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If you ever wondered why it feels like music makes you move, or what it means to move along with it, or even whether music itself can move, Arnie Cox has a provocative answer for you: it’s an illusion! As he argues in *Music and Embodied Cognition*, it is an illusion based on how committed you feel to the sense that music is an intangible, ephemeral product of the physical labor of performers. To be sure, it is a very powerful illusion, prevalent in both scholarly and public discourse, but Cox claims that it simply results from our basic cognitive capacities to conceptualize our experience on the basis of our physical engagement with our environment. In the book he sets out to explore the nature of these capacities (part 1, “Theoretical Background”), how they underlie some of the most common ways of talking about music (part 2, “Spatial Conceptions”), and their implications for music theory, analysis, and pedagogy (part 3, “Beyond Musical Space”).

In part 1 Cox elaborates the premise that thinking about and understanding music is, at bottom, grounded in the physical bodies of performers and listeners. That is, in line with the basic premises of the loosely bound consortium of ideas known as “embodied cognition,” all of what we would consider our cognitive processes—recall, planning, learning, and so on—result from our more fundamental corporeal engagement with the world and its various animate and inanimate inhabitants. This includes not just comprehending music in particular but all our understanding more generally.

The process for Cox is initiated by the seemingly innate human ability to imitate others, including our fellow humans, other animals, and even non-living objects, such as a bouncing ball or a tree swaying in the wind. This ability allows us to answer two questions that, as Cox posits, we implicitly ask whenever we encounter anything in our environment: “What’s it like to do that?” and “What’s it like to be that?” We understand the world by mimicking—or imitating (Cox uses the two terms interchangeably)—the entities that we perceive. This imitation occurs on two levels. One is overt imitation, or what Cox calls mimetic motor action (MMA), which “includes any action performed in imitation of another person, animal, or inanimate entity or event” (38). The other is covert imitation, or mimetic motor imagery (MMI), which “includes brain activity related to imitative actions” (38).
Readers familiar with Cox’s previous work will recognize most of part 1 as a fleshed-out version of his motor mimetic hypothesis. 1 The hypothesis is expressed in two claims: (1) “part of how we comprehend the behavior of others is by imitating covertly (MMI) or overtly (MMA) the observed actions of others”; and (2) “part of how we comprehend music is by imitating, covertly or overtly, the observed sound-producing actions of others” (12). In chapter 1 Cox offers evidence of imitative human behavior in general, such as interactions between children and their caregivers and social interactions in adulthood. Obviously, the existence of MMA, as a visible phenomenon, does not require much convincing, which is why Cox focuses primarily on MMI. Although the concept is initially vague, we eventually learn that MMI consists of “motor-related brain activity that occurs when participants observe the actions of others” (23). Here Cox brings up the issue of mirror neurons—neurons that become activated both when an action is performed and when it is merely observed—as well as brain activation and apparent subvocalization during the perception of speech and both vocal and instrumental music.

With a few minor modifications, chapter 2 recalls Cox’s previously published twenty principles of the mimetic hypothesis, “meant to specify the nature of mimetic comprehension of music” (36). The scope of these principles is very broad, but two general aspects seem especially relevant. The first is that MMA and MMI are apparently ubiquitous in how we comprehend sounds that are both naturally and artificially created. We infer and (overtly and/or covertly) imitate the actions used to produce these sounds. This imitation, which participates not only in real-time perception but also in memory and anticipation, can occur intramodally, cross-modally, and amodally. The second important point is that music can either furnish listeners with “mimetic invitations”—Cox’s term for solicitations “to move, sing, and/or play along in some congruent way, whether overtly or only in imagery” (48)—or attenuate mimetic participation, depending not only on the physical sources of sound (e.g., solo vs. ensemble) but also on musical structure (whether it is singable/danceable). This has important consequences for listeners’ affective responses to music, something that Cox explores at length in part 3.

