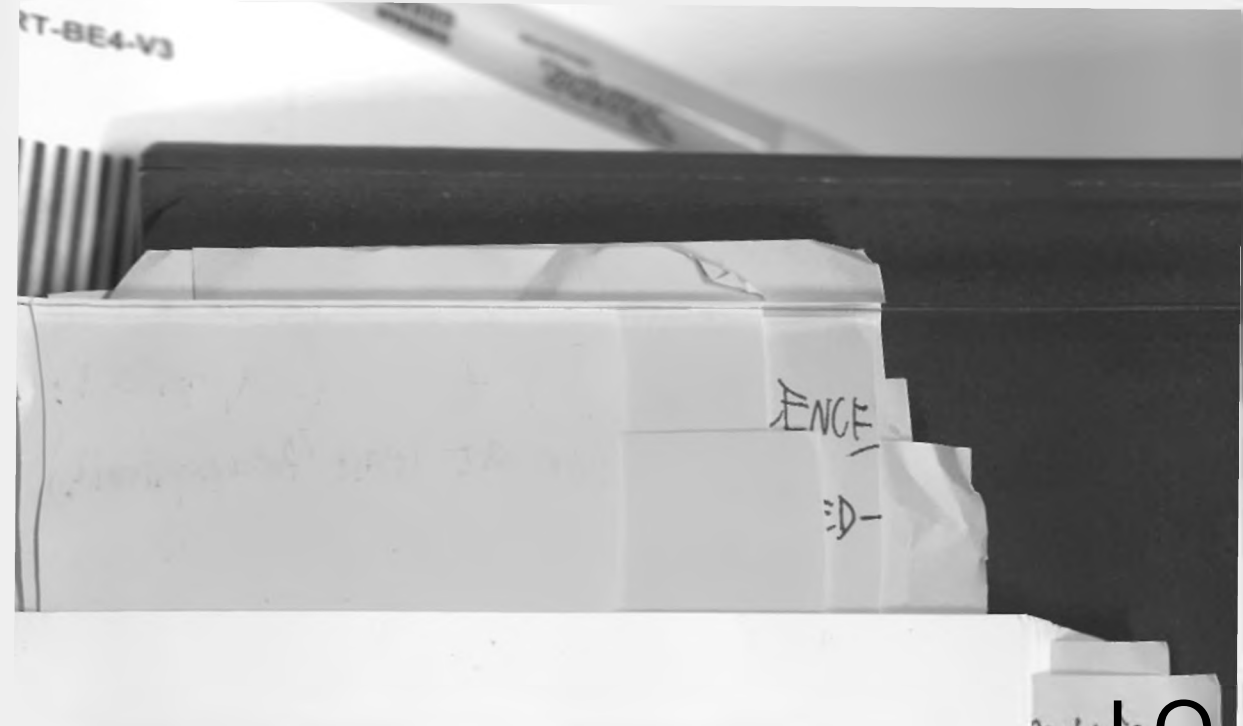
tions we ask concerning music, are symptomatic of a propensity to reduce thick events to manageable signifiers. On the one hand, this could be understood simply as a general cognitive strategy that enables us to deal with and move through a complex world. On the other hand, it is nevertheless important to be constantly aware of the ways in which shifting forces and dynamics of power inscribe themselves onto the perspectives and processes of this reduction.

Sonic reductions—that is, the tendency to constrain our understanding of sound through previously defined referents—arise from assumptions and values concerning the usefulness of sound in constructing meaning.[3] That is, we rely on the phenomena that we broadly conceptualize as *sound* to be stable, carrying out the work we need them to accomplish—for example, in something as commonplace as distinguishing between sound and noise, or sound and music, or noise and music. (In chapters 2, 3, and 4,1 discuss in more detail the kinds of work that we rely on sound to carry out.) Certainty regarding a given sound and its meaning relies on the premise that a thick sonic event may be reduced to a static one, and in the process of this reduction we identify an object, a stable referent. As a result, the thick event of music is understood through restricted and fixed notions such as pitch, durational schemes, forms, genres, and so on—and thus the dynamic, multifaceted, and multisensorial phenomenon of sound is often reduced to something static, inflexible, limited, and monodimensional. Music, then, is most commonly experienced through tropes, or what I call the *figure of sound.*[4] With this term I attempt to capture the process of ossification, through which I argue that an ever-shifting, relationally dependent phenomenon comes to be perceived as a static object or incident. It is precisely because the figure of sound is, by definition, a naturalized concept that inquiries into voice and music, which are based on it, are similarly defined.

Through reconceptualizing the voice as an object of knowledge—and, relatedly, through investigating voice and music as intermaterial practices—we may begin to understand that voice and the states it has to offer are multifaceted and sometimes contradictory. Thus, I suggest that through the insights gleaned from taking the voice seriously as an object of knowledge, we may release music and sound from its containment within a limited set of senses and fixed meanings. Hence, music's ontological status can be changed from an external, knowable object to an unfolding phenomenon that arises through complex material interactions.

The methodological and theoretical implications of reconceptualizing the voice as an object of knowledge include considering singing, or other modes'



of voicing, as primarily analytical issues from the perspective of verbs rather than nouns. That is, contra views of the voice as an aesthetic, technical, or definitional catalyst, I understand voice to offer an opportunity for questioning processes that help create and perpetuate the object and idea of voice. In this understanding, assumptions about the voice as a disembodied object, or as representing a universal body, no longer gain traction.[5] By maintaining that voice, listening, sound, and music are necessarily multisensory phenomena, and by grounding my investigation in pedagogical practices—in singing and listening bodies — I not only make full use of the lessons learned in the area of sound studies, but I also open up the discipline to a broader understanding of sound by asking fundamental questions about deeply ingrained notions surrounding its focus of study.[6]

Rather than reinforcing the figure of sound, I join a current swell of work that seeks to find the nuance in and question such notions.[7] More specifically, this book seeks to recover the dynamic, multisensorial phenomenon of music and to redirect thinking about sound as object, as with the figure of sound, toward a reconception of sound as event through the practice of vibration. I undertake this project not merely as a linguistic corrective. Rather, I believe that how we think about sound matters, and that reducing a dynamic and multisensory phenomenon to a static, monodimensional one has ramifications beyond our use of the concept and metaphor of the figure of sound. My concern is that this limiting conceptualization extends to and affects all who engage with it. That is, if we reduce and limit the world we inhabit, we reduce and limit ourselves. ■

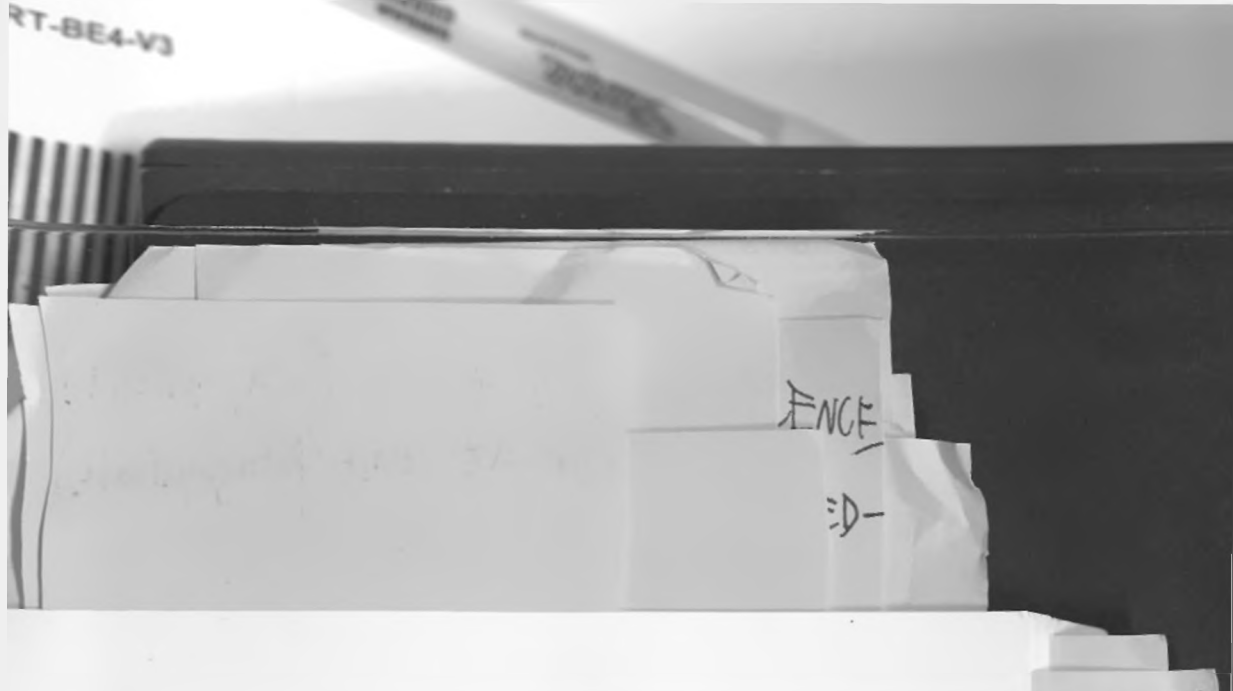
My claim that singing and listening are better understood as intermaterial vibrational practices may appear as a form of radical materiality, as totalizing as other metaphysical claims about voice, including voice as logos, essence, or subjectivity. However, if there is a totalizing position, it is not located within the claim to materiality. The ultimate thrust of this study does not lie in redefining and revaluing sound, music, noise, or matter but concerns those who sing and listen, and those who are moved and defined through these practices.[8] Thus, if a totalitarian position is embraced, it must lie in the relational sphere. In other words, my desire to recover the thick event is fueled by the impulse to understand more about the integral part that music plays in how we forge our relations to one another.

Rather than focusing solely on a phenomenon's ontological status, Geertz advised us to examine its import. He asked: "What is it, ridicule or challenge, irony or anger, snobbery or pride, that in their occurrence and through their anger, is getting said"?[9] Reducing the thick event of music to a singular sensory mode, aurality, is driven by the high value afforded to epistemology—how to know, based on the assumption that knowing is possible—within academia and beyond.

I offer three examples. First, the requirements for knowing a given phenomenon favor particular kinds of measurements and objects that are available to be measured. In music, examples that come to mind include the fixing of pitches, the setting of tempi (for example, through metronomes), and the fascination with music that falls into the Fibonacci sequence.[10] Second, in an effort to build up areas of expertise, the drive toward adherence to the fixed referent has maintained divisions of knowledge within academia. Academic departments each claim a single perceived sense as their domain: music has claimed audition, dance covers touch and movement, art and art history focus primarily on vision (although this has changed as artists have broadly challenged the confines of that domain), and so on. Interestingly, sound, visual, and sensory studies have recently complicated these traditional domains; indeed, *Sensing Sound* is enabled by these destabilizations. Because music's agreed-on sensory domain is audition, our vocabulary and orientation are therefore primarily attuned and confined to that domain.[11] Third, academia's call to teach within these values shapes the knowledge it produces and perpetuates. Perhaps precisely because of the difficulty of knowing within these rigid confines, there is a tendency to approach the material in a mode that seems possible given the limitations inherent in its definitions.

In a radio interview, the former poet laureate Billy Collins recently described a similar disposition within the teaching and knowledge production surrounding poetry:

> It's the emphasis on interpretation, to the detriment of the less teachable, maybe even more obvious or more [sic] bodily pleasures that poetry offers. But that mental and cerebral pleasure seems to be so dominant that it leaves out other pleasures. And the other pleasures are not so teachable, so they don't require the intervention of a teacher. The pleasure of rhythm. The pleasure of sound. The pleasure of metaphor. The pleasure of imaginative travel. All these pleasures that we experience in



> a gestalt fashion, you know, simultaneously as we experience a poem are difficult to discuss, really. So the emphasis tends to be on what does the poem mean?[12]

Applying Collins's insight to music scholarship and teaching, we might say that it is easier, or that it seems more scholarly, to talk about, pitch, rhythm, form, historical context and debates, and meaning than it is to describe, for example, the feeling and effect of being transformed.[13] It is also easier to quantify such material than it is to convey its quality. Adherence to such values directly shapes musical discourse and teaching.

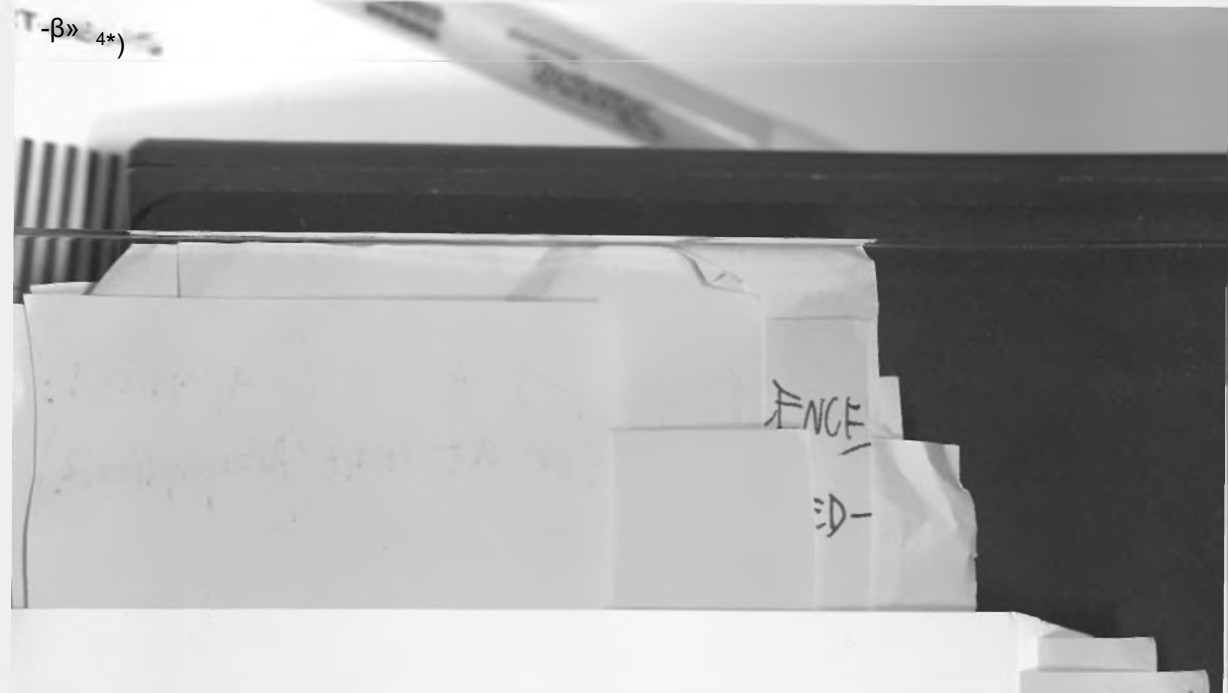
Thus we see that the analysis, interpretation, and definition of music reveal as much about ourselves (and, implicitly, about the era of which we are products) as about the music we name. That is, locating music in the musical work—which is, broadly speaking, the organization of sound—and concentrating our efforts on understanding this organization of sound might primarily yield information about an epistemological paradigm as opposed to ontology.[14] This position has been challenged. One notable example, of course, is Christopher Small's redefinition of *music* as *musicking,* a move designed to point to all people involved in music making and perceiving.[13]

The encompassing concept offered by Small's term is a model through which I begin to map the complexities of singing and listening. Similarly, the idea of transferring creative authority from composer to listener resonates with Peter Szendy's recent theory of listening as akin to "arrang[ing]" music?[6] As I have discussed elsewhere, thinking about music in this way even suggests a transfer of the privilege of authorship to the listener.[17] Furthermore, the music theorist Marion Guck put her finger on the same sore spot when she identified the false assumption that analyzing a musical work or its composer's intention alone can capture the musical experience: "As a theorist, taking listening rather than composing as an analytical focus means that who counts—the listener—is different from theory's usual orientation. What counts about the music is different, too. Since I am interested in what the listener—usually I—experience through the sounds, the point is not identifying configurations of notes but showing how my experiences are elicited by the ways in which the configurations come together for me and change me as I respond to it."[18] To advance the viability of the listener's self-inquiry as an analytical focus, we need to clarify who we are as listeners and, as such, what we can accomplish. In other words, to focus analytically on the listener allows us to read and interrogate the impact of a piece of music as it is experienced by a listener who is encultured in a given way.

Any "theory about the listener" (to invoke the subtitle from Theodor Adorno's controversial "On Popular Music") describes the results of a pedagog) arising from and representing a set of values that has produced that listening practice, rather than simply describing music lovers' "mass listening habits."[1] But it is not only in formal pedagogy (for instance, Heinrich Schenker's listen ing practice and that of the few composers he studied) that we can detect th< underlying values that drive and direct listening perspectives today.[20] Even listening practice and its attendant theory arises from and reinforces a par ticular set of values.

For example, in his study of R. T. H. Laennec, who is credited with inventing the stethoscope, Jonathan Sterne observed that this technology and its alliec listening practice initially developed out of restrictions, values, and attitudes related to class and gender, which called for a listening device that created physical distance between doctor and patient.[21] Jon Cruz observed that, in the abolitionist era, a listener's political position on the subjective potential of Afri- can American slaves could render the slaves' voices as either "alien noise" or "culturally expressive and performing subject[s]."22 Both these examples speak to Mark Smith's observation that "sounds and their meanings are shaped by the cultural, economic, and political contexts in which they are produced and heard."[23] However, despite the varied nature of these observations and cri- tiques, they all depend on one assumption that has not been fully addressed: the presumption that we can make observations, statements, and judgments about the sound of music.

In these pages I propose that sound, the narrow logic through which our concepts of music have been threaded and that lies at the center of music's definition, is merely a trope. It is an empty concept in which we have none- theless so thoroughly invested that it has produced a kind of tunnel vision. We have taken on a stance that rejects any challenges to the a priori idea or to fixed knowledge.[24] While this assessment may be viewed as extreme, it follows from the assumption that music is a thick event. Understanding music as a figure of sound, I suggest, is merely one mode of thinking about the phenomenon. But this is an idea with enormous currency and seemingly unstoppable momen- tum. Not only does it shape how we discuss, conceive of, and analyze music, but it also determines the ways in which we imagine we can relate to music and the power we imagine it to wield in our lives. This shaping, in turn, influ- ences how we configure our relationships to other humans through and with music. Indeed, the way we conceive of our relationship to music could produc- tively be understood as an expression of how we conceive of our relationship to the world.



To be sure, in music we do experience something we call sound. However, I wish to emphasize that this is but one iteration of a phenomenon that may be defined much more deeply and broadly. While sound is a vibrational field to which we are particularly attuned, by no means does it define or limit our experience of music. Nonetheless, the conception of music as sound regularly perpetuates a host of assumptions, such as the notion that identity manifests itself through vocal timbre, a topic that I will discuss in chapter 3.

The result of the strong directing hand of the figure of sound is that when we identify and name sounds, we are not acting as free agents; instead, we are acted on. That is, because we have allowed music discourse to rely so strongly on the figure of sound, it pulls us toward certain ways of experiencing and naming sound and limits our access to other ways. As a consequence, we are not entirely free to experience sound idiosyncratically or to experiment unrestrictedly with that experience beyond agreed-on names and meanings. In fact, if such unbounded naming were carried out, the resulting definition of not only music but also sound itself might not fall under conventional notions of sound. For example, a given phenomenon is, under the figure of sound, understood as the spoken sound /b/ or /p/. In contrast, when released from the figure of sound, the same phenomenon may be understood as an event that, because of the amount of air it emits, has a greater or lesser impact on the skin.[25] Indeed, if the naming of a given phenomenon were uncoupled from the logic of the figure of sound, parameters that currently define this suite of phenomena might be considered not as fundamental, but as merely marginal.

My project arose from frustration with the ways in which, in contemporary musical discourse, we fall short in thinking and talking about (and in devising and interrogating performative and listening practices around) sound by relying largely on judgments about meaning and morality (for example, "she listens well" and "he listens poorly").[26] By critically assessing notions of sound as perceived through the lens of a meaning-making or sound-making source, I try to capture the ways in which a vibrational force is reduced to statements like "this is the sound of a trumpet" or "this is the sound of a black man," and I attempt to broaden such perspectives. Thus, beyond this volume, I envision a move toward analytical models that simply and elegantly challenge such reductions and their impacts.

Were Sensing Sound a historical study, my task would be to directly address how the vibrational material phenomenon, as I understand it, has been conceptualized, understood, and acted on in disparate geographical and historical contexts. While that undertaking would be fascinating, and perhaps one for a future date, what I offer here is rather a contribution to the contemporary de-

Viewing music in this way carries some unsettling consequences. First, it suggests that traditional approaches constrain our understanding rather than expanding it. Second, it asks that people who interact with, are touched by, and seek to understand music approach an artificially bounded experience without that familiar scaffolding. It asks anyone seeking to understand music to let go of the safety net of assumed certainty that is offered by reliance on musical parameters and concepts, and instead to enter the apparent chaos that follows the rejection of preconceived categories.

If this was the sole effect of a vibrational theory of music, its disruptions would be destructive. But approaching music as a vibrational practice offers much more: it recognizes, and hence encourages, idiosyncratic experiences of and with music. Furthermore, approaching music in this way takes into account its nonfixity and recognizes that it always comes into being through an unfolding and dynamic material set of relations.

Therefore, though unsettling at first, augmenting or replacing fixed musical categories (and their attendant parameters, endowed with value by a given culturally and historically specific situation) offers an opening. It enables us to recognize our interaction with and participation in music, and our interaction with and participation in the world, in ways that we have always intuitively recognized and always strongly felt, but that we were seldom empowered (or encouraged) to articulate.

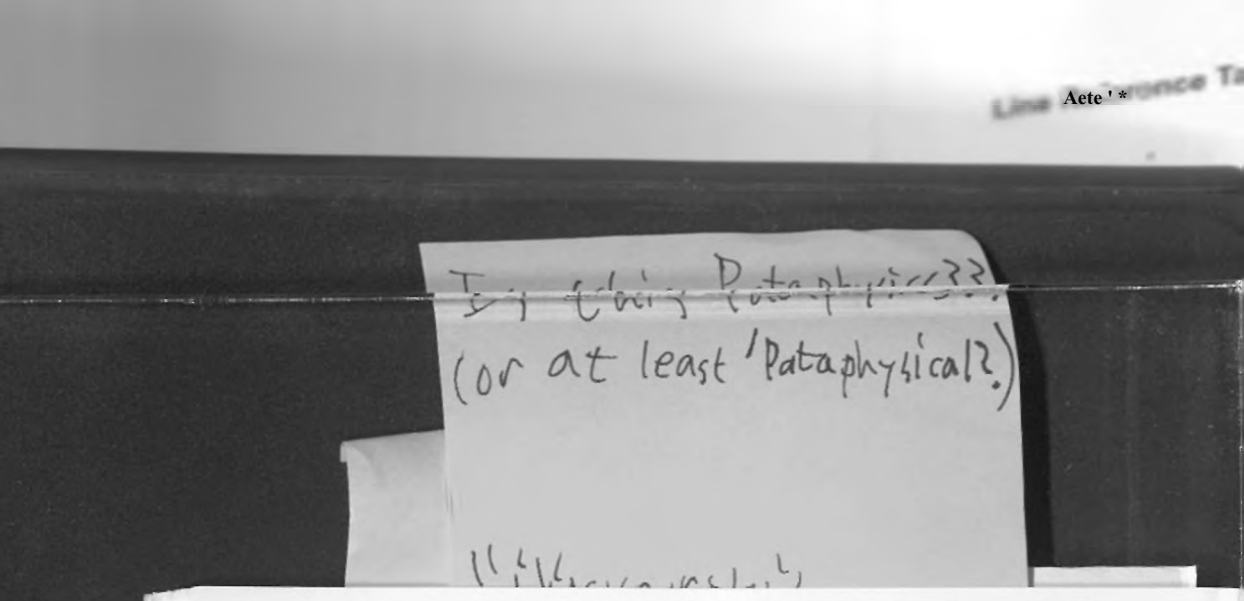
It bears mentioning that a license to take the materially and vibrationally specific experience—the thick event—as a starting point is the opposite of self-centeredness. Taking vibrational practice as a basis for knowledge building around music's ontology and epistemology turns our attention from the categorical correctness or incorrectness of a given description of music to the ever-changing relations that constitute music. As in deconstruction's signifying chain, the final meaning in vibrational practice is endlessly deferred. Moreover. by recognizing vibrational practice or the thick event as ground zero, we are reminded to note and articulate our experiences of music in ways that always keep in sight, and in ear, the ethical dimensions of sound, music, singing, and listening.[31]

To fairly consider the performances at hand, I engaged themes both central and peripheral to the musicological debate. As a result, by adding multisensory and material considerations to the powerful and effective work of Hall, Muñoz, and others, I approach what we have traditionally conceived as sound from six interrelated transdisciplinary concerns: the body, the sensory complex, the sound, the (performative and experiential) methodological orientation, the analytical orientation, and the metaphysical.

