Down with Disembodiment; or, Musicology and the Material Turn

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Confronted with the spread of electronic technologies into nearly every corner of musical life, musicologists and practitioners of sound studies have avidly embraced the theme of music's technological mediation. The mp3 file format, the "cybersounds" of the Internet music scene, and the instrumental ensemble of the modern orchestra are just a few topics that have served as subjects of recent critical and historical inquiry.[1] Summing up this disciplinary activity, Emily Dolan contends that "musical technologies have become the objects that hold our fascination, that demand analysis, explanation, and contextualization."[2] Dolan portrays this "material turn" as a necessary corrective to musicology's long-standing idealism, which holds that musical works possess an identity separate from their realizations in performance and from the techniques of inscription (whether those of memory, writing, or recording) that render them repeatable.[3] In a more interdisciplinary register, media theorist David Cecchetto categorically states that "today's subject is first thought in relation to technology," thus outlining a mode of analysis that seeks to both assimilate and supersede consideration of the social and bodily dimensions of subjectivity.[4]

To be sure, the economic, social, and perceptual ramifications of music technologies, both historically and today, deserve careful study. Equally deserving of study, however, is the way in which the scholarly fascination Dolan

1 See Jonathan Sterne, *MP3: The Meaning of a Format* (Durham, NC: Duke University Press, 2012); Michael D. Ayers, ed., *Cybersounds: Essays on Virtual Music Culture* (New York: Peter Lang, 2006); and Emily Dolan, *The Orchestral Revolution: Haydn and the Technologies of Timbre* (New York: Cambridge University Press, 2013).

2 Dolan, *The Orchestral Revolution*, 20.

3 Dolan, "Editorial," *Eighteenth-Century Music* 8, no. 2 (2011): 176.

4 David Cecchetto, *Humanesis: Sound and Technological Posthumanism* (Minneapolis: University of Minnesota Press, 2013), 6.

identifies mirrors the fascination with technology among those denizens of the world whom Jared Diamond calls WEIRD (Western, educated, industrialized, rich, and democratic).[5] Just as gazing at a computer screen or smart phone often results in attenuated body awareness and movement, scholarship focusing on music technologies likewise tends to sideline that other material resource required for musical experience: human bodies. As materials for study, the intricacies of music perception, bodily responses to music, and the coordination of mental intentions and motor skills in musical performance appear to hold less interest for musicologists than the industry-driven technologies supporting musical production and consumption. The end result is a certain rhetorical drift by which humans become "users" who adapt, in deterministic fashion, to a changing array of inventions and their accompanying interfaces.

The enormous cultural prestige of technology is not the only reason for the relative neglect of the body in musicology today.[6] Most of what goes on between ears, brain, and the rest of the body is still poorly understood, and the little that has been established by empirical studies is generally ignored by musicologists.[7] This indifference toward studies of sensation, perception, and bodily kinetics is a symptom of not only traditional disciplinary divisions but also the lingering constructivism that, in its hostility to essentialism, denies the sciences any purchase on theories of embodiment, which might be defined as the nexus of relations between mind and body, individual and society, organism and culture (with those pairs understood as neither symmetrical nor strictly separable from one another).[8] However, constructivism, along with its poststructuralist cousin deconstruction, has increasingly come under fire from a diverse range of humanists, including feminists for whom the expulsion of biology from critical discourse has hampered efforts to come to grips with contemporary threats to women's health and well-being. Elizabeth Grosz's assay in Darwinian philosophy argues that humanists need to place a "reconfigured concept of the biological body" in dialogue with analysis of the social forces impinging upon the bodily imaginary.[9] Similarly, Elizabeth Wilson calls for intensive study of the somatic aspects of emotion, sexuality, and psychological illnesses, phenom-

5 Jared Diamond, *The World until Yesterday: What Can We Learn from Traditional Societies?* (New York: Penguin Books, 2012), 8–9.

6 Notable exceptions include Tia DeNora, *Music Asylums: Wellbeing through Music in Everyday Life* (Surrey, England: Ashgate, 2013) and *Music in Everyday Life* (Cambridge: Cambridge University Press, 2000); Elisabeth Le Guin, *Boccherini's Body: An Essay in Carnal Musicology* (Berkeley: University of California Press, 2006); and Judith Becker, *Deep Listeners: Music, Emotion, and Trancing* (Bloomington: Indiana University Press, 2004).

7 Petri Toiviainen and Peter E. Keller acknowledge the need for more research into the "corporeality and multimodality of music processing" in their editorial "Special Issue: Spatiotemporal Music Cognition," *Music Perception* 28, no. 1 (2010): 1.

