

Music & Musical Performance

Issue 2

November 2022

Defying the Conventional: Musical Performance, Embodied Cognition, and the Reconfiguration of Institutional Discourse

Dillon Parmer

University of Ottawa, dparmer@uOttawa.ca

Follow this and additional works at: <https://digitalcommons.fiu.edu/mmp>



Part of the [Music Performance Commons](#), [Music Practice Commons](#), and the [Music Theory Commons](#)

Recommended Citation

Parmer, Dillon. "Defying the Conventional: Musical Performance, Embodied Cognition, and the Reconfiguration of Institutional Discourse." *Music & Musical Performance: An International Journal*. Issue 2, article 5 (November 2022): 1–36.

This work is brought to you for free and open access by FIU Digital Commons. It has been accepted for inclusion in *Music & Musical Performance* by an authorized administrator of FIU Digital Commons. For more information, please contact dcc@fiu.edu.

Defying the Conventional: Musical Performance, Embodied Cognition, and the Reconfiguration of Institutional Discourse

Dillon Parmer, University of Ottawa dparmer@uOttawa.ca

Abstract: This essay confronts the dialectic between theory and practice through a comparison of an idea basic to how we understand music (the notion that pitch moves up and down in vertical space) with how pitch is thought of in actual music-making. The comparison leads to both a new conceptual model for thinking about pitch, what might be called Pitch Horizontality, as well as a proposal for how to bring institutional discourse about music into sync, not with how scholars in other disciplines think about their subject matter, but with the thinking that goes on in contexts of real-world artistic production.

Keywords: performance, embodied cognition, pitch verticality, singing, disciplinary critique

In theory, there is no difference between theory and practice. But in practice, there is.

—widely attributed but attested as early as 1882 by Benjamin Brewster¹

This essay reopens the ancient Aristotelian dialectic between theory and practice. My aim is not just to expose and deconstruct that dialectic, but also to displace it with a new institutional discourse in which there is no longer any difference between theory and practice, in *both* theory and practice. I will carry out these aims by bringing the performer's voice, literally and figuratively, into the domain of scholarly discussion. But first let me clarify my terms.

When I say theory, I do not just mean it in the musical sense of the word, as in what is found in the educational curricula and research programs of professional music theorists and analysts (all of which I will refer to collectively as conventional music theory). Nor do I just mean it in the scientific sense, as when scientists, through extensive testing and third-party verification, develop a theory about some aspect of the world (e.g., the theory of evolution or the theory of special relativity). When I say theory, I mean it in the generalized sense, as when any idea, or set of ideas, is thought up without recourse to real-world human application. When I say practice, I do not just mean it in the drill-and-kill sense of what musicians do in practice rooms, where they spend thousands upon thousands of hours mindlessly (or mindfully) repeating all those scales and arpeggios to develop and perfect technique (e.g., “practice makes perfect”). Nor do I just mean it in the broader sense of what Christopher Small calls “musicking,” as when musicians engage in the pastime of making music for self-

1. See <https://quoteinvestigator.com/2018/04/14/theory/>

enjoyment or in the more rigorous demands of professional performance.² When I say practice, I mean it in the sense of the real-world, concrete human action that takes place at a particular time and locality.

I will be the first to acknowledge that, by these broader definitions, theory is a type of practice even if the action that defines it—the act of formulating theories—takes place wholly within, or primarily within, the confines of the mind. (Of course, theory also contains other components that constitute a practice.) And practice necessarily embeds as-yet-to-be articulated theories about what is being practiced, and how it is being practiced, even when theory formulation and its formal articulation are displaced in favor of carrying out some more explicit action (other than the act of theorizing).³

Thus, we can distinguish theories about music from the practice of putting those theories into practice, as when we analyze music according to such and such a theory about music. And we can distinguish the practice of performing music from the theories about performing that enable that practice. But playing around with the meanings of polarized concepts as I have just done—to make one seem like or include the other (as when we make the performance of an analysis akin to the performance of music being analyzed)—in no way negates the dialectic between theory and practice when it comes to how music is studied and talked about in the modern institution. For here, the difference between them is tantamount in that it is what separates those who generate and disseminate, through peer-reviewed publication, ideas about the art but who may not practice that art themselves (theoreticians) from those who practice the art but whose job it is not to generate and disseminate through peer-reviewed publication ideas about it (practitioners). As I have come to see it from the vantage as someone who lives and works in both of these domains, that separation belies the fundamental problem this essay seeks to expose: that there is, at least when it comes to music, a gross disjuncture between theory and practice, between what those engaged in research think about music on the one hand, and how the act of music-making itself—the moment of performance, if you will—compels musicians to think about it on the other.

To show just how deep this disjuncture goes, part 1 (“Pitch Verticality”) will take an idea basic to how we experience, conceptualize, and talk about music in Western European traditions—the notion that pitch moves up and down in vertical space—and contrast that idea with an alternate cognitive model for pitch that seems to be in play in a specific musical practice, that of operatic singing. Then, part 2 (“On the Level”) formalizes this alternate model by drawing from voice pedagogy and anatomy, showing how the model functions in my own fieldwork as a professional singer as well as in my work as a voice teacher. Pointing out a putative gap between theory and practice would be pointless without also pointing to possible solutions. To that end, part 3 (“The Musician Within”) suggests paths to bridging the gap, paths that, in my view, mandate a radical reconfiguration of the system currently in place for how music is understood in the institution. In contrast to the current system, which allows for

2. Christopher Small, *Musicking: The Meanings of Performing and Listening* (Middletown, CT: Wesleyan University Press, 1998).

3. A similar observation is made in Fiona Cadlin, “Practice-Based Doctorates and Questions of Academic Legitimacy,” *International Journal of Art and Design Education* 19, no. 1 (2000): 96–101.

musical understanding to be constructed outside the domain of musical practice but then requires such understanding to be applied in, or to at least inform, that practice, I envision a new system, one in which musical understanding is grounded in and drawn from out of musical practice itself. Reconfiguring the system so as to allow for musicians themselves to speak to music in the domain of institutional discourse from the basis of their expertise and field experience as musicians is not at all as radical as I would like to make it appear. Ironically, such a reconfiguration is already latent within cognitive music theory itself. By grounding musical understanding in embodied cognition, cognitive music theory not only opens the door for musicians themselves to articulate, through the disciplinary paradigm of reflective practice, what they understand from engaging with the art of music in performance. It also shows how the musical experience of the very subject engaged in theory formulation issues from the domain of experience subtended by musical performance. As such, the discipline of cognitive music theory has already sown the seeds for correcting the disjuncture between theory and practice, even if its adherents have yet to venture out into the radical possibilities cognitive science has itself opened up.

Pitch Verticality

One cannot quite call them metaphorical since their meaning, in our culture at least, is both precise and universally accepted. But it would seem very difficult and even perhaps far-fetched if we tried to justify these terms on any rational basis. I think it could perhaps be done, and of course the terms had an origin—presumably not entirely arbitrary—which may possibly be known to musicologists. I myself do not know it. At all events, it is difficult to associate rationally what we call a high note with elevation in either the spatial or the moral sense of the word. The Greeks called what we consider high tones low and our low tones high, for reasons that had nothing to do with the qualities or effects of the tones as such. It is for this reason that I cite this particular case, as indeed it has often been cited. Not only is it interesting in itself, but it shows clearly how essentially arbitrary is at least one of the images that we have borrowed from the realm of space and vision and applied to that of time and hearing.

—Roger Sessions⁴

One idea basic to how we are conditioned to experience, conceptualize, and explain music in West European traditions—from early childhood music lessons right down to the most rigorous of music-theory systems around for explaining configurations of tones—involves the notion that pitch moves up and down in vertical space. Cognitive music theorists like to call this notion “Pitch Verticality.”⁵ Of course, there is nothing intrinsically up or down in the notes themselves that compels us to talk about them as moving this way. Even though our notational system graphs pitch so that it looks like it moves up and down on paper, even though we casually point to scores and say that the pitches go up here or down there, even though we explain chord formations as a function of stacking notes one on top of another, none of this means that notes actually go up and down and occupy positions in space along a vertical axis. Nor do scientific descriptions of the acoustic properties of sound—of frequency,

4. Roger Sessions, *Questions About Music* (New York: Norton, 1970), 31.

5. Lawrence Zbikowski, *Conceptualizing Music: Cognitive Structure, Theory, and Analysis* (New York: Oxford University Press, 2002), 63–95.

timbre, decibel, and intensity—entail notions of up and down that are intrinsic to sound itself. Just because acousticians adopt the convention of describing differing pitches in terms of faster and slower frequencies, just because they represent those differences along higher or lower positions on graphs in no way implies that the acoustic phenomena represented embed attributes that are intrinsically higher and lower in vertical space, nor does it imply that such phenomena are best labeled with such descriptors: the chain of reasoning moving from faster–slower oscillations through higher–lower frequencies to higher–lower pitches in space arbitrarily transfers numerical value related to speed into a spatial realm and a position in that realm along a vertical axis. The basic concept of verticality underpinning all such descriptions is just a metaphor derived from elsewhere, and, as metaphor, it is, as Roger Sessions suggests in the quotation above, wholly arbitrary.

But developments in cognitive science would seem to suggest that such metaphoric borrowing is not arbitrary but actually has defensible rationale. As Andrew Mead suggests:

Our most immediate experience of pitch comes from our voice, and pitch control derives from muscle contraction and relaxation. The shorter the vocal chords, the higher the pitch [*sic*]—reproducing the same physical sensation of muscular contraction experienced when lifting our arms, objects, or ourselves.⁶

Of course, Mead is drawing not from cognitive science but from the work of Suzanne G. Cusick, who, in her feminist critique of mind–body dualism, advocates for “the inextricable presence of the body in music.”⁷ This presence, so she claims, involves treating music not so much as a thing out there as marked by its notation and apprehended in the mind, but as an activity, as something you do or carry out *with your body*. Obviously, if you are doing something with your body you are *de facto* engaged in exerting effort, and it is precisely this implication that Mead, his misconception of vocal mechanics notwithstanding, calls upon when he correlates degrees of effort with the physicality involved in using our voices. By correlating such physical effort with the act of making pitch, Mead tacitly invokes George Lakoff’s, Mark Johnson’s, and Rafael E. Núñez’s embodied-mind thesis, that human understanding, and the conceptual models enabling it, is grounded in how we experience our bodies in action.⁸

Drawing more explicitly from the discipline of cognitive science, Lawrence Zbikowski takes this thesis a step further when he points to where in our bodies we feel the vibrations of the sounds we make with our voices when we speak or sing. He writes:

6. Andrew Mead, “Bodily Hearing: Physiological Metaphors and Musical Understanding,” *Journal of Music Theory* 43, no. 1 (Spring 1999): 7. I have added a “sic” because, as I will explain later in the essay, the basic understanding of vocal mechanics that Mead uses in the analogy is flawed and, therefore, compromises the argument he seeks to make about how precisely the body might be involved in hearing, and doing for that matter.