In chapter 3 Cox shifts gears and presents a primer on conceptual metaphor theory (CMT), first developed by George Lakoff and Mark Johnson in linguistics and later applied to music theory by Lawrence Zbikowski (2002), among others. According to Cox, when we ask our implicit questions, we arrive at our answers through the process of categorization: we give names to things so that we can better comprehend their significance. The process often requires us to categorize an entity or a phenomenon in terms of another category, which is an example of “metaphoric reasoning.” Such reasoning is a nonconscious, biological process, or “something performed by the nervous

1 An earlier version of this hypothesis can be found in Cox 2011.
system as a way of categorizing stimuli and actions according to their actual and possible effects upon the organism” (59). It involves using more visually or tangibly concrete entities (the source domain) to categorize more abstract ones (the target domain), including music. CMT offers one explanation for how this cross-domain categorization occurs.

According to CMT, conceptual metaphors are cognitive structures that underlie metaphoric expressions but that themselves are rarely expressed directly. Conceptual metaphors have their own internal logic, in which the details of the source domain are mapped onto the target domain. The structure of conceptual metaphors is based on what Lakoff and Johnson call image schemata, which are “recurring, adaptive patterns of organism-environment interaction” (Johnson 2007: 136). These schemata are abstractions derived from one’s enactment of movement, including exertions, maintenance of balance, direction of motion, and so on, combined with visual imagery. For example, the ubiquitous musical metaphors of a melodic step or a leap are based on “the feeling of some kind of effort involved in producing [them]” (66).

In part 2 Cox elaborates on the metaphoric nature of pitch height and of musical motion, which he considers the two most prevalent concepts in musical discourse. The stated aim of this section is to “offer an account of the metaphoric logic of our basic spatial concepts” and, by applying conceptual metaphor theory, to “[specify] the role of embodiment and the phenomenological component of experience” (159).

The concept of pitch height emerges from the conceptual metaphor greater is higher, in which “the domain of height imports a visible, or visualizable, spatial conceptualization of relations among quantities or magnitudes” into what is an otherwise nonspatial domain of sound frequencies (86). In chapter 4 Cox describes the possible embodied experiences that might serve as a basis for this conceptual metaphor and ultimately argues that “ordinary assertions about music in terms of pitch height . . . are founded on a fiction” (107). That is, we do not hear pitch height, but rather, “pitch height is a conceptualization of what is felt in response to what is heard” (107). The basis of this fiction lies in even more basic generic metaphors: states are locations, change is motion, and difference is distance. According to Cox, these are grounded in “what we feel in response to what we hear and, to some extent, what we see” (104).

Chapter 5 addresses the metaphor of musical motion, which, Cox argues, does not involve actual motion, making it “entirely imaginary” (109). The question here concerns why it seems that we sense or experience motion in music. Cox’s answer is that musical motion “is a special case of temporal motion—the motion through time, and the motion of time—which is itself a

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2 Cox adopts what has become the standard typography in literature on CMT, which is to use small caps to indicate conceptual domains and the mappings between them.
product of metaphoric reasoning” (109). Thus the more general discussion addresses what Cox calls “the phenomenology of temporal experience,” or how we conceptualize temporal motion in general, and how our concepts of temporal and musical motion result from “very much the same embodied reasoning” (109). This embodied reasoning concerns shared aspects of the phenomenology of metaphoric pathways and physical locomotion, which Cox identifies as anticipation, presence, and memory. In turn, the shared phenomenology “helps motivate and ground conceptualization of the otherwise abstract (intangible) events of stories and music in terms of motion” (111). Accordingly, we understand future events as located ahead, present events as located where we are currently situated, and past events as located behind us. These are metaphoric extensions “of a correlation that dominated the lives of early humans and that still pervades the lives of modern humans,” specifically that states are locations (115).