8 Carrie Noland has recently defined embodiment as "the process whereby collective behaviors and beliefs, acquired through acculturation, are rendered individual and 'lived' at the level of the body" (*Agency and Embodiment: Performing Gestures/Producing Culture* [Cambridge, MA: Harvard University Press, 2009], 9).

9 Elizabeth Grosz, *The Nick of Time: Politics, Evolution, and the Untimely* (Durham, NC: Duke University Press, 2004), 4.

ena whose attendant discourses have been unfairly dominated, she argues, by the ideational.[10] In sum, feminist interventions in so-called new materialism are renegotiating relations between matter and ideas in nondeterministic and politically sensitive ways.[11]

For the most part, technology studies have perpetuated a constructivist line of argument by foregrounding the formative power that technologies, rather than the once-ubiquitous "discourse," exert upon individual experiences of embodiment.[12] While we do not wish to discount the importance of technology in this capacity, we believe that a better balance might be struck between technosocial and biological considerations in studies of embodiment. At the same time, realism, insofar as it serves as the guiding philosophy of Western science, has tended to promote reductive and mechanistic notions of physical phenomena that fail to do justice to the complexity of both organisms and the environments in which they are embedded. In an era in which it is common to hear the body compared to a machine and the mind to a computer, we believe it is imperative to chart a new path through the musicological "mind/body problem" to which Suzanne Cusick drew our attention twenty years ago. Cusick suggested that music offers "an actual solution to the mind/body problem," a claim that would seem to demand more sustained inquiry into musical embodiment in all of its forms, as well as novel research methodologies grounded in the principle of mind/body integration.[13] We propose that musicology stands to benefit from a material turn only if its purview includes both the materiality of the body and the complexities of embodiment as a phenomenon simultaneously mental and physical, rooted in the organic and routed through the cultural. Tia DeNora gestures in this direction when she calls for a "realist-constructivist" understanding of health and illness that devotes equal attention to medical practices, physical and mental competencies, and lived experience as they unfold within particular environments.[14]

Our essay seeks to contribute to the recalibration of realism and constructivism in humanistic inquiry by critiquing both deconstructive and mechanistic conceptions of the body, outlining holistic variants of realism found in the work of Francisco Varela and Terrence Deacon, and advocating for what we call somatic introspection—the reciprocal exchange of signals between body and consciousness along internal pathways of perception and action—as a frame-

10 Elizabeth A. Wilson, *Psychosomatic: Feminism and the Neurological Body* (Durham, NC: Duke University Press, 2004).

11 See Susan Hekman, *The Material of Knowledge: Feminist Disclosures* (Bloomington: Indiana University Press, 2010). See also the collection *New Materialisms: Ontology, Agency, and Politics*, ed. Diana Coole and Samantha Frost (Durham, NC: Duke University Press, 2010).

12 Harmony Bench, for example, while conceding that bodily aptitudes contribute to processes of mediation, claims unilaterally that "media create the bodies that use them" ("Gestural Choreographies: Embodied Disciplines and Digital Media," in *The Oxford Handbook of Mobile Music Studies*, ed. Sumanth Gopinath and Jason Stanyek [New York: Oxford University Press, 2014], 2:238–56).

13 Suzanne Cusick, "Feminist Theory, Music Theory, and the Mind/Body Problem," *Perspectives of New Music* 32, no. 1 (1994): 18.

14 DeNora, *Music Asylums*, 26–28, 137–38.

work for the analysis of mind/body relations in musical experience. Finally, we present a case study drawn from the history of vocal pedagogy in order to illuminate the conceptual potential of this framework.

L'homme n'est pas une machine

Technology studies have received a boost from deconstructive critiques that challenge the notion that the body is an experiential domain distinct from such technical prostheses as tools, memory, and language. But although deconstruction has proven adept at exposing the metaphysical presumptions lurking in a wide range of human discourses, it is less well equipped to deal with processes and entities—planets orbiting the sun, enzymatic reactions in our cells, even the "real cat" of Derrida's essay "The Animal That Therefore I Am"—that bring their own material constraints to our interactions with them.[15] Refusing to engage with—or, worse, denying the possibility of—somatic experiences that fall outside the purview of language not only renders the sensory and cognitive capacities of nonhuman organisms trivial but also sanctions lopsidedly constructivist accounts of human embodiment. Cecchetto tries to have it both ways when he asserts, "It is resolutely not Derrida's belief that language determines bodily experience per se but rather that it is the technology through which experience is registered as such, and that this registration reveals that both language and experience are always-already both present and absent in their relation."[16]