7. Suzanne G. Cusick, “Feminist Theory, Music Theory, and the Mind/Body Problem,” *Perspectives of New Music* 32, no. 1 (Winter 1994): 15.

8. See for one instance, George Lakoff and Mark Johnson, *Philosophy in the Flesh: The Embodied Mind and its Challenge to Western Thought* (New York: Basic Books, 1999), 63–95.

when we make *low* sounds, our chest resonates; when we make *high* sounds, our chest no longer resonates in the same way, and the source of the sound seems to be located nearer our head [original emphases].⁹

Taken together, all of these lines of thinking—the critique of Cartesian dualism, the embodied-mind thesis, and sound localization—seem to make a strong case for the viability of Pitch Verticality as an effective way of describing pitch, at least in Western European music traditions. This effectiveness is made all the more apt because the generalized concept of Verticality allows us to map categories of up and down from our bodies to pitches in ways that correspond both to what it feels like when we make sounds and to where in our bodies we feel the resulting sound. And so what is merely arbitrary—a metaphor for describing differing acoustic frequencies—sticks, and we continue to rely on it because Pitch Verticality seems to enable us to understand more complex formations like melodic contour and shape, chords and textures, movement and tension, meaning and gesture, even affect and representation.

To illustrate the extent to which the concept of Verticality underpins how we conceptualize, understand, and interpret music, let us take one small example, the vocal line in a passage from Mozart's *Don Giovanni* (example 1). The concept—I will mark it with italics in my commentary—is in play right from the moment you look at the score and see the melody as charting a stepwise *descent*, from *high* to *low* F-natural. The concept is also in play when you recognize the distinctive feature of the passage, that the implied *downward* resolution to low F is evaded in m. 41 when the melody suddenly *leaps upward* from G-natural past the starting note to *high* A-natural, and then restarts its *descent*. The concept is also in play when we move past description into interpretation. For when you characterize that leap as a musical gesture embodying *high drama*, it is the concept of verticality that allows you to see the distance traversed in such a short time span as what gives the passage its dramatic import. But we need not stop there. When you move to actually having to sing the passage, you would surmise from that description and interpretation that the execution requires—through the aforementioned mind-body correlation underpinning the concept of verticality—a momentary *surge of physical effort* to *reach* the high note and a concomitant *decrease of effort* on the approach to the conclusion of the phrase. Thus, the concept of Verticality would seem to enable not just description and interpretation of those pitches, but also how we would have to manipulate our bodies to sing them.

We can actually take all of this thinking even further. Having made that correlation, between effort and execution, we could broaden the argument past this isolated passage by recognizing how similar *surges of physical energy* are called for throughout the aria, not just in comparable phrases asking for wide leaps and arpeggios extending past the octave, but also in its long scales, its sustained phrases, its fast *coloratura*, its *messa di voce*. And when we move from singing just the aria in isolation to performing it in the context of the drama in which it is embedded, the physicality required to navigate such technical difficulties throughout the

9. Zbikowski, *Conceptualizing Music*, 69.

nar, nun - zio vo - gl'i - o tor -

nar, sì, nun - zio vo - gl'i - o tor -

nar!

Example 1. Measures 39–44 from “Il mio tesoro” (Mozart’s *Don Giovanni*). “che sol di stragi e morti, nunzio vogl’io tornar” (I will return as a messenger of punishment and death).

entire opera would seem to embody something of the effort needed for what Don Ottavio decides in this aria to do: with Don Giovanni’s guilt unequivocally evidenced, “Il mio tesoro” announces Ottavio’s intention to bring the culprit to justice. How *up* to that task he is, his capacity *to rise to the occasion* in other words, as the hero of the story will be embodied in how the singer meets the vocal demands of both the aria and the role that contains it. And the confidence his comrades on stage have in his ability to be the hero will be measured in how they perceive him to sing the piece.

Even the audience watching a performance from the comforts of cushy seats in a darkened house, or a comfy armchair at home, can also have a sense of how Don Ottavio will do, through something called “kinesthetic empathy.” Those who subscribe to this theory say that because we all experience our bodies in more or less the same way, those who just listen and watch can experience something of the physical demands required to sing the aria even if they are not singing (or cannot sing) it themselves, by imagining and silently engaging in the physical maneuvers performers are carrying out to sing it.¹⁰ And so, just as Ottavio and his

10. See for instance Arnie Cox, “Embodying Music: Principles of the Mimetic Hypothesis,” *Music Theory Online* 17, no. 2 (July 2011). <http://www.mtosmt.org/issues/mto.11.17.2/mto.11.17.2.cox.html>.

comrades know if he can mete out justice by how a singer meets the aria's demands, listener-spectators too can surmise how Ottavio will fulfill his responsibilities if their embodied experience of his performance makes them feel at ease or not.¹¹ We could continue to deepen this account of how the concept of verticality infuses Don Ottavio's singing of "Il mio Tesoro," even developing it into present-day musical hermeneutics, as when scholars tease suggestive metaphors out of analytic descriptions of musical structure, or read them from textual adjuncts (or the circumstances of composition or reception) into such structure, to produce the proverbial "close reading." The attributions of meaning to music that such a critical practice yields almost always sound good . . . at least in theory.

In actual musical practice, however, things get more complicated . . . and a lot more interesting. For one thing, you would not sound good if you tried to sing the passage, or the whole aria, or the whole role, according to how the above theory predicts it should feel. If you were to put the above theory into practice, by conceptualizing all high notes as "high" and applying concomitant surges of physical energy to execute them, your voice will crack, and you will disrupt the flow of the musical line. (*I invite readers to try singing the passage in example 1 according to this theory and see what happens.*) True, you could defend a performance in which your voice cracks as reflecting an Ottavio with good intentions but not enough backbone to carry out the duties of the hero. Indeed, his ineffectiveness as a hero would be embodied in the singer's inability to meet the demands of the aria. But that defense is problematic on at least two counts, the first historical, the second professional. For the Vienna production of 1788, Mozart replaced "Il mio tesoro" with Leporello's and Zerlina's duet "Per queste tue manine" and instead conceived a substitute aria, "Dalla sua pace," for his new tenor, Francesco Morella, who had trouble negotiating the demands of the original aria from the Prague premiere of 1787. We do not know the precise reasons why Mozart agreed to the changes: Morella may not have been the right voice type for the original aria. But it seems possible that Mozart substituted arias because a problematic performance of the original aria would be musicodramatically unacceptable. Indeed, that is borne out in the professional domain: if you were to sing the aria with a voice that cracked, you would not be hired by a professional company to sing the role, or, if you were already engaged by such a company and were singing it that way for performance, you would be fired on the spot and replaced, or you would not be hired by that company again. (*Again, I invite readers to try auditioning in this way and see what happens.*) All of which is to say this: it is not that cracking in the passage from example 1 is evidence of a lack, in talent, training, or discipline. The reason is that to sing it in a professionally, musically, and dramatically viable manner requires you to conceptualize the melody in a way that is at odds with how conventional music theory suggests you should think about it. For in the domain of real-world musical practice, singers are—or at least seem to be—working with an entirely different conceptual model for pitch.

Take, as an example, what Martial Singher (1904–1990), a noted Metropolitan baritone and voice teacher, has to say about this very passage. He writes:

11. Of course, Mozart and Da Ponte never allow Ottavio to succeed or fail as Giovanni is pulled down into hell by the statue of the dead Commendatore before the arrival of the posse.

One interval requires vocal wisdom: In “nunzio vogl’io tornar” the second time, from middle G on “tor-” to high A on “-nar,” while going down on “vogl’io tornar,” keep the voice in the upper resonances, *ignore the fact that the interval is a ninth*, keep the start of the A in the same resonance and the sound of the vowel /a/ (“-nar”) very similar to the sound of the preceding vowel /o/ (“tor-”), *singing as if the two pitches were near each other*. The explosion of an open sound on the A must be avoided at all costs [emphases added].¹²

I came across this excerpt when I was preparing the role of Ottavio for a production of *Giovanni*. I was curious about what Singher had to say regarding the interpretive and technical problems the aria poses. Although I did not understand why, at the time, Singher’s suggestion helped in how I executed the passage, the aria, and the role itself. What interests me about it are the two comments I have italicized: the first, that you should ignore the fact that the interval is a ninth, and the second, that you should sing as if two pitches separated by fourteen semitones were near each other. These two phrases embody ways of thinking about two pitches separated by a wide interval that radically contrast the mode of thinking that makes us think of the relationship between middle G and high A in example 1 as an upward leap traversing a wide distance. To be sure, we can all describe that leap in terms of up and down, but when it comes to singing it, Singher insists that tenors executing the passage neutralize the leap, that they negate the concept of Pitch Verticality in the moment of performance. And when he does that, he points to what I am calling the disjuncture between Theory and Practice, between how music is conceptualized as an object available for theoretical elucidation, and how it is, or ought to be, conceptualized as an activity to be carried out.

What precisely the conceptual model is in the domain of musical practice Singher himself does not say, for his commentary is not about making music theory. It is about making music. But it is simple enough to extrapolate the countermodel. For to say that the notes bounding wide intervals are near each other implies that the space Pitch Verticality inserts between them is not there. In a conceptual model that negates that space, pitches can no longer be said to move up and down. They can only remain stationary on a level plane. Indeed, that is precisely what Stephen F. Austin advocates in his vocal pedagogy:

Singers should be encouraged to sense that all the notes emanate from the same place, eliminating any sense that there is high or low. I suggest to them that they feel all the notes on one level or plane so that they do not reach up to the high notes or down for the low notes.¹³

Although Austin does not see the broader implications of his pedagogical imperative for understanding the disjuncture between Theory and Practice, his conceptual model

12. Martial Singher, *An Interpretive Guide to Operatic Arias: A Handbook for Singers, Coaches, Teachers, and Students* (University Park: Pennsylvania State University Press, 1983), 141.

13. Stephen F. Austin, “Building Strong Voices—Twelve Different Ways,” *Journal of Singing* 69, no. 3 (January–February 2013): 349.

nevertheless illustrates how the discourse of the practitioner potentially embeds a counter-conceptual model for pitch. I will call this counter-conceptual model Pitch Horizontality.

