Special Issue

Music and the Body: From Cognition to Performance

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This article provides an overview of some recent approaches to the study of music and the body. Among the topics discussed are embodied music cognition, phenomenology, affect and atmosphere, entrainment and gesture, and "reading" bodies as cultural texts. The different concepts are defined, and examples of relevant studies are identified and discussed. Themes that cut across these topics include the moving body, the nature of embodiment, and the relationship between non-discursive forms of meaning making and language. Earlier work on music and the body within ethnomusicology is also discussed, as well as more recent work that theorises music and embodiment. The article concludes that ethnomusicology is especially well situated to study the body and embodiment due to its ethnographic approach to performance, where moving, performing, and listening bodies are in focus.

Researchers in the psychology of music, musicology, ethnomusicology, popular music studies, music theory and analysis, and dance studies have studied in many different, sometimes contradictory ways the relationships between music and the body.[1] Following the "corporeal turn" (Sheets-Johnstone 2009) more generally, researchers in music studies have begun to explore the role and place of the body in music, first in a number of article-length polemics beginning in the early 1990s (e.g. Walser 1991; Cusick 1994; McClary and Walser 1994; McClary 1995; Fisher and Lochhead 2002; Duncan 2004; McMullen 2006; Hutchinson 2010; Watkins and Esse 2015), and more recently in several ethnographically oriented monographs on musical subjects with the words "body" or "embody" (or their derivations) in the title (Hellier-Tinoco 2011; Henriques 2011; Rahaim 2012; Miller 2017; Wong 2019; Livermon 2020). That "music and the body" has come of age as a research orientation is indicated by the subject having its own volume in the *Oxford Handbooks* series (Kim and Gilman 2018).

This article will discuss some aspects of research on music and the body. I do not pretend to be comprehensive (an impossible task in the format of a short article) but will rather trace a pathway through a few concepts and approaches that have been relevant in the field, thus contextualising and providing a partial genealogy for the more recent research presented in the other articles in this special issue of European Journal of Musicology. The relevant literature in this field is vast, with contributions from philosophy, psychology, anthropology, gender studies, musicology (broadly construed), and ethnomusicology, and I will limit myself to reviewing a small subset of writings that I take as representative of major currents of research. Like Clayton, it is with some trepidation that I "[dip] into vast literatures so briefly" (2008: 142); the trade-off here is that this approach allows me to present a fairly broad overview of several of the many ways researchers have theorised music and the body.

1 In order to keep this article within a manageable length, I must unfortunately mostly leave out dance and focus primarily on work in ethnomusicology or that is ethnomusicology adjacent, though I do refer to other relevant literatures within music studies more broadly.

European Journal of Musicology | ISSN: 2504-1916
Bern Open Publishing
Vol. 23 | Issue: 1 | DOI: 10.5450/EJM.23.1.2025.5

The title of this special issue, "Performing Bodies," can be read in two ways: as *bodies that perform* (active voice), highlighting the materiality of the body in musical performance and the body as a resource for the embodied production of sound, and as *bodies that are performed* (passive voice), putting the emphasis on the body as social and cultural construction and a site of and for representation. While these two meanings can be seen to be dialectically intertwined, I will focus primarily on the first meaning, though with some reference as well to the second.

Which Body?