Cecchetto's argument relies on a rather mechanistic conception of cognition as "registration," a process in which, one supposes, sensory stimuli strike the nerves, undergo some form of translation, and are then "recorded" by a consciousness whose mode of knowledge is exclusively linguistic. Such a conception leaves no room for the many sorts of unconscious or nonlinguistic modes of knowledge by which bodies gather and process information in order to act. Proprioception, for example, might be described as the body's unconscious knowledge of gravitational gradients, a knowledge enacted in the assumption of appropriate postures rather than the production of mental representations. The anthropologist and neuroscientist Terrence Deacon writes that perception is "not merely the registration of extrinsically imposed changes of neural signals" but the "differentiation of self to better fit extrinsically imposed regularities."[17] Similarly, Francisco Varela's theory of cognition as embodied action begins from the premise that cognition, rather than being solely a matter of symbolic representation, encompasses all aspects of an organism's physically constrained modes of perception and action. As Varela puts it, "cognition depends upon the kinds of experience that come from having a body with various sensorimotor capacities." In the case of humans, "these individual sensorimotor

15 See Jacques Derrida, "The Animal That Therefore I Am (More to Follow)," trans. David Wills, *Critical Inquiry* 28, no. 2 (2002): 369–418, quote from 374.

16 Cecchetto, *Humanesis*, 117.

17 Terrence Deacon, *Incomplete Nature: How Mind Emerged from Matter* (New York: Norton, 2012), 531.

capacities are themselves embedded in a more encompassing biological, psychological, and cultural context."[18]

Varela demonstrates this point with a detailed discussion of the tangled neural network that constitutes the visual system. The perception of color, for instance, cannot be reduced to one-to-one mappings of light wavelengths onto sensory receptors in the eye, nor is the light that hits the retina simply transformed by the optic nerve into a "real" image of the world. Multiple neural pathways leading from the brain to the eye (and not just the eye to the brain) also play a role in perception. Color, for Varela, is therefore paradigmatic of a "cognitive domain that is neither pregiven nor represented but rather experiential and enacted."[19] It is in this sense that conceptions of the body modeled on human-made technologies (e.g., the eye as a camera, the brain as a computer) not only oversimplify matters but also perpetuate the anthropocentric propensity to see the world through the lens of human artifacts. Bodies are not just fleshy versions of telescopes or audio recording devices; they are not mediating instruments that stand between the world "out there" and minds that "register" sensory data. Varela's theory supports a description of bodies not so much as mediators but as mediation through and through—where mediation is understood in terms of the "mutually enfolded" evolutionary histories of organisms and environments.[20]

Investigations of the formal similarities between living and nonliving systems (and, further, between organisms and human-made artifacts) are often accompanied by a certain impatience toward the challenge of identifying properties specific to organic life. Emboldened by a Derridean notion of "technicity," Michael Gallope, for example, claims that "life is structured by technical apparatuses that stretch from DNA replication to modern information and communications technology."[21] He concludes that "our experiential technical world is substantially coextensive with properties immanent to the development of all living matter."[22] Gallope's conflation of living and nonliving entities on the basis of an isolated similarity (their dependence on iteration) engages in a reductive logic that, as Katherine Hayles observes, "privileges informational pattern over material instantiation, so that embodiment in a biological substrate is seen as an accident of history rather than an inevitability of life."[23] Suggesting that human technologies are coextensive with the sum total of organic life effectively

18 Francisco J. Varela, Evan Thompson, and Eleanor Rosch, *The Embodied Mind: Cognitive Science and Human Experience* (Cambridge, MA: MIT Press, 1991), 173. For convenience, our essay refers only to Varela as the author of this book.

19 Varela, Thompson, and Rosch, *The Embodied Mind*, 171.

20 Varela, Thompson, and Rosch, *The Embodied Mind*, 202.

21 Michael Gallope, "Technicity, Consciousness, and Musical Objects," in *Music and Consciousness: Philosophical, Psychological, and Cultural Perspectives*, ed. David Clarke and Eric Clarke (Oxford: Oxford University Press, 2011), 49.