I approach the body in and as performance, and as it manifests itself to us as a result of cultural construction and habituation. I consider the sensory complex of voice, sound, and music with similar mindful attention to the ways in which that complex by definition is culturally structured. And I keep in mind that any information we might glean through the sensory complex is thus shaped. This perspective leads me to interrogate the culturally informed parameters of sound on which we rely. That is, does any music exist prior to and independent of that which a culturally structured and informed sensory complex gives rise to, delivers, and verifies? Or—as the question of the falling tree's sound suggests—is the music we can sense in any given cultural moment merely a reflection (or indeed a confirmation) of our limited ability to perceive that moment?[32] The process of responding to these questions led me to interrogate musicological cornerstones: musical parameters, methodologies, and analysis.

I also interrogate one of music's fundamental parameters: sound. I do this because the traditional understanding isolates sound from the thick event of music—a parameter from which we believe we can derive knowledge of music and its effects. In so doing, I retreat from the assumption that music lies uniquely in the sphere of sound. Taking that assumption seriously, I pay close attention to the gradations and impacts of vibration (as in sound), transmission (as in intermaterial How), and transduction (as in conversion of wave form from, say, mechanical to electric) within historical and theoretical discourse. My study relies on a methodological orientation which arose from a concern that I was trapped within my vocal training's culturally and historically shaped and informed perceptual structures. Hence my methodological orientation includes attempts to disrupt said sensory complex by working through vocal and listening practices that explicitly refuse to concern themselves with sound making or conventional aural-oriented listening. Moreover, I turn my attention to the question and issue of analysis, specifically to self-consciously interrogating where we direct our analytical focus and with which methods we decipher our material. I also note that the metaphysical assumptions at the base of musical inquiry arise in relation to questions about music's materiality or ineffability. Finally, I should mention that, as my references to Hall and Muñoz have suggested, my grounding orientation is informed by some of the critical perspectives and insights offered by scholarship on race and gender.[33]

My methodological orientation, then, is based on the premises that, on the one hand, dominant concepts are (silently) instilled in the human body and that, on the other hand, by testing a concept through its use in teaching, the concept's (unintended) consequences may be revealed. By following singers



people do," including perspectives from sound, sensory, and material studies, I pay attention to the microscopic material transformations that music helps to usher into reality.[49] And as Small's definition of music put the social at the hub, I hope that this discussion can expand the conversation further, from thinking about music as a knowable aesthetic object to thinking about it as transferable energy.[50] *Transferable energy* here denotes energy pulsating through and across material and transforming as it adapts to and takes on various material qualities; it is at the crux of thinking about music in the dimensions of nodes of transmission and vibrational realizations in material-specific and dynamic contexts.

Situated within musicology and its intellectual trajectory, I have found that the concept of vibration, considered in a musical context, is useful when putting cross-disciplinary bodies of knowledge in dialogue.[51] While the concept of the figure of sound represents a disregarding of areas of knowledge that fail to fit within prescribed frameworks, vibration provides a route for thinking about fluidity and distribution that does not distinguish between or across media, and a portal for communicating beyond physical boundaries. For example, the political scientist Jane Bennett relied on an obscure treatise on music in developing her arguments for the "political ecology of things" and the "active participation of non-human forces in events."[52] Toward that end, she theorized a "vital materiality" running through and across bodies, both human and nonhuman.[53] Like Bennett, I am concerned with the material relationship between humans and things, for which the practice of vibration is both metaphor and concrete manifestation. And I see music not as a novel example of vibration, but as an everyday example of that tangible, material relationship, akin to tree leaves' movements manifesting the wind.

Music as Nodes in a Chain of Transmission and Transduction

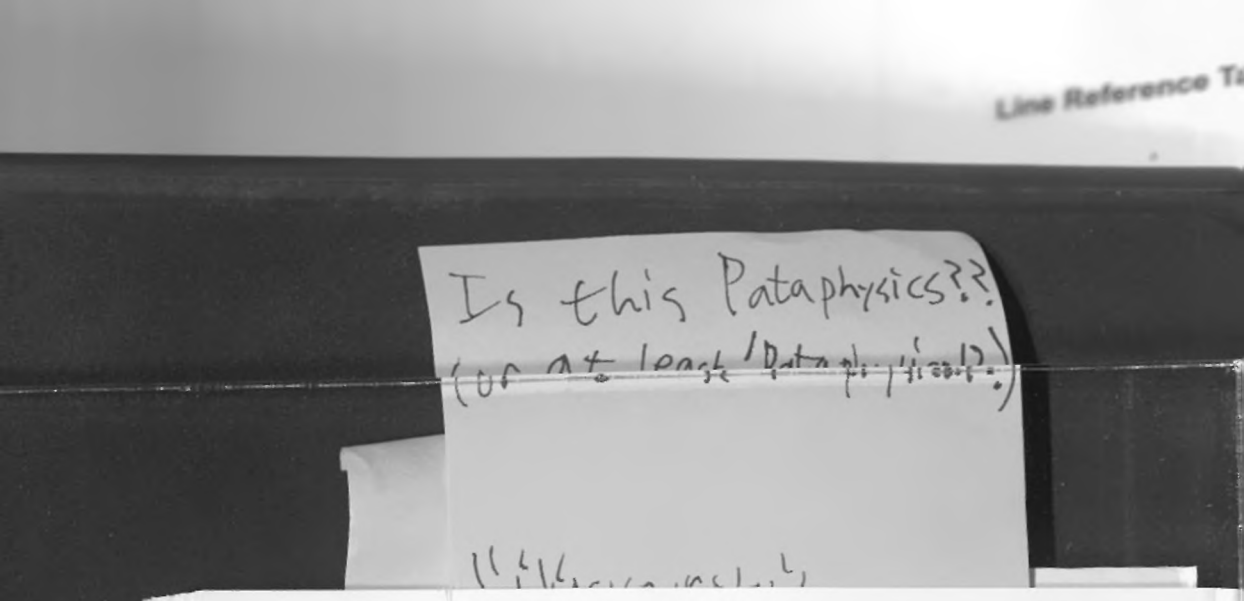
Thinking about music through the practice of vibration brings up the limitations of the paradigm of music as sound, as articulated by Rebecca Lippman, a participant in one of my graduate seminars: "But if we think about this phenomenon as vibration, where does vibration begin and where does it end?"[54] With this question, Lippman encapsulated the limitations of our conceptualization of music when we operate with naturalized notions: the set of questions and observations central—perhaps native — to one paradigm often seem foreign and irrelevant to another. For example, within one paradigm we would consider a certain phenomenon to be sound and see it as bounded and knowable, with a distinct beginning and end. Yet within a different paradigm we

would see the same phenomenon as vibration and understand it in the terms of the energy in a body's mass and its transmission, transduction, and transformation through different materials.[55] Furthermore, while the first paradigm includes parameters, such as duration, that specifically imply beginnings and endings, these parameters—duration, in particular—are less relevant in the second framework. Within that framework, relevant information comes from inquiries into the relationships between materials and sensations, indeed between the bodies involved. Each paradigm has its own logic, and the parameters and questions that yield knowledge in one are not necessarily productive in the other. Let's compare the two frameworks:

Figure of sound	Practice of vibration
— Remains the same independent of listener (fixed)	— Shifts according to listener (relational)
— Circumscribed	— Always present
— Defined a priori	— No a priori definition
— Original; copy	— No assumed original; no copy
— Judged according to fidelity to source	— Nodes of transmission observed
— Static	— Dynamic

The figure of sound is an entity whose existence depends on an objective measurement. For instance, sound as a figure demands a concrete definition on a larger scale of bounded territory, as does the ground in a figure-ground relationship. If the smaller scale is, for example, pitch, the bounded territory is song. Vibrations, however, are unbounded: their relations are defined by process, articulation, and change across material. In this paradigm, then, the phenomena that we conventionally recognize as notes making up songs cannot be limited to particular renditions or articulations. What we observe and label as sounds in the figure of sound framework are considered simply as different points of transmissions in the practice of vibration framework. If singing and listening both constitute the process of vibration across material, they are always present—or, more correctly, always occurring. In short, listening to, making, and manifesting music is a vibrational practice.

From the perspective of this practice, it is the impetus, the urge, and the rush to action—indeed, the vibrations that this presonic activity puts forth—that make up singing and music making. In other words, sound is created and shaped in the action and transmission of vibration, millisecond to millisecond. A person's body is also conditioned, shaped, and created within that time-



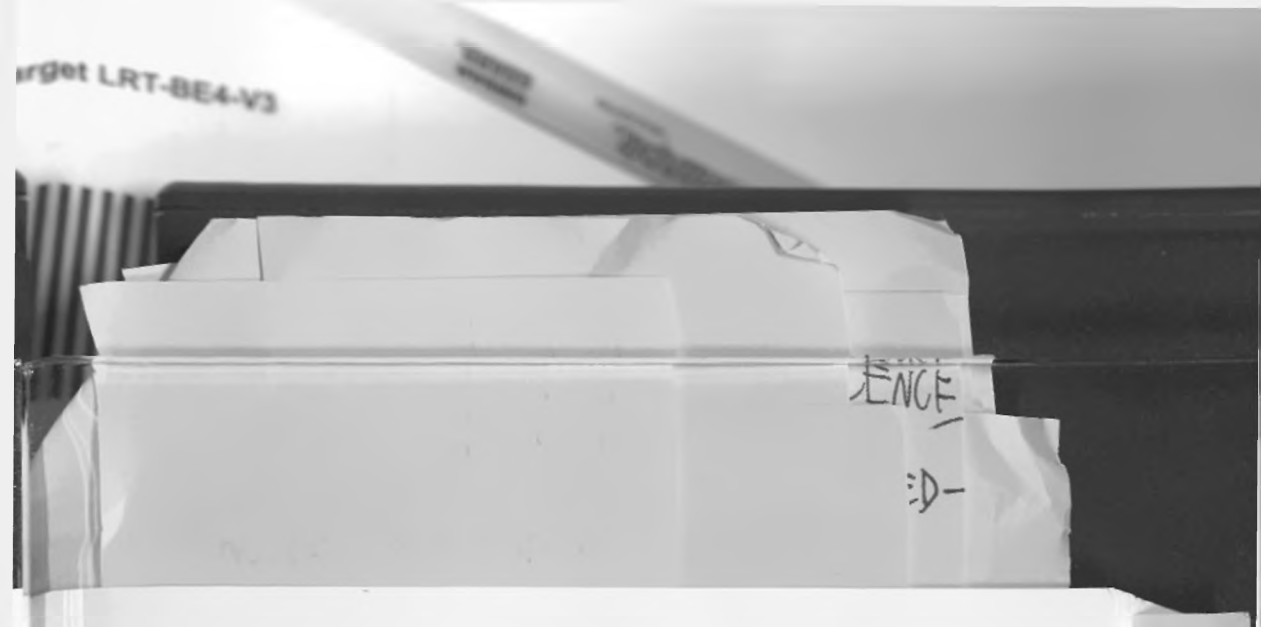
frame, and the sounds it can produce are determined—and limited only—by the range of action and material transmission. That is, we participate in the points of transmission: for each of us, there is no knowable music or sound before its singular transmission through us. While each iteration is unique, we exist as a sine qua non, and the vibrational energy exists prior to the particular transmission.

This completely contradicts the figure of sound's drive to define sound according to an original, and to apply the question of fidelity to a source. Furthermore, without a drive to identify an object, or sound bounded by a beginning and an end, there is no assumed original with which to compare and against which to measure a given figure of sound's relationship and potential legitimacy. The evaluation of fidelity assumes a static object, which is examined to determine its relative loyalty and similarity to the source; in contrast, the practice of vibration assumes a dynamic, shifting process of transmission.[56] In other words, when there is no assumed fixed object, the need to establish relative fidelity to a static definition evaporates.

As Lippman's question reveals, the figure of sound paradigm assumes that knowable and measurable things form the basis of music. A considerable amount of music analysis derives its main energy from defining these objective elements and naming their relationships and structures. While we understand that defining pitches within scalar systems is contextually dependent within a particular discourse about a musical system, we accept that a given analysis and its attendant listening practice and judgment do not question the basic building blocks of the analysis (for example, pitch). Within the sound paradigm, a given pitch operates as a stable index or signifier. While a range of values and beliefs is tied to the signifier's assumed relation to a given sound, this framework impels us toward recognizing a given iteration's fixed relationship a priori.[57]

This plays out dramatically in music: a given epistemic framework developed through a cultural system enables us to recognize and name, say, a G#. In other words, G# is historically situated within a chromatic, tempered scalar system that is culturally bound to the Western tonal system. Recognizing the vibration that we name G# also assumes recognition of the system within which G# is situated, including a number of possible systems—for instance, the assumption that it is part of the E-major scale but that it would be a foreign note (indeed, the tritone) in a D-major scale. Recognizing G# also leaves out the possibility that these vibrations play a part in other musical systems that would not recognize them as G#.

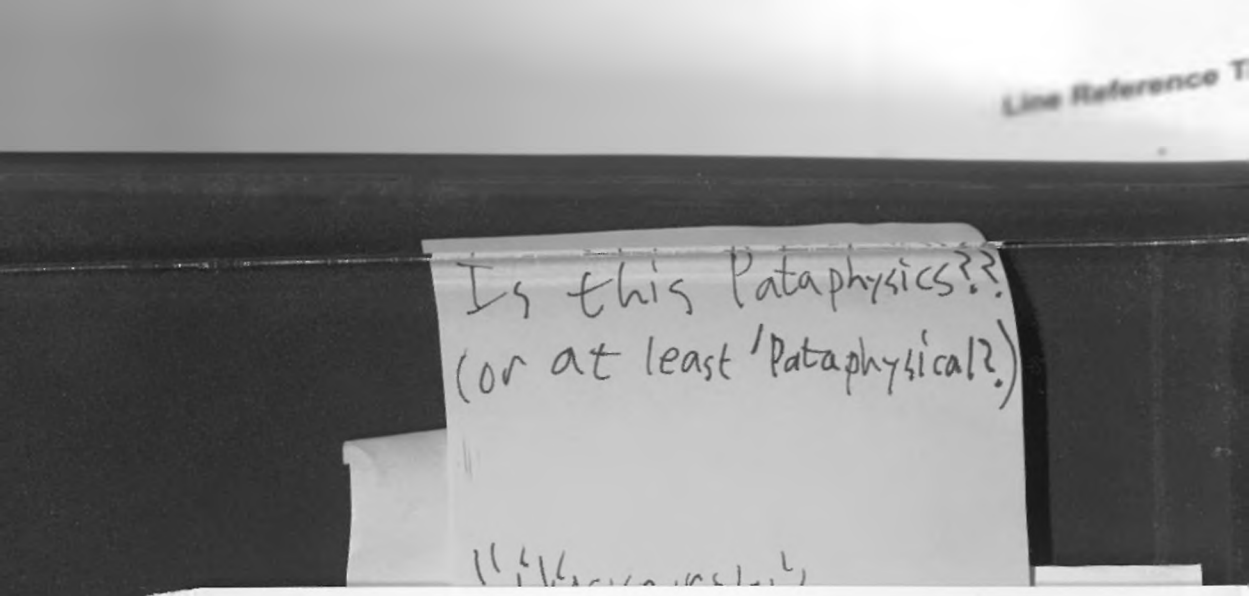
However, the paradigm of the figure of sound does not stop with the drive to



know and identify a pitched sound as the second scale degree of F# major: it is bound up in the assumed meaning of this identity, and it is often derived from values and assumptions about identity that are deciphered from visual clues.[58] The figure of sound paradigm so structures listening to voices that it can lead to appraisals such as "this is the sound of a woman's voice." This appraisal is based on perceived similarities and dissimiliarities between one sound and another—in this case, on similarities to other human vocal sounds and on dissimilarities to, specifically, men's and children's voices.[59] By assuming an essential tie between a vocal timbre and a given definition of race, this paradigm can also lead to observations that are loaded with a presumption, such as the voice "sounded as if it was of a male black."[60] Listening to voices through the framework of sound can also carry multiple layers of appraisal: for example, the observation that somebody is "talkfingj white."[61] This judgment has at least two layers: the idea of "talking white" assumes that the speaker is not white, and that the unexpected racialized vocal style is relevant only because of that assumption. (Just as the designation G# can be applied in relation to many different scale systems, the observation that a person is "talking white" can be applied against a backdrop of a number of different racial classification systems.)

Ultimately, the figure of sound reduces sound's being and its attendant listening practices to sound's relative relation to a range of a priori ideas of sound. It also reduces the listener. In this dynamic, the listener's main task is to name the relationship between figure and ground: the task revolves around determining a sound's faithfulness to a given set of assumptions. Here, being faithful entails such virtues as being in tune and conveying the a priori intent and meaning of a particular sound, composition, or musical-cultural tradition. From the assumption of a defined, nameable, and knowable sound follows an assumption of fidelity, and a perceived moral obligation to consider each sound in its fidelity to that a priori. Robert Fink aptly describes these two processes as "listening through" a sound versus "listening to" that sound (for itself).[62] in other words, this model rests on the assumption that, in the meeting between a sound, a voice, and a music, the respectful, responsible, and ethical way to relate to the sound, voice, or music is through the capacity to recognize it and know it.

The practice of vibration, in contrast, relates a sound not to an a priori definition but to transmission. Because propagation is never static and, as a series of continually unfolding transmissions, is not a matter of recognition and naming, the notion of fidelity accompanying the figure of sound is undermined. If there is nothing to which sound must remain loyal, the notion of fidelity does not retain its currency. Then, rather than limiting our conception of singing



to the task of replicating an ideal sound, we might grow comfortable with the notion that human existence and the activity that flows from a human being necessarily constitute a song. Singing beyond the "shadow" of the figure of sound then moves away from forcing us to mold our bodies to create an expected sound, and toward accepting the vibrations that pulsate from our material, sonorous beings.[63]

Before discussing the larger ramification of this modulation from the figure of sound to the practice of vibration, I should stress that I do not elevate vibration merely in an effort to move away from a perceived linguistic hegemony based on the figure of sound. My approach to the consideration of music as a practice of vibration is not just a definitional adjustment, nor simply a rhetorical attempt to allude to prelinguistic and presemiotic spaces or pre- and posthistorical spaces. In invoking vibration, I am not making a posthuman move toward the subjectivity and agency of things, or away from human-made sounds to theoretical vibrations of the spheres, unrelated to and unencumbered by humans. I reach toward vibration not to offer a mechanical orientation or to align considerations of sound with science, nor because I consider music as entirely mechanistic, something in the sphere of applied engineering rather than aesthetics.

Instead, my turning to vibration is fueled by my interest in thinking about music as practice, not object. Music as vibration is something that crosses, is affected by, and takes its character from any materiality, and because it shows us interconnectedness in material terms, it also shows us that we cannot exist merely as singular individuals. In this sense, music as vibration is analogous to social relations in a Marxist sense, or "the common good," which, as the theologian Jim Wallis cites from Catholic teaching, is vital to the "whole network of social conditions which enable human individuals and groups to flourish and live a fully genuinely human life."[64] The ramifications of understanding music as a practice of vibration are not limited to music discourse or music culture, as Wallis has suggested. In contrast to the figure of sound, the figure of vibration understands music as always coming into being: it renders music an event of the common good.[65]

This shift in orientation leads to major adjustments regarding epistemology, ontology, and ethics. First, using the illuminating framework of the Dutch philosopher and anthropologist Annemarie Mol, "ontology is not given in the order of things, but. . . instead, ontologies are brought into being, sustained, or allowed to wither away in common, day-to-day, sociomaterial practices."[66] Second, when we deal with music, singing, and listening as events rather than as objects, the need for a specialized epistemology of sound evaporates. Ques-

tions and methodologies designed to lead to the ability to know and identify the sonically knowable become uninteresting if there is nothing to recognize and identify a priori, nothing to know.

And, third, this epistemological shift replaces the central tenets of musical ethics and values, moving from fidelity (questions of identity and difference) to charity (concern for the material implications of our actions on others). Here, we consider the experience of music as one possible register in the full range of material vibrational practice. If we accept this position, music necessarily brings us into the territory of relationality, and hence of political ontology. Thus, what we conventionally consider audile listening is only one of many possible ways of articulating and interacting with and through material relations.

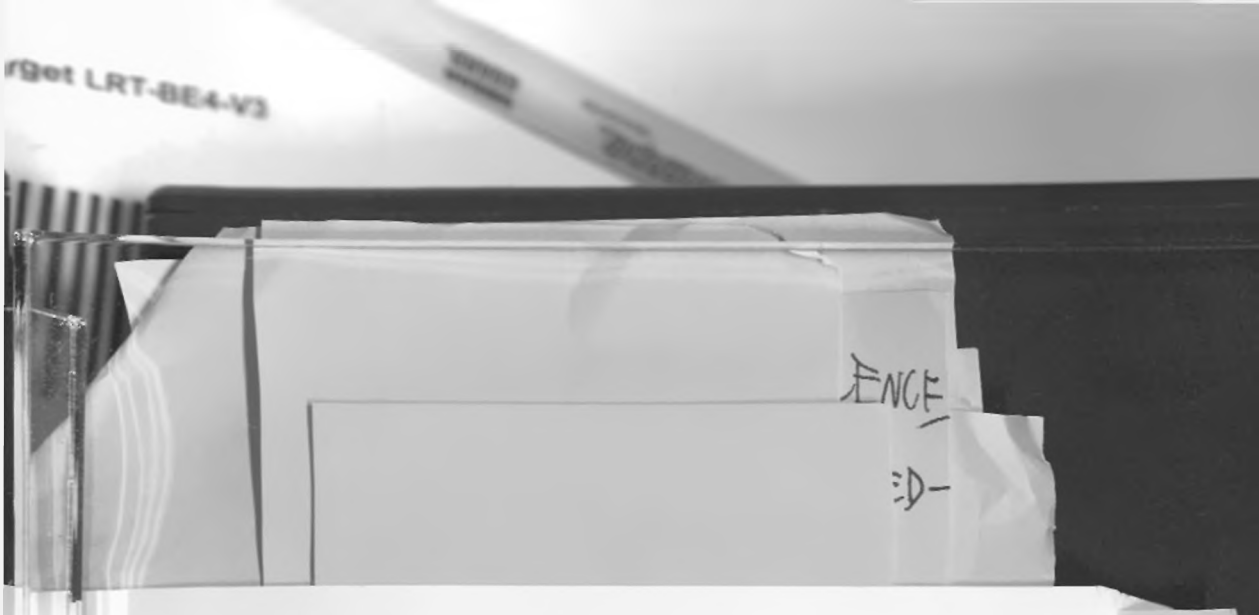
Naturally, then, music is only one of many areas in which adopting the paradigm of the practice of vibration helps both equalize the roles and contributions of the different senses and point to an ethics that circumvents fidelity. For example, a thought model that I have followed, and that has influenced me throughout this project, is Aldo Leopold's classic essay "Land Ethic," first published in 1949.67 In it, and through his lifework, Leopold introduced ethics as the fundamental concept that should underlie all considerations of land and water use, including our relationship to land and water. While my project does not explicitly argue for sound making and listening as ecological practices, I have found in Leopold's philosophy of the human-land relationship a lucid model for human-human relationships as they are rendered when sound is understood as material transmission: "In short, a land ethic changes the role of Homo Sapiens from conqueror of the land community, to plain member and citizen of it. It implies respect for his fellow members, and also respect for the community as such."[68] Leopold's text, which is intensely relevant today, is valuable in thinking about all relationships and stewardships into which humans enter. While reading the above excerpt, in my mind's ear I heard: "Approaching sound, music, and voices as vibrational practice changes the role of Homo Sapiens from conqueror of the figure of sound, to plain member and transmitter of a vibrational field. It implies respect for his fellow members, and also respect for the community as such."