Before looking specifically at work on music and the body, it can be useful to address more generally the nature (and culture) of the body. What do we mean when we refer to the body and bodies (in the plural)? In an article titled "The Mindful Body" published some 35 years ago, but which I think has insights that are still useful today, medical anthropologists Nancy Scheper-Hughes and Margaret M. Lock (1987) synthesised the anthropological literature on the body up to that time, organised in terms of what they described as "three perspectives from which the body may be viewed" (1987: 6). These are: 1) the body "in the phenomenological sense of the lived experience of the body-self," 2) "the social body, referring to the representational uses of the body as a natural symbol with which to think about nature, society, and culture," emphasising "constant exchange of meanings between the 'natural' and the social worlds," and 3) "the body politic, referring to the regulation, surveillance, and control of bodies (individual and collective) in reproduction and sexuality, in work and leisure, in sickness and other forms of deviance and human difference" (1987: 7–8). Scheper-Hughes and Lock suggest that these three perspectives on the body represent respectively "three different theoretical approaches and epistemologies": 1) phenomenology (cf. Merleau-Ponty and other continental philosophers, though they do not extensively cite that literature), 2) structuralism and symbolism (cf. Levi-Strauss and Mary Douglas), and 3) poststructuralism (e.g. Foucault on the historical creation of "new forms of power/knowledge over bodies" (1987: 26)). While Scheper-Hughes and Lock present these three perspectives on the body as having rather separate intellectual genealogies, the implication is that they in fact overlap, and that they all point to ways in which a host of dualities following from the Cartesian mind-body duality can be challenged. For example, in relation to the social body, they argue that "Insofar as the body is both physical and cultural artifact, it is not always possible to see where nature ends and culture begins in the symbolic equations" (1987: 19). As musicologist William Echard suggests in his summary of the article, "The body necessarily has physical and ideational components, and cannot be reduced to one or the other. It is never possible to say in a final sense which are which, since the boundaries are multiple and shifting" (2000: 55).

From a more grounded perspective, however, the different bodies that Scheper-Hughes and Lock theorise are not actual living bodies but abstractions (useful though they may be) engendered through critical categories. Beckles Willson argues against normative understandings of *the* body, noting that "Bodies are differently enabled and constrained by the regimes in which they exist: if bodies are shaped by their environments then there can be no positing of a 'normal' body … So there is no 'body': there are only bodies – these of varying size, shape, colour, gender, ability, and so on" (2018: 225).

Since Scheper-Hughes and Lock published their article in the late 1980s, a number of theories and empirical approaches have emerged that engage more directly with different aspects of the social nature of the body and that bridge the phenomenological and social bodies. Relevant concepts here include embodied cognition, affect, atmosphere, entrainment, gesture, and the body as text, each considered briefly below.[2]

Embodied Cognition

Separate from but parallel to the anthropological tradition Scheper-Hughes and Lock were working in is research in what has come to be called *embodied cognition* or *cognitive semantics*. Emerging from work by George Lakoff and Mark Johnson on metaphor theory, notably their book *Metaphors we Live By* ([1980] 2003), and specifically elaborated by Johnson in his 1987 monograph *The Body in the Mind*, then further developed by Lakoff and Johnson in their joint book *Philosophy in the Flesh: The Embodied Mind and its Challenge to Western Thought* (1999), and then again by Johnson in *The Meaning of the Body: Aesthetics of Human Understanding* (2007), this approach explores the bodily basis of cognition. As Johnson explains, "Our reality is shaped by the patterns of our bodily movement, the contours of our spatial and temporal orientation, and the forms of our interaction with objects. It is never merely a matter of abstract conceptualization and propositional judgements" (1987: xix). Johnson's approach thus proceeds from the assumption that the body is not a container for the mind, but rather, in a sense, the body *is* the mind, and there is no cognition without the body. A key concept Johnson develops in this approach is *image schemata*. Image schemata are "recurring structures of, or in, our perceptual interactions, bodily experiences, and cognitive operations" (Johnson 1987: 79). As musicologist Robert Walser explains, quoting Johnson,

> Image schemata are not concepts; they are patterns of *activity*, and they "emerge as meaningful structures for us chiefly at the level of our bodily movements through space, our manipulation of objects, and our perceptual interactions." These schemata are "prelinguistic" not because they become superseded by language, but because they are fundamental mechanisms of meaning production that inform the more abstract operations of language and conceptual thinking. (Walser 1991: 119–20, quoting Johnson 1987: 29, emphasis in original)