22 Ibid., 53.

23 Katherine Hayles, *How We Became Posthuman: Virtual Bodies in Cybernetics, Literature, and Informatics* (Chicago: University of Chicago Press, 1999), 2.

naturalizes those technologies without regard for their increasingly destructive effects on living creatures, humans included. To be sure, the story of human evolution is partly the story of our coevolution with technology, but that story now includes processes of "dysevolution" (not to mention the potentially disastrous outcomes of global warming) that should discourage monolithic conceptions of technology as a "making" that is wholly on the side of the living.[24]

Deacon's elaboration of the "teleodynamics" of organic life (namely, its capacity for self-preservation and propagation) further exposes the dangers of modeling organisms on machines. Deacon observes that such analogies, which reach back at least to Julien Offray de La Mettrie's 1748 treatise *L'homme machine*, are "deeply infected with the special assumptions associated with human artifact design."[25] In the case of artifacts, design and realization can be separated, as can designer and designed; the whole is composed of discrete parts and serves an extrinsically determined end; and if the artifact is a machine, its internal states are planned out in advance. Deacon reveals the inadequacy of each of these principles when it comes to understanding organisms, and he concludes that the reductive materialism inherent in the machine analogy cannot accommodate the "ententional" aspects of organic life and human thought alike—namely, the essential incompleteness which accompanies purposive orientation toward an end.[26] In the musical realm, similar problems arise when the voice is equated with an instrument, an analogy that, while defensible in a certain sense, downplays the especially intimate fusion of somatic introspection and embodied action involved in the act of singing. For singers, player and played, like designer and designed, cannot be separated.

Singing as Embodied Action

With the expansion of anatomical research and the growing popularity of tools like Manuel García Jr.'s laryngoscope, vocal pedagogy in the nineteenth century increasingly became the domain of physicians and scientists. James Davies's account of French research on the voice during this period describes a shift from exteriors to interiors—away from a focus on the mouth's role in vocal production and toward a plumbing of the body's depths. As García and others dug into as-yet-unexplored regions of the body in order to access the vocal "mechanism," they produced numerous (and often fantastical) notions of voice.[27] The voice was not a single instrument, they discovered, but multiple, flexible, protean—as Davies puts it, "Such a thing as *a* voice hardly existed for these thinkers."[28] Davies thus concludes that "there is no absolute or natural

24 See Daniel E. Lieberman, *The Story of the Human Body: Evolution, Health, and Disease* (New York: Pantheon Books, 2013).

25 Deacon, *Incomplete Nature*, 36.

26 Deacon, *Incomplete Nature*, 27.

27 See J. Q. Davies, *Romantic Anatomies of Performance* (Berkeley: University of California Press, 2014), 135–36.

28 Davies, *Romantic Anatomies*, 136.

relation between voices and bodies. The truth of what voices are depends on *where* observers look, on which part or aspect of the body is deemed essential: mouth, lips, tongue, vocal tract, larynx, lungs, cerebral cortex—one could go on and on."[29]

Davies's desire to decouple voice and body is understandable, given that he aims to complicate the idea of voice as something unitary, natural, and inevitable. But surely there are ways to talk about what he calls "vocal presence" and to acknowledge that voices emerge from bodies without invoking metaphysical (i.e., reductive) notions of what the voice "is." What is at issue here is actually the failure of the machine analogy—all those close-ups of larynx, tongue, and glottis that break the body down into parts—not only to account for the embodied action of the organism as a whole but also to yield knowledge that is of use to singers. Treatises often gave the impression that singers were disassociated from their own voices and needed the help of experts to understand their own physiology and prevent doing injury to themselves. But the new set of discourses at the disposal of vocal pedagogues created what seemed an impossible task: to relate new scientific theories of vocal production to the singer's own sense of how to produce sound. Vocal pedagogy had long been (and still is) fraught with uncertainties regarding how musicians might balance conscious intention with "letting go," the demands of musical activity with the health of the body as a whole.[30] A number of treatises on either side of the turn of the twentieth century display a marked preoccupation with how to relate a piecemeal knowledge of anatomy to broader questions of cognition, intention, and conscious effort—in short, the work of making music. A brief look at two authors pointedly illustrates the difficulty of explaining how to intervene in one's own bodily actions. Should the singer's consciousness be like an operator at the gears of a machine, or is it only one participant in a broader, and richly semiotic, practice of somatic introspection?

It is in the matter of "proper" breathing that such tensions are perhaps most apparent. For example, the Harley Street physician Sir Morell Mackenzie urged singers to abandon so-called natural breathing in favor of drawing in the stomach while inhaling because the latter method had been mathematically proven to increase chest volume.[31] Yet Mackenzie also warned singers against trying to acquire the same knowledge as medical professionals. Unlike García, he thought that tools like the laryngoscope had no place in pedagogy. "At best," he remarked, "the laryngoscope can only serve to make the singer

29 Davies, *Romantic Anatomies*, 151.

30 Two contemporary examples are Anthony F. Jahn, MD, ed., *The Singer's Guide to Complete Health* (New York: Oxford University Press, 2013); and Melissa Malde, MaryJean Allen, and Kurt-Alexander Zeller, *What Every Singer Needs to Know about the Body* (San Diego: Plural Publishing, 2009).