Leopold's meditation on our ethical relationship to the land resonates with and underscores my convictions about ethical relations in the practice of music. Trapping music in the limited definition that follows from the figure of sound (that is, a stable signifier pointing to a static signified) constitutes an unethical relationship to music. According to my definition, having an ethical relationship to music means recognizing it as an always becoming field of

and a chamber opera by Alba Fernanda Triana (b. 1972). In these projects, sounds do not maintain static definitions based on numerical values (for example, 440 Hz) or significations (such as the note A). Instead, sound is a dynamic element arising throughout the exchange that takes place during singing and listening. This chapter denaturalizes sign- and discourse-based analyses of sound, proposing in their place a material, sensory-based analysis that assumes sound to be the result of an action rather than the action itself. I compare this perspectivai shift to the sea change that took place in art criticism in response to Jackson Pollock's work: with the rise of what became known as action painting, critics had to move away from defining artistic work as a corpus of reified objects (works) and instead define it in terms of the actions that might have produced such objects. In this way, chapter 3 questions the position and origin of the definition of *work.*

Chapter 4, "All Voice, All Ears: From the Figure of Sound to the Practice of Music" concerns common assumptions about music and its definition. One major problem with the naming process in general is that the name becomes an index for an experiential phenomenon. Relying on the index, we become several steps removed from the phenomenon itself, including its initial, singular articulation; the likelihood that we can experience another moment unmediated by prescribed parameters and meanings; and even the name itself. For example, although we are educated to believe that it is the form of an opera that moves us, in actuality we are moved by multiple singular and particular articulations within, yet not reliant on, the operatic form. We listen for opera, arias, and a particular operatic sonority; we endorse and validate the experiences we have in accordance with these predetermined categories at the expense of other experiences—that is, even though other articulations that do not fit the categories might also offer meaningful experiences. Thus the names, and the fit between names and experiences, become central. This constitutes the process of reification. In chapter 4, I examine how this process is performed in classical vocal pedagogy, and I experiment with a teaching style predicated on the assumption that singing and music are material articulatory processes. This chapter proposes that articulatory action—indeed, events—is at the core of both singing and music.[72]

The fifth and final chapter, "Music as a Vibrational Practice: Singing and Listening as Everything and Nothing," uses the four case studies and multisensory perspectives offered by the preceding chapters to propose a model for thinking through selfhood and community. In this model, we are sound. Like sound, which comes into being through its material transmission, human beings are not stable and knowable prior to entering into a relationship; rather,

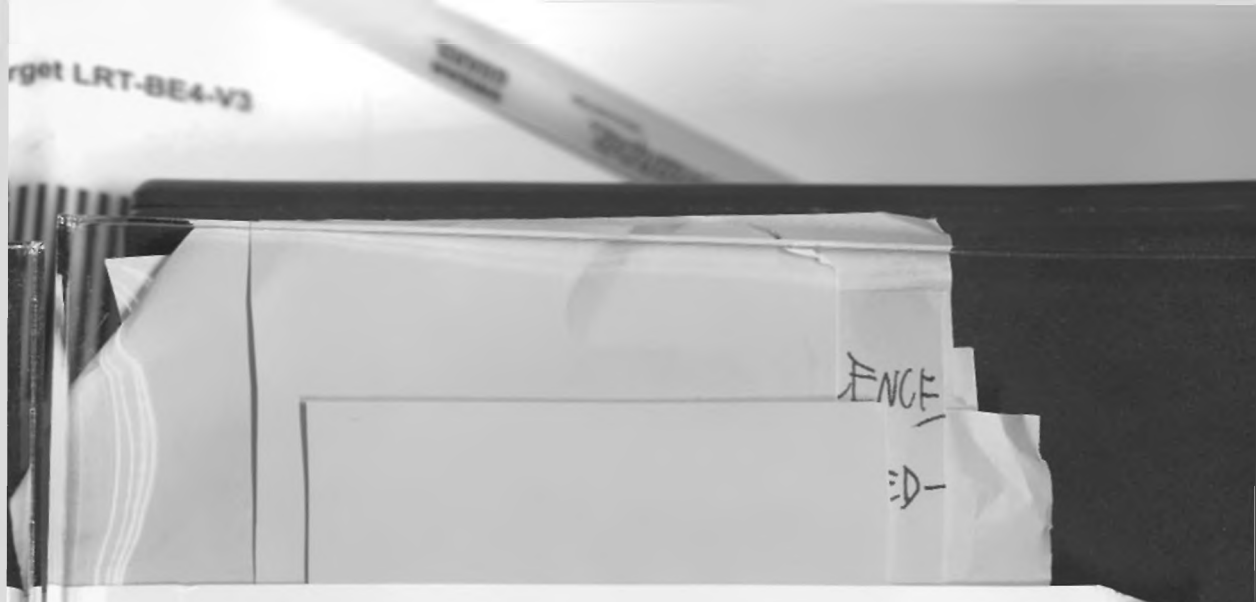


we unfold and bring each other into being through relationships. Our potential for recognizing and accepting self and other rests on our ability and willingness to be changed by our encounters, rather than merely by the potentially desirable qualities (or their absence) in others. Hence, for a relationship with sound to take place, we must be willing to take part in, propagate, transmit, and—in some cases—transduce its vibrations. From this it follows that entropy occurs when we focus on the preconceived identity of another rather than on our own ability (or inability) to undergo change. I posit, then, a strong parallel between how sound is realized or propagated through certain materialities and how we as unique beings are being realized through transmission and the reception of .mother person who approaches us as a unique, unrepeatable human being.[73]

FIGURE i.i · Juliana Snapper at the Aksioma Institute for Contemprary Art, Ljubljana, Slovenia, June 20,2008 (photo by Miha Fras; courtesy Aksioma, Ljublana).

and algorithms maintains the traditional tendencies to quantify music. Consequently, an abstract yet fixed notation, or a notation-derived notion of sound, overshadows the actual, ever-shifting experience of music. In vocal studies, this orientation plays out as a privileging of dramatic, structural, and semiotic content derived from documents (libretto, score, and contemporaneous documents) and analyzed with attention to the sociohistorical context over the distinct quality or timbre of each individual voice in each performance of each work. Historically, Western music studies have favored the idealized and abstract at the expense of the sensible, unrepeatable experience.

The common conception of the voice as a generic vehicle for words, pitches, and durations arises from the same set of values. This notion results in the neglect of key vocal and sonic dimensions that, traditionally, are not notated. By considering the underwater singing practices of Snapper this chapter points the way toward those aspects of music that are inaccessible to standard notation but available to all of our perceiving senses. Snapper's work opens a window on the physical and sensory properties of singers' and listeners' bodies; on



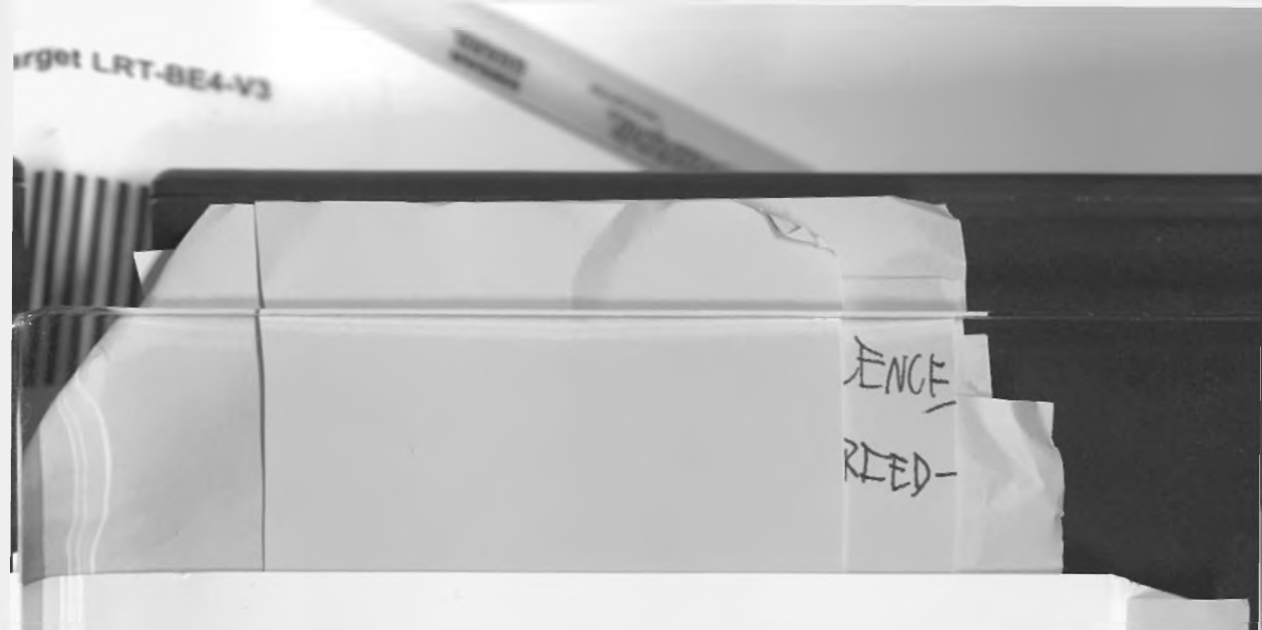
the spaces and materials in which sound disperses; and on these aspects' collective indispensability to singing and listening as lived experiences. Because sensory readings of singing and listening reach for dimensions of voice and sound that are difficult if not impossible to account for with conventional analytical methods, multisensory perspectives can enrich the analysis of musical sound in general, and vocal practices in particular.

Pushing the Limits of Voice and Body

Snapper's work experiments with (or perhaps against) the limits of her voice and body, challenging her physical abilities as well as her imagination.[2] The venues for her underwater operas range from bathtubs to Olympic-sized pools (see figure 1.1). The works range from solo pieces and duets to large-scale productions with choruses and dancers. *Aquaopera* was set for solo and duo performances, all of which invited audience participation; Five *Fathoms Deep My Father Lies* was modular in size, and ranged from solo performance with audience participation to performance with large-scale chorus and sound design elements; and *You Who Will Emerge from the Flood* was composed for soloist, full chorus, sound design, and keyboards?

Snapper is a classically trained soprano, highly sought after by contemporarycomposers of complex music. Despite her mastery of vocal nuance and her success in the traditional music world, when it comes to her own vocal work. Snapper's main concern is the body and its mechanism and state; the sound is secondary. Snapper represents the third generation of vocal experimentation stemming from American classical music, part of a lineage of singer-composers that includes Laurie Anderson, Cathy Berberian, Meredith Monk, and Joan La Barbara (first generation); Shelly Hirsch, Diamanda Galas, Kristin Norderval, and Pamela Z (second generation); and Amy X, Gelsey Bell, and Kate Soper (third generation). Yet Snapper cites diverse influences such as comics like Carol Burnett, the punk vocalist Nina Hagen, the seventeenth-century opera singer and composer Barbara Strozzi, the composer and improviser George Lewis, and the artist Kathy Acker.[4] Additionally, in her nonsolo work—most recently, her involvement in the Human Microphone Project, part of the "Occupy Wall Street" protest movement — Snapper is intimately connected with the American composer and accordionist Pauline Oliveros, who, while not a singer, has composed a large body of work for group vocal experience. Oliveros's work, which seeks to erase the distinctions between performer and audience and between professional and amateur and to use "technology" (from the human body to instrument building and modifications and musical soft-

FIGURE 1.2 · Ron Athey on the Judas cradle. May 5, 2005 (photo by Manuel Vason).



ware and hardware systems) to break down those boundaries, opened a number of paths for Snapper.[5]

A classical singer who had trained for most of her life to gain complete control of her voice, Snapper began a journey toward unsettling, questioning, and challenging that foundation. By challenging sonorous traditions of opera, a highly formalized vocal genre that rests on assumptions of decades-long practice leading to high levels of control, Snapper also questions the utility of other areas of constraint. As I will discuss below, she questions the performance of gender and sexuality and the limitations of language in the face of nonnormative behavior. Her investigation aims to complicate her performing relationship with her instrument, her voice, by pulling the rug out from underneath herself, so to speak, and implementing techniques that would undo her hard-earned control.

Vocal Context and Influences

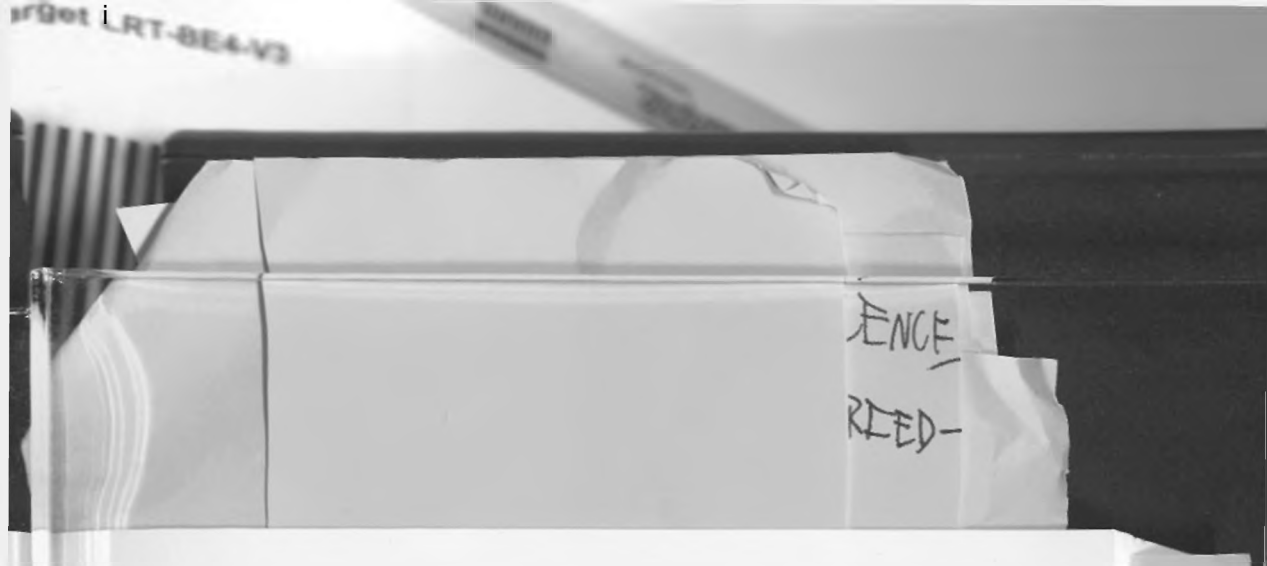
While these experimental practices seem to situate Snapper alongside composers who work with extended vocal techniques, Snapper understands her endeavor as a breakdown of technique rather than as its extension. She likens the process of breaking down her instrument to the instrumental preparation investigated by experimental composers of the late twentieth century, including John Cage, Oliveros, Annea Lockwood, and Cecil Taylor. To prepare a piano or guitar in this sense is to distort the instrument's capabilities by attaching alien objects to it, causing the instrument to create new and distinctive sounds. Similarly, Snapper distorts the sound of the operatic voice by penetrating, mutilating, or inhibiting the human body. For example, in The *Judas Cradle* performances, Snapper's vocal body is temporarily deformed by being tied upside down, while the anus of her collaborator, Ron Athey is penetrated by the Judas cradle as his soul is entered by the Holy Spirit (see figure 1.2); in Five *Fathoms Deep My Father Lies,* being underwater prevents Snapper from drawing breath. As a practice, preparation evidences both a curiosity and adventurousness about sound and a desire to interrupt and disturb human relationships with instruments and their histories. We might also imagine Snapper's vocal preparation as a way to remark on, negotiate, and play with the boundaries between nature and culture: between the female voice historically understood as uncontrollable or natural, and the operatic voice as refined and controlled.[6]

To offer a snapshot of Snapper's forerunners: La Barbara explores voice as an instrument; the celebrated Berberian, classically trained but often inspired by popular culture, investigates the voice's sonic range; Monk attempts to ac-

from a different impetus, Suzanne Cusick mobilizes the notion of performativity in her suggestion that culture works its way "deep in the throat," and that certain vocal styles arise from the body's relationship to culture.[15] Thus, as Carolyn Abbate suggests, knowledge gained from hermeneutic analysis, while not completely divorced from the experience, can be completely contradicted by a given performance, or rendered irrelevant when a performer "offers up his body."[16] Steven Connor reminds us that the voice and ears are part of a multisensorial bodily landscape in which the transfer of experience from one sense to another (say, from hearing to touch) is natural and unavoidable —for example, one can even experience sound by biting on a vibrating rod.[17] That is, while Snapper's work is unusual in its clarity and heuristic, we see that scholars and artists never cease to grapple with the intersensorial aspects of sound.

Flood and Rapture

Snapper began her *Five Fathoms Opera Project,* "a series of modular, site-specific operatic performances," in response to an environmental disaster, which had been met with reactions ranging from apoplectic to indifferent.[18] Watching Hurricane Katrina on television from the West Coast of the United States, Snapper bore horrified witness to an emerging awareness of our changing climate, as fear of flooding and drought turned to a full-fledged politics of disaster. She watched Evangelical Christians absorb climate change into their idea of the rapture: the biblical end of time in the form of melting glaciers and rising sea levels. The Judeo-Christian perspective is predisposed toward a linear sense of time and the progressive inevitability of events. The end of the world is thus inexorable and often depicted as an uncontrollable flood—not as a gateway to cleansing and renewal, as with the flood of Noah's Ark, but as an eternal doom, an irreversible watery state. The element from which we ascended billions of years ago and that we depend on for survival, enjoy in recreation, and use as a means of transportation is also the unstoppable punishment that will obliterate humanity from the earth. Therefore, even as scientists search for clues about the beginnings of civilization, others predict the end of time, wondering: What are the signs? What deeds might trigger events of such magnitude? And how should we act when we are faced with the rapture? Snapper's practice questions the relationship between a progressive trajectory and the events that can be read as propelling it forward. For example, when a linear narrative is set in motion, she asks whether it is not a centrifugal force surrounding this narrative's trajectory that pulls events into it, to be read as its confirmation, rather than the events themselves causing the end time to



draw nearer. Specifically, when homosexual practice is understood as causing a flood, the two are erroneously linked through a narrative, rather than causal factuality.[19]

Outraged by the uncommon, yet brazenly articulated, views of the supposedly inevitable suffering wrought by Katrina, and appalled at the inertia of the unaffected populace who—dry and warm in their living rooms—watched the flood unfolding, Snapper began to reflect on water's relationship with society, leading her to ask whether people had lost touch with water, its potential, and what it represents. Were they numbed by a media culture that profited from fear? Had they been pulled apart by each episode of paralyzing dread? "I think we need to take [opera] out of the opera house and bring bodies together. It can work against that separating damage," was Snapper's eventual response to these questions. She continued by describing her hope that opera, if ejected from the opera house and steeped in water, could infuse souls:

> The idea that water [always] represents emotions in some fundamental way is all over our language. The idea of being flooded with emotion, or storms of rage, or raining tears. It's very raw. [Water is a] technology that gets people feeling in a new way. My hope is to use that technology in a way that is more fresh and more immediate and really actually can work on people listening—which I think less and less happens in the opera house. . . . Maybe opera can help us to bind in new ways, to feel what we're feeling.[20]

Because water can represent extreme emotion, Snapper believes that to connect with water is to enhance our engagement with our feelings. She views underwater singing as a way to address a society distanced from itself and from emotion, paralyzed by the prospect of the end of time. Additionally, for Snapper, singing underwater is an adaptive strategy for basic and artistic postapocalyptic survival. She wonders if instead of accepting watery engulfment as the conclusion of our story, could one adapt to this new state? Snapper says: "I am interested in what it means to accept the end of things — instead of trying to keep things that are dear to us alive at any cost."[21] Thus, the Five *Fathoms Opera Project,* of which there are several versions, was born from the idea of adapting singing to the condition of the end of time and, through this adaptation, defying the end of time envisioned by a minority of Christian leaders.

out as both live performances and taped pieces, in all of which the feminine body acts out madness operatically. Although these works most often feature women, the mad figure might also be a feminine man, or a man rendered effeminate by his madness—as exemplified in Davies's *8 Songs for a Mad King* and Julius Eastman's *Prelude to the Holy Presence of Joan d'Arc* (both 1981).32

Snapper calls this repertoire "hysterical" because of the extreme extent to which it "re-arranges the body of the singer" in ways that affect vocal quality.[33] This rearrangement "extends outward from [the performer's] body," affecting the other musicians' and the audience's empathetic bodies, "rearranging" our ingrained notions of music as an ineffable experience. Just as we may be lulled into believing that we are completely disconnected from the suffering that we watch from the comfort of our homes, so we can persuade ourselves that music, fleeting and seemingly intangible, has no lasting consequences. Snapper attempts to rearrange these beliefs through what she calls "hystericism," alluding not to an illness—like the hysteria historically assigned to women who did not align their behavior with prescribed gender roles—but to an approach to technique that deliberately harnesses physical responses to terror through music drama.[34] Snapper says she coined the term *hystericism* to describe "a non- or truly anti-di scurs ive mode of vocal performance capable of transmitting things [that] symbolic systems (language, narrative, musical rhetoric) cannot."[35] While her performances are not about hystericism, her objective is to "harness the technology of hystericism to redirect the kinds of energy[7] that propagate a growing culture of fear."[36]

Through hystericism, Snapper addresses how women are silenced, prevented from using their voices in ways that seem proper and natural to them, the ways this silencing plays out in emotionally lonely places, and her experiences as a woman with a fundamental distrust of language. After Snapper lost the ability to speak for a period of weeks at age nineteen, her relationship to verbal discourse and to social expectations grounded in language became deeply distrustful. While she could articulate words during this period, she could not form sentences or sing lyrics. Naturally this resulted in an inability to explain herself (and how can a nineteen-year-old explain that she has suddenly lost her grasp of language?). Though she attempted to communicate with her eyes and nonverbal sounds, she loathed the powerlessness that came with being half-mute. Snapper views her vocal compositions as reactions to her own abandonment by language and uncertainty in relation to the voice. Retreating from the everyday tool of language that temporarily abandoned her, Snapper's work restages situations of uncertainty, discomfort, and reaches for the uncanny and fantastical.

Singing Underwater

As she gradually adjusts to new self-imposed linguistic and physical constraints, Snapper's practice in the Five Fathoms *Deep Opera Project* involves continually pushing her body toward moments of surprise. She first experimented at home, in the bathtub; her first performances, too, were in tubs. "Once I got the hang of... well, I am still getting the hang of it," Snapper notes, "I started working with movement, different depths, different apertures" before moving into larger pools of water (see figures 1.4-1.6).[37] When Snapper described her process to me, we agreed that the best way for her to demonstrate being overwhelmed by a new environment was to take me through a comparable experience. So in 2010,1 took a group of graduate students to the Standard Hotel in downtown Los Angeles. We gathered in the rooftop bar, one of Snapper's many performance venues, which featured fire-truck-red waterbeds and a large salt-water swimming pool.

Once we were in the water, Snapper took us through some participatory activities. The first had us form pairs; one person gently held the other underwater, while the person underwater made sounds (see figure 1.7). I was paired with Natalia Bieletto, who shouted—but with my ears above water I didn't hear her voice.[38] We tried another strategy: one person made sounds underwater while the rest of us put our heads and ears in, enabling us to hear him. We found that the deeper into the water we descended, the more difficult it was to sing high notes. Fast tempi were also difficult to maintain; Bieletto's attempt resulted in muddled sounds. Surprisingly, while sung sounds generally didn't seem very loud, small internal throat sounds were incredibly powerful. They boomed, beamed, and spread and were almost overbearing. These exercises demonstrate the extent to which the medium in which sound waves flow affects their characteristics: their speed, direction, and so on. It also shows that to register sound, the listening body, including the head, must be immersed in the material through which the sound flows.

The next exercise linked the six of us together by the arms: three participants stood in a line, with their backs against those of the other three. We sang in a drone-like manner, playing with our voices above the water, at its surface, and slowly descending into it. We felt the sonic vibrations largely through direct contact with each other's bodies. Of course sound also passed through the air and the water, but because the most immediate path was from one body to another: this was the sensation that overpowered us.

As we ended the day by gathering around the poolside fireplace, we discussed how taken we were with singing's different feel in a liquid environment.

FIGURE 1.7 · The author (right) with Natalia Bieletto (left, under water), participating in *Aquaopera st/Los Angeles,* April 28. 2010 (photo by Jillian Rogers).

Although some of us were singers with decades of training, we felt that little of our experience could effectively apply or even seem relevant underwater. We found that aural experience is predicated on our physical contact with sound waves through shared media—in this case water and air, flesh and bone. We noted that the shared medium makes a great deal of difference to how we experience the voice, and that the sound ultimately heard depends partly on what is sung, partly on the medium through which it passes, and partly on how our bodies interact with that medium. Connor's engagement with Michel Serress work came to mind. "For Serres," Connor writes, "the body itself is caught up in a process of hearing, which implicates skin, bone, skull, feet and muscle. Just when we thought hearing was going to be put in its place, Serres evokes its own mingled or implicated nature."[39]

In other words, in Snapper's workshop we experienced what we already

knew in theory. And although we had prior theoretical knowledge, we felt as though we had discovered that sound is a multisensory experience, tactile as well as aural. Snapper's exercises revealed that music making involves more than traditional theories and notation can capture, and even more than what current musical discourse can describe.

The Sensing Body in Relation to the Material World

Singing in water sounds so different from the way it sounds in air largely because, unlike electromagnetic waves of light, mechanical waves of sound require a medium through which to propagate. Consequently sound cannot travel through a vacuum.[40] Hence the speed at which sound waves travel depends on the density and compressibility of the medium through which they pass. Because higher densities and compressions engender slower speeds — and relative to air, water is very dense but nearly incompressible—the speed of sound in water is generally about four times faster than the speed of sound in air, with slight variations depending on several factors. These factors include water quality (distilled or salted, warm or cool) and hydrostatic pressure (which depends in turn on the distance below the surface at which an object sounds).[41] This is partly why Bieletto's up-tempo tune sounded muddled underwater, and why Snapper chooses slower tempi for underwater music than for the same music sung in air.

The specific relationship between our material bodies and the materials in which we immerse ourselves also affects how we experience sounds. In its unfamiliarity, listening underwater brings the relationship between sound, matter, and eardrum—which, in air, we take for granted—into relief. Because the density of human tissue is very similar to that of water, the eardrum does not provide the resistance necessary to translate underwater vibrations into tympanic movements—that is, into sound that eardrums can register. Thus, when we listen underwater, many vibrations pass through our eardrums without registering as sound. It is precisely because our skull bones are dense enough to convey the sound that those bones, rather than the eardrums, capture most of the sounds that humans do manage to register underwater. As a result the sound resonates in the body, going directly to the inner ear and circumventing the eardrum. Like air and water, the eardrum and skull bones are media through which sound passes, and by which its character is affected.