Of course, you would be hard-pressed to find such a model discussed by conventional music theorists, musicologists, and even ethnomusicologists who study Western European musical traditions. And that is because the kind of thinking the model encapsulates is not necessarily found in the scholarly literature of these disciplines. It is found, as I am suggesting, in a domain of musical experience bounded by actual practice, what Michael Channon calls the “third matrix,” a domain in which scholars tend to have little experience. He writes:

As long as an audience is made up of listeners who themselves play and sing, their listening also becomes, in crucial respects, an active process. Such listeners are able to adopt an attitude which bases its musical judgement neither on subjective emotion, nor on detached intellect, but on a third matrix: the practical knowledge of the instrument, or the voice, which guides both intellect and emotion in the moment of performance.¹⁴

Even though Channon distinguishes these matrices with reference to listener-spectatorship, the knowledge that constitutes the third one obviously encompasses the corporeal elements involved in music making itself, all that you must know how to do to configure your body into a musical instrument, or to play one. In the case of singing, that knowledge involves managing four variable components: 1) knowing how to maintain a continuous stream of air which though continuous can vary in pressure; 2) knowing how to control a variable point of resistance found in the vibrating vocal folds which change in thickness and length to produce different pitches when they are met by that stream of air; 3) knowing how to amplify those fundamental pitches in the cavities of the pharynx, mouth, and sinuses the first two of which can vary significantly in shape and size depending on vowel, volume, and frequency; and 4) knowing how to maintain those variable configurations within the shifting musical and expressive demands constitutive of actual musical performance. It is possible to extend the scope of this third matrix to include what you do in actual performance, how you actually sing or play, shape or phrase, color or animate the music, as well as how you interact with what other performers around you do, how you adapt to the context in which your performance is embedded, and how all that is received by an audience. But for the purposes of this essay, I will stay within the confines of the more-narrow definition.

According to Joseph Kerman, the kind of understanding that arises within those confines is largely ineffable and, for that reason, is transmitted primarily by embodied example, in what a practitioner does rather than in what she says. He writes:

A musical tradition does not maintain its “life” or continuity by means of books and book-learning. It is transmitted at private lessons not so much by words as by body language, and not so much by precept as by example. . . . It is not that there is any lack of thought about performance [or music] on the part of musicians in the central

¹⁴. Michael Channon, *Musica Pratica: The Social Practice of Western Music from Gregorian Chant to Postmodernism* (London: Verso, 1994), 27.

tradition, then. There is a great deal, but it is not thought of the kind that is readily articulated in words.¹⁵

If that is indeed the case, that the knowledge of music grounded in the third matrix embodies a type of understanding not readily articulated in words, then practitioners would seem to disseminate knowledge in ways that require their students to learn not by taking in what the master says, but by witnessing what the master does. Indeed, there is so much about music that is most efficiently conveyed and learned only through such an exchange. But efficiency of information exchange in no way entails that what is being exchanged, musical understanding grounded in performance, is not amenable to discursive formulation as Kerman and many others (including musicians themselves) are too quick to assume. Even if such talk has yet to be formalized into a “professional discourse,” musicians talk a great deal about music, about what they and others do and think as musicians. Just because I have been able to find in print only two examples of Pitch Horizontality in no way implies that the conceptualization of pitch it embodies is not “readily articulated in words,” is not widespread. Indeed, I have heard many voice teachers and coaches encourage singers to conceptualize pitch as being on a level plane, as being neither high nor low, as being fixed in bodily space. Talk of such things was a recurring motif throughout much of my vocal development, from student to professional, and the conceptual model for pitch that underlies it continues to be operative in my own vocal practice, as well as in how I advise those who study singing under my guidance.

But when I was a student, I did not realize what was meant by thinking about pitch in this way, and consequently, I did not realize (and nor did my coaches and teachers I would surmise) that they were talking about conceiving pitch in the act of singing in a way that was radically different from what conventional music theory tells us how to read a score or conceptualize a passage. When they told me that high notes were not high, that I should think of them as on the same level as lower notes, I thought they meant that what I perceived as high was entirely within my capacity to sing well, and that I should not, therefore, think of high notes as being at the extremes of, or outside, my usable range. In other words, I thought they were telling me that the climactic high Cs in “Salut! demeure chaste et pure” from Gounod’s *Faust* or “Che gelida manina” from Puccini’s *La Bohème*, to take two famous examples, were wholly within my vocal reach. My lack of understanding on this matter is very important. It is not that the idea my coaches were trying to convey was elusive and difficult to formulate in words. It was that it is so contrary to received understanding for how we are supposed to think of about pitch, that my ability to understand what they were telling me was deficient. I failed to understand what my coaches and teachers were telling me because I was not thinking like a musician. I was thinking like a conventional music theorist.

It was only when I was working with one particular coach in New York City, Kenneth Merrill, that I eventually realized what all my voice teachers and coaches had been talking about. As I approached the high C in the *Faust* passage (example 2), he jokingly diagnosed me

15. Joseph Kerman, *Contemplating Music: Challenges to Musicology* (Cambridge: Harvard University Press, 1984), 196.



Example 2. High C from “Salut! demeure chaste et pure” (Gounod’s *Faust*). “Salut! demeure chaste et pure ou se devine la presence d’une ame innocente et divine” (I greet you, little home chaste and pure, where the presence of a soul innocent and divine was created).



Example 3. Example 2 as performed (mm. 1–2 of example).

with “ledger-line-itis.” This was his mildly condescending term for singers who thought of notes as above (and below) the staff in imaginary vertical space. He did not use the term Pitch Verticality, but he was in effect critiquing me for singing with that model in mind, and he was absolutely correct in his diagnosis. At the time, I was still figuring out how to sing with consistent ease and efficiency in especially my upper range, the “money notes” as they are called. If I really wanted to achieve that objective, he advised, I would have to jettison both the notion of pitch height and the idea that pitch moves up and down. It took some time to retrain my mind and body to rethink pitch on a horizontal, rather than a vertical, plane, but eventually I did and the results continue to astonish me (example 3). What was once problematic—singing high notes easily and efficiently—has become easy as pie. Of course, I am oversimplifying the matter for the sake of brevity and to make a point. There is a lot more that goes into what makes them easy, and I would talk about all that if this were a journal on vocal pedagogy or voice science. For the polemic of this essay, however, it is enough to know that an essential component in the thinking process for, and the subsequent execution of, the passage from *Faust*, is that the high C be thought of as on the same level as the E \flat preceding it, or to use Singher’s words, the two notes must be sung as if they were side by side. When you sing them that way, as if they were side by side, you are in effect using a horizontal or level model for pitch. Interestingly, in his commentary for this very passage, as well as for the optional (now requisite) high C in the *Bohème* aria, Singher does not suggest that the tenor think of the notes in this way. Instead, he falls back on metaphors of up and down.¹⁶ Nevertheless, when I apply the horizontal model he suggests for the Mozart passage to singing this passage from *Faust*, I always get a better vocal product than when I work with a model

16. See Singher, *An Interpretive Guide to Operatic Arias*, 59 and 191.

Musical score for "Gloria" by Franz Schubert, Op. 107, No. 1. The score is in G major (one sharp) and 2/4 time. It features a vocal line and a piano accompaniment. The vocal line includes lyrics in Italian: "gnor, o - gnor, presente o - gnor, o - gnor, o - gnor." The piano accompaniment includes dynamic markings such as "rall.", "p", and "pp". The score is divided into two systems, each with a vocal staff and a piano staff.

Example 4. Measures 39–46 from “Una vergine, un angel di Dio” (Donizetti’s *La favorita*).

grounded on Verticality. (I invite readers to sing it according to both conceptualizations to see what happens.)

One eminent musicologist, Richard Leppert, who heard this recording of me singing the *Faust* passage, noted that the high C sounds remarkably like the E \flat that precedes it, that the “high” note does not pop off the same plane as it does in the singing of so many tenors. His observation invokes one of the hallmarks of elite operatic singing, the cultivation of an even scale. (Leppert, as he confided to me, studied as a classical tenor in his student years and so would be aware of the importance of this aspect of elite operatic singing.) Indeed, the effectiveness of the horizontal model for producing such evenness does not just apply to isolated leaps such as the ones from the passages in *Faust* or *Giovanni*. It applies everywhere and at all times. Take this passage from the cadenza in “Una vergine un angel di dio” from Donizetti’s *La favorite* (example 4). Whether you sing it at pitch, or transposed down a semitone or two as many tenors do, successful negotiation of the scalar ascent to the high C-sharp must involve conceptualizing the notes on a horizontal plane not only to achieve the even scale, but also to keep the voice from cracking or popping off. (*I invite readers to sing it according to both conceptualizations to see what happens.*) But the application of the horizontal model even applies in more extended passages whether ascending or descending. Take this excerpt from “Nature immense” in Berlioz’s *Damnation de Faust* (example 5). The vocal line

obviously charts a chromatic ascent from D (m. 39) to A (m. 47) but if you think of the passage as ascending in vertical space and execute it as such, you will not only begin each new phrase with more tension than what you ended with in the previous one, you will be unable to sing the climactic A easily and authoritatively by the time you get to it. (*Again, I invite readers to sing it according to both conceptualizations to see what happens.*) To get to that high A convincingly and securely, you have to conceptualize the whole passage, indeed, the whole aria, on a horizontal plane along which all the notes you sing reside. Anything else will not produce the result that is needed. After reconceptualizing all the music I sing—not just passages that go up, but also all passages that go down—with the horizontal model in mind, I began to ask myself the question of why a horizontal model made singing so much easier than the vertical one. It was only when I linked the horizontal model to my understanding of vocal anatomy that I had an answer, for the very concept of verticality goes against the grain of the voice.

The image shows a musical score for measures 36-55 of "Invocation" from Berlioz's *Damnation de Faust*. The score is written for voice and piano. The key signature is F major (one flat) and the time signature is 4/4. The vocal line is in the upper staff, and the piano accompaniment is in the lower staff. The lyrics are: "ai - me a - su - nir. Fo - rêts. ro - chers, tor - rents, je vous a". The piano accompaniment features a complex, rhythmic pattern in the right hand and a more melodic line in the left hand. Dynamic markings include *f* (forte), *pp* (pianissimo), and *a tempo*. The score is divided into three systems, each with a vocal line and a piano accompaniment.

Example 5. Measures 36-55 from "Invocation" (Berlioz's *Damnation de Faust*). "Forêts, rochers, torrents, je vous adore! Mondes, qui scintillez, vers vous s'élance le désir d'un cœur trop vaste et d'une âme altérée d'un bonheur qui la fuit" (Forests, rocks, streams, I adore you! Sparkling worlds, toward you rushes the desire of too vast a heart and of a soul altered by a happiness that flees).

do - re! Mon - des, Qui scin - til - lez, vers

f

cresc. un poco rit.

vous s'élan - ce le dé - sir D'un cœur trop

pp

cresc.

vas - te et d'une âme al - té - ré - e D'un bon - heur qui la

f

dim.

a tempo

fuit.

p

dim.

p

Example 5 (cont.).

