stewardship over semantic or dialogic exchange.[25] All of this is fine—even admirable, from an ethical perspective. But communication as such has a tendency to get lost along the way. This book aims for a better balance.

A separate body of literature, less academic in nature, deliberately anthropomorphizes non-human animals, partly because of an irresponsible use of language and partly for shock value. "My starting point is that animals have language," writes Eva Meijer in *Animal Languages*.[26] Peter Wohlleben's *The Hidden Life of Trees*: *What They Feel, How They Communicate—Discoveries from a Secret World* fails to mind the same gap—fails, that is, to recognize the difference between arboreal homeostatic processes and something more complex (and meaning-laden) like "feeling."[27] Both books are easy to read, brim with intriguing anecdotes, and fulfill the need of many contemporary readers to reconnect with nature. In a similar way to work described above, both books shift seamlessly between human and non-human, between emotion, love, and care. But where Haraway keeps the semiotic aspect of her work murky and difficult to pin down, and where Peters shifts *from* semantics *to* ethics, Meijer and Wohlleben build their ethics on a capacity for language and

emotion that humans (in their view) share with animals and trees. I find work in this category unscientific as well as politically dubious.

Other approaches exist. Probably the most fruitful among them is a particular take on "biosemiotic theory." Biosemiosis—at least according to the authors I look to for inspiration, most notably Gary Tomlinson and Eduardo Kohn—refers to the use and interpretation of signs by many animals, including but not limited to humans. It welds together Darwinian evolutionary models with a theory of signs developed by the American philosopher Charles Sander Peirce (1839–1914). Current biosemiotic theory has several things going for it. It is grounded in empirical research, but it is also deeply theorized and in contact with movements in critical theory. It is, on this score, both scientific and humanist, and, in my view, takes the best of both traditions. At its best moments, biosemiotic theory is attuned to and concerned with important political questions as well—something that cannot be said of all scientific fields. As a bonus, biosemiotic theory provides important insights not only about language and communication, but about music as well.

This book includes an appendix that covers the thornier aspects of biosemiotics. There, the reader will find a rigorous, if brief, explanation of the theory (or at least those elements of the theory I find most valuable). All I wish to emphasize here is that biosemiotics can, to a surprising degree, account scientifically for how different meaning-making systems function. It does this by starting with the building blocks of semiotic systems, rather than beginning with systems as fully fledged and impenetrable. Biosemioticians are keenly attuned to the overlap and continuities between semiotic structures, while also shedding light on how they differ. Biosemiotics (at its best) refrains from facile, negative definitions that are unfortunately all too common in the literature: it offers positive definitions rather than simply declaring, for example, that music is *more* emotional than language, or that animals communicate *less* abstractly than humans.

The work of Tomlinson in particular helps us understand what we lose by applying terms like *music* and *language* willy-nilly to scenarios where they are not appropriate. Following Tomlinson, in this book I guard against casual pronouncements such as, "Birds have language since they communicate," or "The cries of a gibbon have musical cadences and are, therefore, a kind of singing." Although the focus of this book is more critical-historical than scientific, it seems to me that any discussion of interspecies communication requires a rigorous deployment of key terms. Not all communication is linguistic (which is why we should be leery of applying the word *language* to birds), and we can speak meaning-

fully about gibbon cries (including an aspect like pitch-contours) without likening them to either music or singing. This is the kind of careful thinking in which authors like Tomlinson and Kohn are engaged.

If Tomlinson and Kohn help us see the distinctions between various forms communication, they also help us identify a region of semiosis shared between humans and other animals. (This region of semiosis is principally made up of indexes—signs concerned with pointing or causality. Many non-human animals use these for a variety of purposes.) Kohn, who deploys biosemiotic theory in his ethnographic work on Amazonian communities, refers to communication in this overlapping meaning-space as "transspecies pidgins."[28] Because it is based on empirical research with animals, and because it provides a lexicon for different kinds of communication and expressivity, biosemiotics provides an antidote to those (typically dyed-in-the-wool humanists) who insist that we must remain agnostic about anything other than symbolic communication.

But despite its potency, a strictly biosemiotic account of human/animal communication has one serious limitation: even if we are able to rigorously establish the continuities and boundaries between human and animal semiotic systems, humanity is not and has never been defined in purely semiotic terms. The human, in addition to being a species, is also complexly layered sociopolitical being, where value (i.e., whose life matters, or who counts) is a key consideration.[29] Philosophers have variously characterized humans as beings with a soul, with language, with rationality, with moral virtue, with free will, or with the capacity to change and develop—to list just a few monstrously thorny examples. None of these terms are definable in value-free language, which is why, historically, certain human population groups have been excluded from the category of the human (or what we might call the Human). Aristotle famously made a distinction between voice (*phonē*), which is shared by humans and animals, and rational speech (*logos*), which is a distinctly human attribute. But he also qualified which humans have the capacity for rationality, arguing that slaves do not.[30] In other words, no matter how powerful it is (and it is powerful), biosemiotics does not and cannot provide an all-encompassing definition of humanity. Nor can it offer a comprehensive account of humanity's relationship with the non-human world.

Biosemiotics does, however, point to a sphere of semiotic activity that various kinds of creatures have access to. Even if scarcely any species other than the human possesses the capacity for symbolic meaning (or, for that matter, music), a great many creatures on our planet participate in a world of indexical (and perhaps iconic) semiosis, and it is there that interspecies communication flourishes.

This book, therefore, moves continually between a more scientifically driven approach informed by biosemiotics, and a political orientation informed by history and critical theory.

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