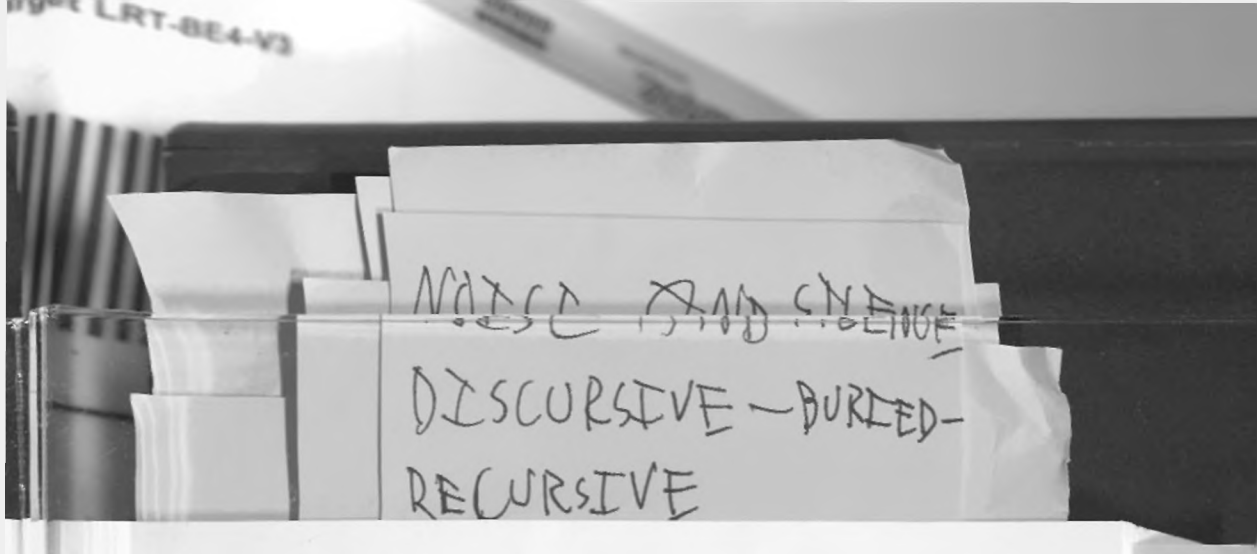
Bone-conduction theory explains that sound signals reach the inner ear not only via the eardrum's ossicle path, but also via the bone-conduction path.[42] Bone conduction can take place via air conduction, in underwater hearing,

or through stimuli that set the body directly into vibration. While the early twentieth-century hypothesis that bone conduction is a crucial aspect of normative spatial hearing is no longer widely accepted, the German psychoacoustician Jens Blauert points out that when the sound component that reaches the inner ear is similar in strength to air-conducted sound, bone conduction does play a significant role. Examples of when sound can reach the inner ear with a strength similar to air-conducted sound include the use of ear protectors and the immersion of the body in a medium with a field impedance similar to its own —for example, water.[43] Favorable conditions for underwater hearing are enabled by the similarity in acoustic field impedance between water and the skull.[44]

The specific part of the body that registers sound also plays a role in its apparent directionality. For example, our ability to hear in stereo —two distinct signals, left and right—is the result of sound entering our bodies from two directions (through two ears). In contrast, when the inner ear registers sound via the skull bones, rather than with the left and right eardrums, the sound seems to be omnidirectional.[45] Because the sound waves vibrate the bones of the listener's body, her perception is that her own body has created the sound. The sound becomes a state or quality of the listener's body—in Stefan Helmreich's description, a "soundstate."[46] in effect, at an underwater performance where the audience and performers are immersed, the singer's body, the water, and the audiences' bodies connect through vibration to become one mass, a single pulsating speaker.[47]

The multiple iterations of *Five Fathoms* transmit sound along very different nodes. The paths of propagation depend on whether the audience is immersed in the water with Snapper or seated on bleachers by the pool. For example, in the 2011 Geneva performance of You *Who Will Emerge from the Flood,* when audience members sat on bleachers, they were not only removed from Snapper at a greater distance than was the case in the water-immersed mode, but also the number of transmissional nodes between Snapper and the audience increased, differing between sections of the piece. At various points Snapper's voice was emitted into air, water, a traditional microphone, and an underwater microphone. From these various nodes, her voice would be transduced (i) via air to eardrums; (2) via water to air—where most of the energy is lost and not transmitted —to eardrum; (3) via air to microphone to amplifier, speakers, air, and eardrums; and (4) from water to underwater microphone to amplifier, speaker, air, and eardrums.[48]

The contrasting propagations resulted in four distinct characters that engendered four distinct sounds and could potentially be understood as four dif-



ferent voices. While, needless to say, throughout these different transmissions the sound is sensed beyond traditional eardrum-based audition, it is the unusual situation of having different material afforded sensory experiences of the same musical segments that allows us to grasp that the identification of a musical piece is materially specific and dependent. Because so many discursive resources have been put into controlling and repressing the material, multisensory aspects of sound, we have stopped accounting for these aspects. But it seems that in limited cases, such as immersing ourselves in water with an opera singer, we can sense beyond the strong naturalization of our sensing of sound.

Musical practices that extend beyond normative perception tend to be marginalized as exceptional or as functional. But does it actually matter whether Snapper's work is framed as opera as opposed to, say, music therapy? That is, does Snapper's work reveal anything different from the revelations offered by practices that yield similar experiences, but that are framed as music therapy or alternative healing practices?

In summary, because musical discourse is in large part aesthetic, and only selectively engages with knowledge of sound gained in other fields, there is an unexpected twist to this story: the most important and revealing part of Snapper's work is not her need to develop a strategy for singing underwater, but that she sings underwater, deals in vibration, and still considers it opera. In that way knowledge about sound's propagation underwater and its particular material relationship to the body must be dealt with as it is articulated within a piece of music—as opposed to, for example, situations in music therapy, sound engineering, or medicine. Snapper performs in opposition to traditional conceptions of sound and music while working within traditions. Her insistence on defining her own creative collaborations as opera, and her legitimacy as an opera singer through her training and performance of more traditional repertoire, manage to keep what are considered extreme vocal articulations within the aesthetic. Thus, she opens up a space to think about aspects of sound and music that previously have been considered too liminal to have anything to say about music. Snapper's feat, then, is to offer extreme vocal articulations while managing to maintain her practice within a tradition-bound form of music such as opera. In so doing, she exposes the limitations of music analysis, an analytical framework that assumes that sound is propagated through air.

The Lived Body

In the midst of a crisis caused by the constraints of gendered and sexual life, during which the speech that supposedly reflects the vast range of human

inner life was unable to communicate and describe it, we remember, Snappe lost her ability to use language. Her reaction and response to societal, cultura and musical control involved devising incredibly difficult situations (singin upside down, singing underwater, and so on), challenging herself to masu them within a demanding vocal tradition such as opera. By overcoming thes impossible situations, she effectively breaks the narrative arches around gei der, sexuality, and verbal communication that had trapped her. She upsets tl conventional wisdom that dictates the forms of vocal communication by d· ciding where opera ought to take place. She directly questions both the idea < inevitability that a rigid, linear sense of time sets in motion and the tendenc, to slot events and even people into this notion of time and its progress. For me, a close reading of Snapper's work and practice has impelled an examination of those dimensions of sound that musicologists have not traditionally considered in earnest, such as materiality and its multisensory dimension. This examination in turn throws other inevitability narratives into question.

This type of analysis asks the subject to take leave of his or her absolute sovereignty and to acknowledge that he or she is both subject and object in the world, subject to material forces over which the mind and body do not hav control. Following Shoshana Felman and Judith Butler, Michelle Duncan su gests that the "very 'scandal' revealed by psychoanalysis ... proposes] that tl speech act undoes meaning, that it disrupts intentional knowledge through bodily act," and that the nonlinguistic and nonreferential sound of the voit can move us to affect and action.[49] Wayne Koestenbaum shares how diva vibrating voices worked on his consciousness via his bodily tissue in ways th were foundational to his budding awareness of his queer identity.[50] Accoun such as these, exploiting normative listening practices, are poignant example of listening and thinking about listening beyond established paradigms, adap ing Thomas Csordas's use of the term. That is, they describe instances of a new and "consistent methodological perspective that encourages re-analyses of existing data and suggests new questions for empirical research."[51]

"To be present in the world," writes Simone de Beauvoir, "implies strictly that there exists a body which is at once a material thing in the world and a point of view towards the world."[52] Beauvoir recognized that it is impossible to locate a body outside its performative representation of culture. In other words, she recognized that material in a natural state is a phantasm to which we do not have unmediated access. Rather, the materiality that we can access which includes sound and the voice—is determined by ideas and representations that are unavoidably subject to power relations. The power relationship that we have seen play out in music analysis has pulled the eye and

ear above the other senses, out of the full sensory experience that is listening to voice and sound.[55]

in a response to feminist scholarship's debate about materiality, performativity, and nature in relation to the question of sex and gender, Torii Moi offers the image of the lived body (replacing categories of both sex and gender) as a means of illustrating the involvement of our bodily characteristics in the formation of a lived sense of ourselves.[54] This lived body is embedded in and subject to cultural forces at a foundational level. And it is this body, with a perceptual system tuned by a given culture, that is the perceiving conduit of sound. Quite strikingly, through her practice Snapper also addresses the possibility or impossibility of experiencing outside or beyond the situated sensorium. If she does not fully present the body with a new sensory complex by exposing it to situations such as singing underwater, which transcend the dominant narratives and rules, at the very least she questions whether the current narrative is entirely waterproof.

By descending into water with excessive performative expressions, costumes, set designs, and vocal sounds, and by inviting her audience to accompany her, Snapper confronts the pervasive cross-cultural ambivalence about the female body head-on. She challenges notions of this body's dangerous ambiguity, notions that have survived across geographies and cultures for millennia in stories of sirens' and mermaids' seductive, enveloping voices. Moreover, the idea of the underwater female body and its material form symbolize, literally and figuratively, the feminine embrace and the allure of all humans' complete dependency on a woman's body while in utero.[55] Snapper's performance points to inconsistencies in the stories we are told about how the world works, and it defies the rules surrounding vocal performance and operatic practice. From her work we have learned that (i) sound does not exist in a vacuum but is materially dependent. Therefore, (2) the transmitting medium (for example, water versus air) and the combination of different materialities (such as the body in relation to water versus air) affect the sound's propagation and hence its actualization. As a consequence, (3) listening is materially dependent. And, moreover, (4) we can arrive at these conclusions about sounds and music only if we investigate them in a material and multisensory register. The dominant discourse about sound, the assumptions on which traditional analysis is based, and my proposed material and multisensory notion of sound summarize the comparison between the perspectives of the figure of sound and the practice of vibration in the introduction.

As Susan McClary observes, "our music theories and notational systems do everything possible to mask those dimensions of music that are related to

Some have already read this story against the grain. Let us consider three especially relevant readings and, finally, conduct a briel reading within the n paradigm.

Reexamining the Encounter between Odysseus and the Sirens

Ruminating on the reasonable idea that no amount of wax could keep out sirens' tempestuous voices, Franz Kafka suspects that there was actually no ing to be heard by either the sailors or Odysseus. Kafka believes that the si of Odysseus's triumphant expression as he sailed into danger with his gen plan in place rendered the sirens silent—or perhaps they decided not to was. their voices on him. This view suggests that Odysseus in fact heard nothing: instead his desperate gesticulations to the sailors, ordering them to untie him because of the pull of the sirens' voices, enacted one of the tallest tales a man ever told. In Kafka's words, "the Sirens have a still more fatal weapon than their song, namely their silence"—and Odysseus "did not hear their silence."[61]

So here we are presented with two different accounts of how Odysseus and his men were able to travel close enough to expose themselves to the sirens' voices,[62] yet escape their fatal allure. The difference between the stories tu on two points: how the men were kept safe from the tempting voices and w Odysseus heard. Homer's account suggests that, because of his cunning, Od seus is the only person who ever lived to tell of the sirens' incredible voie· Kafka claims the whole thing was a setup that has conned readers and au enees for thousands of years. The men sailed safely by because the sirens c not actually sing.[63] (But, having gone to the trouble of being tied to the ma Odysseus would have been the last to admit that his efforts were in vair Hence, in both Homer's and Kafka's accounts, the sailors were prevented fr< bearing true (auditory) witness to events. Moreover, both interpretations a sume that hearing takes place, and that Odysseus hears exactly what he is presented with—even if it is silence.

For both Mladen Dolar and David Copenhafer silence is the opposite of speech, singing, and sound. Both scholars assume that the absence of one is the presence of the other, and also that the existence of one always already offers the potential of the other. For Dolar, reading Kafka, the voice at its purest exists in silence. [64] For Copenhafer, Kafka's casting of Odysseus' wax-filled ears pretending to resist nonsounded sound constitutes a situation in which it "becomes necessary to play with one's potential to listen and to not listen."[65] While both readings and musings on Kafka's version of Odysseus 's encounter are intriguing, to me the notion of a default to silence as the oppo -

site of the potential impact of voice lacks imagination in terms of the human voice's sensory range. It also strikes me as too simplistic that a slightly mysterious element of this story, the reason assumed for Odysseus's triumph, is silence. Is Odysseus—or, for that matter, are we—up to that task? It is significant that the element on which this story turns, the cause for Odysseus's triumph, is silence. "The politics of silence often assumes a conservative guise and promotes itself as quasi-spiritual and nostalgic for a return to the natural," Steve Goodman writes. "As such, it is often Orientalized and romanticized tranquility unviolated by the machinations of technology which have militarized the sonic and polluted the rural soundscape with noise, polluted art with sonification, polluted the city with industry, polluted thought with distraction, polluted attention with marketing, deafens teenagers and so on."[66] Goodman's list contains well-rehearsed pure sites that are liable to contamination. Reading Odysseus, it is worthwhile noting that the nonsilence—that is, the nontranquility and the destructive force —is, in Odysseus's case, the sound of feminine gendered voices. Therefore, to that list add "polluting male rationality with the female voice."

Let us return to Kafka's suspicion about whether the sirens made any vocal sounds by recalling Max Horkheimer and Theodor Adorno's reading of Odysseus's exploits.[67] These scholars indict Odysseus for initiating a dynamic realized much later by capitalism, accusing him of finding no more than entertainment in the sirens' song, a protobourgeois reduction of the song's unique enchantment to the "longing of the passerby" (Sehnsucht *desser, der vorüberfärt)*^ Drawing on Adorno and Horkheimer in writing about Debussys "Sirenes," Lawrence Kramer suggests that an Odyssean dynamic exists between the modern concert audience and the music it consumes: "Fixed in his seat at the concert hall, the listener becomes the modern form of Odysseus tied to his mast, for whom the enchainment of the body makes possible the enchantment of the mind."[69] These readings, as Adriana Cavarero has pointed out, are anachronistic in their consideration of the "bourgeois."[70] But a view of Odysseus bound to the mast as a restriction of perspective wherein voice becomes commodity is nonetheless a perceptive observation about our general tendency to confine the experience of voice to a single physical sense.

The new paradigm I propose would ask us to examine how listening functions in these stories from a multisensory perspective.[71] li hearing is strictly confined to the eardrum, either Homer's or Kafkas version may be accepted without hesitation. Nevertheless, within the paradigm of voice and sound that I suggest—which refuses to assign stable, measurable identities to sonic phenomena and refuses to associate each physical sense with only one region of

concepts and vocabulary, and reconfirmed and ossified through experiences guided by these ideas. While music—and sound, more generally—has always been experienced in a variety of spatial-acoustic configurations, because of the privileged status of the repertoire played in the symphony hall and the elevated status of the concert-hall listening experience, it is the kinds of sound and music that are played in that acoustic condition that formed the basis for the listening, discourse, vocabulary, and concepts that we use to make sense of music today. I show that by eschewing such notions, the aforementioned productions of *Songs of Ascension* and *Invisible Cities* offer audience members a choice of listening and relational stances. It is the existence of that choice that I wish to point to in this chapter.

"Berlin Stinks"

The history of concert-hall acoustics in itself is beyond the scope of this book.[2] However, drawing on robust research from musicology, architecture, and architectural acoustics, I offer a few key moments. I chose these moments to exemplify how nonmusical, nonsonorous dimensions were key to the constraints placed on the acoustic conditions of public concert venues; the formation of, and consequent commitment to, an acoustic sensibility; and the formalization of today's acoustic norm. I also chose these moments to exemplify the construction that led us toward a unified Western understanding of good acoustics. While I mainly discuss halls and acoustic conditions, it is important to bear in mind that these experiential repetitions of music that is sounded —the sound's specific acoustic conditions—are inseparable from the ways in which people and critics heard the music, and that the acoustic condition is inseparable from what is otherwise experienced, articulated, and conceptualized regarding the sound. Moreover, as sound is heard, impressions articulated, and concepts formed, these concepts themselves direct further impressions of music and limit our thinking about others.

The acoustic dimension of the figure of sound can begin simply as a practical question involving the optimal acoustic for a particular repertoire. Then, through repetition, the experience and standard concepts used to describe those acoustic phenomena and experiences burrow into our perceptual repertoire, and further language is formed around these experiences. In turn, these linguistic, conceptual, and perceptual frames inform expectations and further experiences—in short, they lay the groundwork for the acoustic dimension of the figure of sound. (I will return to the specifics of the conventions related

to the figure of sound's acoustic dimension, a concept that will be developed throughout this chapter.)

By the spatial-relational and acoustic dimension of the figure of sound, I mean simply that the framework within which we imagine sound, and that we subsequently fit around the sounds to which we are exposed in daily life, is not limited to pitch and its duration (and/or to rhythm and meter). Included in our practices of sound is an acoustic dimension—which may be simply described as the length of the reverb and the sense of clarity (which I will discuss at much greater length below). Unlike pitch and duration, however, the spatial-relational and acoustic dimensions are noticed and called out only when they are nonnormative. That is, when a sound is too close, dry, wet, or uneven or exposes an unusual nonnormative feature—for example, a whispering arch—we become conscious of it and can overlay it with a particular meaning. Again, when a sound adheres to the normative spatial-relational and acoustic aspect of the figure of sound, we do not notice it. What is the process by which select sounds become naturalized?

The spatial-relational and acoustic dimensions of sound are naturalized within distinct sonic, performative, and listening practices. The music I will discuss in this chapter, and indeed in the entire book, is heard and conceptualized within the framework of Western classical music. As such, the spatial-relational and acoustic dimensions of this music's figure of sound have been formed partly through public concert practices. Historically, concert music was performed outdoors or in existing enclosed venues such as churches, theaters, or palace rooms.[3] The York Buildings, the first public hall with the explicit purpose of housing performances of music, was erected in 1678 London.[4] While this hall could seat an audience of two hundred, the later Hanover Square Rooms, where twelve concerts featuring Haydn in performance were presented in 1791, accommodated 900. As the orchestra grew in size, and the concert was transformed into a public format, demand arose for additional halls sized to fit increased audience capacity.

The first dedicated concert halls were constructed in the eighteenth century in Oxford, London, Hanover, and Leipzig. The sheer size necessary to hold the growing audiences and the desire to also offer a view of the orchestra led to seating plans and overall shapes that created "uneven acoustic results." (With its horseshoe shape, the Royal Albert Hall in London is often mentioned as a famous example of less than optimal acoustics.)[5] At the beginning of the eighteenth century, with the spread of concert music as entertainment throughout the continent, concert halls were built in Berlin, Vienna, Stockholm, and else-

Ensemble, I was deeply affected, but I could not capture what it was about the concert that moved me. Considering it through concepts and vocabulary I knew from dance and music, I felt that the choreography was simple, and I could not articulate what exactly about the music captivated or had an impact on me. In fact, in many ways my reactions to Monk resembled my original reaction to Snapper's underwater opera project: for a long time I was not capable of understanding what was interesting about it, yet it continued to preoccupy me.

One reason for my baffled incomprehension might be that Monk's artistic work and expression are not limited by the traditional division between dance, theater, and music, a quality that has certainly met with challenges. While this topic is too large to discuss here, given the goals of this book, I will mention that Monk struggled greatly with national funding agencies, such as the National Endowment for the Arts, as it was unclear into which artistic category her work fell.[35] Thus, while Monk's music has been read thoughtfully from choreographic, theatrical, and operatic perspectives, in what follows I will posit that there is a different, multisensory way to understand her work. More specifically, I will suggest that if we limit our understanding of her work to one sense, that understanding will be greatly diminished. In other words, I will suggest that reading her music within the traditional acoustic aspect of the figure of sound limits our access to the artistic experience of the thick event. Specifically, considering Monk's work from a multisensorial perspective encourages inquiry into the way in which spatial-material relationships between sound-producing, listening bodies and the spatial-acoustic structures these relationships are organized within contribute to sound's affect.

Born into a family of musicians and educated at Sarah Lawrence College, Monk had become recognized for her work as a dancer and choreographer by the 1960s. However, even in her earliest solo efforts in downtown New York, she combined movement with images, music, and vocalizations.[36] in a quest to "make my voice move the way the body moves," Monk explored alternative ways of vocalizing.[37] She came to so-called extended vocal techniques through her own vocal experiments, her background in classical and folk music, and her experience as an "interdisciplinary performer."[38] With Laurie Anderson and Pauline Oliveros, Monk is often named as one of three female pioneers who have shaped the sound of American music. Over the years her work has been interpreted as choreography in which the dancers sing, opera in which the singers act and move around, and postdramatic theater with nonverbal vocalizing.

A major component of and resource for her subsequent portfolio, which so far spans four decades, was her establishment in 1968 of the nonprofit House Foundation, a moderately staffed organization that supports, produces, promotes, and maintains her work as a legacy. The House Foundation has produced a variety of work, from Monk's solo efforts to her operas and films, including the documentary *Inner Voice* (2008).[39] In 1978, Monk founded Meredith Monk & Vocal Ensemble. As the House Foundation preserves her work in institutional memory, the ensemble not only performs it but, since the music is not in notated form (with a few exceptions when it was transcribed much later), the members of the Vocal Ensemble hold, carry, and guard it within their bodies.[40] Although the core membership of the Vocal Ensemble has changed over the years, former members remain very much part of the life of the repertoire by teaching it and sometimes returning for select performances.

Not only do the Vocal Ensemble's members learn, memorize, and hold the repertoire within and with their bodies, but the compositions are also adjusted through, and in collaboration with, the bodies of these specific singers. Following is how some of Monk's longtime collaborators and performers describe the process.

Theo Bleckmann, a longtime key Vocal Ensemble singer, feels that working with Monk's music led him to singing from "muscle memory. A discipline I had never experienced before," because it was a process of "memorizing so deeply internally. Let go, just do it."[41] Allison Sniffin—who sings, plays the keyboard, co-arranges pieces, and has transcribed the few pieces that are now available in score form[42]—notes the creative relationship between Monk, the ostensible composer, and the performers: because "Meredith seemed to be okay with people finding themselves through her works," "I as a performer feel more and more free to put in sort of crazy ideas" rather than simply having to be "faithful to the first improvisation she did." As a result, "we do a lot of that work in collaboration."[43]

The soprano Katie Geissinger reflects on the roles and importance of individual singers in the formation and cohesion of the ensemble: "What I realized was that she was picking me for me, and not for skills that were put on, inhabited by me. And that has really helped me."[44] The process described by these three key performers is akin to a site-specific piece: it would not be the same were it to be performed with and through the body and voice of another singer. Correct execution of sound or movement does not constitute the piece; instead, the piece lives and exists through a particular person's materiality and life story. And it is through the challenges of the piece that vocal aspects the

performer has not previously had a chance to explore are engaged. In other words, both performer and composition gain invaluable and unique material from one another and contribute uniquely to each other.

Songs of Ascension

Having followed Monk's career since attending the concert mentioned above, in 2008 I finally understood what intrigued me about her works: the issue of compositional and performative spatial specificity, which she contemplates throughout her oeuvre. In addition to composing within the parameters of sound and time, Monk also composes for the spatially specific relationship between the sounds, as well as in terms of the sounds' overall relationship to the space. Reflecting on Paul Celan's poetry about the songs of ascent, a series of psalms sung by ancient pilgrims as they climbed a holy mountain via a series of steps, Monk created a movement, light, voice, string quartet, and percussion piece that embodied the energies and dynamics of the circumventional and vertical movement axes. Hence, *Songs of Ascension* (2008) was a response to questions Monk asked herself: "What did the songs of ascent sound like? What did the voices sound like?"[45] She found this practice, and the general idea of reaching upward — emphasized in several spiritual practices —fascinating.

As Monk was working on *Songs of Ascension,* the visual and installation artist Ann Hamilton invited her to sing at the opening for one of her sculptures. The sculpture in question was an eight-story work in the form of a tower with a stair, situated in the private sculpture garden of the Oliver ranch in Geyserville, California (see figure 2.2).[46] Monk describes the experience: "We're on parallel staircases, but we can never reach each other." The stair, modeled on a double helix, creates the illusion that you can touch the people on the other side. Similarly, there was a relationship between closeness and distance, in that "the audience couldn't see the entire thing [the performers], but you could hear the whole thing [the music]." Furthermore, Monk notes that "the acoustical situation in that tower was so unique and, you know, to be able to even hear each other was so interesting." In terms of performer placement, Monk was "trying to work with that very extreme, like sometimes something would come from way down at the bottom, and the rest of the performers would be way up at the top and one performer would be way down at the bottom."[47]

Hamilton's tower became not only the first of many memorable performance spaces to host Meredith Monk & Vocal Ensemble, but, with its ascending architecture and weaving stairways, it became *Songs of Ascension's* physical and compositional touchstone.