Throughout part 2 the role of mimetic participation in musical understanding remains attenuated. Chapter 6, “Perspectives on Musical Motion,” reanimates it in the context of musical motion, specifically in the distinction in experience between first person (moving listener), second person (music approaching the listener), and third person (the listener is “observing” music as if it were a moving landscape). According to Cox, “Overt and covert mimetic participation create a quasi-first-person experience of imaginary motion, but the experience is always combined with second-person listening and quasi-third-person reflection and conceptualization” (135). This tripartite perspective creates a continuum between “interior” (first- and second-person) and “exterior” (third-person) perspectives, which, when combined with the two scenarios of musical motion—stationary and moving observer—results in four possible views on temporal and musical motion: interior-stationary, interior-moving, exterior-stationary, and exterior-moving. Each view has its own logic and can be employed to different ends. For example, Cox notes that analysts commonly adopt the exterior perspective of a moving observer, in which music is a landscape. Finally, he describes in prolific detail how mimetic participation underlies the two most common schemata used in describing musical motion: the path and container schemata. In both cases Cox finds two sources of motivation for the metaphoric mapping. One is top-down, whereby “our habits of metaphoric conceptualization are reflected in language, and each of us learns to conceptualize temporality in terms of spatiality as we acquire the cognitive-linguistic habits of our community” (157). The other is bottom-up, in which “evolutionarily and developmentally ancient correlations between anticipation, desire, location-ahead, exertion in moving-forward, and so forth” of spatial experience (157) provide the basis for more recent experiences of nonspatial entities, like music. Accordingly, the feeling of movement in music is not the result of mapping from the spatial domain but “is already part of musical experience prior to the metaphoric conceptualization that it motivates. . . . The assertion that matters most is that the meta-
phoric conceptualization of musical motion is a conceptualization of a feeling, in response to a specific acoustic-auditory stimulus, and this feeling is arguably what motivates and grounds our spatial musical concepts” (157).

Reading Music and Embodied Cognition at times feels disjointed, as if we were given a GPS programmed with a sequence of locations—some undoubtedly featuring delightful vistas, such as Cox’s impressive etymological sleuthing (see esp. chap. 7)—but without a clear final destination. Perhaps the most jarring example of an excursus that is interesting but that stops the discussion dead in its tracks is the mention of Manfred Clynes’s work on “sentic,” or the measure of physiological responses to emotional states (22). Since Cox never comes back to it, perhaps it would have been best to relegate it to a footnote. In general, Cox defers any discussion of the book’s significance. Although we are told that there is a “larger purpose” (159) to specifying the role of embodiment in musical experience, or that how we consider perception “concerns the role of cognition in making sense of sensory information” (118), or even that our “explanatory possibilities” open up when we realize that our “ordinary assertions about music in terms of pitch height . . . are founded on fiction” (107), Cox is frugal with the specifics and, just when such guidance would be most welcome, backs away from directly telling us why he is leading us in this or that direction. We learn, for example, that it is “important to question the extent to which our metaphoric use of visual and manual terms might matter for musical knowledge and understanding” because such use “tacitly marginalizes” our visceral embodiment (170), but not why such marginalization should be a concern for us. The narrative landscape sometimes misses convincing transitions that would justify moving forward.

Still, an intrepid reader is rewarded in the last section of the book, where the purpose and the significance of the whole enterprise are finally laid bare. In particular, Cox ends part 2 with a declaration that “to speak of motion-related musical features as if they were audible is to honor the acoustic-auditory component of musical experience; but to do so exclusively is to tacitly deny or marginalize the fundamental role of what we feel, preconceptually, in response to what we hear, along with the role of these feelings in shaping what we think” (159). Part 3 focuses on those feelings as a source of musical knowledge and on the role of mimetic comprehension in their creation. As Cox claims in the book’s introduction, “The emergence of musical meaning includes conceptualization of musical experience, and one of the premises here is that musical concepts are conceptualizations not only of what we hear but also of what we feel. Accordingly, the words we use to describe music never refer simply to sounds but also to what those sounds make us feel” (2).