On the Level

Shifting up and down the [violoncello's] neck, by progressively shortening and lengthening the strings, mimes the melodic “shapes” created by the invisible shortening and lengthening of vocal cords. This ability of our bodies to generalize such an activity from one situation or body part to another, our marvelous self-analogizing propensity, can be experienced by the string player nowhere so intimately as in the physical analogies of tone production for voice. To be launched upon a melody, airborne among the expressive and muscular demands of shaping it, seems only to be adequately described by reference to the experience of singing.

—Elisabeth Le Guin¹⁷

The alternative conceptual model for pitch—what I have called Pitch Horizontality—might seem a ludicrous way to think about the relationship between musical notes given how engrained Pitch Verticality is in Euro-American music traditions. Indeed, for those ensconced in those traditions, it must come across as absurd to even suggest that there might be another way to think about pitch. And yet there are precedents for alternative ways of thinking about pitch, in the music theories of ancient Greece as well as in those of contemporary non-Western cultures. As Zbikowski has already pointed out, Greek music theory maps “oxys” (sharp, pointed, keen-edged) and “barys” (heavy) to what we normally call higher and lower pitches, while metaphors deriving from waterfalls, sizes, and ages are used to differentiate pitches of varying frequencies in the cultures of the Kaluli of Papua New Guinea, Balinese and Javanese, and the Suyà of the Amazon basin respectively.¹⁸ You might say that alternatives to the model that is engrained in Euro-American traditions as an axiom are to be found only very far away in time and in space. But what if we do not need to travel abroad or backward in time to find alternatives to the axiom of verticality? What if Singher’s directive for how you should think of the Mozart passage embodies such an alternative model within the classical music tradition itself, a way of thinking about pitch that derives from the musical practice of that tradition? And, even more radical, what if it is not an arbitrary conception, in the way that Pitch Verticality most certainly is, but one that is inextricably tied to how the voice works as a musical instrument?

As Johan Sundberg points out, the voice is not a stand-alone instrument unto itself, as when we make the distinction between instruments and voices, musicians and singers. On the contrary, the voice belongs to the family of instruments that relies on air pressure to make its sound.¹⁹ Just as a clarinet or trumpet produces sound—by sending a stream of pressurized air against an oscillating surface in such a way that the oscillation converts the air stream into a sequence of air pulses which come out as a fundamental vibration which is then amplified in a resonating chamber, the body of the clarinet or trumpet as well as (some would argue) in the mouth and throat of the player—so too does the voice work, and in precisely the same way. The mechanism that produces the fundamental vibration is often explained with reference to the Bernoulli Effect: when the airflow meets the vocal folds in closed position, pressure increases, the vocal folds open, and the air directly underneath flows through. At this

17. Elisabeth Le Guin, *Boccherini's Body: An Essay in Carnal Musicology* (Berkeley: University of California Press, 2006), 22.

18. Zbikowski, 63 and 67–68.

19. Johan Sundberg, *The Science of Musical Sounds* (San Diego: Academic Press, 1991), 106–8.

moment, an area of lower air pressure is created underneath the folds, an effect that immediately pulls or sucks the vocal folds back together and the cycle begins again. This rapid opening and closing results in phonation, which is then amplified in the resonating chambers of the human body, specifically the throat, mouth, sinuses, and chest. Every body can potentially be configured into a singing instrument in that every body can, assuming normal neurophysiology, produce a resonant sound from infancy right through to old age, a sound that, since every body is different, will be unique to each person. It is for this reason that the voice is the most common instrument, the original instrument: every body can potentially be converted into one.

Thinking of the voice as an instrument unto itself, as separate from other musical instruments, is not the only misconception to be found in professional discourse on music. Just think of what is implied when Mead casually refers above to the oscillator in the singing instrument as the vocal “chords.” For the metaphor of chord—or cord (the two are interchangeable)—likens the voice not to wind instruments but to those that belong to the family of instruments that depend on vibrating strings. Indeed, this misconception of the voice as a string instrument is so firmly entrenched in the thinking of Western classical musicians that Elisabeth Le Guin encourages string players to conceive of their instrument like a voice as in the quotation above. To be sure, Le Guin is not trying to explain singing in terms of what it feels like to play the cello. She is trying to do the converse, explain the experience of cello playing with reference to what goes on in singing, or what she thinks goes on. What is interesting, and worth bringing into the foreground, is a basic incongruity between singing and string playing that underlies her analogy-building exercise. For when she makes the comparison between the two types, she inadvertently fails to recognize a crucial difference between how the string instrument and the voice make pitches of differing frequencies.

In instruments that use strings as the primary resonator (this includes not just violins and guitars, but also keyboard instruments like pianos and harpsichords), a general principle regarding the correlation between pitch and string length always obtains. Sundberg puts it this way:

If we recall the shape of the piano, it is easy to realize the relationship between dimensions and frequencies. Bass strings are long: Great string lengths are needed for low resonance frequencies. Further, they are thick and spun with copper wire, so that the string mass is increased: A great string mass contributes to low resonance frequencies. Finally, the pitch rises if the string tension is raised: An increased string tension raises the resonance frequencies.²⁰

This correlation between dimension and frequency does not, however, obtain in precisely the same way in the voice. Here is what Sundberg has to say:

The fundamental frequency depends on the length and vibrating mass of the vocal folds, and these properties are controlled by the musculature in the larynx. The longer

20. Sundberg, *The Science of Musical Sounds*, 141.

and thinner the vocal folds, the higher the pitch. . . . Note that this is a bit alien to what is normally found in music instruments in which “long” is associated with low tones. This depends on the fact that the vibration frequency of the vocal folds is controlled by their mass and tension. The higher the tension, the higher the vibration frequency. If the tension is increased, the folds get thinner, and this adds to the same effect.²¹

Whereas the longer and thicker the string, the lower the note, in the voice low notes arise when the oscillator (the vocal folds) are *short* and thick. Conversely, when a string is short and thin, you get higher notes, but in the voice you get higher notes only when the vocal folds are *long* and thin. If there is any point of similarity, it is only in the thickness/thinness of the vibrating mass and not its length, which, as Sundberg explains, makes perfect sense in the voice. Since the vocal folds are more like elastic bands than like strings, they naturally become thinner when you stretch them out.

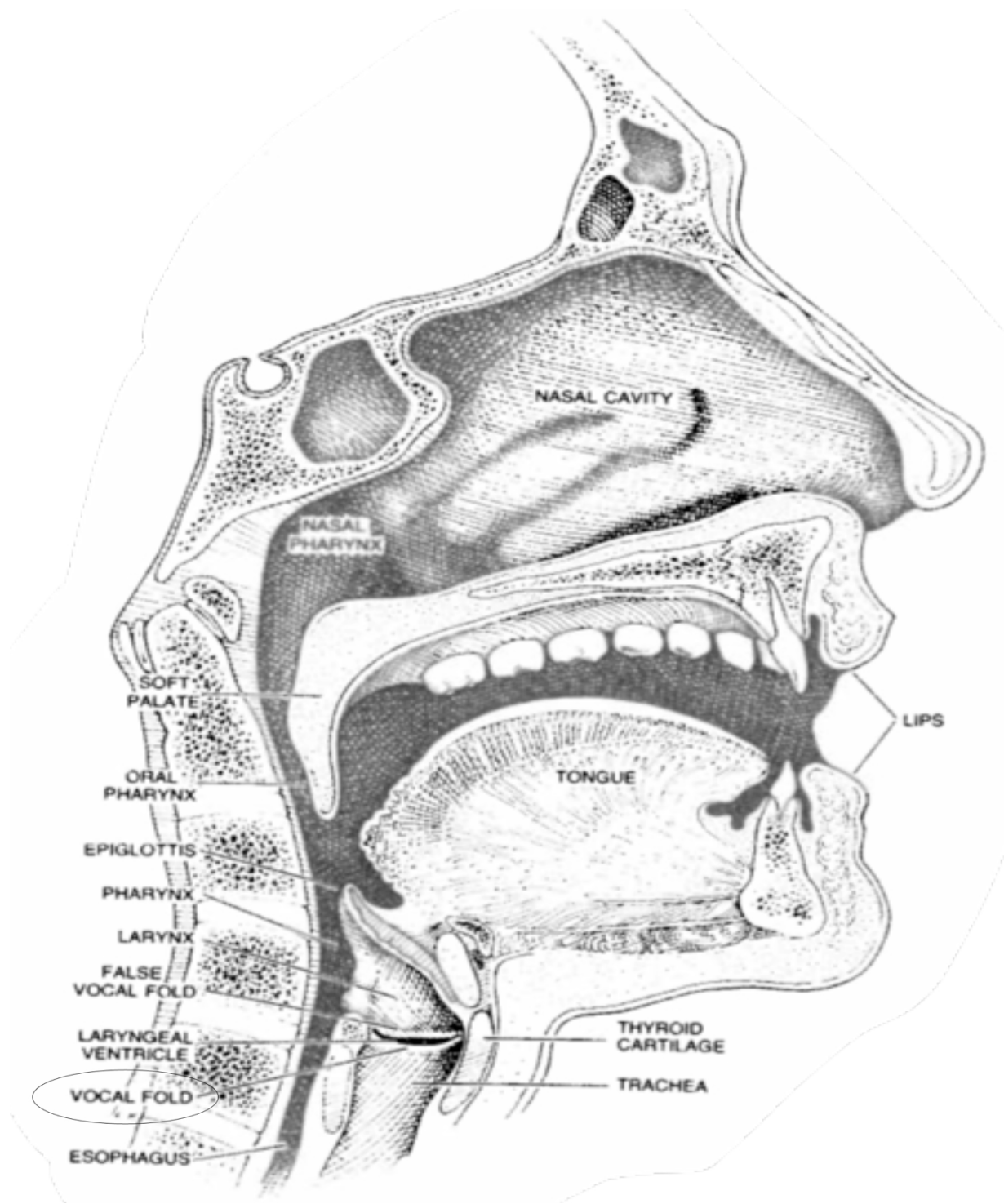
Even though all of these distinctions are scientifically true, they may in fact be moot. Although we can see and measure all these physiological functions, we cannot feel them as we do them. We cannot feel our vocal cords lengthening or shortening, thickening or thinning as we sing, we cannot feel the oscillator opening and closing in phonation. All we sense are the results those physical actions produce, pitches of varying frequencies as well as the resonances that vibrate in various places of our bodies. But even this caveat is not entirely accurate, for we can sense something else as well. Here is where Sundberg’s application of the scientific method for understanding musical sounds, and the application of that understanding to music-making, potentially falls short. For Sundberg’s objectification of sound and the processes involved in making it fail to give an account of what Cusick, Mead, Zbikowski, and Le Guin are after, the experience of what it feels like to make those sounds. What I am talking about here, of course, is the difference between the objective and somatic understanding of the body, between understanding the body as an object out there that can be observed, prodded, and measured, and an understanding of the body from being within it. For when we sing, even when we cannot feel most of the actual physical mechanism involved in making sound, we can still sense from within our bodies other physical motions that contribute to or hinder the physical process that we cannot experience. We can feel our abdominal core engage to create the air compression necessary for the oscillator to open and close. We can feel how relaxed (or tight) the musculature in our chest wall, neck, throat, jaw, and face is. We can feel our tongue and jaw change shape and position when we change vowels. We can feel our lips and tongue move when we articulate consonants. We can feel the sound resonating throughout our bodies. And we can feel how all of the above can be upset or helped by constantly varying factors, things like our general physical and emotional well-being, the weather, the altitude, or what we have just eaten or imbibed.