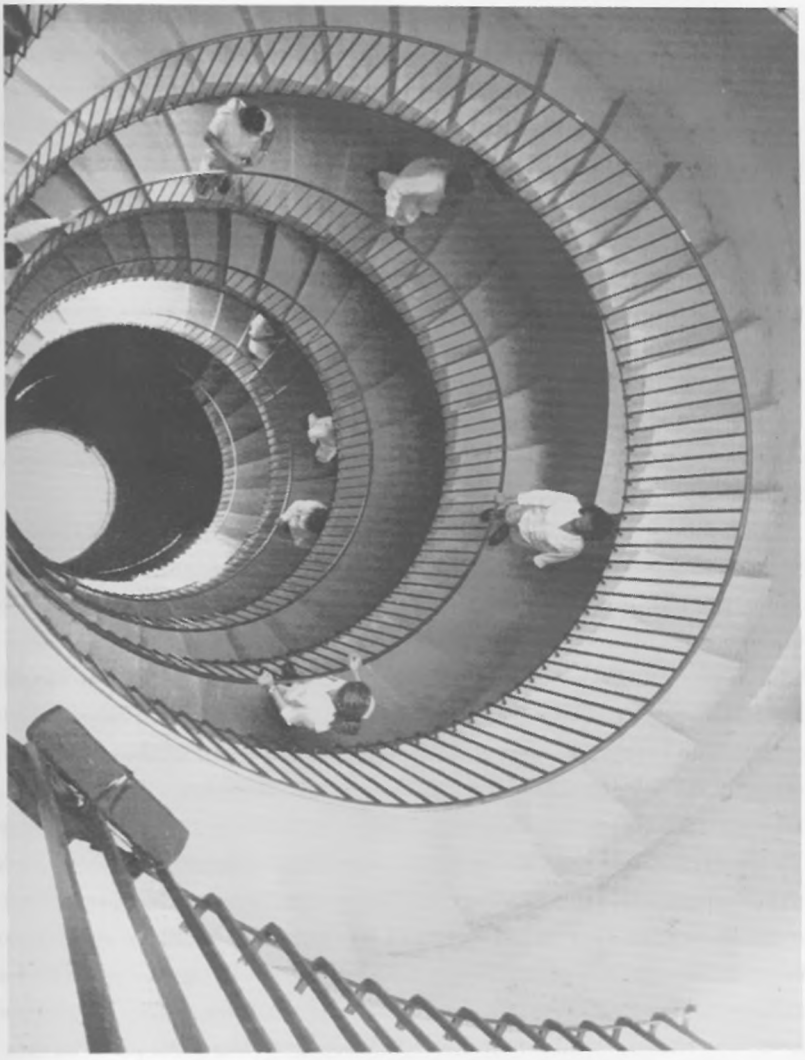


FIGURE 2.2 · Meredith Monk's *Songs of Ascension* performed inside the sculptural tower created by Ann Hamilton, Oliver Ranch, Geyserville, California (photo by Maria Mikheyenko).

After the concert at the tower, the piece was brought into a number of new performance contexts. In each new setting, *Songs of Ascension* was mounted in response to the space. As a touring art show is uniquely laid out and configured for a new situation, Monk adjusts the piece spatially in response to a given hall. By *mounted,* then, I mean not that the piece is just brought inside the space as a static object, the same each time independent of the space, but instead that it is configured for, and according to, the specific space. While the overall choreography among the singers is retained, necessary adjustments are made in response to new spatial conditions. In this way, the piece is as much about reconstructing and creating a sculptural space as it is about the particular notes that are sung. Hence, when entering a new performance setting, Monk asks what the space tells her. She then remounts the piece as needed, with the aim of offering an immersive, circular experience for the audience in venues quite different from the first performance in the double-helix tower.

Monk thinks about the process of creating *Songs of Ascension* as a return to her ideas about site specificity, which she nurtured during the 1960s. As she mounts the piece in different settings, I hear her choreographic and spatial adjustments as reorchestrations that respond to the space through the music. Through this process she not only throws the space into relief, but she also allows the space to call forth a new aspect of the composition. *Songs of Ascension* has been brought to such diverse places as the Great Hall at Dartington College of Arts, Devon, England (May 13, 2008); the Memorial Auditorium at the Stanford University, Palo Alto, California (October 18, 2008; see figure 2.3); the McGuire Theater in the Walker Art Center, Minneapolis, Minnesota (June 12-14, 2008); the REDCAT Theater in Los Angeles, California (October 29-November 2, 2008); the Harvey Theater at the Brooklyn Academy of Music, in New York (October 21-25, 2009); the Walt Disney Concert Hall in Los Angeles (April 11, 2010; see figure 2.5); and the Solomon R. Guggenheim Museum in New York City (March 5, 2009; see figure 2.4). The piece has been transposed into spaces that included black box theaters; traditional concert halls; elevated stages; performance spaces on the floor; and three-dimensional spaces, where the performers move not only in the two traditional directionalities—stage front and back and stage left and right—but also move vertically. In the majority of these spaces the audience was seated in one place and position in relation to the piece throughout its duration.

The sonic particularity of each performance space derives in part from its unique architectural, material, and spatial-relational properties. However, much technical work on concert hall acoustics aims to unify or homogenize the sonic experience from each seat in the house, undermining the facts that

seats in different sections exhibit different physical and spatial relations to each sound source, and each sound source relates in its own way to the hall n general. In contrast, by making considerable choreographic (or acoustic-relational, as I see it) and sonic adjustments—which I have termed reorchestration or transposition—to *Songs of Ascension* each time it is performed in a tew space, Monk recognizes and responds to the spatial and relational specificity of each situation, and indeed of each encounter that takes place during singing, listening, sound, and music.

Hence, in the same way that Monk composes not only for, say, a soprano voice but for a specific person in her ensemble, *Songs of Ascension* was created or a specific spatial-acoustic situation. As a result, when it is performed in a different spatial-relational situation, we could make the analogy that Monk has 1 different set of instruments available and so needs to reorchestrate the work. In other words, the piece would lose its identity if it were not adjusted to the spatial-relational dynamic between the various performers and their overall relationship to the hall. This shows us that, in each remounting of the piece, Monk must respond to the dynamism of the hall. Acoustics is such a crucial part of sound's identity that Monk has to respond to the specific acoustic conditions of each new performance space.

Similarly, Emily Thompson's extensive aural history of early twentieth - century science and engineering demonstrates that how we think about natural sound or just sound has, in fact, been carefully manufactured through isolation and abstraction from its original acoustic context. Indeed, Thompson points to an underlying commitment to an idea of sound that "had little to say about the places in which it was produced or consumed."[48] Indeed, by 1932, innovations in electrical engineering and acoustic design were used to strip sound of the actual sound of space. Sound of space was now an element that could be "added electronically to any sound signal in any proportions; it no longer had any relationship to the physical space of the architectural constructions."[49] in the construction of concert halls, extrasonic concerns influenced the architectural layout—and the acoustic design needed to compensate to hold the notion of (metaphorically speaking) pure sound in place. Essentially, concert hall design is a numbers game in which money and prestige fight against the laws of acoustics, architectural aesthetics, and seating politics. How can we maximize the ticket revenue for each performance? Who gets to sit where, and for what price? Presenting music in spaces of commerce—that is, concert halls with purchased seating—has pinned us to the mast (echoing the previous chapter, I again invoke Max Horkheimer and Theodor Adorno's critical imagery).[50] Concert hall acoustics attempts to create the ideal sound from

spective to Monk's work highlights the notion that a sound's affect depends on the spatial relationship between the sound, listening bodies, other sounds, and the larger situational canvas on which these relationships take place.

Invisible Cities

Another production of an operatic piece that opened my senses to additional aspects of the figure of sound took place five years after I first attended a performance of Songs *of Ascension.*[52] Opening on October 19, 2013, this was a production presented as "an invisible opera for wireless headphones." I concentrate here on the production of the piece rather than on the content and music of the opera, *Invisible Cit ies* (based on its namesake, Italo Calvino's 1972 novel), composed by Christopher Cerrone. The opera company The Industry and the dance company the LA Dance Project, both located in Los Angeles, mounted the production.

Founded in 2011, and with *Invisible Cities* marking its second major production, The Industry has already made an impact on Los Angeles's new music and opera scene. Its dynamic director, Yuval Sharon, was formerly director of vox : Showcasing American Composers, the New York Opera's new opera program, and he has directed or codirected traditional and new opera at venues including the San Francisco and Los Angeles Operas.[53] Thus far, The Industry's work has been marked by an intense engagement with issues related to the continuing transformation of the Los Angeles region and Southern California in general. Part incubator for emerging talents, part collaborator with established artists, its productions are marked by experimentation and engagement with emerging technologies, with the goal of breaking the bounds of the proscenium.

During an interview with KEVT, a Los Angeles television station that did an hour-long documentary on the production of *Invisible Cities,* Sharon commented that its concept resulted from a challenge by the sound designer E. Martin Gimenez, who dared Sharon to consider "an opera for headphones."[54] Using microphones, sound design, and headphones in the context of live opera performance is not a casual technical decision. It is a philosophical and, some would say, moral decision, as historically and fundamentally, opera owes its very sonority and existence to a feat of acoustic virtuosity. Singers' voices are pitted against the sounds of the orchestra and challenged to rise above them to reach the audience. All singers can rely on is their decades of training and the acoustic condition of the house. In this context, the unamplified power of singers' voices is part of the fetish that defines the art form.[55]

Sharon took on Gimenez's challenge. To take the concept to its fullest, Sharon realized, he wanted to set the opera in a public space, a situation that would "blur" the line "between everyday life and art."[56] On first blush, that setting and mediation of the piece share characteristics with silent disco and the Metropolitan Opera's high-definition video transmission, Live in HD. As in silent disco events, the audience would inhabit two spaces: the physical space and the space provided by the sound emitted from the headphones.[57] However, unlike some silent disco gatherings in which people bring their own music and the primary sharing takes place through listening and dancing together (to different music), the audiences of *Invisible Cities* shared not only the music, as in the Metropolitan Opera's high-definition video simulcast, but also a live performed music, albeit primarily experienced via headphones.[56]

For Gimenez, whose original challenge to Sharon initiated the opera-for-headphones endeavor, "sound design is as much a character as the music."[59] Studying the libretto, Gimenez designs the sound to communicate the drama, just as the director and lighting and costume designers do. To Gimenez, the "sound design is going to be as much of a character in the piece as the text, as the singers, as the dancers." For the sound design for *Invisible Cities,* Gimenez was thinking in cinematic terms. He explains his thinking process about the sound design for the opening: "Kublai Khan [is] alone in this Palace." The libretto begins: "There is a time of emptiness that comes over everything."[60] Taking on the challenge of conveying the character of "emptiness" in this scene, Gimenez asked himself: "How can I create [the camera's] close-up to a very wide angle" in sonorous terms?[61]

The solution was to render the voice "bone-dry for that first line. . . . And then sonically, over the first line, over a minute," Gimenez explains, "we kind of sonically pan out, and this cathedral reverb slowly fades in and you kind of realize Oh, wait. He's all alone in this vast space.'"[62] Acknowledging that because traditional "opera is based on hearing things unamplified in a beautiful room," while *Invisible Cities* goes "to the extreme opposite," Gimenez reflects that, under his design, "each movement, each line kind of has a sonic character [related] to that." He asks rhetorically, "How do we achieve that sonic character?" Answering his own question, he says: "Using ambient mies [sic]. Using a lot of fake reverb within our console. That will help us to determine, dramaturgically, the goal within each scene." Using microphones and digitally determining the voices' reverb and placement in space shifts the aesthetic premise and value, traditionally bound up with singers' ability to both ride the room's acoustic and train for years to gain the vocal power necessary to match an orchestra and fill a space the size of an opera house. What you gain in a digi-

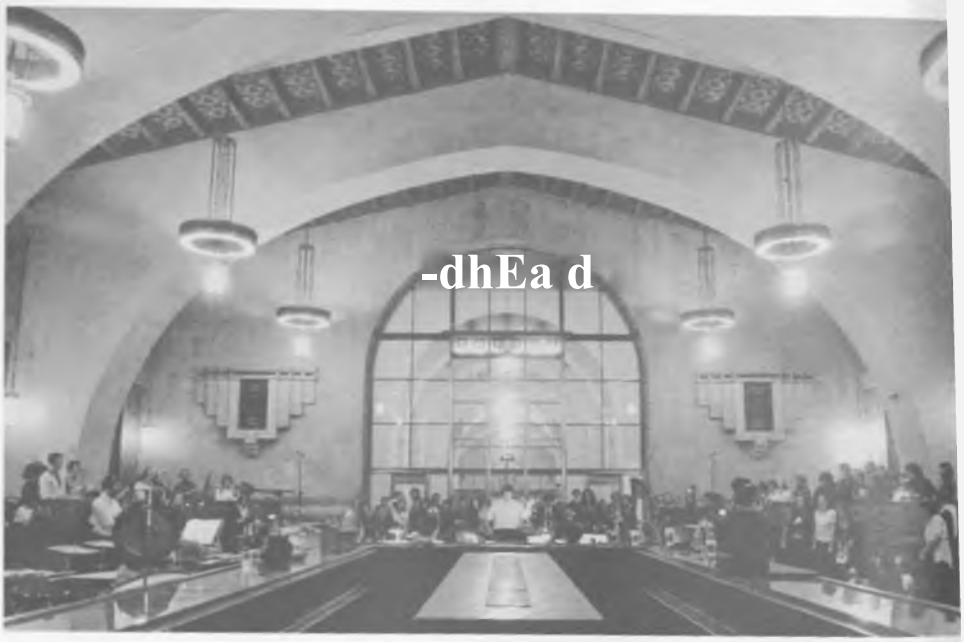


FIGURE 2.7 · The overture of Christopher Cerrones *Invisible Cities* played in the Harvey House Restaurant, Union Station (photo courtesy of The Industry).

Audience members stay for a while, watching and listening to the orchestra, before leaving the space of their own accord. After exiting the restaurant, where the orchestra was both heard and seen and the sound was fairly similar with or without headphones, each audience member's experience of the opera takes a unique path. That is, for each audience member, the opera unfolds according to his or her specific sonic, visual, and spatial experience. Accordingly, I will now adopt a first-person narrative, reflecting one iteration of the opera as it took place from a single perspective.

Leaving the Harvey House Restaurant, I am led directly into the enclosed South Patio. I see some people with headphones forming clusters and moving around together, while others move alone. At first there is only orchestral music coming from the headphones, with the vague hum and bustle of the station pressing in, and sirens filtering in from a distance. As soon as I hear a voice in the headphones, my inclination is to go and find its source. It is when I hear sounds that I do not see, when I cannot tell immediately even from which general direction they come, that I begin to sense the gap between the acoustic and sonic world surrounding me and the omnisonorous sound world offered through the headphones.[68] Since the acoustic cues conveyed by the

mixed music do not reflect the music's placement in the physical space and acoustic character of the station, I find myself relying on visual cues such as gatherings of small crowds to seek out singers' locations. I assume audiences have gathered around the activity I hear.

The first performers I see are dancers in the South Patio, dancing in spotlights lighting up the garden (see figure 2.8). As everyone who was in the Harvey House Restaurant during the overture has to move through this area, it is so crowded that I move into the main waiting hall, heading from there toward the areas that lead to the gates and tracks. Before I even make it to those areas, two friendly people whose pins identify them as ushers emerge to let me know that the performance space ends at the edge of the waiting area. From that point until the finale, I move between the North Patio, the main waiting hall, and the area near the main entrance (on the Alameda Street side). In this way, audience members are subtly directed through and dispersed throughout the space, drawn to particular areas by an activity or away from others by ushers.

The overall concept of an invisible opera emerges not only from the performers' engagement in the everyday activities of the hall, such as sitting down in the waiting area and reading a paper or cleaning the floors, but also because the performers are, both for rehearsals and performances, situated among the station's everyday patrons—both travelers and those who use the building for shelter (see figure 2.9). It is only when they break into operatic-style song that the singers identify themselves (people frequenting the station sometimes sing as well!). In some ways, the line between the dancers and the patrons is arguably less distinct than that between the singers and the patrons. Many of the patrons are highly creative in dress and movement, and before I begin to notice repeated dance vignettes and recognize specific dancers, my occasional difficulty in identifying them illuminates the blurring of the line between everyday life and performance and the emerging and receding of this particular performance. And, perhaps as importantly, seeking out performance or heightened moments throws everyday life into relief as performance or as art.

Wearing the headphones distinguishes audience members from the station's everyday patrons. In contrast, the singers are indistinguishable from the patrons in terms of appearance. I find myself playing a silent guessing game, wondering whether a particular extravagant-looking person is part of the cast. As the different singers start to sing throughout the performance, I realize that some of them wear everyday clothes while others are more theatrically marked. However, some of the people who act, move, and appear theatrical in the station are not part of the cast. Again, while there is no obvious distinc-

liar speech as an absence of "forcefulness" in the words. As the speaker, she senses that she is "slowing" down or that she is "once removed" from her own speech. Furthermore, she feels that she is "thinking and hearing and filling up a vocal void."[20] Indeed, in all three examples, the vocalizer felt that she was genuinely impaired, relative to the linguistic system. What might engender such strong reactions to the breakdown of speech and exposure to other aspects of vocality? The unvoiced assumption is that voice functions only in the service of rational thought and speech.

But while the connection between thought, vocal intent, and speech is altered by delayed vocal feedback, to what extent is the voice truly paralyzed? In none of these cases do nonlinguistic utterances suffer any distortion or muting. *Boomerang,* for example, caused no impediment to Holt's ability to produce sounds like "ah" or "um." Speechjammer's inventors observe that "speech jamming never occurs when meaningless sound sequences such as 'Ahhh' are uttered over a long time period"—the device jams only linguistic vocal sounds.[21] In fact, any notion that the voice is jammed or paralyzed by these processes hinges on the erroneous assumption that speech alone — that is, logos or sensible linguistic utterance—counts as vocalization. The experiences I have described caused breakdowns in vocalizers' ability to produce the vocables that they needed to pronounce correctly to be understood. What they experienced was not vocal paralysis, but a greater difficulty in their attempts to match their vocalizations to known sonic models—that is, to familiar words. Only preconceived sounds were jammed. The vocalizers' discomfort shows that, while there are plenty of vocal sounds involved in communication, we do not endow each sound with communicative value, though we do accord that value to sounds such as words: nonlinguistic sounds and pauses are understood as the words' negative backdrop.[22]

This is one example in which listening proves to be always already deeply encultured. Through a cultural process that divides signifying vocal sounds from nonsignifying vocal sounds, we learn to value each differently.[23] We learn to concentrate on vocalizations that reproduce signifying sounds to the extent that we naturalize them, and consequently we are unable even to conceive of other vocal sounds as vocalization. The examples discussed here expose the gaps in such naturalized listening practice and insist that voice cannot be defined by logos, or systems spun out of logocentrism, alone.

This book's previous chapters describe the naturalization of basic musical components. In the vocal experiences that comprise *Boomerang,* bad Skype connections, and Speechjammer, the naturalization of yet another musical element, signifying sound, becomes evident. It is on this incomplete engage-

ment with selected aspects of the thick musical event that our understanding of voice and music as well as our analytical tools are based. Consequently, our knowledge of voice and music is not only incomplete, but also skewed. It is not voice—vocalization as physical activity—that is stymied in these examples. Even when words refuse to come, the vocalizing body remains active. Instead of the logocentric definition of voice (with whi-h iee„«λ *Boomerang* and Speechjammer exhibit a voice that speech" and indeed "plays a subversive role with i codes of language" and the fetishization of certain t

While the notion that music consists of selectee ready been interrogated, I want to go one step fun I discussed in chapter 1, air has been naturalized that sound's passage through other materials—and each unique material propagation—are not accoun music (except in extreme situations such as a thur tered by a piercing high note). And, as I discussed is always produced from a particular point in space frontal, two-dimensional, and static when it is invt less there is an extreme situation at hand. I want i the third naturalized parameter of music is the noti tifying component is sound.

This chapter considers the ontology of voice, assuming a notion of voice that takes into account a number of activities related to sounds produced by living, communicating, and perceiving bodies. I will begin, though, by looking at how the marginalization of activity in favor of finished products affects the reception of visual artworks. In calling attention to this analogy, my goal is to show that just as the thick event of painting has been reduced to visual marks, the thick event of music has been reduced to sound.[26]

Considering Action: Jackson Pollock

Echoing the tension I have addressed regarding sounds and pedagogies of listening that legitimize classified sounds, Jackson Pollock's action painting unsettled long-standing positions on the dynamics at work in painting between causal actions and signifying or nonsignifying visible results. Thus Pollock's work effectively disrupted normative discourses surrounding visual art by provoking discussion about action in relation to its result, the painted marks.

Here, we observe an analogy to *Boomerang* and Speechjammer. While a variety of vocal sounds were present, only selected sounds were considered

within the value system of normative voice. Hence, the "umms" were seen to reflect the extent to which the normative voice's abilities were jammed. Analogously, the thick event of painting gives rise to a variety of marks, from drippings to be washed away (like "umms" to which we don't listen) to marks considered painterly (like words to which we pay attention). Pollock's explicit use of dripping signals his unabashed inclusion of elements normally seen as superfluous to painting: accidents resulting from lack of control, excesses to be covered or washed away. Pollock gave these marks value within a composition.

Pollock was explicit about the value he placed on the premeditated mark—that is, what made a painting look a certain way as a result of careful planning and the technical ability to carry out this plan. When a reporter dared to compare his work with aleatory art, the artist became enraged. He burst out: "Don't give me any of your fucking 'chance operations.'" To demonstrate that chance played no part in his process, he threw some paint at a doorknob across the room. Pollock "hit that doorknob smack-on with very little paint over the edges" and topped the gesture off with the comment: "And that's the way out."[27] However, while Pollock expressed outrage at suggestions of anything but traditional painterly values, and while he demonstrated his precise painting skills, his bravura created interest in the actions that lead to the existence of paint on a given surface.

Echoing Pollock, in discussing the 1950 *Lavender Mist,* Robert Hughes, *Time* magazine's art critic, also stressed the premeditated aspects of the compositions and the artist's technical ability. According to Hughes, Pollock's refinement as a painter results in "delicacy—at a scale that reproduction cannot suggest":

> It is what his imitators could never do, and why there are no successful Pollock forgeries: they all end up looking like vomit, or onyx, or spaghetti, whereas Pollock . . . had an almost preternatural control over the total effect of those skeins and receding depths of paint. In them, the light is always right. Nor are they absolutely spontaneous; he would often retouch the drip with a brush. So one is obliged to speak of Pollock in terms of perfected visual taste, analogous to natural pitch in music—a far cry indeed, [sic] from the familiar image of him as a violent expressionist.[28]

Generally speaking, although Pollock explicitly engaged in what was then a new process, discursive frameworks (even the artist's own) persistently relied on existing evaluative models, basing evaluations of his work on relationships to known indices. However, even if Hughes's defense of Pollock's work was

cast in a language of precision and premeditation, Hughes's critique paved the way for action, rather than the final imprint, to be understood as the point of painting. If Pollock is admired for being able to hit a doorknob with paint, he is perhaps the first painter to be praised for the mere act of getting paint onto a surface. Therefore, despite his intentions, his work also challenged his viewers to expand their understanding of the types of marks that constitute a painting. Thus, it was not only the apparent free flow of Pollock's paint, between the two harbors of brush and canvas, that thrilled his audiences. In other words, even if it is in part Pollock's precise indices (a traditional painterly currency) that are admired today, it is because these indices were created by particular—seemingly unpainterly—actions that the resulting marks are celebrated. Hughes's praise of Pollock's "perfected visual taste" foregrounds the fact that all marks are preceded by actions.

Despite Pollock's conservative framing of his work, and his demonstrations of precisely placing paint on surfaces, he inadvertently presented a productive dissonance that was noted by critics and fellow artists. Harold Rosenberg, who is credited with coining the term "action painting," describes the shift: "At a certain moment the canvas began to appear to one American painter after another as an arena in which to act. . . . What was to go on canvas was not a picture but an event."[29] Rosenberg read Pollock's work as expanding the moment of art to include what happened before the arrival of the paint on the canvas. Rather than focusing on the result, in Rosenberg's view, Pollock stages his physical and visceral situation "'in' the [act of] painting" by laying his canvas on the floor, hovering over it with brush and paint, and allowing the final product to be whatever resulted from his movements. His focus was on what was happening: the canvas documented, and was part of, the event. Amelia Jones offers similar observations, noting that "the [Hans] Namuth images of Pollock show him standing above or within his huge canvas, overtly and theatrically *performing* the act of painting," and that in Namuth's 1950 movie, *Jackson* Pollock, the artist's "act of painting presented art as performance ... rather than a fixed object."[30]

Going a step further, Jiro Yoshihara and the approximately twenty artists involved in Japan's Gutai ("Concrete") Art Association mistook Pollock's work for performance.[31] Inspired, the association created events (or happenings) and participatory environments such as moving in mud and making marks by leaping through a wall-sized piece of paper stretched over frames.[32] In an interesting twist, the group's idea of Pollock made its way to the United States, where artists began to undertake an intentional restructuring of painting as event. Today, despite the insistence by Pollock and some critics on the paint-

by any particular musical culture, we invited nonmusicians to serve as performers. These decisions, which unsettled the traditional setting for musical practice, were intended to dislodge the judgmental mode of listening propagated by musical cultures, in which performed sounds are compared to standardized sounds, and to place performers beyond the reach of such judgments.