Chapter 7, “Music and the External Senses,” begins with a premise that our relationship with the world is shaped by our five senses and that each sense offers a different way of knowing that world. The basic conceptual metaphor underlying this premise is knowing is perceiving. Cox suggests that
some senses have greater epistemological value than others, which is reflected in how we conceptualize the domains of knowledge and understanding. In particular, vision and touch are valued more highly than are hearing, smelling, or taste, because visual and tactile sensory information about the world is more readily available than auditory, olfactory, or gustatory information. Cox finds this problematic in the context of musical understanding, because it leads analysts to create “fictional visibility of invisible musical features,” which “provides knowledge and a kind of certainty that disguises the role of the listeners’ and conceptualizer’s embodiment” (168). Although he characteristically holds off on giving us any details—for example, what exactly do we lose when we fail to acknowledge the “invisible feeling” of music?—Cox notes that “the present chapter and this entire book are meant to increase awareness of what [the practice of transforming music into something visible or quasi-tangible] overlooks, and of the disadvantages it offers us” (171).

Cox argues that understanding how the different senses underlie our epistemologies allows us to draw on more than vision or hearing in conceptualizing music and to include our affective responses as the ground on which we structure our conceptual metaphors. The task of chapter 8, “Musical Affect,” is to provide the reader with eight “avenues” of musical affect in an effort to account for “how the feelings that motivate and ground our spatial conceptualizations of music are already part of our affective responses to music” (176). The avenues, conveniently summarized in a table on page 198 (which also features a perplexing header that is likely a remnant of an exchange between Cox and his editor), include the affective dimension of mimetic participation, the experience of anticipation, the acoustical impact of sound, music as an opportunity to explore taboos, analysis, and music’s invisibility and intangibility, among others. All avenues overlap, and all have both mimetic and nonmimetic aspects, which Cox fleshes out in considerable detail.

Cox illustrates the utility of the affective avenues in chapter 9 with three analytic snapshots: Webern’s op. 5, no. 4; Stockhausen’s Studie II (which Cox dubs “postcorporeal music” on account of its lack of human performers); and a more generic treatment of dissonance in Western common-practice music. Importantly, the approach is not meant to address questions of emotional content or musical meaning. Rather than exploring what precisely he is feeling, Cox is interested in the processes of explaining how the music makes him feel whatever he feels. Notable here are two directions one can take in applying Cox’s framework to analysis: starting with the acoustical signal and inferring the listener’s most likely affective response, or vice versa. Curiously, although his stated preference is for the latter, Cox opts to lead us down the former pathway. My sense is that this is an approach most familiar to music

3 On the subject of editorial curiosities, all the pages with endnotes have a running footer with the text “Notes to Pages 000–000.”
theorists, hence a clear way of illustrating the utility of the theory; however, its speculative nature results in the loss of some of the nuance evident in bodily responses to music. There is also a danger of making assertions as if the mimetic hypothesis were a proven fact. Still, Cox draws a very refined picture of the music and allows for the possibility of broadening one’s experience beyond what he describes. Moreover, his use of posttonal music—although at times verging on apologia (e.g., Cox writes that he is “particularly interested in offering listeners, especially students, ways of understanding aversive responses to such music” [202])—makes a strong case for the general applicability of the method.