The pertinence of pitch horizontality comes into play in precisely this domain of subjective experience. For even though you cannot feel the variations in vocal-fold tensioning, you can feel the degree of ease or difficulty you have when trying to produce pitches of varying frequencies. Example 6 presents a cross section of the vocal instrument with the vocal

21. Sundberg, *The Science of Musical Sounds*, 117.

folds circled at the bottom left. The dark slit represents the space between them when the folds are open. Assuming that you are standing upright such that your spine is perpendicular to the floor, you can see that the vocal folds are oriented along a more or less horizontal axis. As I have already explained, variation in pitch is tied to the degree to which those folds stretch backward or shorten along that axis. It is not at all tied to how the vocal-fold housing, the voice box or larynx, moves up and down in vertical space. Now this next point is very important for the dialectic between verticality and horizontality that I have been building thus far. Since the extent to which the vocal folds can stretch backward is directly proportional to both the depth and the state of rest of the larynx in which they are housed, conceptualizing ascending pitches along a vertical axis will raise the larynx and thereby compromise the facility with which the musculature can negotiate pitches of faster and faster frequency. The compromise arises because the very thought of moving up destabilizes and raises the laryngeal position, and it stiffens the associated musculature and consequently encumbers both vocal range and efficiency of tone production. The converse also obtains when you think in the other direction when trying to sing pitches of slower and slower frequencies. Put simply, if you think pitches move up or down, if you think they are high or low, you will not be able to sing those pitches easily or well. Indeed, you might not even be able to sing them at all. Given such a correlation, could this be the reason why Singher advises the tenor preparing Ottavio's "Il mio Tesoro" to conceive of the high A on the same level as the middle G, because he knew intuitively that to think (and then sing) otherwise would not only create the explosion of sound he wants to avoid, but also go against the grain of the voice?

At this point, I could put this theory to a test. I could get a tenor guinea pig, myself or somebody else, and make him sing the Mozart passage. I could ask the singer to execute the phrase with the conceptual model of Pitch Verticality. I could then ask the same singer to do the same passage but to execute it from within the conceptual model of Pitch Horizontality. In both scenarios, I could use some scientific equipment, like electroglottograms and voice spectrographs, to measure what is going on at the vocal-fold level in relation to the acoustic makeup of the sound produced. And I would do just that if I were a voice scientist. Instead, I will speak from the vantage of a practicing musician, from my fieldwork as a professional singer and as a voice teacher. In the former domain, it was only after I learned to go with the grain of the voice, to be true to the structure of the instrument, that I realized that the ability to sing with ease is directly proportional to the extent to which I am working within a conceptual model involving Pitch Horizontality. In this model, pitch remains fixed in bodily space in the middle of the sternum. At this location, differences between pitches correlate less to higher or lower positions in vertical space and more to adjustments in the shape of the resonating chamber, in the rate and compression level of the airflow, in the thickness or thinness of the vocal fold closure, and in where you feel the resulting resonances. Indeed, what strikes me when I sing with this model in mind is how easily and effortlessly the execution of all pitches whether high or low become. The upshot of this can be simply stated: the way in which I have been programmed to conceive of pitch (as moving up and down on a vertical axis) is fundamentally at odds with the perceptions that arise from singing in a way that is true to how the vocal instrument works (on a horizontal axis). Successful phonation, in other words,



Example 6. The Vocal Instrument. From Johan Sundberg, "The Acoustics of the Singing Voice," *Scientific American* 236, no. 3 (March 1977): 82.

produces an embodied experience of pitch in which the concept of Pitch Verticality has no resonance.

Now, I will be the first to admit that thinking about pitches on a horizontal plane might be specific to just my own practice as a singer. It may be how *I* need to think in order to make my voice work properly and efficiently. I will be the first to admit that were it not for the fact that I get similar results in all of my voice students, a small group of singers extending from beginners, through accomplished amateurs and university-level students, to young professionals. Of course, when I first tell them to overwrite Pitch Verticality with a model that puts pitch on a level plane, they look at me with the usual skepticism. But after they go with it, they consistently report that when they sing with the horizontal model in mind, pitches neither feel nor sound high or low to them. Pitch remains stationary on a level plane that is more or less fixed in bodily space. And most importantly, they report that singing is much easier when they think of pitch in this way. It may be that this way of thinking is specific to classical singing, and to elite operatic singing in particular which requires evenness of production throughout a wide range as well as the ability to produce maximal acoustic product with minimal physical effort during extended rehearsals and performances and in big houses over large orchestras, and all of this without artificial amplification. It may be that singers who work in other musical styles do not need to think this way. I would acknowledge that as a possibility too were it not for the fact that some of my voice students sing folk, rock, and pop. They come to me not to learn how to sound like an opera singer, but to learn those aspects of operatic technique that can improve or help their singing in other genres and styles. In all of these non-classical singers, I always recommend that they horizontalize pitch. And in all cases, they report greater ease in vocal production, and greater range, and (when they make recordings of their lessons and listen to themselves after the fact) they are surprised to hear that they do not at all sound like opera singers. Just based on my own vocal practice, as well as what I have casually observed in a small sample of singers from various vocal styles, I would hypothesize, therefore, that Pitch Horizontality is a way of thinking about pitch that is specific to singing itself.

One last case from my voice studio, perhaps the most interesting case, deserves special mention. Thinking of pitch as residing on a horizontal plane may be specific to singing, but in the aforementioned cases taken from my voice studio, all students have already come to me with a concept of verticality in place for distinguishing between pitches. Its *a priori* existence is evidenced in the fact that they have to negate the concept of verticality in the moment of performing: the notion of horizontality, i.e. of singing notes of differing frequencies on a horizontal plane, depends on the existence of another concept, in this case verticality, for it to work. In other words, the beneficial effects of executing pitch on a horizontal axis arise because the students I have worked with have already conceptualized and executed pitch on a vertical axis. But what if a student did not have that *a priori* concept of verticality there in the first place? How would she distinguish between pitches of varying frequencies? Actually, I have one student who embodies this type. He loves popular music, he desperately wants to sing his favorite songs, but he has no musical training whatsoever. He cannot read notation, he has no piano skills, and, most importantly, he cannot match pitch. He is what some might call “tone deaf.” The extent of this deafness is manifested in the peculiar way he seems to

process the different components of sound: frequency, decibel level, and timbre or resonance. This peculiarity became clear to me only over the course of many lessons. For instance, when I would play a pitch on the piano and ask him to sing it back to me (frequency), he would generally be unable to match it, erring on either side of the specified note. Or, when I played the same note twice but made the volume of the second iteration either louder or softer (decibel level), he would invariably respond by singing a pitch of faster or slower frequency from the first one he sang. He had an easier time matching pitches that were sung, but the same results obtained when I changed a variable in the repetition of a pitch. If the repeated note were louder or softer, he would respond in the same way with higher pitches for louder sounds, lower pitches for softer sounds. And when I changed the vowel (resonance) for the second pitch, say from [a] to [i], he would match the vowels but change the pitch depending on how he perceived the second vowel in relation to the first. Clearly, this student was a curious case in which the various facets of sound had become all mixed up.

Rather than address the problem of pitch matching by invoking metaphors of Verticality, I decided to work with him just on making good vocal sounds regardless of whether the sounds he made accurately matched the pitches I was singing or playing on the piano. Once he learned how to phonate correctly, which did not take long at all, we then gradually started working pitch matching into the equation by having him tune to pitches I sang or played by invoking not the upward-downward metaphors but metaphors of temperature. The more in tune he was, the warmer I would tell him he was. And vice versa, the less in tune, the colder I would tell him he was. Eventually, he got to the point where he could sing well and match pitches on simple scales, triads, and arpeggios. He will never become a professional pop singer, but he can sing simple melodies confident that he is holding the tune. What is interesting about this case, at least for the purposes of the present essay, is how this particular student described his experience of singing well-tuned pitches of varying frequency, not as variations in position along a vertical axis but as variations in intensity of phonation and breath support, and where he felt the resonance: the “higher” the note, the greater the intensity/support required, with resonance feeling as if it was vibrating in his head, the “lower” the note, the lesser the intensity/support, with resonance feeling as if it was vibrating in his chest.

This latter observation is remarkably similar to both Mead’s and Zbikowski’s descriptions earlier in this article, when they related pitch height to degrees of physical effort and sound localization. It is remarkably similar save for one very important point. We often speak of head and chest resonance in reference to where in our bodies we feel vibrations of the pitches we are singing, true. But those who are not singers do not realize that this reference is just an ellipsis. The reference points to an important feature of the vocal instrument, in that its range divides into what are called “registers.” Speech pathologists generally distinguish between four of them, the vocal fry, the modal (also known as speech or chest), the falsetto (also known as head), and the whistle. Assuming normal physiology, all human beings can access all four registers although the vocal fry and whistle registers may require some training. Of these four, classically trained singers generally focus on the middle two, the chest and head voices (low basses and high coloraturas make more use of the vocal fry and whistle registers respectively). For present purposes, it is enough to consider just the two most common ones, the modal and

false alto, since the demands of mainstream operatic roles are, generally speaking, poised in these vocal regions. Of course, singers generally do not refer to these registers by their medical names but by where they are felt to be situated in the experience of singing, as in chest and head, or lower and upper voices. Between these regions singers also posit a third one, a virtual middle zone that mixes elements of the other two. We refer to two inner registers and virtual mixed register as low, middle, and high to delineate the regions of the vocal instrument in which the notes are felt to be resonating. And from there we simplify the matter, usually for ease of reference, and refer to notes by the region in which they reside. Thus, high notes are referred to as “high” because their location in the vocal register makes them feel like they resonate in the head. Likewise, low notes are referred to as low because their location in the vocal register makes them feel like they resonate in the chest.