It is challenging to change habits. Nonetheless, *Noisy Clothes* was a success in relation to the experiment of freeing ourselves from the frame that solicits predetermined sound making; observations confirmed that the performers probably made their decisions independently of preconceived notions about sound and sound making. Because the instruments used in *Noisy Clothes* did not seem like instruments, we managed to shift the performers' frame of reference from playing an instrument to simply playing around. The boisterous play, laughter, and conversation that went on in rehearsals indicated that the performers were busy discovering rather than judging the sounds they made. For example, the group wearing the Velcro costumes hitched their arms and legs together in complex human-Velcro bundles, bursting into laughter as they disassembled the bundles and heard the result. This example of focusing on discovery showed performers operating outside of sound-focused framing, which begins to suggest answers to the question posed earlier: by focusing on action rather than the action's symptoms, we displaced the event from a preexisting value system. The parallel with painting is that, when the discourse about Pollocks work shifted to focus on action, his marks were no longer judged on the same basis as those featured on canvases that were not viewed as action paintings. Replacing one frame of understanding with another (even if only in a limited set of instances) opens a space in which to question the application of that frame more broadly. In other words, the power of a given frame has been denaturalized.

Conflating instruments with clothes and cross-fertilizing the performers' conceptions of each, *Noisy Clothes* opened a space that promoted play and exploration and, as a result, managed to counteract the tendency to operate according to an idea of a sonic outcome determined prior to any sonic creation. According to my observations during rehearsals, performers discovered sound after carrying out an action: sound was understood as a consequence of movement rather than as an attempt to match an a priori sound ideal, and performers were open to any possible result, sound being only one possibility. This revised conception enabled those involved to access an action-based process rather than a sound-focused music product.[42]

To summarize, through this performance-based research I realized that shifting frameworks and definitions may illustrate another side of the thick

event. Applying one frame to Pollock's work, we understand him as making precise and premeditated marks that form a deliberate composition; employing another frame, we see the canvas as merely a documentation of the actions that took place. Thinking within one frame about an event, we understand it as a jump; using another frame, we understand the same event as a thumping sound. In a traditional musical context, the latter understanding, which limits our reading of the thick event to its sonic aspect, would serve as a list of desired outcomes for the goals of performance: our goal is to create a sound similar to that thumping sound. The former reading implies something more akin to choreography: our goal is to jump in this exact way. In a third reading, based on the listening pedagogy derived from *Noisy Clothes,* the primary focus is to jump for the sake of jumping, with only a secondary interest in discovering what sonic implications this action presents.

Detaching music making from conventional frameworks can provide an opportunity for the radical rewriting of prevalent notions of sound, listening, and action in relation to cause and effect. Such rethinking would in turn call for reconsiderations of what exactly is involved in sound and music making.[43] *Noisy Clothes* gives participants a way to escape the common musical dynamic ruled by a lurking, policing ear, which takes the form of the performer's own knowledge of predefined sounds and of her or his own attempts at sound making within sanctioned parameters. Released from preconceptions, we emerge from the acoustic shadows cast by our very own panopticons' watchtowers. It is this "automatic functioning of power," to quote Michel Foucault, and total autosurveillance that lead to self-regulation, which in turn recognizes and produces only recognized sounds.[44] The sound-making process itself becomes irrelevant and escapes consideration.

I want to suggest, therefore, that *Noisy Clothes* demonstrates the aesthetic value of the process of sound making, regardless of its final product, by designating any sound resulting from action as music. As in my considerations of *Boomerang* and Speechjammer, we may conclude that the process is never exempt from sound; sound-making bodies are never irrelevant or paralyzed where sound is concerned. That is, aesthetic value is neither tethered to nor hinges on sonic results. Instead, *Noisy Clothes* points toward the line of argument I will develop further in the remaining chapters: any incidence of aestheticization or any other value judgment is contingent on specific material-relational dynamics. Often, it is naturalized parameters of music that mask these material-relational dynamics.

Engaging in music making through naturalized lenses can be counterproductive. First, as we witnessed with *Boomerang* and Speechjammer, the

regulating effect arising From the sonic taxonomy —normal versus pathological sounds—immediately causes us to become less efficient at producing the sound that we have been conditioned to value.[45] Production is mangled by self-surveillance. Second, because musicians and analysts tend to value music primarily that consists oF such standardized sounds, other music—containing other kinds oF sound—remains unaccounted for. Third, this selective evaluation prevents us from gaining access to music as a thick event. Music is thought to consist only of a particular sonic end product (not necessarily a given sound, but even just the presence of sound). However, in works like *Noisy Clothes,* corporeal action replaces standardized sound as the most important aspect of music. In this situation, music making becomes an activity that is not restricted by preconceived signifiers.

Body Music: A Chamber Opera without Vocal Cords

Adopting this sense of music making, we may begin to consider more than just gestures and activity located in a discernible area. While perceptions and descriptions of the voice have certainly been used to essentialize the body, as discussed in chapter i, scholars who have thought through the anatomy of voice in dynamic relationship to repertoire may offer useful perspectives. Additionally, for example, Raymond Knapp and Mitchell Morris outline the inner anatomy of the voice and its relationship to vocal characteristics in specific tessituras, such as chest voice and head voice.[46] While their reading specifically traces sonic and stylistic characteristics of selected musical theater repertoire, beyond unlocking some of the specifics of the genre, it provides a model for reading vocal stylization through the singer's vocal apparatus and use of the body.[47] In a related view, David Sudnow offers in-depth reflections on how it might be the body—in his case as a pianist, the hands in particular—that leads music making. While in this example, the gestures of the hands, arms, shoulders and torso are visible, the pianist is still an interesting example for this discussion—first, because there are inner dynamics to which we as audience members are not necessarily privy, but which are key to the nuance of the musician’s touch. And second, an important part of Sudnow's argument is that, through practice, the body gains knowledge that at times drives the artist, rather than the pianist commanding her or his hands to play in a given way.[48] Taking cues from these instructive works and others, my investigation and reading focus on areas involved in singing that are invisible to the naked eye. Building on the work of these scholars and others, I consider the body's movements as actions, and their central role in music making as it takes place through song.

In addition to the indiscernible nature of much of what makes up singing, the second central point of the project that I will discuss is the notion that the ontology of singing is masked by our fetishization of sound. That is, because the vocal cords produce such beautiful sounds, they traditionally get all the attention, misleadingly subsuming the multifaceted collection of events that comprises singing into sound alone. Contrastingly, if we define singing as action, singing can and does happen independently of the vocal cords.[49] The rippling layers of bodily activity that constitute singing may ultimately be filtered through the vocal cords; however, other mediators can also transduce and communicate the body's activities. Thus, moving considerations regarding singing beyond its various manifestations reveals that the singing body extends beyond that which we conventionally recognize as the vocal instrument.

The piece *Body Music,* the research phase of which forms the final case study I will work through in this chapter, takes to heart the notion that singing is an internal corporeal choreography.[50] On the basis of concepts derived from *Noisy Clothes, Body Music* makes music by composing actions with detailed attention to the internal, invisible choreography that yields vocal sounds. With this piece I began to build a vocal practice around a deliberate shift in attention from the vocal cords to the actions of the total body. Hence, taking to an extreme the premise that music ought to be defined as corporeal action rather than as sonic product, *Body Music* experiments with voice sans vocal cords.[51] (In this chapter I discuss the development of the vocal part only.)[52]

I asked the Miami-based Colombian composer Alba Fernanda Triana to develop *Body Music* in close collaboration with me. The project's development was experimental, experiential, and process-based. We began the experiments by identifying an inner corporeal vocabulary in biweekly workshops through the fall of 2007. After working independently on the material with only intermittent meetings, we resumed weekly workshops in 2011.1 also worked with Pai Chou, an electrical engineer, and Luis Fernando Henao, a programmer and sound designer, to develop the necessary sensors and discover the range of possibilities available for mediating the data we would read from the vocal body. At the production stage, which we will enter in the end of 2015, additional collaborators who have only been involved in the discussion stage thus far—a digital visual artist, a fashion designer, and a dramaturge—will begin to participate more actively.

To create the composition we mapped, analyzed, and finally expanded on the movements and internal activities that engage the singing body. This process was divided into three distinct phases. During the first phase, we observed conventional singing and mapped the activity that flowed into it. In the second

system available to performers and audiences alike allows only sonic dimensions to be expressed.

Any dominant notational system is really just the actualization of dominant discourse. Furthermore, while notational systems allow for and promote a certain mode of thought and reality, sound does not have the capacity to express and think about other dimensions. If performers, composers, and audiences think about this in terms of Clifford Geertz's image of the thick event,[59] dominant discourse and supporting notation are limited to a few strands of the thick event, while—by necessity—others are not on the observer's radar. This limited selection is then reproduced as reality. To be sure, it is not the notational system per se that produces this limited reality, but the reality felt by singers and other vocalizers is that sound is also a naturalized parameter of voice and music.

How Experience and Meaning Making Are Limited

Musical notation's entry into the compositional process seems to be tethered to working with music through signifiers. When determining distinct units for notation, and when employing notation to contain a musical event, the thick corporeal event is necessarily subject to a reduction. And, as a result, our relationship to the event shifts after we access it via notation. Even in my attempt to work creatively with action to illuminate singing as a corporeal process, the process of notation unequivocally reduced the corporeal event to a relationship between sign and signified. Once sound, merely an extracted component of the thick event of action, was fixed in notation, a reduced and partial aspect of the thick event was frozen. Signification and related notation constitute just one example of the reduction of singing and listening. In the same way that the question about the falling tree is symptomatic of a tendency to ignore — or an inability to comprehend—a thick event, the process of arriving at notation for an event, it seems, threads the experience through the needle's eye of an a priori idea of sound: the part of the thick event that prior values and priorities have rendered notatable. Furthermore, the practical uses of the document tend to perpetuate these reductions. Of prime consideration in the process is the decision about which concepts to connect to the signifier, and how our relationship to that broader event shifts after we access it via the notation of the signifier.

Considering notation in relation to well-known theories of *phone* (the voice) inscription, and body, throughout the creation process of *Body Music we* can learn that the dynamic between voice and notation arises from an overarch-

ing paradigm. That is, this dynamic does not reflect inherent relative virtues of the formats of speech or writing, but rather the overarching value system that makes such discussions potent.

The dilemma that Triana and I experienced in *Body Music,* triggered by our conversation about notation, is representative of an ongoing debate. What is the possibility of reporting on the fine details of the thick event and rendering it into meaning? For Ferdinand de Saussure, this process requires a linguistic system, which he argues is most accurately embodied through phonemes; for Derrida, speech and writing are interconnected. With a slight twist, Roman Jakobson concentrates on the arbitrariness of the relation between vocal speech sounds and meaning-making sound units. Let us consider these influential theories below, in relation to the reduction I felt when notation was introduced in *Body Music.*

In broad strokes, Saussure and Derrida disagree on whether the arbitrariness and "unmotivated institutions" of signs deny evidence of any natural attachment between signified and signifier.[60] If the sign does not arise from any foundational reference to reality, does that mean that no one sign system (for example, speech or orality) is more natural than another (for example, writing)? Saussure suggests that sounds are related more intimately to thoughts than, for example, to the written word. Derrida's critique of Saussure, and Western philosophy in general, was predicated on a particular critique of and skepticism about phonocentrism —the privileging and romanticizing of language's acoustic dimension at the expense of the written. At the base of Saussure's system is the idea ofa natural attachment or "natural bond"with sound.[61] That is, grounding language in the body through *phone* depends on the assumption that language and experience have an organic—to paraphrase classicist Shane Butler's vocabulary—and privileged relationship to one another.[62]

More specifically, Saussure posits that, prior to the linguistic system, sounds and ideas were not connected. In other words, before the linguistic system there was no way to evaluate baby babble containing syllables akin to *mama* and *papa.* The overall value system that vocal sounds should signal linguistic meaning— rather than a supposed meaning inherent to each syllable — engenders a pedagogy of listening and the kinds of distinctions that are detectable in listening.[63] "In a language," Saussure writes, "there are only differences. Even more important, a difference generally implies positive terms between which the difference is set up; but in language there are only differences without positive terms."[64] Outside a system of contrasting and related sounds —that is, outside the linguistic system—a sound's phonic substance would not mean anything. The introduction of /e/, /i/, /o/, and /u/ makes /a/ distinct as /a/ because of its

and *Enarrationes in Psalmos* are instructive for understanding the medieval "anxiety about what singing did to the sound and sense of words"—for example, how a text about chastity could be delivered by a voice that listeners found sensually irresistible.[77] Indeed, this is one of Dillon's key examples of supermusicality—that unnamable aspect of voice or music, the attraction and power of which lie beyond the reach of understanding through fidelity to words or music. Augustine's dilemma "establishes a standard for musical sound in relation toverbal sound and meaning; but when resituated in the larger mediaeval discourse of words, it reminds us of the high ethical stakes of effecting a rift between sense and sound."[78] Augustine wrote:

> The pleasures of the ear had a more tenacious hold on me, and had subjugated me; but you [Christ] set me free and liberated me. As things now stand, I confess that I have some sense of restful contentment in sounds whose soul is your words, when they are sung by a pleasant and well-trained voice. Not that I am riveted by them, for I can rise up and go when I wish . . . but my physical delight which has to be checked from enervating the mind, often deceives me when the perception of the senses is unaccompanied by reason, and is not patiently content to be in a subordinate place. It tries to be first and to be in the leading role, though it deserves to be allowed only as secondary to reason.
>
> Nevertheless, when I remember the tears which I poured out at the time when I was first recovering my faith, and that now I am moved not by the chant but by the words being sung, when they are sung with a clear voice and entirely appropriate modulation, then again I recognize the great utility of music in worship. Thus I fluctuate between the danger of pleasure [in the music] and the experience of the beneficent effect [of the words], and I am more led to put forward the opinion (not as an irrevocable view) that the custom of singing in Church is to be approved, so that through the delight of the ear the weaker mind may rise up towards the devotion of worship. Yet when it happens to me that the music moves me more than the subject [meaning or truth] of the song, I confess myself to commit a sin deserving punishment, and then I would prefer not to have heard the singer.[79]

For Dillon and Bruce Holsinger, Augustine's account of listening, which vacillates between the linguistic and the "innately non- or even prelinguistic in music's flow through the human body,"[80] serves as a launching point for further investigation into the tension Augustine articulates between "words and their sound, and music's particular ability to complicate the sound-sense re-

lationship, which clearly has roots in a broader linguistic theory."[81] For Dillon this exemplary point of tension serves as a poignant illustration of her sense that music has the "capacity to unsettle words."[82]

I understand Holsinger's interpretation of Augustine slightly differently from the way Dillon understands it. For Holsinger, the "pleasure of the ear" *(voluptates aurium)* is not dynamically pitted against "truth" or "meaning" (*cantus, quam res)*. Rather, in Holsinger's words, "the human body represents . .. the very ground of musical experience."[83] Rather than being complicated by the flesh, "musical sonorities" are indeed "practices of the flesh."[84] Indeed, for Holsinger, music at its root is not divided into sense versus pleasure. It is only value systems (as personified by Augustine's painful and pleasurable listening) that can split music in this way.

The relationship between a song's words and a sound's composed melody, or the sound of the voice and our experience and understanding of it, boils down to questions about what the experience of music is. These questions, as posed by Holsinger and as considered in *Body Music,* include: "What is it to 'experience' music? Where and how is music located vis-à-vis the persons who listen and react to it? How do we approach music as a sensual, passionate, and emotional medium, and how might we account for its widely varied effects on and interactions with human bodies?"[85] In contrast to a focus on words, speech, and writing, I consider my work with *Body Music* through Holsinger's evocative questions. I suggest that if we reframe musicking's core, understanding it as a constellation of corporeal activities and sensualities, we accomplish nothing less than a reconfiguration of the body's position in relation to sense and meaning making.

Emphasizing signifying sounds, as a semiological context begs us to do, skews the reality of the full event that is music and voice. In this context, sounds are selected, isolated, notated, and repeated. And in this dynamic, sound appears as the primary point, with the body and its actions—which create the sound —considered to be mere afterthoughts. That is, the body and its actions are considered as what Derrida—taking the term from Jean-Jacques Rousseau—calls supplements. Rousseau saw a supplement as "an inessential extra added to something complete in itself."[88] A supplement, then, is that which is secondary because it serves as an aid to something original or natural. Derrida offers writing as a prototypical example of this relationship: "if supplementarity is a necessarily indefinite process, writing is the supplement *par excellence* since it proposes itself as the supplement of the supplement, sign of a sign, taking the place of a speech already significant."[87] What characterizes the supplement, then, is its double function as both "substitution and accretion."[88]

anachronistic analyses, interpretations, and methodological applications.[3] Gary Tomlinson offers a crucial bottom-up perspective on rethinking historical work by grounding theoretical and analytical frameworks in the examination of the social, cultural, and spiritual spheres in which the music and practice arose, as opposed to gathering and synthesizing a larger number of data points from which to derive analytical tools.[4] These are examples of the intriguing work that arises from the complexities with which scholars are faced when taking into consideration the true dynamism of music.

Despite the seminal and intriguing work that has arisen as critique of the work concept, I suggest that it is important to expand that critical lens to focus on what a knowable and recognizable piece of music is. More specifically, how is vocal labor recruited to maintain a piece's identity and status?

In thinking about how contemporary performers, as thinkers about music, are shaped by the work concept, it is productive to consider timbre in relation to musical genres and the works that exemplify these genres. Among other aspects, the intactness of, for example, a given opera—the ontological sameness between the notion of an operatic work and its actual performance, and the perceived identification of an operatic performance — depends on, for instance, a classical opera performer's ability to deliver sounds that match tacitly agreed-on timbral ideals. Thus, minutely detailed timbral adherence, an element that is often indicated in very general terms (for example, sotto *di voce,* meaning "with a soft voice"), drives the perception of the work's status and directs performers' training and delivery.

Musical genres are generally recognized within a few seconds, based on timbre.[5] If the formal parameters of a genre are fulfilled but the timbral aspects are not, the status and intactness of the work in a particular instantiation— that is, the extent to which the work remains itself— are called into question. That is, when Luciano Pavarotti sings "My Way," its genre designation as a torch song might not be as clear as when Frank Sinatra sings it. Or when U2's Bono sings "Ave Maria," it might not be recognized by classical music aficionados as worthy of the same contemplation as a classical singer's rendition. That is, the work's retention or loss of a particular status rests not only on the composition and on listeners' ability to recognize it as that composition at a root level (in this case, as "Ave Maria"). Nor does it rest on audiences' agreement as to the status of the composition (that "Ave Maria" is a religious piece in the classical genre). A piece's retention or loss of a particular status also depends on the timbres used in the work's performances.

Consequently, the performer's labor goes beyond the careful production of

beautiful timbres and individual works. She is required both to be an ideal listener who knows and listens within the frame of the work concept —that is, someone who recognizes the particular subtleties, often established and maintained through unspoken conventions that hold the concept together —and to develop the ability to deliver these musical subtleties to an audience. In other words, to maintain the work's autonomy requires dedicated human timbral labor. And the constant need for this labor is one area in which we can see that music's status, meaning, and definition are not a priori.

In the context of her reflection on the Romantic work concept, Goehr discusses extensively how "the work-concept began to regulate a practice at a particular point in time."[6] In the same way that sound is one of the parameters of music that I argue are naturalized, the labor that goes into offering and maintaining music's fine-grained nuances is crucial to keeping the work concept intact. As Bono's performance of "Ave Maria" exemplifies, the piece's identity breaks down if it is not performed with the expected timbre. I have come to think of this minute labor as timbral alignment with the given genre. The work practice, then, regulates musical practice, and hence the bodily practices of both musicians and listeners.

The structuring of the individual sounds and timbres that are required for a work to retain its identity also takes place within the dynamic of the power structure that is the work concept. In the same way, the notated page and our expectations regarding all musicking resources are depended on to realize the intactness of a particular work, and it is assumed that features such as the timbre of, say, a classical vocal production function "as neutral conduits, as instrumental rather than substantive parts of the social relationship."[7] In fact, as I will discuss in detail below, because the Romantic work concept rests on its assumed a priori status, the concept wavers and falls apart if the performers' hard-earned skill in presenting timbral alignment is revealed.

The appearance of timbral alignment as an instrumental conduit rather than as a requirement for the intactness of the work feeds into and is enabled by pedagogy that reproduces these timbres and their attendant ideologies and, as Frances Dyson puts it, is "ontologically separate from" the need to support the idea that a work's identity as itself "exists prior to and outside of its affiliation with the technology."[8] But the "politics of voice," writes Amanda Weidman, and the "ideology of voice" perpetuated by the work concept "are also a mode of discipline — embodied and performed—through which subjects are produced."[9] In other words, the work concept is technologically enabled. It is, in part, the limited awareness and examination of this dynamic that has led to

range and intervals, musical demands (rhythm, accents, and so on), combinations of vowels and consonants (and the particular musical parameters within which they are combined), and other interpretive demands.

Sound-based voice pedagogy focuses on sonic accomplishments. The various parameters and their relative importance are set in a clear hierarchy. The number of parameters to which the student is able to attend also marks her or his accomplishment.[25] Additionally, the parameters are clearly ordered according to their importance, from the correct pitch and duration of notes and syllables to subtleties regarding the delivery of consonants, movement from one consonant to the next, and so on. Overall, this type of lesson is based on a fundamental belief that the pedagogical goal is to move the voice as close as possible to the sonic ideal set by the genre. In short, what I have come to see as sound-based singing revolves around conformity in regard to sound. The bodily activity that accomplishes this conformity is considered secondary—or not considered at all.[26]

As the teacher corrects, often by demonstration or verbal description and sometimes—but less often—by corrective physical instruction (such as "straighten your neck"), the student's ear is trained to hear the same things that the teacher's hears and to catch any anomalies that fail to line up with the sonic ideal. Even if the correction is physical in nature, it is implemented with the desired sound in mind. These exercises are meant to gradually move the student's voice closer to the sonic ideal through imitation. Such basic training takes, on average, around six to ten years, and professional singers continue to engage with voice teachers and coaches throughout their careers to ensure that they maintain this sound.

Although the activities involved in singing seem to take place simultaneously, we can deconstruct this multifaceted act into the following sequential events. Work-based singing begins with holding the idea of sound in one's mind—an ideal predetermined by generic or stylistic conventions. The desire to match this sonic ideal is an impetus to an action, which produces a result that is evaluated according to how well it aligns with the preconceived sonic notion. This means that while she sings, the singer constantly listens to and evaluates her sound in relation to an external sonic idea, akin to the *Boomerang* performer discussed in chapter 3. Because the catalyst for the act of singing is the motivation to match preconceived sounds, it results in an act of re-creation rather than creation. And because this endeavor involves matching an a priori sound ideal, the result—always a copy—will inevitably fall short.[27] Moreover, because the act of singing primarily aims at the produced sound's relationship to an ideal sound, it results in a disembodied action, with the singer spending

most of his energy on evaluating his sound relative to the ideal, rather than focusing primarily on sonic production or on the resulting sound's qualities and virtues.

Admittedly, learning to sing according to the classical Western opera model is a rarefied practice, and an experience shared by a relatively small percentage of singers. However, this rarefied tradition exemplifies and rehearses sentiments and values that are not limited to its milieu. And while classical singing is hardly a universal practice, it has disproportionately affected academic discourse on singing. Therefore, while classical vocal pedagogy provides an extreme example, it also offers a model for thinking through this issue: the belief in and practice of the sound-based notion of singing are not limited to classical singers and pedagogues. For example, even when you sing along with a recording, nobody is telling you what to do, but a sound-based perspective nonetheless orients your activities. Anytime we operate under the ontological impression that sound and music are stable and knowable, it is a sound—the way in which we have come to understand and name a singular, unique articulation — that guides our singing.

From the study of voice-as-sound lessons we can extrapolate a general model: whether our relationship to a given sound takes the form of conformity (imitation) or repulsion (creating a nonimitative sound that is nonetheless derived from a relationship to the initial sound), it is the sound as we understand it, filtered through its name and related meaning, that we seek to reproduce (rather than moving into new and singular articulations).[28] The ideal voice can be of many different kinds—perhaps even one that refuses to cast itself in sonic terms, but that nonetheless contributes to the dynamic of sonic and vocal ideals.

For example, Annette Schlichter observes that the Kristin Linklater method for actors' voice training "offers the performative production of a form of natural vocality that allegedly expresses an 'authentic self.'"[29] Its vocal ideal is what Linklater terms the "natural voice," which she promises to liberate through vocal training. This voice "serves the freedom of human expression," freedom from the corrupting influences of culture and therefore is understood as a truthful expression of an authentic and universally understood human self.[30] Although Linklater's language is radically different from that of the opera world, it is interesting to observe that her ideology is equally strong. While she self-consciously refuses to name specific sonic ideals, her methods are clothed in vocabulary such as "freedom," "authenticity," the "natural voice," and a desire to "educate the voice into the union of self and body."[31] Furthermore, these ideals are believed to be achieved primarily through intimate engagement with

Shakespearean language in combination with long-term, on-site, committed work with Linklater or an instructor she has certified. Hence, while vocabulary that refers to specific sounds is avoided in this vocal training and practice, the architecture that forms the practice contains elements similar to those of classical vocal pedagogy. a specific repertoire and exercises believed to bring forth the natural voice, vocal technical specifications that call for resonating fully in a room without the aid of amplification technology, and finally an intimate working relationship with a person authorized to teach the practice.