31 Sir Morell Mackenzie, MD, *The Hygiene of the Vocal Organs: A Practical Handbook for Singers and Speakers*, 7th ed. (New York: Edgar S. Werner, 1891), 100–101. Mackenzie cites anatomist Mayo Collier, who modeled the chest cavity on a cone (!) and compared how changes in its height or radius affected its volume.

self-conscious, a fatal defect in the execution of movements which to be perfect must be almost automatic."[32] Mackenzie's choice of words might seem to support a conception of the body as machine, but it is worth remembering that the term "automatic" properly means "self-acting." In this respect, the word characterizes (some aspects of) organisms rather than machines, which in order to run must be built and set in motion by humans. The problem Mackenzie pinpoints is that the self of self-acting behavior is not the same as the self routinely identified with the I (the self that can become "self-conscious"). In other words, in musical experience, as in so many other arenas of life, the I's intentions and the involuntary activities of the self-acting self (or selves) can potentially come into conflict.

Emilio Belari, in his polemically titled book *Vocal Teaching Is a Fraud*, makes the results of such conflict quite clear. "When in the accomplishment of some natural function the will is caused to intervene," he observes, "the means of action are exaggerated by preventing the mechanism to act freely and rapidly. This is what the singer does when he thinks of putting the respiratory organs into action; organs which . . . act automatically and independently of our will."[33] Belari accordingly declares incompetent those teachers who (like Mackenzie) "give rules for breathing contrary to the natural mechanism employed from the moment we enter this world until the instant we leave this life."[34] The meddling of the conscious will in practices like singing creates problems precisely because the vocal "mechanism" to which Belari refers is not a true mechanism, which, far from conducting itself "freely," must be activated or prepared by an external agent. Instead, breathing is both automatic and subject to conscious intervention, an activity that proceeds by way of the self-monitoring characteristic of somatic introspection. Both voluntary and involuntary aspects of embodiment—along with the little-understood channels of communication running between them—must be in play for singing (not to mention other pursuits such as meditation, athletics, and dancing) to go well. The obviousness of this point sits uneasily alongside the obscurity of the physiological processes involved in such feats.

How, then, does musical practice point toward a conception of embodiment that eschews both the reductive tendencies of realism and the ideational excesses of constructivism? First, the challenges of music pedagogy spur us to consider how the entire cycle of cognition as embodied action—a cycle that includes physical movements as well as intentions, beliefs, and habits—is engaged by musical activity. Second, we need to recognize that the body is not fully controlled or dominated by thought. The self of conscious reflection is nested within, but not reducible to, a whole series of autonomous but codependent "selves"

32 Mackenzie, *The Hygiene*, 90.

33 Emilio Belari, *Vocal Teaching Is a Fraud: A Reasoned Demonstration of the Errors of Vocal Education and Their Disastrous Consequences* (New York: M. M. Hernández, 1892), 30.

34 Belari, *Vocal Teaching*, 9.

that comprise the organism (cells, organs, and so on).[35] Thought can "couple" (to use one of Varela's favorite concepts) with some but not all of these selves and their attendant organic processes. Thanks to the multiplicity and complexity of bodies themselves, embodiment is not an uncomplicated source of immediate presence, but neither is it wholly inaccessible due to our linguistic entanglements. For humans, embodiment is both inevitable and something that can be cultivated through practices that transform attention and movement. As Carrie Noland has recently shown, attending to the dynamics of kinesthetic awareness offers a much-needed way to conceive of embodiment that remains responsive to both realist and constructivist perspectives. Like Noland, we are interested in "use[s] of the body that can become a source of kinesthetic feedback, and thus agency."[36] This is where somatic introspection (or, alternatively, Noland's "self-reflective interoception") moves into the domain of the political.[37] Musical practice offers fertile territory for research into how and to what end individuals hone the perceptual and "ententional" channels by which consciousness and the body communicate. A musicology that navigated the "mind/body problem" in this fashion would aspire to be not merely another instance of what Varela calls "disembodied, unmindful reflection" but a protocol for expanding self-awareness beyond the limited domain of symbolic thought.[38]

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35 See Deacon, *Incomplete Nature*, chap. 15.

36 Noland, *Agency and Embodiment*, 16.

37 Noland, *Agency and Embodiment*, 49.

38 For Varela, this phrase describes most Western philosophy, including its deconstructive variants. See Varela, Thompson, and Rosch, *The Embodied Mind*, 28.