But this last correlation does not actually obtain, as my tone-deaf student will insist. He would say that the position of the note remains fixed in vertical space irrespective of where you feel the resonance the note produces. He would say that, not just because he is not preprogrammed to think of notes as high or low. He says so because he recognizes that there is a distinction between the pitch being sung and where you feel the resonances. This distinction has nothing to do with my student’s lack of conventional music theory training. It has everything to do with how the voice works. And that working is attested to in specialized vocal exercises from historical voice pedagogy (example 7). The purpose of this set of exercises is to teach singers how to move between two registers (in this case the modal and false alto registers) while staying on the same pitch. As indicated by the notation, you are to sing the notes with stems down in the modal register in alternation with the same note stems up in the false alto register. When you execute this exercise, what you come to experience is that you can sing the same note with two different resonance locations. You can sing a note in the chest register and feel the concomitant resonances in that part of the body. You can sing the same note in the false alto register and feel the concomitant resonances in the head. When you reflect critically upon this experience, what you come to learn is that resonance, or more specifically the location where resonance is felt, is distinct from the pitch being sung. What singers identify as head and chest registers, and their concomitant perception that high notes seem to be resonating in the head and low notes seem to be resonating in the chest, is simply a function of the degree of contact of the vocal folds (thinner for head, thicker for chest). Since pitch is a function of the length of the folds rather than the thickness of the contact, it is entirely possible to sing the same pitch in either resonance. The difference between where you feel the resulting resonances is not a function of pitch being sung but of thickness or thinness of the vocal fold contact, in other words, of registration.

Subsequent more advanced iterations of this exercise might seem to prove otherwise. For instance, the exercise in example 7 is often made more difficult by increasing the interval between the modal note and the false alto note incrementally by semitone. Indeed, in my own

Exercise No. 1
Falsetto

Chest,

etc.

No. 2.

etc.

etc.

No. 3.

etc., up to:

etc.

No. 4.

etc., up to:

etc.

Example 7. Special Exercise for Blending the Chest and Falsetto Registers, from Manuel Garcia II, *A Complete Treatise on the Art of Singing: Part One*, trans. Donald V. Paschke (New York: Da Capo Press, 1984), 52.

vocal training, that interval was sometimes expanded to a perfect fifth. In such variants, not only do you feel distance between the pitches, a distance that incrementally widens as the interval increases, but you actually do experience the falsetto note as being “higher” than the modal one because of the difference between where the register resonates. But when you reverse the position of the modal and falsetto notes, i.e. when you sing the falsetto note on the lower pitch and the modal note on the higher one, the opposite perception obtains. You perceive the lower falsetto note as “higher” and the higher modal note as lower. The purpose of the exercises is not to assess how to perceive pitches per se. The purpose is to teach the vocal mechanism how to blend two registers. In voices in which the registers are dynamically balanced (i.e. there is enough contact for chest resonance to be accessed, but not so much that the contact precludes easy entry into the “top” and vice versa), there will always be both resonances. Difficulties arise at the extremes of range when there is an imbalance, i.e. trying to sing “lower” pitches only in head voice or trying to sing “higher” pitches only in chest voice. In an optimally functioning voice (as defined by the western classical tradition), therefore, such difficulties are minimized to the point that singing the B-natural at the end of “Nessun dorma” or the high C in “Che gelida manina” or “Salut demeure chaste et pure” are perceived as effortless and tension-free. At that level of execution, as so many of my voice coaches have instructed me, “high notes are not high.” Or to put it another way, once you decouple resonance from pitch, you are free to resonate your voice in any register without changes in the position of where you make the fundamental pitch. You effectively sing on a horizontal plane, or on the level.

Of course, a few dozen singers is hardly a sufficient group from which to generalize with any semblance of authority about how pitch is experienced, or should be experienced, in the act of singing. It would take a much larger sampling from various vocal levels and musical styles, perhaps even across differing cultures, to be able to assert that a conceptual model for pitch grounded on a horizontal and not a vertical axis best suits how singers need to think of the notes they sing. (I will leave that task to scientists.) Nevertheless, when my students get to a point in their vocal development where they can coordinate the various physiological functions for singing (posture, breath support, the position of the tongue and jaw, lifting of the soft palette, onset of phonation, sustaining of tone, etc.) in the context of singing an actual piece—when they see that the conceptual model of Pitch Verticality has nothing at all to do with their embodied experience of pitch in the moment of performing that piece—they almost always ask some variant of the following question: why is it that a concept so basic to how we understand music is so basically wrong in practice? Good question. To conclude, I will offer an answer.

The Musician Within

If a minority of a population that can understand its native language could speak it in any way but a kind of baby-talk, we would have a linguistic situation comparable to the musical state of affairs that actually exists in many parts of the Western World, as, for example, in the United States. How large this minority of producers of music may be, we have no way of knowing. Even if we include as producers individuals with only moderate technical abilities, it seems unlikely that it could be more than 10–15% of the total population. Yet the total population is hearing each year an increasing amount and variety of music. This bifurcation of musicality that results in the division of two hundred million people into two classes, a producing–listening minority and a merely listening majority, has never been studied. The difference between the kind of music heard by the musically productive and the musically mute may be slight or large; but we know nothing about it.

—Charles Seeger²²

Another way to ask the question that ended the previous section is by first situating that question within the broader context of the dialectic I have opened for this essay—the so-called disjuncture between theory and practice; then by broadening the scope of music making—from singing a melody to making music in real-world contexts of actual artistic production (as soloist or ensembler, as orchestral player or choral singer); and finally by asking the question again: why is there (or why does there seem to be) a disjuncture between how the thinking constitutive of institutional discourse compels us to think about music and how the thinking constitutive of artistic practice compels us to think about it?

The question is hardly a new one: those of us employed by institutions of higher learning to teach student musicians how to think about music hear some variant of this question every day whenever such students ask, “Why do I have to study that?” or “What does that have to do with music?” Of course, such questions are delivered more as complaints than as genuine interrogatives and are, therefore, often met with defensive answers designed to shut down or circumnavigate the complaint. When I myself asked such questions as a student, the answer my professors always gave was a stock response, that having an understanding of music grounded in institutional research would give me a clearer sense of the art and, in the end, make me a better musician. Instead of questioning the veracity of what I was being taught, I accepted their response—the so-called promise of cognitive clarity—in good faith, believing that my professors knew what they were talking about.²³ Unfortunately, I found out long after my course of study was over that the way my curriculum was programming me to think about music was nowhere near how I actually had to think about it to be a functional musician in contexts of professional music-making. Even when such programming was cognitively clear (which was not always the case), its content rarely corresponded to the cognitive demands those contexts placed on me. The divergence between Pitch Verticality and Horizontality set forth in this essay is just one of many cases in point, cases that extend from how musicians conceptualize rhythm and meter, phrasing, shaping, and color, all the way to how musicians

22. Charles Seeger, “The Music Process as a Function in a Context of Functions,” *Anuario* 2 (1966): 21–22. I thank James Wright for bringing this article to my attention.

23. Indeed, it is the principal reason why I transferred from a degree in performance to one involving an intensive course of academic study. At the time, that course of study combined historical musicology, ethnomusicology, and conventional music theory with the discourses of the new musicology.

think about meaning and expression. And so now, as professor, when I hear music students complain about the same thing, I do not evade their outbursts by telling them that taking the time to read up on the latest scholarship will improve their music making. On the contrary, I raise their awareness about the very real possibility that their complaints point to a very real problem, that there is a gross disjuncture between what they are being required to learn and what they really need to know, a disjuncture between what the scholar says and what the musician does.

One way of getting around this disjuncture is to question the assumption underlying it. For the dialectic I have concocted to frame the matter presumes that institutional research about music ought not to differ from what one comes to discover in the world of music outside the institution. But what if this is a dubious assumption in itself? What if institutional research and artistic practice are fundamentally separate and incommensurable activities that are not required to be in alignment? If that be the case, then the ideas generated by engaging in institutional research and the latent theories embedded in the actions constitutive of artistic practice were never supposed to correspond, and my pointing out a disjuncture between the two domains confuses the distinct ways in which theory and practice operate in the institutional study of music. On the one hand, there is the academic study of music, all of those forms of inquiry modeled on already established disciplines (I am thinking of the conventional disciplines of music research, musicology in all its brands, music theory and analysis, and ethnomusicology, all of which apply tools and methods borrowed from anterior disciplines in the practice of doing music research). On the other, there is the practical or applied study of music, all of those forms of study in which musical performance is the outcome but which is subtended by latent theories not necessarily required to be made explicit. Of course, the distinction between academic and applied musical study is something of a misnomer: anyone who works under the umbrella of an institution is engaged in nothing other than academic study. But the two types of study are structurally differentiated. Indeed, we see that distinction housed in the difference between the modern research university and the vocational college or conservatory school. The first privileges forms of knowledge characterized as higher, critical learning, while the latter embodies forms of knowledge characterized as lower learning applied in contexts of local human activity (applied). Within the domain of music studies, this separation is often housed in the difference between music departments (where the training is more research or liberal-arts oriented) and music schools or conservatories (where the training is geared toward the formation of professional musicians). This institutional division extends right down to the very way music is defined and consequently studied, as an object available for theoretical elucidation on the one hand, as an activity to be engaged in on the other. And that division is manifested not only in the terms we use to define them, knowledge produced through Research, and knowledge embodied in Artistic Practice, but also in that both types come with their own set of theories and practices. Here is the moment at which the dubious status of the assumption underlying my essay comes to the fore. By calling out a disjuncture between institutional research and artistic practice, I have assumed that the ideas specific to the former domain are supposed to align with or correspond to the ideas embedded in or underlying the other. And in doing that, and calling it the disjuncture between Theory and Practice, I have not only created a straw

man, I have also failed to recognize that the researcher is also engaged in various forms of practice, not just the practice of doing research, but all the practices that are embedded in that activity. Maybe I should just adopt a live-and-let-live attitude to the whole thing.

And I would do that if and only if the various theories and practices contained in institutional research and artistic practice were actually kept rigorously and systematically separated both in and outside of the institution. But they are not. In the modern university especially, they are brought into a hierarchical relationship under the ideology governing how the institution organizes and manages knowledge. This ideology, which Jürgen Habermas calls “Technological Rationality,” dictates that research-based discourse—whether it derives from scientific, humanistic, or socio-scientific disciplines does not matter—rules over all other forms of discourse and human activity.²⁴ In the case of music studies, this rule entails that those engaged in the applied study of music—namely musicians (and, to a lesser extent, composers)—must be subservient to what those engaged in the disciplinary study of music have to say. We see this rule play out in music curricula structures when student musicians are subjected to disciplinary rule in its various guises from day one of any program of music study. Whether those guises be conventional music theory or history, or other brands of academic study, like critical or cultural, literary or linguistic, structuralist or post-structuralist, psychoanalytic or semiological, phenomenological or ecological, student musicians are expected to defer to all of these discourses lest their experience of music remains uninformed, lest what they have to say remains undisciplined. Even if the purpose of music research in any form is *not* to service the understanding of musicians, the knowledge that derives from such research is nevertheless pitched at musicians under a promise that its acquisition will make them better at what they do, that it will help them understand what they are doing, that it will provide them with, in other words, cognitive clarity.²⁵ Put another way, the practice of institutional research presents its knowledge outcome as something which musicians must put into, or at the very least use to inform their, practice.