This case is further strengthened in the final chapter of the book, “Review and Implications,” particularly in the discussion of pedagogy. Using his own experience as a guide, Cox suggests that the mimetic hypothesis can be introduced to students “gradually and selectively” to raise their awareness of the role of motor mimetic imagery in conceptualizing elements of musical structure, such as pitch height, tonal motion, and temporal succession. This can apply equally to common-practice and posttonal music, and it seems to me that it is in this latter context that an explicit awareness of the body’s doings in response to sound can have the greatest impact on interpretation and appreciation. In truth, I myself have at times struggled to convince undergraduate students of the aesthetic value of Pierre Boulez or the visceral beauty of Morton Feldman. Having the framework of affective avenues at hand, or being able to draw on the details of conceptual metaphor theory, provides the tools for overcoming this initial incredulity and, at the very least, gives students an opportunity to articulate their negative reactions. I think young musicians are often astonished to realize that, as Cox writes, the musical object “is infused with us, insofar as it is partly contingent on our affective-cognitive response, so that reflection on the musical object is infused with, whether tacitly or explicitly, what one feels” (228). Cox’s monograph explicates the mechanisms that underlie this infusion and reaches across the often cold, distancing formalism into the familiar warm flesh of musical experience.

Among the recent contributions that explore how musical understanding is grounded in the bodies of listeners and performers, Cox’s captivating sensitivity to the nuances of the sonic reality of music and his earnest dedication to pedagogy are exceptional. Particularly useful is Cox’s comprehensive, taxonomical approach, which offers readers a number of principles, avenues, and continua that may serve as heuristics in analysis and in teaching. His commitment to excavating the meanings hidden in metaphors can be further enlightening to music theorists and critics, increasing their awareness of their own corporeal involvement in musical thinking. However, at least one aspect of the argument demands closer scrutiny, because it lies at the heart of Cox’s hypothesis and, as such, has important consequences for the entire theory: imitation. In particular, although we clearly observe mimetic behavior (MMA) in certain musical situations, such as playing air guitar or dancing,
the significance of overt imitation in human understanding is not at all self-evident. Moreover, the inaccessible, invisible nature of covert imitation (MMI) raises a number of flags, because its reliability as an explanatory mechanism is limited by its somewhat magical, irreproachable quality. As I see it, three key points need to be sorted out going forward with this line of research.

The first is that Cox simply asserts the existence of covert imitation and subsequently interprets all the evidence as if it were a fact. Defining MMA and MMI, he writes that

MMA includes any action performed in imitation of another person, animal, or inanimate entity or event. . . . These actions include limb movements, vocalizations, facial expressions, and poses. MMI includes brain activity related to such imitative actions, whether or not the actions are actually performed. In effect, MMA corresponds to “monkey see, monkey do,” while MMI corresponds to “monkey see, monkey imagine-do.” (38; emphasis added)

Yet the only evidence offered by Cox that might conceivably satisfy the burden of proving that MMI occurs when we try to make sense of musical sounds comes from the much-critiqued (including by Cox himself) notion of mirror neurons, or neurons “that fire both when an action is observed and when the same or closely analogous action is executed” (23). The widely acknowledged problem is that the significance of this coactivation is still little understood, not least because, as Gregory Hickok (2014) points out, the rhesus macaques in which mirror neurons were initially discovered do not imitate: “Monkey see, monkey does not do.”

Even while cautioning us about the problems associated with mirror neurons, the essence of Cox’s argument is that because motor-related areas of the brain are activated when we listen to speech or certain sounds, this is evidence that the mental imagery we have is of motor actions: “Activation of these portions of the brain while observing the actions of others suggests that part of how we comprehend observed actions is by imagining performing those actions” (23). However, there is no established connection between the activation of specific brain areas and our conscious awareness of the functions of those activations. That is, when I feel myself moving my arm, I am conscious of the movement of the arm, and of a sense of ownership of that arm, but I am not conscious of the neural firings that correlate with either the movement or the sense of ownership. Thus it cannot be claimed with any certainty—and some neuroscientists argue that it cannot be claimed at all—that activation of relevant motor-related parts of the brain has anything to do with imitation (Hickok 2014). Without denying the existence of conscious, deliberate motor imagery that relates to the production of sounds, conclusions that unconscious imitative imagery also occurs are simply beyond what the evidence can suggest (at least for now), and certainly not with the kind of fine-grained acuity—including “strong” and “weak” activation—that Cox describes. For example, he writes that “the pertinent implication [of the acti-
vation of motor-related brain regions] is that simply attending to goal-directed actions can activate MMI” (24), but the question remains as to how the perceiver can know that an action is goal directed if the only way to understand it is, according to Cox, to imitate it. Or, to take another example, with regard to instrument-specific MMI, we read that “an observer’s motor system is most strongly activated when perceiving one’s own actions” (33), yet it is unclear why we would need to imitate ourselves to comprehend what we were doing.