While the Linklater method avoids the explicit naming of sound qualities, it is a teacher's call to determine what is the student's natural sound. So, while the sound-determining process appears more forgiving than it does in classical vocal pedagogy, the structure wherein an authority names the sound is actually the same. Linklater and her instructors, who self-consciously avoid naming sounds (since that would undermine the concept of each person's natural and free voice), still act according to an inner sound barometer that allows them to recognize the free voice. That is, this vocal method is rooted in voice as sound.

Structures of power are funneled into sound ideals. This intensification takes place at the base of vastly different vocal practices and training scenarios where aesthetic ideals, training structures, and groomed practitioners intersect. Given that we hear and practice within given vocal structures, how can we produce a critical distance from these contextually naturalized sounds and practices? Schlichter's term "voice work" is productive here.[32] in short, it names the constructedness of both sound and practice, helping to create the critical distance that allows us to examine the labor that produces and maintains these sound ideals. Understanding that voice work is indeed an "embodied discourse-practice," to draw on Schlichter again, "calls for a denaturalizing critique of an ideology of vocality."[33] This ideology can, in the case of classical vocal production, uphold and support the appearance of the immanent work; in Linklater's institutionalized actors'vocal training, the belief in a natural voice, freed from culture, is imparted.[34] The term voice work also helps us dig deeper into ideologies such as Linklater's that purport to free the voice from technology, even though speaking to and with a room such as the specially acoustically designed Shakespearean Globe Theatre is, of course, as technological as the use of amplification.[35]

Key to understanding the power performed through voice is an understanding of the heavy vocal labor shaping every utterance and informing every instance of listening to voices. Because the natural voice has never existed, the qualities we essentialize from the voice to the vocalizer (including authenticity, subjectivity, truthfulness) are also not natural, but learned and performed. This

leads us to ask whether, when voices are overtly trained within distinct and self-conscious vocal traditions and every quotidian vocal interaction is politically, ideologically, and socially generated, "one's voice belongfs] to oneself at all, and if so in what sense?"[36] Furthermore, as Mladen Dolar notes, "voice is not a primary given which would then be squeezed into the mold of the signifier, it is the product of the signifier itself, its own other, its own echo, the resonance of its intervention. If voice implies reflexivity, insofar as its resonance returns from the Other, then it is a reflexivity without a self—not a bad name for the subject. For it is not the same subject which sends his or her message and gets the voice bounced back—rather, the subject is what emerges in this loop, the result of this course."[37]

Dolar warns that fetishizing the voice creates a barrier between us and our ability to critically analyze the voice as "the product of the signifier itself." He argues that "singing, by focusing on the voice, actually runs the risk of losing the very thing it tries to worship and revere: it turns it into a fetish object—we could say the highest rampart, the most formidable wall against the voice."[38] The voice as sound experimentation confirms Dolar's observation. However, *Noisy Clothes* and *Body Music* suggest that there is a way to interact with the singing voice without fetishizing it. I will now discuss this idea in more detail through experimentally testing the voice-as-action hypothesis. Thereafter, I will propose that we take Dolar's insight even further and ask whether we can relate his statement about voice as a product of the signifier to the discussion about my proposed reversal of supplement and core (sound being the supplement and action being the core) in chapter 3. In the dominant view, in which sound is the core, perhaps it is not the voice or logos but the sound that is the fetish object of the voice, inhibiting us from knowing the voice more closely and understanding more about its effects on singers and listeners.[39] Moreover, if we were not deafened by sound, would music appear to us not as an ideal and fetishized sound that helps maintain the work concept, but as a compound manifestation of performers' bodies?

All Voice: An Action-Based Voice Lesson

Applying a shift in focus from the finished product to the action that produces it (exemplified by Noisy Clothes and Body Music in chapter 3) to the dilemma of vocal epistemology and heuristics described above, we understand that a song or any piece of music is created through the collective musicking—the cooperative participating in sound — of each person and community. We can apply these insights to strategies of vocal instruction and, more broadly,

to the ways we conceptualize singing. As I explained in chapter 3, singing is the action that takes place before the sound is materialized. In the words of Catherine Fitzmaurice, music "has no location in the body except when it is in action, sounding."[40] In addition, sound is not an a priori index. In relation to singing and its teaching, we may recall the analytical shift surrounding Jackson Pollock 's work in which emphasis was transferred from the finished painting to the actions that created it. Similarly, vocal instruction's emphasis could be shifted from the resultant sound to the actions that produce it. And maintaining that sound and singing are singular, unrepeatable instances and articulations, and that we can engage with them only at that level, would preempt all efforts to reproduce a named indexical that has since vanished.

I have taught voice since 1994. Through my intense engagements with the teaching and learning process I not only began to question conventional methods, but also to experiment with alternative frameworks and methods. Needless to say, my theoretical work on voice has influenced my practice, and vice versa. If pedagogy were to cultivate the concept of sound that I articulate in this book—the notion that sounds are actions leading to singular, unrepeatable articulations—what would such pedagogy be like? First, instructions would be action- rather than sound-based. Second, this pedagogical model would create scenarios in which the student is prevented from judging the sonic outcome and from adjusting her voice according to a feeling of success or failure in relation to the outcome.

Developed through weekly interactions with students, and with the help of their feedback, my action-based voice lesson begins by giving the student a series of aerobic physical exercises that do not involve producing vocal sounds—for example, running around, jumping up and down, and so on. I then resize these activities and transpose them to the anaerobic realm, but I work to maintain their general level of energy. So, for example, the activity of moving the arms while extending them away from the body's trunk is slowed down and moved closer to the body. These exercises are intended to initiate the use of the vocal apparatus (the entire body), and also to guide the student's concerns away from the voice per se to fully physically engaged activity. When we finally start adding sonic components, it is crucial to prevent the student's attention from moving from the action to the sound. To this end we work toward three specific goals: (1) building on actions that can also yield vocal components and make the vocal sound appear to be either a form of play or an artifact of the general exercise; (2) keeping the student so busy with actions and movements that she does not have the time or energy to pay attention to

All of these listenings fare- -fy,ï.ttjaik

I the resultant sound; and (3) transferring a bodily stance from the instructor to the student.

An example that includes all three components is the exercise in which we imagine we are standing at the edge of a very high cliff with our toes hanging off the edge—just at the tipping point, beyond which there is only a drop into empty space. The student attempts to avoid falling by holding herself up and back with her entire musculature and energy (objective 2). This situation is simulated several times. First I stand very close to the student, so that the sides of our bodies are touching, and I often put an arm around the student. The goal is to invoke shared bodily energy by breathing together (objective 3). We enter this situation and position a few times without any vocal sounds. When I sense that the student has fully embodied this physicality, I invite her to imagine the excitement of being at such close proximity to the cliff's edge and to release the kind of vocal sound that would come from being in such a situation — a sort of scream, or an exalted sound (objective 1). During this process it is key that the student does not judge and correct her sound as she creates it.41

As we slowly move toward more conventional singing, the activities that have yielded general phrase contours as a result of actions are now repeated. Here the key is to avoid offering a pitch or pitch set that the student is asked to match. Also key is to maintain the centrality of activity, which only secondarily happens to yield a pitch. The pitch contour discovered through an activity is slowly transformed, or transposed, into a phrase of song.

To summarize, the principles of action-based pedagogy include: (1) avoiding listening for an ideal sound and judging the sound produced (in other words, sound is not a goal); (2) avoiding singing and correcting one's sound simultaneously; and (3) building a bodily choreography that yields sound and slowly scaling back the outer manifestations of that activity, such as large arm movements, while maintaining its intensity level. These guidelines invite each singer to discover his body's sonic possibilities by exploring its potential for action. Only subsequent to a particular action may he discover the pitch and timbre of his body as it undertakes that action.

Sound-based vocal pedagogy focuses on what the voice sounds like in the imaginary, rather than on how it is realized in and through the body. Instructions such as "inhale as though you are smelling a rose" call for the re-creation of the outer appearance of a still-undefined action, and not necessarily for the re-creation of the action that led to the sound. In action-based singing, in contrast, there is no preconceived sound that singers must attempt to match. In fact, learning to sing within this model aims largely at unlearning ingrained

patterns, many of which involve listening to oneself while singing, to measure one's own sound against a sonic ideal. Instead, in action-based singing, one concentrates one's energies and attention on the actions involved in singing, which are indeed what give rise to sound. Then it is impossible to make mistakes: all sounds are, by definition, what they are supposed to be — since they are supposed to be whatever they turn out to be. Such a shift in the conceptualization of singing—from sonic to active—has enormous ramifications for our understanding of the exchange that occurs between listeners and singers.

If, at its core, singing is akin to a falling tree, classical singers train for decades to perfectly reproduce the abstracted idea of a sound, without ever realizing that that idea arose from a tree falling. In action-based pedagogy. I try to facilitate the safe falling of the tree and to allow for the experience of the thick event, and the witnessing of the effects of that thick event. And, despite my dust-burned eyes, choked-up nose, and thumping body, I sense that singing and listening are not confined to the audile register but rather permeate us. At its base, the ontology of singing and listening is material practice.

All Ears: Multisensorial Listening

If singing is not sound but action, what takes place when we listen? If singing is no longer intended to re-create a sound that has been signified and indexed a priori, then listening is no longer a matter of recognizing the accurate production of the a priori signified. When we reconceive singing as action rather than sound, the definition of song is no longer stable; rather, it continuously emerges according to an unfolding process and a play involving multiple parts, including the material sound source: the materiality through which the sound is transduced and the materiality of the listener. If singing is reconceptualized asa total-body activity, listening—or the receptive engagement with singing—must follow suit, as will the ontologies of music, sound, voice, and listening.

In sound-based listening, above all we attempted to name the effects of each singular articulation. Thus we identified "G#," "G# minor scale," "aria," "opera," "lyrical tenor," "dramatic soprano," and "Western classical vocal sound" as strictly defined categories on which we must call in our attempts to replicate their effects. Consider this example: as the feeling of reverence arises in response to an aria, we ascribe worthiness to the aria. In other words, we assume that there is something inherent in the aria that gives rise to reverence, just as Romeo assumes that something inherent in the thirteen-year-old Juliet gives rise to once-in-a-lifetime love. Like Romeo, who believed that his newfound ex-

perience of love could be derived only from Juliet, when we name the effects of a singular and particular articulation we begin to seek the signifier, rather than holding ourselves open and ready for other singular and particular articulations that may become equally meaningful and important to us. Seeking to replicate that sense of reverence, for example, we seek out the particular aria that produced it. To listen beyond the familiar categories and their prescriptions, and thus to listen beyond the paradigm of voice as sound, we must think beyond the limiting categories to which listening is usually bound.

These categories are exemplified by Michel Chion's "three listening modes": "casual listening," which gathers information about the sound's source, from the owner of the voice on the telephone to the gravel underfoot; "semantic listening," which uses "a code or a language to interpret a message," from phonemes to spoken words; and "reduced listening," which concentrates on the sound itself, not as a "vehicle for something else."[42] While Chion considers listening to be more complicated than hearing, we could extend even his definition of listening to include an active contribution to the material circumstances surrounding that which is sensed. As a material entity, I partake in the material propagation that I understand as hearing or listening. If I considered my sonic experience from the perspective of its participant and cocreator, aspects of it that previously seemed liminal might in fact reveal themselves to be ordering and distinguishing properties of the experience.

There are some well-known examples from the history of music and sound technology that may prove helpful in taking further this thinking about listening. In these examples, compensation is sought for an eardrum's diminishing sound transmission, or hearing is explored in the process of developing sound technologies. For instance, it is said that as Beethoven's hearing slowly declined, he began to make fuller use of the multisensory dimension of sound. He supposedly held one end of a wooden rod between his teeth while the other end touched the piano's soundboard. In this way, the piano's vibrations were transferred from his teeth to his jawbone, to his skull bone, and finally to his inner ear. It is on this principle that current jaw-conducting hearing aids were developed.[43] In another purposeful transmission of sound, Beethoven removed the legs of the piano, transferring the soundboard's vibrations to the floor. Sitting on the floor, he would receive vibrations through his ear trumpet (the only hearing aid available at the time) and through large areas of his body such as his buttocks and thighs. At times he would even rest his head on the floor to facilitate transmission from the floorboards to his cranial bone. Beethoven also experimented with his ear trumpet. Instead of simply holding the trum-

pet open to the air, he would aim it at the sound source, or place the trumpet directly against the source. All of this reminds us that objects contribute to the material reconfiguration of sensing and the propagation of sound.

The senses, as Steven Connor and others tell us, never operate alone; we intuitively seek out situations in which we may take advantage of their commingling.[44] In the same way that Beethoven supposedly used bone conduction to have a more visceral contact with musical vibrations, Thomas Edison held wood between his teeth to enhance his hearing. Connor is interested in Edison's claim that this allowed him to sense overtones that he could not have otherwise experienced, given his compromised hearing: "The sound-waves then come almost direct to my brain. They pass through only my inner ear. I have a wonderfully sensitive inner ear . . . [that] has been protected from the millions of noises that dim the hearing of ears that hear everything. ... No one who has a normal ear can hear as well as I can."[45] Here we see Edison's belief that shielding himself from the sounds that indiscriminately enter the ears of normatively hearing people allowed him to configure his material body to transduce sounds in a heightened way. Edison even privileged this mode of hearing, implying that because he was not distracted by the constant sound that fills the world, his sensing and hearing were paradoxically liberated.

Others have also developed theories about and practices related to the idea of a bodily listening. The French anthropologist Marcel Jousse observed that the "reception of [an] event involves the sensorium in its entirety, entwining proprioception with various forms of synesthetic experience — the patterned interconnections of touch, vision, hearing, smell."[46] Drawing on Jousse's thought, Charles Hirschkind discovered that even some people with intact hearing deliberately engage with sound using more than just their ears. Through ethnographic work with people who listened to religious sermons on cassettes, Hirschkind found that their listening activity was not limited to information comprehension, as the sermons' power lay beyond the factoids they delivered. Privileging multisensory communicative modes is particularly central to Islamic listening practices, even those that are mediated through technology. In his study of a group of Egyptians listening to Islamic sermons on cassettes in 1990s Cairo, Hirschkind found that what he describes as an "ethical listening" practice necessitated a particular stance: a deliberate positioning of the entire body.[47] That is, listening instructions are not about what sounds to listen for, but about preparing the body to move into a psychic and physical position that will allow it to receive God's message and prepare to be moved by it.

Consider as well Hirschkind's close reading of the self-consciously em-

bodied listening stances described in the Quran. What Hirschkind calls "the physiology of the Quran" rests on three principles.[48] First is the idea that one must listen to sermons not just with the ears but with the heart, specifically with an open heart *(inshirà),* as this corresponds to the humble and repentant moral stance that is desired in Islam: God himself, the Quran says, "opened his chest and took the resentment out."[49] Second is the principle that the body is shaped by its own practices, including listening: since "the [perceptual] event occurs within the disciplinary context of a Quranic education, it contributes to the training and inculcation of sensory habits ... in all of [their] kinesthetic and synesthetic dimensions."[50] To "listen with attention" (αί-insàt), as one of Hirschkind's interviewees evokes, is to listen with the entire body.[51] Third, the ideology on which this practice is based includes the belief that language does not exist merely to communicate something about God.

The performative listening, therefore, in which one "follows the ethical movements of the sermon with its appropriate gestural, vocal, and subvocal responses" is akin to a sonic, physiological, and spiritual spooning with God — and, through that intergestural and vocal proximity, to becoming saturated with God.[52] "Ethical listening" —multisensory, highly responsive, and physical—is presented as a material state.[53] Thus the definition of sound is dependent on who is listening. The Quran's ethical listening highlights the listeners' agency in this process: their joint decision about whether to listen fully and, as a consequence, whether to be articulated. What a sound is in such contexts depends on all of the material articulations and circumstances that form the sonorous event and the practices of its participants.[54]

For Hirschkind's listeners as well as for Edison, the crucial aspect of listening is the multisensorial and full-bodied participation of the receiving body, for which Chion's purely aural listening modes cannot account. This idea not only echoes but also expands on the point of Christopher Small's four additional letters—changing *music* to *musicking*[55]—letters that make visible the active doing of what we have traditionally called music. To refer to music as a noun is to align it with objects and thus imply that humans are not necessarily essential to its existence. However, in the words of Brian Massumi, "there's something doing" in music.[56] To turn music into a verb is to acknowledge that people, activities, and flows are indispensable to its practice. Furthermore, Small contends that the term music reifies an activity—and that it deceptively affirms music (a noun) as a given, a priori, rather than as a reified and naturalized notion. In fact, "there is no such thing as music," Small writes. "This is the trap of reification, and it has been a besetting fault of Western thinking."[57] What the present chapter adds to Small's powerful insight arises from the application of

his perspective to the fine-grained level of music making. When we take seriously the idea that music is material and multisensory, we give ourselves the opportunity to pose fundamental questions about music, about what exactly constitutes the object of musical analysis.

We may now revisit Romeo and Juliet, and their analogy with music, one final time. Although Romeo believed that it was Juliet who moved him to love, it was instead their interlocking coarticulations that gave rise to his emotions. Because of his conviction that it was Juliet who engendered his love, Romeo believed that he would never experience other interlocking coarticulations that would give rise to similar feelings. Comparably, we might believe that it is the greatness of an opera that moves us, but it is rather our interlocking coarticulation with the work's musical and dramatic material that bring about our feelings. If we insist on a belief in fixities, we grant ourselves access only to certain people, musics, and sonorities, and we endorse and validate the experiences we have under these now-predetermined labels even if other articulations that we cannot imagine might also offer meaningful experiences. It is this feedback loop—the measurement and comparison of experiences in relation to a roster of sanctified labels—that gradually ossifies our experiences, and that we fix into a particular understanding of music.

The perspective I offer in this chapter attempts to turn the dominant definitions of music, singing, pedagogy, and listening on their heads. Rather than assuming that the emotion of love is evoked by a particular person, or that the transcendent feel of music is evoked by a particular composition, I suggest that these effects arise instead from material coarticulation, and that a variety of human and musical articulations could result in equally powerful effects and affects. Recalling chapter is discussion of music's material base, and chapter 3's notion of the naturalization of sound, we may now flesh out and extend their suggestions about the action-based framing of music and voice, and unsettle the conventional understanding of core and supplement. Thus this chapter rejects the idea that sound is the center of music, proposing instead that articulatory action is at music's core. In other words, the idea of the thirteen-year-old girl, Juliet, or the idea of the sound fixed as A# are supplements; the material articulations are the core.

Conclusion: From the Figure of Sound to Material Practice

Singing and listening are not limited to the vocal cords or to the organ we call the ear. Rather, we use the entire body to sing, and the entire body carries out the function we normally locate in the ear. We are all voice, all ears. Beetho-

ven and Edison were each able to reconfigure their material situations to sense sounds that were otherwise unavailable to them. These two listening scenarios poignantly illustrate that sound is not a stable entity that may be captured by a uniform listening practice. Rather, what is sensed relates directly to how sound is listened to, and how the material interactions involved in listening are configured. As I have attempted to show, the material circumstances, the spatiality of the material configurations, and the specific people who collectively participate in unfolding material articulations define what we more conventionally imagine as a fixed song, a piece of music, or a work. Indeed, using a multisensory framework, we understand that voice, song, sound, and music cannot be defined without accounting for the person who senses and the specific circumstances within which she or he transduces. This insight begs us to reassess the roots of music's meaning making. Music's affect and relative value are not limited to any preconceived meaning, ideology, or structure of power such as the work concept. We can begin to consider the ramifications of our setting movement into action through music, and of our being moved by sound. We may realize how and why sound not only has a discursive impact and further implications, but is also of material consequence.

In shifting our understanding from viewing sound as the naturalized primary parameter of music to recognizing music as a material articulatory process, we come to understand that when we make and otherwise participate in music, we do not do so at arm's length. When we make music, we have a material impact on the world. Our musical actions have material consequences. In the moment we coarticulate or reject the music presented to us, we coarticulate or reject part of the person presenting it. In other words, by articulating music — not only as singers, but also as listeners—we are the music. And it is in our being the music, and in our music's becoming a part of others, that music's meaning, power, and consequent ethics lie—because, to quote Benjamin Piekut's succinct formulation, "every musical performance is the performance of a relationship."[58]

something external that an internal "I" senses. There is indeed no separation between "it" and "I": each configuration forms a unique node and is best understood when investigated as such. The transmission and vibrational configuration are unique and unrepeatable in any dimension. In other words, since sound cannot exist in a vacuum, a given material circumstance and its articulation comprise as much of what we provisionally understand as the sound as what we may point to as the sound or the music.

Ironically, now that we have understood how the so-called same sound can have both restorative and destructive effects, we can also begin to understand that the very question oozes out of a logic that relies on the figure of sound. Indeed, the question's specific articulation must be reconsidered in light of its answer. In other words, the concept evoked—the same sound—implies fixity and knowability, in the same way as does the question "where does the sound begin and end?" There is no "same" music. There is no externally fixed music that is passed on in an unchanged form into vastly different environments, causing different effects in people. There is only the music that comes about in a particular material-vibrational transmission, and the delineation and meaning we give to that transmission. In this way, the music that restores a particular person is, by definition, not the same music that destroys another.[3]

In other words, it is the figure-of-sound framework's ways of understanding music and vocabulary that reduce two drastically different events to what we conceive of as the same event. It was out of the desire to untangle such assumptions that the motivation to write this book arose. The previous framework constrained us to understand music's effects in the world as symbolically based. Due to this assumption, some of music's outcomes and effects seemed illogical, or were unexplainable within that framework. As we have seen, there were no existing analytical frameworks that could deal fully with the idea that the same music could affect the same person with different outcomes.

If sound and music have been reduced to static nouns, then the practice of vibration is a verb—regenerating its energy through material transmission and transduction within a continuous field. (And it is listeners who delineate this continuous field into nodes according to a priori parameters.) In other words, in applying the intermaterial vibrational framework, we turn our focus away from the effect and force of a stable object and toward the unfolding intermaterial process. This refocusing suggests that we need to reexamine not only assumptions about music, but also the ways in which questions are framed and thus what kind of knowledge is sought in that questioning. Moreover, our realization suggests that this shift moves musical inquiry away from the musical objects we study, and toward an intrinsically human and material realm.

To this end, as a result of examining the details of what happens in the doing, in this chapter I propose that an investigation into music is an investigation into relationships and community. Thus, I explicitly move the discussion about music and its ramifications out of the orbit of the knowable and the potentially meaning making, to the material and always already relational.

The Limits of the Symbolic

In which ways may conceptualizing sound and music through the figure of sound—sound and music as knowable—limit not only our understanding of the musical event and our own contribution to it, but also its range of power? Recall from chapter 3 that defining and naming music as distinct sound is akin to nudging a child into the symbolic realm. In the same way that an infant's thick event is usurped and reduced to sound, music's thick event is naturalized and reduced to sound. And in the same way that the sounds "mama" and "papa" are severed from the infant's thick output—"a pure manifestation of vocal resonance linked to a state of internal displeasure" — music as knowable sound is severed from the thick event of musical experience.[4] Over time, what was manifested as a thick event is slowly stylized into a signifier, overlaid with the signifieds *maternal caretaker* and *paternal caretaker*—or sound and silence.