As musicologist Hallgjerd Aksnes further elaborates, image schemata are "skeletal structures which can be regarded neither as propositions nor as rich images. Instead, they involve operations that are analogous to spatial manipulation, orientation, and movement" (Aksnes 2001: 82). The theory of embodied cognition is thus "a cognitive model of how embodied experience comes to structure and unify all levels of cognition" (Echard 2000: 52). Although Johnson uses static diagrams to illustrate specific image schemata, it should be stressed that these diagrams are meant to evoke processual experiences of bodies moving or being subjected to forces in space and time.[3]

Building on his earlier work with Lakoff, Johnson uses the concept of *metaphor* to trace how the embodied experiences that underlie image schemata form the basis of cognition through processes of cross-modal mapping. As Walser glosses Johnson, "metaphor is a crucial process for generating meaning, whereby we come to understand one area of experience in terms of another. It is by means of metaphor that image-schematic structures are extended, transformed, and elaborated into domains of meaning that seem less directly tied to the body, including language, abstract reasoning, and," Walser argues, "music" (1991: 120). Echard further explains that "Spatial relations, movement, and relations of force form the most basic level of metaphorical structures, since these are among the most fundamental elements of embodied experience" (2000: 61).

2 For reasons of space, I must unfortunately leave out another important concept with clear relevance for music, *intercorporeality*.

3 Besides the illustrations included throughout Johnson (1987), examples of diagrams of image schemata can be found, for example, in Echard (1999: *passim*) and Aksnes (2001: 83).

Lakoff and Johnson's theory of embodied cognition has been adapted to music studies, especially in the field of music analysis. Beginning in the 1990s, a small number of musicologists and music theorists (e.g. Walser 1991, 1993: 31–32; Echard 1999, 2000; Brower 2000; Aksnes 2001; Moore, Schmidt, and Dockwray 2011) began to explore the place of bodily experience in the perception of music and the inter-subjective creation of musical meaning. These researchers found the theory of embodied cognition to be a useful tool in the larger project of accounting for how music signifies, how the embodied experience of musical sound transcends language, and how insights into the bodily experience of music challenge linguistically based models of musical meaning. These writers all use the metaphor theory of Lakoff and Johnson as a starting point for exploring the place of bodily experience in the perception of music and the inter-subjective creation of musical meaning.

One of the first, if not the first, attempts to use Johnson's concepts in a musical context is a short article I have already referred to by Robert Walser published in 1991, just four years after Johnson's *The Body in the Mind* was published. In direct reference to Johnson, Walser titled his article "The Body in the Music." Walser chooses one of the image schemata identified by Johnson, *force*, and describes how use of intentionally distorted timbres in heavy metal music may be understood in these terms. Walser argues that distortion in heavy metal (for example in overdriven guitars and voices) functions "as a sign of extreme power and intense expression by overflowing its channels and materialising the exceptional effort that produces it" (1991: 123).

Aksnes also suggests an analytical focus on what she calls "our musical body," a body that "transcends Cartesian duality" and includes "auditory, visual, emotional, kinesthetic, linguistic, and other modes of cognition" (2001: 81). Aksnes applies Johnson's image schemata for different kinds of balance, and the idea of metaphorical projection more generally, to various short music examples from the European classical tradition, ranging from the Renaissance (a mass by Palestrina) through the Baroque period (an aria from an opera by Henry Purcell) to the Classical period and twentieth-century music. This work uses notated scores as the starting point, so the focus is not on actual, specific performances of these works, but on potentialities inherent in the compositions as notated on the page. In the field of popular music analysis, musicologist William Echard (1999) also uses various image schemata identified by Johnson, in a sustained, detailed analysis of a single song by the rock musician Neil Young, focusing on the specifics of harmony, timbre and texture, and the relationships between two guitars. Here the starting point is a commercially released recording. Mark Johnson himself, together with co-author Steve Larson (2003; see also Larson (2012), chapter 3), applies some aspects of his theory of metaphor and movement to music, using the Beatles song "Something" as his example.