In fact, the book’s central claim largely hinges on a single report, by Valeria Gazzola, Lisa Aziz-Zadeh, and Christian Keysers (2006), in which motor areas of the brain were shown to activate both when participants performed an action and when they heard it. Cox concludes that when we hear “goal-oriented” actions, we infer the action that made the sound on the basis of our own simulation of this action in our MMI. He then generalizes this point to say that “whenever we give our attention to such musical sounds, normally we do not simply hear the sound, but we also feel something of what it would be like to perform the sound-producing actions. (That is, we mimetically represent the sound-producing hand actions, to some degree of fidelity, and such representations have an affective dimension, in what it feels like to perform such actions.)” (26). However, the above-mentioned study on which this statement is based is problematic, and Cox acknowledges as much (239n21). This move points to a kind of selectivity often found in music-theoretical literature that engages such fields as psychology, neuroscience, and evolutionary biology (which Cox repeatedly mobilizes in support of his hypothesis), where authors present evidence bolstering their claims without contextualizing it within a wider critical discussion in that field. In this particular case, it must be reiterated that neural activation does not imply either imitation or imagery, and, at least according to the evidence offered by Cox, the subject must first comprehend that an action is goal directed before being able to imitate it.

The second point is related to mirror neurons and concerns imitation itself. Although simple observations confirm that humans engage in overt mimetic behavior, its function in development and in action comprehension remains unclear. Much of the evidence that the foundation of our knowledge lies in our ability to imitate comes from studies of newborn infants, in particular a classic experiment published by Andrew Meltzoff and Keith Moore (1977). Meltzoff and Moore claimed to have observed two- to three-week-old infants imitate simple behaviors shown to them by an adult, such as tongue and lip protrusions and mouth opening. What makes this so remarkable is that imitation is a complex process that involves many steps: visually analyzing bodily movements of others, making a match between external and internal body configurations, matching representations across modalities (from visual to kinesthetic), finding specific body parts to produce the target con-
figuration, and finally voluntarily moving those parts to achieve the target outcome. If newborns are indeed capable of such a feat without having been exposed to the relevant stimuli prior to birth, the implications for our understanding of the origins of human knowledge would be profound.

Yet this entire line of research has come under fire. A combination of thorough meta-analyses, longitudinal studies, and novel explanatory models has revealed that infants might not in fact be imitating the behavior of adults after all. According to a review by Susan Jones (2017), it appears from replication studies that the only action that newborns consistently mimic is tongue protrusion; however, they also do that in response to a wide variety of stimulations, including blinking lights, retractable pens, opening and closing boxes, listening to music, and being stroked or tickled. As Jones underscores, the wide scope of effective stimuli suggests that “tongue protruding in very young infants is a general response to moderately arousing stimulation” (7), which means that, rather than responding to humans imitatively, infants simply find them interesting. On this view, imitation, far from an innate ability, is a social skill acquired through associative learning, and rather than babies mimicking adults, it is adults who are actually imitating babies.