But the problem with this mandate, and the ideological framework from which it issues, is that the current system for how music research is produced creates subjectivities required to speak to music but who may not know what they are talking about. And the reasons for that are manifold. First of all, the disciplinary discourses from which music researchers borrow their tools and methods for talking about music are rarely generated by those who whose understanding is grounded in expert musical practice and whose professional interests further musical understanding. Second, when anterior disciplinary discourses enter music scholarship, they often come secondhand, in parts that are half digested and incompletely or incorrectly understood. Third, when music scholars apply those discourses to understanding music, such application is motivated less by a desire to give accurate accounts of how the art works than it is by a need for scholars to construct distinctive professional profiles for career

24. Jürgen Habermas, “Dogmatism, Reason, and Decision: On Theory and Practice in a Scientific Civilization,” in *Jürgen Habermas on Society and Politics: A Reader*, ed. Steven Seidman, 29–46 (Boston: Beacon Press, 1989).

25. This cultural practice is discussed at length in Dillon Parmer, “Musicology, Performance, Slavery: Intellectual Despotism and the Politics of Musical Understanding,” *Intersections* 34, nos. 1–2 (2014): 59–90.

development and advancement. Fourth, since the need to build such profiles tends to win out over the disinterested testing of knowledge claims, these borrowed discourses are rarely subjected to the kinds of critical assessment that is the professional obligation of those who do research, which is to distinguish truth from falsehood. And fifth, circumnavigating this obligation has allowed those who lack the expertise to conduct such tests in real-world musical practice the opportunity to nevertheless build themselves up as experts on music. The lack arises because the experience of music that the rule of technological rationality allows for is grounded not in Channon's third matrix, but in the detached intellectual contemplation of music. Even if such contemplation constitutes a practice unto itself, music ceases to be that which is practiced but is rather reduced into a sounding object, actual or imaginary, that can be read in a score, listened to in a recording, watched in a performance. And from within the confines of this matrix of listener-spectatorship, scholars lay claim to understand music in ways that are not only applicable to music making but will also help the musician know what she is doing. And herein lies the problem for the disjuncture between theory and practice: those who make the claim to understand music might not actually know what they are talking about when it comes to understanding music in the third matrix precisely because they do not practice the art as musicians. In other words, the disjuncture between theory and practice arises because the understanding confined to the matrix of listener-spectatorship remains uninformed by the third matrix, which embodies all of the understanding constitutive of the practice without which there would be nothing to listen to.

I am by no means the first person to point out a problem of this order in print. As given in the quotation above, Charles Seeger bemoaned it half a century ago when he distinguished between two types of listeners, a "producing-listener minority" and a "merely listening majority." Seeger, of course, provides no empirical data to back up this diagnosis, and he fails to clarify what constitutes the "moderate technical abilities" that distinguish the two classes from one another. (He is, of course, "theorizing.") But he nevertheless makes a valid distinction in this "bifurcation of musicality" between "the musically productive and the musically mute," two distinct subjectivities who experience music differently. Indeed, that difference is unwittingly exemplified when Mead distinguishes between two ways of experiencing how the oboist, Harry Sargous, performs a concerto. He (Mead) writes:

During the piece, I found myself at one point in intense pain (not from the music per se, I should add), which abated when I found myself taking a deep, gasping breath. What had happened, I realized, was that I had quite unconsciously been breathing along with the soloist. Harry, however, had been using circular breathing for a particular patch, and I had quite literally run out of breath. This moment was a physical embodiment of something that had been lurking at the edges of my musical consciousness, the fact that a significant part of my engagement with music, be it as listener or composer, had to do with a sense of how music was made—that the sound

of the music was an embodiment of that making, and that hearing that making in the sounds had much to do with my understanding of music.²⁶

If Mead's "sense of how the music was made" actually were grounded in an ability to play the oboe with the technical skills to make use of circular breathing, then his response to the concerto, the moment of "intense pain," would not have taken place as it would have been in line with how a skilled player would have responded: Mead would have been impressed with how well the player executed the technique. Now, I am not aggrandizing one mode of listening or experiencing music over the other. I am merely pointing out that there is a substantive difference between how an experienced musician listens to and responds to the music she plays (or can in principle play) and how non-musicians, those listeners with less than "moderate technical abilities," listen to and respond to music.²⁷ And that, as a result, the way the producing listener conceptualizes and understands music will be different from how the non-producing listener does. And that it is the difference between these two modes of understanding that accounts for the disjuncture between the academic and practical study of music, between theory and practice, scholarly research and artistic practice.

Regardless of what gives rise to the divide between scholars and musicians, between institutional research and artistic practice, between "the musically productive and the musically mute," one way of bridging it is hinted at, not surprisingly, in the early work of Cusick. In the critique of mind-body dualism that inspired Mead to write his article, she was preoccupied with opening up the scholarly discussion to address questions of how gender, sexuality, and the body are implicated in music. But tucked away behind her efforts to get those questions onto the discussion table is a reference to an issue even bigger than the putative closed-mindedness musicology and theory held to such matters back then. When she writes, "We who spend our paid lives thinking about music might suddenly need to spend a lot of time talking with our colleagues in the studios and practice rooms, in order to develop answers to these sorts of questions,"²⁸ she points to the real problem plaguing especially North American institutions where music is studied: not the barriers that keep research about music separated from other disciplines in the institution (barriers which the new musicology succeeded in breaking down), but the absence of any kind of productive dialogue between, to rehash words I used at the beginning of this essay, those who generate ideas about the art but who may not practice it, and those who practice the art but whose job it is not to generate ideas about it (dialogue which neither musicology nor theory at any stage has failed to achieve especially when it comes to talking about Western classical music).²⁹ Having studied and worked for a few decades in such institutions, I am deeply skeptical that a call for discussion,

26. Mead, "Bodily Hearing," 1–2.

27. I would include in this second group those musicians who do not play or cannot in principle play the music in question.

28. Cusick, "Feminist Theory, Music Theory and the Mind/Body Problem," 17.

29. Regardless of its shortcomings, a recent collection of essays illustrates that a movement to break down these barriers is well underway where music is studied in the UK. See Mine Doğantan-Dack and Graham Welch, eds., *Artistic Practice as Research in Music: Theory, Criticism, Practice* (Surrey UK: Ashgate, 2015).

such as the one made more generally by James Winn,³⁰ will overcome the entrenched pedagogical structures and programs of scholarly and artistic work that keep academic study separate from applied practice in the domain of music. As one eminent musicologist bemoaned to me in private, “neither party is truly interested in what the other has to say.”³¹ Academics and performers continue to follow the conventions they have always followed, the former seeking out new ways of talking about music without having to engage in acts of musical performance, the latter seeking out new ways out of getting out of having to talk about music so that they can perform. Repairing the disjuncture between scholarship and performance, bridging the putative gap, requires a much more radical reconfiguration of how music is studied, one that defies the convention keeping academics and performers in their own silos, as well as the ones keeping performers from having to publish and academics from having to perform. Of course, the problem is specific to studies in Western classical music: the discipline of ethnomusicology already mandates a performance component in the formation of its adherents, and for that reason, its discourse is at least partially built on the foundation of performance-based understanding. Even though the theory of pitch height (or flatness) I have proposed in this essay embodies one possible example of such understanding, even though a handful of scholars have already been charting routes that generate institutional research from out of their own artistic practice, a comparable discourse grounded in the performed experience of music has yet to emerge in the research about Western classical music.³² What would help bring about this emergence would be to require all performers employed by institutions of higher learning to publish what they know and understand of music from going out into the real world of music making in the same way that all academics are required to publish theirs.

But there is another path, one that comes from the other direction, when the so-called academic moves into the domain of actual musical practice. That move is already suggested in certain branches of cognitive music theory itself. No matter how much it might seem desirable and necessary to maintain a rigorous separation of academic from applied musical study, of university from *conservatoire*, of music as a “studied” object fit for intellectual contemplation from music as an activity that we do in contexts of real-world artistic production, of a discourse which professionalizes the experience of listener-spectatorship from the talking and thinking about music that occurs within the sphere of real-world artistic production, cognitive music theorists themselves cross, indeed, may have even erased, the line that divides. The erasure—which seems to happen at precisely that moment when such theorists try to

30. James Anderson Winn, *The Pale of Words: Reflections on the Humanities and Performance* (New Haven: Yale University Press, 1998).

31. Indeed, that indifference is embodied by the lack of dialogue at my own institution which houses on one floor an internationally recognized laboratory for piano pedagogy research and on another a remarkable array of international-level pianists who are master piano pedagogues.

32. See, for instance, Elisabeth Le Guin, *Boccherini's Body*; Linda T. Kaastra, “Performance Inquiry and Cognitive Science: A Search for Common Ground,” *College Music Symposium* 48 (2008): 131–56; Mine Doğanant-Dack, “In the Beginning was Gesture: Piano Touch and the Phenomenology of the Performing Body,” in *New Perspectives on Music and Gesture*, ed. Anthony Gritten and Elaine King (Surrey, England: Ashgate Publishing, 2011), 243–66.

establish an epistemological foundation for how and why they think as they do—is implied as a possibility within what Arnie Cox calls the “Mimetic Hypothesis.” Cox himself does not make this erasure explicit, but its inevitability is built into the progression he traces from covert imagination to overt participation. The Mimetic Hypothesis suggests, or so he postulates, that “we comprehend music . . . by way of a kind of physical empathy that involves imagining making the sounds we are listening to.”³³ In its strongest formulation, such imagining “holds that there is little or no musical imagery that does not involve motor imagery—in other words, thinking about music involves imagining *doing* (making) music [original emphasis].”³⁴ If it is true that imagining how music is made is at the root of how we think about music, then it is impossible to separate the experience of music as a heard object from an imagined experience of performing the music that is heard. Of course, what is imagined is merely hypothetical in that it does not necessarily correspond to what actually transpires in real music-making. For if it did correspond, any listener listening mimetically to a performer will, if they were to play or sing the same piece, engage in the same motions and consequently sound the same. Of course, real mimesis does not necessarily follow from real acts of listening: if it did then every listener would sing and play like the musicians they listen to. But that distinction does not negate the fact that even hypothetical mimesis slips into acts of actual music making.