Since the mid-2000s, musicologists seem to have backed off from their initial enthusiasm for the Lakoff/Johnson approach to embodied cognition. Rather than direct, almost slavish attempts to apply Johnson's theory by seeking direct relationships of homology between specific image schemata and specific musical structures, researchers have started to use instead the much more flexible concept of *gesture* (see further discussion below).

Phenomenology

As Harris Berger notes in his useful overviews (2015, 2019), music scholars, including especially ethnomusicologists, have found several different strains of philosophical approaches to lived experience, grouped under the general heading of phenomenology, relevant to musical research. The most relevant in this context is the body-based phenomenology associated with French philosopher Maurice Merleau-Ponty, whose *Phenomenology of Perception* ([1945] 1962) set the

agenda for much later philosophical, social scientific, and humanistic research on the body and embodiment. Berger suggests that "phenomenological ethnomusicologists have argued that music is necessarily, rather than contingently, embodied and have explored the complex, culturally specific ways in which embodied practice is essential to even the most seemingly disembodied, formal qualities of music" (2015, section "Embodiment"). Like the approach to embodied cognition discussed above, Merleau-Ponty also uses bodily experience as a starting point, but he phrases the important issues not in terms of cognition, but in terms of the body's ongoing, contingent way of encountering and being in the world and making *sense* of experience. In an implied critique of the embodied music cognition approach discussed above, Berger thus, discussing the work of Downey (2002) on the Brazilian martial art *capoeira* – in which musical accompaniment is essential – notes that "here the body is not an output device for some underlying musical cognition; rather, it is the social and musical means by which music structure itself is created" (2015, section "Embodiment").

An important theme here is the relationship between embodied experience and the construction of subjectivity. Stephen Amico (2014), for example, in his study of the place of music in corporeal experience in the embodied construction of post-Soviet homosexual subjectivity in St. Petersburg and Moscow shortly after the turn of the millennium, draws extensively on Merleau-Ponty's phenomenology (e.g. the concept of *intentionality* and Merleau-Ponty's discussion of the phenomenological status of the phantom limb). Using these conceptual tools, Amico posits "a deep and profound relationship of corporeal existence to the auditory" (2014: 51). In his discussion of how music effectively *penetrates* the body, Amico thus highlights

> the ability of music, through the subject's experience, to trouble the very idea of bodily impermeability. For while the actual, physical sources of music may be outside the listener's body (the body of the musician, his or her vocal chords or instrument, the mp3 or CD player, the speakers, the stores that sell the CDs, the encoded .mp3 or .wav files on a physical hard drive, and so forth), outside the listener's place/space (emanating from a foreign locale), at the same time it is experienced inside the listener as well via the cognitive and affective circuits in the body *and* mind and the actual organs of reception: the ears, of course, as well as the eyes which take in surrounding discourses, as well as the entire body, the gut of which may be (either or both metaphorically and/or physically) vibrated. (2014: 52, emphasis in original)

Amico also takes into account feminist and queer critiques (e.g. Young 1980; Butler 1989; Ahmed 2006) of Merleau-Ponty's phenomenology that argue that the universal body-subject Merleau-Ponty takes for granted as his point of departure is not universal at all, but actually the body of a heterosexual white European male.

Another important theme in this work is the relationship between embodiment, on the one hand, and discourse, representation, and culture on the other. Amico sees embodiment, discourse, and culture as co-constructing each other. Taking into account recent critiques of Merleau-Ponty's work, such as that of Ahmed (2006) who holds that the embodied is not pre-ideological, Amico argues that "the body, and the actions of the embodied subject, however primary they might be postulated, never exist outside of the constraining structures and strictures of culture" (2014: 170). On the other hand, Amico argues that "the significance of the body cannot be read only through the discursive or the ideological; rather, its significance must be understood as dependent upon an embodied experience of the world" (2014: 114). Amico treads a middle path between these positions, arguing that the non-normative body is thus "never free of discourse, yet never entirely defined by it either" (2014: 18–19). The question of the relationship between bodily experience and the discursive is also central to the pair of concepts I turn to next, affect and atmosphere.