Considering the symbolic in relation to the operatic voice, Michel Poizat notes that the child's cry is not only responded to, but also *"attribute [d]* meaning" and *"interpreted] ...* as a sign of hunger or thirst or whatever."[5] Similarly, the thick event of musical experience is carried into the symbolic order when knowable sound segments are understood within systems of sounds and music and overlaid with a given sound's contextual functionality (say, the second step in a scale) and cultural and historical meaning (say, a commercial jingle). Poizat poetically describes the process of entering into the symbolic: "This first, pure cry is qualified as mythical or hypothetical because as soon as it is interpreted and elicits a reaction, its original 'purity' is lost forever, as it is now caught up within the system of signification that is already in place with the intervention of the Other."[6]

Similarly, in the same way that we generally believe—and act on our belief—that once the symbolic order has opened up for a child, he or she has moved fully from the presymbolic to the symbolic order, so we generally respond to sounds we can name as music, and thus constrain within the symbolic order, with the presumption that they occupy only that order. By defining and naming a sound within the thick event of music, we bring music into the symbolic and subsequently constrain our relationship with it to the limits of the

thinking about music and its sonorous link to the body, she suggests that we consider "what music may achieve, silently." More specifically, DeNora posits that while music's "link to the body" is "distinct from music's interpretive processing," the process is not a regression to a nondialectical understanding of music-as-stimulus."[25] Also addressing the traps that can arise when we follow the trail of bread crumbs scattered by the sound of music and its possible function as sign and signified, Gary Tomlinson has noted: "Humans are symbol-makers too, a feature tightly bound up with language, not so tightly with music. . . . Homo symbolicus cannot help but tangle musicking in webs of symbolic thought and expression, habitually making it a component of behavioral complexes that form such expression. But in fundamental features musicking is neither languagelike nor symbollike."[26] For Tomlinson, studying humans in relation to the symbolic offers clues about music's ancient origins. And even for scholars without similar ambitions, such discussions offer clues regarding the relationship between the symbolic and music making. As Tomlinson notes, music in itself is not primarily symbolic; rather, it is made to serve the symbolic.-if we can release that perspective, he continues, we can "plot... the counterpoint between musicking and the language and symbolic cognition that coalesced alongside it."[27]

One part of the presymbolic phenomenon that some psychoanalytically oriented scholars address is, for me, most clearly explained by Tomlinson. He concludes "Evolutionary Studies in the Humanities: The Case of Music" by pointing out that part of the problem with understanding music is the limited timescale within which we think about it. If we go far enough back, Tomlinson observes, we can clearly see that humans engaged in "musicking" prior to the appearance of "either language or symbols."[28] Tomlinson's preliminary million-year evolutionary history of hominids shows us that musicking is neither dependent on, nor an evolutionary outcome of, symbol making. What Poizat understood as the "presymbolic," DeNora recognized as "silent practice," and Tomlinson thought of as musicking independent of language or symbols, I describe as the thick event of music and, ultimately, as intermaterial vibrational practices and events.[29] Thus, on some level, while we primarily conceptualize and, accordingly, have access to these events — on linguistic and cultural planes, we still react perceptually and instinctually to them. If you will, we are affected by the falling of the tree rather than by the sound of the tree-falling event, as indeed our presymbolic and prelinguistic ancestors most likely experienced the phenomenon.

Toward an Organological Inquiry into Intermaterial Vibrational Practice

Some scholars might react to the proposal that we investigate music from an intermaterial vibrational perspective much as I initially reacted to Juliana Snapper's underwater opera. Recall that I first dismissed her work by asking why I should bother with something so unlikely and cumbersome. In the same way, scholars and others might rightly ask why we should insist on viewing music as intermaterial vibration when, on the one hand (even if we agree that the figure-of-sound framework is incomplete), it works well enough and, on the other hand, in the larger scheme of things, why should we bother with the return to vibration? Is this not such a small detail that hardly anyone would notice? Is this particular emphasis not just a minute shift in perspective? Furthermore, will we not, in reality, continue to think about sound in the way we have always thought about it? In other words, what useful outcome could this perspectivai shift have? In response to these objections and questions, I argue that even a cursory examination of music itself as vibrational material matter suggests a few points at which our understanding of music departs from how we understand it through the figure of sound and the symbolic.

First, when music is predominantly understood not only through the symbolic but as material and, indeed, intermaterial vibration, we can begin to conceive of it in a class with — instead of separated from—other intermaterial vibrational phenomena. While John Cage famously included so-called silence in his compositional material, thus questioning the nature of sounds allowed in music and the position of intentionality in their production, understanding music on a par with other intermaterial vibrational phenomena questions the division between material modes, including the exclusion of some from our attention. If we understand our bones and flesh as participating in forming the music we experience, are they not as much a part of the music as the so-called musical work? And if music is the fluctuation and transmission of energy, does it not have something in common with other forms of energy fluctuation and transmission?

Second, when we examine music as vibrations, we see that the object of study is not only the vibrations but also, for all practical purposes, the material that vibrates. Expanding our perspective in this way reveals that the vibrations themselves are shadow phenomena and that, in fact, vibration does not exist prior to a specific material realization. In other words, we cannot experience and define the boundaries of a particular vibrational occurrence before

of music's materiality. Indeed, building on Bill Brown's thinking about things, by putting into perspective notions of what an instrument is and what an organ is, I examine the collective intermaterial vibrations of music, sound, and voice to ask how music "as an inanimate object enables human subjects (individually and collectively) to form and transform themselves."[38] Focused on vibrating technology in the period when it was recently introduced to the public, Shelley Trower's work shares Brown's interest in material cultures. Examining the culture of the Romantic harp; vibratory objects including strings and spiritualist objects; and the introduction of new technology such as the bicycle, railway, sewing machine, and vibrating medical devices, Trower is concerned with material and literary cultures and objects as "vibratory movements of various material objects" and how "vibration is also bound up with different kinds of materiality beyond objects, including the air and ether."[39] In this way, Trower provides a useful model for historical work on vibration and how it has been conceived, harnessed, and used.

I take the position that studying voice, sound, and music from the point of view of materiality generally, and organology specifically, offers access to an otherwise unrecuperable history and process.[40] That is, I assume that investigating the intermaterial vibration of singing and listening can become a music-analytical operation itself. Studying intermaterial vibration as organology puts voice and perception into conversation with Emily Dolan's observation that "in their ubiquity and diversity, instruments might be thought of as boundary objects."[41] Building on the work of Trevor Pinch and Frank Troceo, Dolan quotes Susan Leigh Star's and James Griesemer's work on boundary objects within museum and exhibition contexts. Star and Greisinger explained that an object's "boundary nature" can be understood as "simultaneously concrete and abstract, specific and general, conventionalized and customized. They are often internally heterogeneous."[42] Bringing the discussion back to musical instruments, for example, Dolan notes that the synthesizer's boundary nature is described by Pinch and Troceo. That is, the idea of the "liminal entity" is invoked to convey not only the crossing of boundaries, but also the transformation that takes place through that crossing.[43]

We may consider material and vibration as instruments, while what are more traditionally conceived of as musical instruments 'may be considered as subclasses of material and vibration. If we use this viewpoint, our conception of the liminal space and arena necessarily shifts. Voice, with its ability to filter out certain frequencies by changing shape, is often used to describe the synthesizing process. Voice also plays multiple roles as an anatomical entity that protects the lungs from food and liquids, as a sound shaper, and as a transmit-

ter of music and words. With its many roles, voice represents a prime example of the physicality of the "boundary object" or "liminal entity."[44]

As noted throughout this book, some of the material that vibrates during a musical experience is the human body. By considering music in this way, we may study the phenomenon of the "boundary object" or "liminal entity" through observing shifts in vibrational patterns. We may also come to terms with the notion that we are one and the same as the vibrations. Rather than viewing music as an external and stable object, signal, or ground for meaning making, it is these various intermaterial vibrational states (thick events) that we transmit and take in, that we interpret and make meaning with, and that we refer to as music. Thinking through intermaterial vibrations, we learn that we are putting ourselves on the line.

However, by pursuing intermaterial vibration within a music-analytical context, I have no illusions that I am adding to the existing technical knowledge about these topics. Because much of current music discourse has moved so far from directly drawing on this knowledge (although the knowledge is already present in related fields), my modest hope is to merely reengage some of the terms. My point is precisely that this book does not offer new insights. Instead, it engages insights arising from the observation that music discourse limits its understanding of music to sound, silence, and the practices that surround them. Recall from the introductory chapter that I position vibration (as in sound), transmission (as in intermaterial flow), and transduction (as in the conversion of wave forms from, say, mechanical to electric) within historical and theoretical discourses. I draw on this rich body of knowledge to distill my proposition that analyzing music, and life in music, from this perspective can tremendously enrich our understanding of how music does what it does.

Intermaterial Vibration and Energy

In the following visual representation created by R. Bruce Lindsay explaining vibration, the severance of sound and music from other broad areas of material vibration, transmission, and energy is telling. As I noted earlier, when we believe that music deals in the figure of sound—the currency of sound and silence — implicit or explicit questions nudge us into identifying its distinct units (types, qualities, and temporal span) and form (From which units is music built? When does the music stop and end?). In figure 5.1 we can see that music is largely conceptualized as constrained by the limitations of musical scales and instruments, with a much smaller overlap with areas such as communication and room and theater acoustics. While some might differ re-

resonates because (1) an external sound, vibration, or other force —such as the soprano's high note — matches (2) one of the glass's natural modes of vibration, causing it to vibrate vigorously at exactly that frequency. The story of the soprano who hits a certain high note and shatters a crystal glass may be explained as a phenomenon of resonance: the frequency (tone) of her loud high note coincides with the frequency of a natural mode of vibration inherent in the glass, thereby inducing a vibration vigorous enough to break it.

However, in an organological investigation of intermaterial vibration, the nodes we think of as sound can be investigated as nodes of transmission. And the investigation can be expanded beyond musical instruments into every node that is affected during the experience of music. An organological investigation of intermaterial vibration would consider music in its vibrational realization, in how it is realized by different parts of our bodies, and in how the combination of material nodes reconfigures another node into transmitting or transducing energy uniquely. The boundary drawn around the object, or the liminal space that appears as the boundary is drawn, is reconceptualized from the sound's volume (the perspective of the figure of sound) to a transformation on the molecular level (the perspective of the organology of vibrations) when we consider the shattering of the glass.

For example, the abdomen is highly sensitive to vibration.[67] In the abdomen, resonance in the vertical direction occurs in the 4-8 hertz range and can amplify a vibration up to 200 percent. The neck and lumbar vertebrae amplify vibrations of 2.5-5 hertz up to 240 percent. Certain vibrations even set up a strong resonance between body parts. For example, 20-30 hertz vibrations amplify the head-shoulder resonance by up to 350 percent. Certain frequency regions are especially resonant with organs or body parts that perform specific functions. Vision can be affected due to the 20-90 hertz correlation with the resonance of the eyeball. Sujatha's vibratory model of the human body is reproduced in figure 5.2. In addition to taking into account how vibrations affect distinct regions of the body differently, it is also necessary to consider that the body's sensitivity to vibration is affected by its general posture (for example, whether it is standing, lying, or sitting).[68]

Excitation of a vibrating system can take the form of displacement and/or velocity (the rate of positional change) of the mass element or elements. The change imparts potential and/or kinetic energy to the system. Due to the initial excitation, the system is set into oscillatory motion, which can be called *free vibration.* It is during this free vibration that an exchange takes place between potential and kinetic energies. Within a conservative system, the sum of

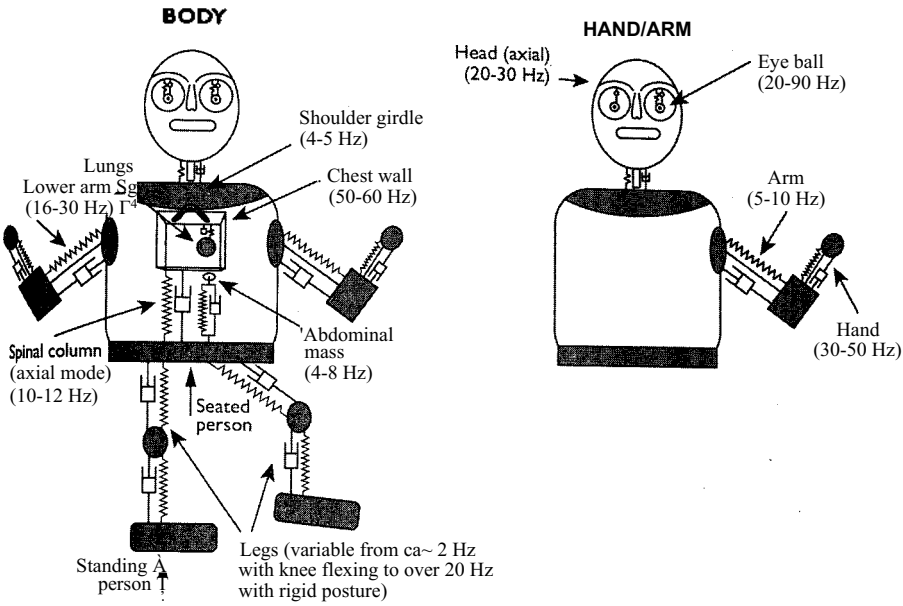


FIGURE 5.2 · "Vibratory Model of the Human Body" adapted from Chandramohan Sujatha, *Vibration and Acoustics: Measurement and Signal Analysis* (New Delhi: Tata McGraw Hill Education, 2010), 295.

potential energy and kinetic energy is constant at any point in time. Theoretically, the system continues to vibrate, but in practice the surrounding medium (for example, air) causes dampening or friction, and thus energy loss takes place during motion. Therefore, for the system's vibration to be maintained in a steady state, the energy that dissipates due to damping must be continually replaced. This means that a vibrational impulse is not stable or independent of material circumstances. Its excitement depends on the general vibrational condition (say, in an enclosed area versus in the open air), the concentration of masses (such as bodies), and other material characteristics.

Among other spatial and relational investigations, an organological inquiry into intermaterial vibration could explore the dynamic between the body's sensitivity to vibration and how the body is affected by oscillatory motion or reconfigured by the extended material vibrating continuum of which it is part. This dynamic not only raises questions about the body's response to vibration; it also asks how this process works within a given material configuration, and how that response affects the body's expression. Because impedance is mis-

matched, transferring energy from air to the human body is not as easy as transferring energy from mass to mass. Like my examinations of Snapper's underwater opera project, further examinations of the body's particular material configuration and relation to mass in the acts of making and listening to music could lead to new insights into musical experience, as well as suggest specific material configurations and interactions with music.

In chapter 2, I discussed the always already spatial aspect of sound. For most animals, including humans, the ability to localize sound is due to the placement of the two ears as far apart on the head or body as possible. This placement, and additional information gathered as the head moves to collect more data, results in the ability to hear in stereo and locate sounds in space. Because the two ears are situated differently in relation to the sound source, we draw on two distinct sources of information to compute sound's spatial relation to us. Its location is understood in terms of its three-dimensional position and velocity.[69] Additionally, we understand sounds within enclosed spaces by distinguishing direct from reflected sonic signals. That is, we compute the difference between the original sound source and sounds emitted from other locations. This perceptual procedure, referred to as the precedence effect, allows us to automatically localize a sound to, say, a person's moving mouth, rather than to other surfaces that reflect the sound.[70] Thus, Jens Blauert writes, "the totality of all possible positions of auditory events constitutes auditory space." He concludes: "The word 'space' used in this expression is to be understood in the mathematical sense, as a set of points between which distance can be defined."[71]

Not only is sounded sound always already spatially and relationally specific (and thus would benefit from being studied as such), but our perception of this specificity is complex. Therefore, thinking through the issue of sound's specific spatial placement and relationality to the listener, or of receiving vibrational nodes, organologically can provide some tools that may help us sort out the issue's complexity. Even when we become aware of sound's spatial specificity, that localization is not a straightforward matter. For example, in outlining the major principles of the "psychophysical territories of spatial hearing," Blauert shows that different sensory organs (including the presence of one or two ears, vision, balance, touch, and reception of tension) participate in the process of locating sound, and that a number of different notions beyond monaural and binaural theories for air-conducted sound must be engaged to interrogate these phenomena (including bone, visual, vestibular, tactile, and motional conduction theories).[72] Auditory events may occur in any directional relation to the person who senses the sound: inside his or her body or behind objects, near or

far. Additionally, factors such as familiarity with the sound and the specificity of human anatomy play a role in identifying and locating auditory events.[73]

Keeping these nuances in mind, Blauerts' terms "locatedness" and "localization" can be useful in looking more deeply into spatial specificity and relationality. He uses the term "locatedness" to describe "the spatial distinction" of a sound: "The locatedness of an auditory event is described in terms of its position and extent, as evaluated in comparison with the positions and extents of other objects of perception, which might be other auditory events or the objects of other senses —in particular visual objects."[74] In short, the concept of "locatedness" facilitates a discussion that takes into account the complexity of sound as it is sensed within space. For instance, while the position of a sustained sound in a reverberant room is not easily pinpointed, a short sound in an anechoic chamber can be precisely located.

"Localization," Blauert explains, "is the law or rule by which the location of an auditory event (e.g., its direction or distance) is related to a specific attribute or attributes of a sound event [physical sound source], or of another event that is in some way correlated with the auditory event [in which the sound sounds like it is emitted]."[75] Localizing a sound seems pretty straightforward. However, the *sound event,* the *physical sound source,* and the *auditory event* are not identical. For example, under certain circumstances, the same sound event can yield simultaneous yet differing auditory impressions. Furthermore, Blauert reports, "localization varies within certain limits from one subject to another and undergoes nondeterminable variations over time."[76]

Among other spatial and relational investigations, an organological inquiry into intermaterial vibration could examine the dynamic between localization and locatedness. These terms partially explain the complex nuances of technical descriptions of spatial specificity, its psychoacoustic aspects, and the relationship between sound sources and sounds reflected from reverberating surfaces. The terms also offer just one example of a possible further organological direction of inquiry into both the spatial specificity of the musical event and the way in which the meaning we form around the vibrational impulse is partially based on our spatial sense of it.

In chapter 3,1 discussed the naturalization of sound as one of music's currencies and suggested that what we think of as sound might be better understood if we conceive of it as vibration. However, an organological investigation into the matter would quickly reveal that the phenomenon is more complex than this. That is, while I posit that what we have identified as sound is a species of vibration and would be more accurately and usefully described as such, the twist is that while music is not necessarily sound, not all sound is related to a

causal event. In other words, sound signals and auditory events are not necessarily related, and an auditory event has not necessarily been preceded or caused by corresponding mechanical vibrations or waves.

Thus, an organological inquiry into the naturalization of sound would, first, investigate the nuances of the phenomenon that we understand as sound — beyond the confines of the assumption that sound is caused by intermaterial vibration. Some auditory events that are not caused by a sound signal but by other factors could include auditory hallucinations, disease conditions (such as tinnitus), or sound experienced as the result of artificial stimulation of the acoustic nerve.[77] Our organological inquiry could also encompass ranges of vibration including "mechanical vibrations and waves of an elastic medium, particularly in the frequency range of human hearing (16 Hz to 20 kHz)."[78] Moreover, any investigation must be mindful of the way in which, as Blauert observes, these "physically measurable changes of position" are based on what is primarily perceived visually, and of the fact that the range of vibrations and waves with which we are concerned are limited to those that fall within the "frequency range of human hearing."[79] In other words, an organological approach to the question of sound would inquire into the limitations and ramifications of certain causes of sound (that is, why traditionally priority is given to inquiry into shared or sharable experiences instead of hallucinations?) and into the privileging of certain modes of experience (human over other animals) and nodes of materiality as the basis for vibration (human entity over object).[80]

In chapter 4, I posited that what could be understood as action is intermaterial vibration. An organological inquiry into intermaterial vibration would thus include an inquiry into bodies' oscillatory motion, the simplest form of which can be expressed as harmonic motion. Sujatha offers some examples of simple harmonic motions, including rotor rotation at constant speed, swing motion, orbiting satellites, and tuning fork vibrations. I draw on Sujatha's work to consider a chain of events from acoustic signal to vibration, created under the general condition of air: muscular activity (energy and vibration) activates the laryngeal area, and vocal sound is produced; sound waves in the vocal tract vibrate through the mouth and propagate through the air. Sound reaches listeners directly through the air, or, after being reflected off walls or other surfaces, interacts with the middle and inner ear and excites further vibrations of the basilar membrane and outer hair cells. An electrochemical reaction takes place, which converts the vibration and impact of the hair cells into potentials transmitted to the central nervous system.[81]

This area of knowledge is heavily relied on by traditional (acoustic) instrument makers and, in any time period, by developers of new instruments —

including those making use of electromagnetic forces. For example, piezo ceramic sensors have been developed to measure pressure, acceleration, strain, or force. The piezo—the name comes from the Greek term for "press" or "squeeze"—converts mechanical vibrations to electrical vibrations, or charge.[82] Piezo microphone technology thus works with intermaterial vibration in taking advantage of a disturbance, change, or fluctuation in a relaxed or natural state or axis (of mass, chemicals, electronics, or air).[83] This process allows audiences to detect the material's vibration sonically.[84]

Generations of artists have been interested in energies in various forms, and an organological study of such energies would take into account the study of unwanted vibration—which, within the framework of the figure of sound, is often referred to as "noise"—as well as the study of generating vibration.[85] In the former area, an understanding of vibration's natural occurrence is sought to, for example, build bridges and other structures without inadvertently constructing one that will fail due to naturally occurring vibration. Examples of controlled levels of vibration include drills, engines, and trains traveling on tracks. Indeed, "if the frequency of excitation of a structure coincides with any of its natural frequencies, resonance occurs." Hence, the "failure of major structures like bridges, aeroplane wings and buildings is due to resonance."[86] A 1940 incident that became a recent meme is the YouTube video of the Tacoma Narrows Bridge collapse.[87]

We may recall that "any system which possesses mass and elasticity is capable of vibrating."[88] The study of vibration is divided into two major areas: free and forced vibration.[89] Sujatha explains: "Free vibration is due to forces inherent in the system, while forced vibration is due to externally impressed forces."[90] Resonance occurs when a frequency coincides with a structure's range of excitation. For example, the "typical natural frequency" of a variety of "systems" (the term Sujatha uses for what we might call a "thing") ranges from an offshore oil rig (1 or 2 hertz), a bridge (1-10 hertz), the human trunk (2.5-5 hertz), human vertebra and an suv's compartment cavity (100 hertz), and a hard disk drive and turbine blade at a high-pressure stage (100-1,000 hertz).[91] Since any body having mass and elasticity has the potential for oscillatory motion, we can appreciate the continuous field through which music is realized.

It is the body's potential for oscillatory motion on which a piece of equipment, a musical instrument such as the piezo microphone, traditional instruments, and vocal and listening organs and bodies and the mass within which they are situated capitalize. And it is this phenomenon that reconfigures our understanding of the boundary objects and related liminal spaces between violin, voice, ear, air, water, or whatever mass transmits the vibrations to which

tive index or object. Moreover, tracing singing and listening to action shows us that listening is not passive in its relationship to singing: the listener does not merely receive what he or she hears. As a result, listening, like singing, should be defined as the transmission and transduction of sound.

We may therefore think about propagation, transmission, and transduction specifically the transduction of aural vibration, especially in the 20 hertz to 20 kilohertz range—as the common denominator of material mass, muscle activity, sound, and hearing: the elements that constitute singing." If singing and listening are the actions that give rise to sound—in the vibration that surges through the singer, and in the material that envelops the singer and listener— does this sound, this vibration, have a beginning or end? It does not. The vibration is expressed as transmission or as transduction, and depending on how we define a node within that continuous field, we may define its beginning and end. But the vibration or energy in itself does not imply or express a bounded object with a beginning or ending point.

The following formula may help us to understand these interlocking relationships and summarize the argument I have made thus far in the book:

If [s] and [1] are [v] and [v] is [r];
And, if [b] is [v] ;
Then, also [b] is [r]. [1]

[s] = singing; [1] = listening; [v] = vibration across bodies, causing change;
[b] = being; [r] = relational

Singing and listening are particular expressions of the processes of vibration. What we understand as sound ultimately reverberates throughout the material body that produces and senses it; it is precisely because sound—undulating energy—is transduced through the listener's body that it is sensed. On the one hand, when we produce music we ourselves are affected by the process. On the other hand, by projecting music out into the air, we have an impact on the world around us. We do not engage with music at a distance but, by definition, we do so by entering into a relationship that changes us. The most extreme definition of music possible, then, is vibrational energy—and, at times, transformation through that vibrational energy, which is an always already unfolding relational process.

Music arises in the confluence between the materiality we offer up and the vibrational force that is put forth into the world. As a consquence, (1) to participate in music is to offer oneself up to that music; (2) to put music forth into the world is to have an impact on another; and, therefore, (3) it is as propaga

tors and transductionanodes of that thick event of music—the full Vbratwnal ranee, including sub- and ulrafrequedcies-that " Pompate in a'd privy to music.[100] What connects singing, listening, and sound, t ch, is fi ia tion Indeed, what connects the physical, foil-body activities and experiences that take place during both singing and listening is the transmission and tie! duction of vibration. That is, if music is not something external and objective but is transmitted from one material node to another, music indeed puts us into an intrinsic dynamic, material relationship to both the so-called external world and each other. Musical discourse then shifts from the realm of the symbolic to that of the relational.

From the Relational to the Thick Event

Throughout this book, I have continually returned to the relational aspects of sound, music, singing, and listening. Typically, when people discuss a particular facet of what I have called the thick event, there is an assumption that it constitutes the entirety of that event—for example, the sound of a falling ti ee. which is actually only one of the many aspects of the full experience of a tree falling in the forest. If we make this assumption, we may think that understanding the nuances of a particular facet of an experience can provide an understanding of the thick event. However, if we explore each isolated phenomenon as a way of grasping one aspect of the thick event, we realize rhat no single aspect is the event. The process of putting these aspects, traditon ally understood in isolation, into relationship with each other foreg counds the absences, lacunae, or shadows that suggest a more complex event (tltat is, the thick event). And this, in turn, emphasizes the isolation of each sp.. and the fact that one aspect cannot be dealt with alone, if we wish to er gaye the full event.

In this way, relationality erases itself. By first showing the multiple "slices" involved in the whole, and how they interact as a whole, relationality leads us back to dealing with the whole as an experience, rather than as an isolât·.·.· idea. As we set up a process that prompts thinking relationally through aspects of sound, music, singing, and listening, this linking presumes isolated aspects that are connected. In other words, once the thick event is recognized experientially, then a return to naming conventions, to using pieces to represent the whole, diverts our attention from the next step: dealing with the rediscovered thick event as intermaterial vibrations within which we ourselves are situated, and to which we ourselves contribute.