Such a slip, from the imagined or hypothetical into the actual, is exemplified in the very research I referenced at the outset of this essay. When, for example, Mead writes that “Our most immediate experience of pitch comes from our voice, and pitch control derives from muscle contraction and relaxation. The shorter the vocal chords, the higher the pitch [*sic*]—reproducing the same physical sensation of muscular contraction experienced when lifting our arms, objects, or ourselves”; or when Zbikowski observes that “when we make *low* sounds, our chest resonates; when we make *high* sounds, our chest no longer resonates in the same way, and the source of the sound seems to be located nearer our head [original emphases],” they are doing much more than applying to the discourse of music theory notions they have borrowed from feminist music theorists, cognitive linguists, and cognitive scientists. By looking to their own embodied experience to ground the concept of pitch verticality, by correlating “pitch control” with “physical sensation,” and by describing what it feels like to make sound with *our* voices, they not only imply that they themselves have actually (as opposed to imaginarily) made sound with their own voices and assessed what it feels like in their own bodies to do so. It also implies that they are inviting their readers to do the same. And in that invitation, they transform the monolithic subjectivity dominating music scholarship, the intellectually detached, mute, musically nonproductive listener-spectator, into something of a music practitioner. Even if Mead’s and Zbikowski’s ability to practice the art is underdeveloped or attenuated, even if they are lacking moderate technical abilities, even if they have no experience in the field, they have effectively initiated a move from the practice of listening to the practice of performing, from the auditory to the kinesthetic, and, most importantly, they have unwittingly opened the door for others, especially the professionally

33. Cox, “Embodying Music,” paragraph 3.

34. *Ibid.*, paragraph 9.

trained musician, to ground a discourse on the foundation of the third matrix. This opening stems from something other than encountering the Other when you follow the proverbial Möbius strip.³⁵ It stems from the fact that the discourse of the theorist is grounded in the subjectivity of the practicing musician. Let me flesh this claim out with an example closer to home.

A few years ago, my academic colleagues conducted an open house for prospective graduate students. One of the events involved the delivery of a formal conference paper so that potential applicants can see an academic in action. The sample paper was an SMT-styled presentation, a classical music–text analysis of a German *Lied*, in which descriptions of structure were entwined with metaphors from the poem and other documents associated with its compositional genesis in such a way as to create the impression of musical exegesis. We do not need to know the specifics of author, title, or content, as these are ultimately irrelevant for my point. What is relevant is what happened in the discussion that ensued. One scholar resolutely committed to the objectified, non-performative approach to musical study started talking about the poem, not from looking at it on the page as a series of words and images, rhyme schemes and metrical patterns, or syntactical structure and semantic senses, but from speaking the poem out loud, and from paying attention to how the articulation of vowels and consonants required him to maneuver his lips, tongue, and mouth as he spoke the text. Even though his pronunciation and declamation left much to be desired (he lacked both the technical skills to move his tongue and lips in the right way as well as a familiarity with the nuances of German phrasing and inflection so as to sound like a native German speaker), he effectively left the objectivist domain (which posits the poem as a distant object available to theoretical elucidation) and instead became a practitioner reflecting on his embodied experience of speaking the poem. The fact that he did not perform the poem in full does not negate that transformation: the only way he or anyone else can remain firmly in the objectivist domain would be by not speaking the poem at all. The fact that he did not remain mute allows me to draw out from it the logical ramifications for my argument. For if it was acceptable in that academic setting—and there seemed to be no objection to it in the course of the discussion to him talking about the poem from the perspective of having to speak it aloud and then reflecting on the subjective experience of how it felt to perform language, then it should in principle also be acceptable to speak to the musical setting from the perspective of having to, or having had to, sing and/or play it aloud, to perform it in other words, and then reflect on the subjective experience of how it feels to have done so. Were my colleague willing to engage in critical reflection from singing or playing the piece in the same way he seemed to be from speaking the poem out loud, he would embody not only the very slip from the imaginary to the actual that seems to be implicit in Cox's Mimetic Hypothesis, he would exemplify precisely what I have been advocating for throughout this article: he would move the performer, and the performed experience of music, from the periphery of academic discourse to its center, and make the case for the contingency of musical understanding on music

35. On how this strip might account for the difference between the disciplines of music history and theory, see Kevin Korsyn, *Decentering Music: A Critique of Contemporary Music Research* (Oxford University Press, 2003), 88–90.

making itself. And if that be the case, then there is no reason why a theoretician purporting to understand music with rigorous discipline should be closed either to what happens in contexts of real-world artistic production or to what musicians engaged in those contexts have to say about the art from the basis of how they sing or play, their level of expertise, and their experiences in the field. There is no reason other than the very real possibility that what a theoretician—who for all intents and purposes only dabbles in the practice of music—might think is the case may not align with what experienced practitioners might have to say.³⁶

Although I have confined what I have to say about music—from the basis of my own experiences of singing (and teaching)—to only one small aspect of the art (how singers need to be thinking about pitch in the moment of performing it), I foresee that a discourse about especially Western classical music grounded on the experience of having to perform it will look very different from a discourse about the same music that is confined to listener-spectatorship (even if as I have argued the latter is grounded in the former). It would be a discourse that postulates multiple ways of understanding music, ways that vary according to the instrument played, degree of field experience, genre, and style. According this diverse performer-based discourse the same epistemological status listener-based discourse enjoys in the domain of institutional research would be facilitated not only by making performance a necessary and integral component of all academic musical study, from the freshman year to the end of doctoral studies, but also by having academics perform the music they write about in ways that they can assess if what they have to say about musical works actually works in real-world musical practice. It is in this radical reconfiguration, of how those engaged in music research are formed, together with the requirement that performers themselves publish as well, that the solution to the supposed disjuncture between Theory and Practice, institutional research and artistic practice, lies. If this new subjectivity, whether as publishing performer or as musically productive scholar, were allowed to articulate her understanding and add it to current academic discourse about music, if this new subjectivity were freed from having to align herself with anterior, non-musical disciplines, if this new subjectivity had to publish what she knows from going out into the real world of music making, if this new subjectivity were encouraged to defend her understanding not from how she hears reified relationships of musical structure, but in relation to the structure of singing and playing and her musical experience in the field, then the process of bringing what scholarship says and what music actually does into sync would begin. And that process would, among other things, inaugurate a new discipline, not just one created by musicians from out of their experience of being musicians, but one in which theory is adjusted according to how it corresponds to the experience of music in real-world practice. Such a discipline would constitute an institutional discourse about music that really deserves to be called new, a discourse that intervenes in an intellectual climate pathologically disconnected from the actual practice of music. But even if

36. That difference, between the theoretician's and practitioner's understanding, is made clear when reading Lawrence Kramer, *Interpreting Music* (Berkeley: University of California, 2011), 258–77, in counterpoint with Mine Doğantan-Dack, "The Role of the Musical Instrument in Performance as Research: The Piano as a Research Tool," in *Artistic Practice as Research in Music: Theory, Criticism, Practice*, ed. Mine Doğantan-Dack (Burlington, VT: Ashgate, 2015), 169–202.

this discourse fails to overturn the hegemony conventional theory has had, and continues to have, for determining how we conceptualize music in the institution, it would nevertheless be a discipline in which the difference between Theory and Practice would cease to exist . . . at least in theory.

Bibliography

- Austin, Stephen F. "Building Strong Voices—Twelve Different Ways." *Journal of Singing* 69, no. 3 (January–February 2013): 345–52.
- Cadlin, Fiona. "Practice-Based Doctorates and Questions of Academic Legitimacy." *International Journal of Art and Design Education* 19, no. 1 (2000): 96–101.
- Channon, Michael. *Musica Pratica: The Social Practice of Western Music from Gregorian Chant to Postmodernism*. London: Verso, 1994.
- Cox, Arnie. "Embodying Music: Principles of the Mimetic Hypothesis." *Music Theory Online* 17, no. 2 (July 2011). <http://www.mtosmt.org/issues/mto.11.17.2/mto.11.17.2.cox.html>.
- Cusick, Suzanne G. "Feminist Theory, Music Theory, and the Mind/Body Problem." *Perspectives of New Music* 32, no. 1 (Winter 1994): 8–27.
- Doğantan-Dack, Mine. "In the Beginning was Gesture: Piano Touch and the Phenomenology of the Performing Body." In *New Perspectives on Music and Gesture*, edited by Anthony Gritten and Elaine King, 243–66. Surrey, England: Ashgate Publishing, 2011.
- . "The Role of the Musical Instrument in Performance as Research: The Piano as a Research Tool." In *Artistic Practice as Research in Music: Theory, Criticism, Practice*, edited by Mine Doğantan-Dack and Graham Welch, 169–202. Burlington, VT: Ashgate, 2015.
- Garcia, Manuel II. *A Complete Treatise on the Art of Singing: Part One*. Translated by Donald V. Paschke. New York: Da Capo Press, 1984.
- Habermas, Jürgen. "Dogmatism, Reason, and Decision: On Theory and Practice in a Scientific Civilization." In *Jürgen Habermas on Society and Politics: A Reader*, edited by Steven Seidman, 29–46. Boston: Beacon Press, 1989.
- Kaasra, Linda T. "Performance Inquiry and Cognitive Science: A Search for Common Ground." *College Music Symposium* 48 (2008): 131–56.
- Kerman, Joseph. *Contemplating Music: Challenges to Musicology*. Cambridge: Harvard University Press, 1984.
- Korsyn, Kevin. *Decentering Music: A Critique of Contemporary Music Research*. Oxford University Press, 2003.
- Kramer, Lawrence. *Interpreting Music*. Berkeley: University of California Press, 2011.
- Lakoff, George, and Mark Johnson. *Philosophy in the Flesh: The Embodied Mind and Its Challenge to Western Thought*. New York: Basic Books, 1999.
- Le Guin, Elisabeth. *Boccherini's Body: An Essay in Carnal Musicology*. Berkeley: University of California Press, 2006.
- Mead, Andrew. "Bodily Hearing: Physiological Metaphors and Musical Understanding." *Journal of Music Theory* 43, no. 1 (Spring 1999): 1–19.
- Parmer, Dillon. "Musicology, Performance, Slavery: Intellectual Despotism and the Politics of Musical Understanding." *Intersections* 34, nos. 1–2 (2014): 59–90.

- Seeger, Charles. "The Music Process as a Function in a Context of Functions." *Anuario* 2 (1966): 1–42.
- Sessions, Roger. *Questions about Music*. New York: Norton, 1970.
- Singer, Martial. *An Interpretive Guide to Operatic Arias: A Handbook for Singers, Coaches, Teachers, and Students*. University Park: Pennsylvania State University Press, 1983.
- Small, Christopher. *Musicking: The Meanings of Performing and Listening*. Middletown, CT: Wesleyan University Press, 1998.
- Sundberg, Johan. "The Acoustics of the Singing Voice." *Scientific American* 236, no. 3 (March 1977): 81–92.
- . *The Science of Musical Sounds*. San Diego: Academic Press, 1991.
- Winn, James Anderson. *The Pale of Words: Reflections on the Humanities and Performance*. New Haven: Yale University Press, 1998.
- Zbikowski, Lawrence. *Conceptualizing Music: Cognitive Structure, Theory, and Analysis*. New York: Oxford University Press, 2002.