Affect and Atmosphere

Two more tools for theorising the body that have emerged from different strains of philosophy are the interconnected concepts *affect* and *atmosphere*. Both terms are closely related to the more general concepts of emotion and feeling, and both have an affinity to music and sound.

Affect

In her insightful overview of what she calls "the affective turn in ethnomusicology," Ana Hofman notes that "affect has multiple and sometimes even conflicting definitions" (Hofman 2015b: 35). What most definitions have in common is that affect has something to do with bodily experience outside of or before language, representation, ideology, and semiotic meaning or social constructivism more generally – what Massumi (2002) refers to as affect's *autonomy* or resistance to *capture*. Affect is often contrasted with or defined in relation to two other closely related terms, emotion and feeling, and the concepts are often placed on a continuum from the ineffable or pure bodily experience (affect) to the discursive (emotion). Von Scheve and Slaby, for example, suggest that "whereas 'affect' stands for pre-categorical relational dynamics and 'feeling' for the subjective-experiential dimension of these affective relations, 'emotion' signifies consolidated and categorically circumscribed sequences of affective world-relatedness" (2019: 43); emotions are thus "realizations and conceptualizations of affect" (2019: 43). What has come to be called *the affective turn* (Clough 2007), with its emphasis on embodiment and bodily experience, is thus often seen as a reaction to the poststructuralist *discursive turn*, with its focus on language as the primary shaper of experience. Slaby and Mühlhoff further elaborate affect's relation to the social body, grounding their discussion in

> a notion of affect as *relational dynamics* between evolving bodies in a setting, thus contrasting with approaches to affect as inner states, feelings, or emotions. 'Affect' designates specifically those encounters between bodies that involve a change – either enhancement or diminishment – in their respective bodily *capacities* or micro-powers. Thus, affect is inextricable from an approach to power, understood as relations of reciprocal efficaciousness between bodies – human as well as non-human – in a particular domain. (2019: 27, emphasis in original)

Philosopher Brian Massumi, in his influential essay "The Autonomy of Affect" (first published in 1995 and later incorporated as the first chapter into his book *Parables for the Virtual: Movement, Affect, Sensation* (2002)), is generally credited with having recovered the concept of affect from seventeenth-century philosopher Spinoza and initiating the affective turn in the mid-1990s; work using the concept quickly spread from philosophy to the humanities more generally and to the social sciences. Drawing on Spinoza, Massumi defines affect as "an ability to affect and be affected. It is a prepersonal intensity corresponding to the passage from one experiential state of the body to another and implying an augmentation or diminution in that body's capacity to act" (1987: xv).

While researchers and thinkers in fields such as music theory, musicology, and music psychology (e.g. Meyer 1956; Sloboda 1991; see Hofman 2015b and Klette-Bøhler et al. 2023 for additional references and discussion going back to Antiquity) have long explored the relationships between music and emotion, the contemporary affective turn in music studies can be dated from ca. 2010, around which time a number of organised panels at academic conferences (especially in ethnomusicology) put the topic on research agendas. Many writers have pointed out that music, as a distinct form of communication often associated with ineffable bodily experiences, is especially apt for being theorised in terms of affect (Hofman 2015b: 37). Specifically in relation to eth-