The broader issue with the notion of innate imitation as a foundation of human knowledge, and the third point in my commentary, concerns what is known in phenomenology as apperceptive transfer. Although Cox does not mention it by name, I introduce it to the discussion for two reasons: because phenomenology features very prominently in Cox’s analysis and because apperceptive transfer addresses some of the same issues that interest Cox; its critique thus applies equally to the mimetic hypothesis. Coined by Edmund Husserl, the term refers to the process through which we understand the intentions of other humans. The idea is that what is present to my senses in my encounter with another person is only part of that person’s characteristics, and to understand them, I have to infer those aspects that are implicated by, but absent from, what I observe. My inference is based on the fact that I perceive similarities between my own body and that of someone else’s, which leads me to construct a “pairing” (Husserl’s term) between us. I can then vicariously experience what the other person is experiencing, because it seems that we are both essentially experiencing the same thing.

Apperceptive transfer is meant to provide an explanatory mechanism for how we understand alterity, or how we establish our fundamental intersubjectivity. However, since it basically relies on creating an analogy between our own body and those of others, it presents a problem. In particular, analogical inferences require learning, but in this case it is unclear how my own visual experience of myself can be transferred to what I think is the experience of another person. My visual experience of myself is always necessarily distorted, because my relationship to my own body is one that mixes subjectivity and objectivity. For example, I need a mirror to have visual access to my
own face, whereas your face shows up for me as an object like any other. Even with the aid of a mirror, because of the placement of my eyes, I can see my body only from a particular perspective, in which certain proportions are deformed. Relatedly, my subjective experience of my own body is different from how I experience other bodies. At issue here is a sense of “mineness,” of bodily ownership. Barring any disorders, I can tell the difference between what my body feels like, what other bodies feel like, and what my body feels like against another body (e.g., touching or embracing). Hence my knowledge of another person cannot be a mere projection of myself, because the other always already exceeds that projection (which, in any event, erases the ontological separation between myself and the other). Instead, I have to take up a particular position toward the other on the basis of what I observe them doing. This position may be affective, or it may be grounded in some sort of inchoate proto-ethical affinity, but it is always a matter of realizing that, fundamentally, I am not the other. Consequently, the only way I can understand who this other is and what this other is doing is through the effects of the other’s being and doing.

One way to surmount the above dilemma is to define mimetic behavior very broadly, encompassing not only imitation but also emulation, empathy, and contagion, all of which, despite being treated analogously in Cox’s book, refer to different behavioral mechanisms. Indeed, Cox posits a spectrum of mimetic participation ranging from copying the actions of others in considerable detail to simply breathing in synchrony with the auditory signal. Yet if imitation is associatively learned rather than innate, then perhaps other models might account for bodily responses to music in a way that subsumes this aspect while teasing apart the differences. Zbikowski (2017: 15), for example, regards music as a “sonic analogue of dynamic temporal processes.” On this view, music functions as a kind of repository of what a given culture considers its most valuable affective and bodily habits. Movement and emotional patterns are encoded in sound to be retrieved, or enacted, later by participants engaged in the communal experience of musicking. In a related model, bodily responses may be explained by drawing on the notion of musical affordances, which are features of the environment that an organism perceives as opportunities for action. Here members of a social group learn to discern these opportunities with increased acuity as they are directed to them by other members. At the same time, they learn to imitate by improving their performance on tasks that they observe others doing. In both models, imitation, emulation, empathy, and contagion are available as modes of engagement, but they are not necessary for explaining why and how bodies participate in musical comprehension. There is, in fact, no compelling reason to insist that behavior on which music conceptualization is based is imitative. Cox’s main argument would not be adversely affected if we claimed that our behavior is simply complementary and that complementarity can, at times,
involve an overt imitation of others’ movements. This would expand the field of bodily engagement to include a host of distinctive behaviors gathered by Cox under the umbrella of nonmimetic participation and simultaneously widen the scope of repertoire to which Cox’s thesis can comfortably apply. At this point the analyses presented in chapter 9 emphasize the extent to which twentieth-century avant-garde music suppresses mimetic engagement and leads to “aversive responses” in listeners. An alternative might be to consider how it actually unlocks an entirely new range of embodied responses.

All this is to say that the jury is still a long way from reaching consensus about the nature of human mimetic capabilities. The reason that this matters at all is that it offers a way out of some parts of Cox’s argument that are less parsimonious. For example, in considering the idea of musical agency from the perspective of mimetic participation, Cox claims that we transfer what we would normally do from a first-person perspective to some imagined agent who is vicariously doing that same thing “in” the music. We do this to maintain our identity as something separate from the sounds to which we are listening. We attribute our own “desires and satisfactions . . . to the musical agent” (143). However, in light of the whole book, the argument ends up being circular: we comprehend music by covertly imitating sound-producing actions and implicitly asking what it would be like to make them, yet, to protect our subjectivity, we project our own mimetic participation onto the music to create musical agency. Since this participation is already a reflection of our musical understanding, it becomes difficult to disentangle who exactly is doing what here (which, paradoxically, ends up blurring the line between ourselves and the music). Wouldn’t our imagined agent simply be the implicit performer whose actions we are imitating? But if that were the case, then it would fail to explain other forms of agency that some listeners experience in the music. Jettisoning the idea of mimetic comprehension and substituting it with more general bodily capabilities would, in fact, help establish the listener’s agency as an entity not tied causally to the environment but able to enact complementary responses to its solicitations. This sense of embodied subjectivity can then become the form of organizing sonic events, including ways that seem to go against them.

Part of the larger problem is a general insistence that there must be some (dedicated or ad hoc) internal mechanism that corresponds bijectively to the external source of information that is music. The holy grail, in this case, is to determine how this music “gets into our flesh,” to use Cox’s somewhat hyperbolic locution. But why should music be considered a process that has the unique capacity to penetrate us so intimately? Would we say, for example, that a coffee cup gets into the flesh of our hand when we pick it up? Or that our favorite chair seeps into our blood when we sink into it? Or that the Golden Gate Bridge invades our nervous system as we walk across it? And, of any of these, would we ask, What’s it like to be a mug? A chair? The Golden Gate Bridge? These questions might seem peculiar, but this is exactly what is
implied when we ask how music becomes embodied. Perhaps there is no reason at all to think that we have to have some imitative mechanism that internally replicates what is present in the external world. Perhaps a more veridical explanation is that we simply learn to exploit environmental opportunities for action to the best of our abilities. As a human artifact similar to mugs, chairs, and bridges, music is just such an environmental opportunity.

Of course, these are fine-grained observations aimed at very specific aspects of the mimetic hypothesis. Whereas imitation remains a challenge that offers opportunities for future research and clarification, I should stress that none of my above critiques sinks Cox’s larger argument that our understanding of music has its basis in our active bodily responses. *Music and Embodied Cognition* on the whole charts a clear course toward an exciting possibility of enlivening music discourse by systematically drawing on embodied listening experience, as Cox himself does in chapter 9. Indeed, one of Cox’s most laudable insights is that when we engage with music, we attend not just to the auditory signal but also to the activities of our bodies. To anticipate what is going to happen in a musical phrase is to anticipate our own responses to it; to feel tension in a passage is to feel ourselves tense up; to enter into a metrical free fall is to feel our own ground slip out from under us. After all, what connects the motley crew of approaches amassed under the banner of “embodied cognition” is a commitment to the idea that our cognitive processes are constituted by our own bodily engagement with the environment, which means that how we conceptualize music is constituted by its effects on our bodies. This puts the corporeal forms of performers and listeners at the very center of musical discourse, a perspective that has started to receive increased scholarly attention. Cox is clearly gesturing toward what could be a profound shift in our theoretical approaches to music, toward an interdisciplinary system that draws on the unique resources of the entire body, amplified through an acute self-awareness of its doings, and thoroughly incorporated with our pedagogy. I think that *Music and Embodied Cognition* is a refreshingly sincere, widely accessible attempt at effecting just such a shift, one whose delightful vistas are sure to prove fertile ground for further inquiry.

**Works Cited**


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