nomusicology, Graber and Sumera note that "the core debates that comprise affect theory – critiques about the meanings and functions of embodiment, movement, feeling, and emotion in the constructs of culture and the limits of language – have long been at the centre of ethnomusicological practice" (2020: 4). Desai-Stephens and Reisnour similarly argue that "music should be a very ripe place for examining and theorising affect, for music and affect have parallel epistemologies as phenomena that seem to elude linguistic description or 'capture' while being attributed great potency" (2020: 101). Many researchers on music and affect have, however, sought to understand affect and discourse as being in a kind of dialectical relationship, mutually constituting each other (Hofman 2015b: 48). It is in this spirit that Graber and Sumera offer a conceptual framework in which "sounds move bodies while bodies produce sounds, and those sounds and bodies in turn interact with other bodies, linguistic structures, socio-cultural expectations, ideologies, practices, and musical suppositions" (2020: 4). Rather than being a realm of pure, unmediated experience, here affect is understood as being historically and socially constituted (Hofman 2015b; Slaby and von Scheve 2019). This approach to affect intersects with similar debates in phenomenology mentioned above regarding whether bodily experience can ever be pre-cultural or pre-ideological.

Affect's association with experience and meaning outside the semantics of language has also made it a useful tool in theorising how politics and power can be engendered outside the strictly discursive. Affect thus becomes a concept for understanding political engagement beyond the explicit "message politics" of, for example, the lyrics of protest songs (Hofman 2020), pointing to bodily experiences such as the visceral pleasures of party music as a site for the articulation of politics and power through its embodiment of collectivities (Guilbault 2010, 2011, 2019). While recognising "music's affective capacity in constituting collectivities and its emancipatory potentials in alternative modes of political and cultural production" (Hofman 2015b: 49), Hofman also cautions against the romanticisation of affect, citing studies such as those of Cusick (2006, 2008) and Goodman (2010) that call attention to the weaponisation of musical affect and its application in violence, war, and torture, such that affect can become "a tool for controlling lives" (Hofman 2015b: 49).

The growing literature on music and affect in ethnomusicology and music studies more generally includes four special journal issues,[4] three edited volumes (Thompson and Biddle 2013; Reyland and Thumpston 2018; Lochhead, Mendieta, and Smith 2021), several monographs (e.g. Goodman 2010; Stokes 2010; Gray 2013; Kassabian 2013; Gill 2017; MacMillen 2019; Garcia-Mispireta 2023), and more individual articles and book chapters than can be mentioned here. Useful summaries of the literature on music and affect are Hofman (2015b) and the introductions to the mentioned journal special issues (Hofman 2015a; Desai-Stephens and Reisnour 2020; Graber and Sumera 2020).

While affect may be pre-personal, it is not isolated in the individual. The capacity of a body to affect or be affected means that there are always present other bodies that can potentially come together as a collectivity in a complex set of mutual affective relations. It is precisely the issue of the nature of the collectivity where *affect* begins to shade into *atmosphere*.

4 The journal special issues include *Southeastern Europe*, special issue "Music, Affect and Memory Politics in Post-Yugoslav Space," volume 39, number 2 (2015), edited by Ana Hofman; *Culture, Theory and Critique*, special issue "Musical Feelings and Affective Politics," volume 61, numbers 2–3 (2020), edited by Anaar Desai-Stephens and Nicole Reisnour; *Ethnomusicology Forum*, special issue "Affect Theory: Ethnomusicological Interventions," volume 29, number 1 (2020), edited by Katie J. Graber and Matthew Sumera; and *Journal of Extreme Anthropology*, special issue "Music, Affect and Politics," volume 7, number 1 (2023), edited by Kjetil Klette-Bøhler, Lorena Avellar de Muniagurria, Bjørn Schiermer, and Chris Stover.

Atmosphere

Affect and atmosphere are often understood as being closely related (McGraw 2020; Riedel 2020a). If *affect* is about bodies (including non-human bodies) in relation, *atmosphere* is more fully ecological in the sense that it takes into account the whole *situation* bodies are collectively experiencing. Indeed, one of the tenets of the theory of atmosphere developed by Schmitz (see below) is that atmospheres only exist in specific situations; "the analytical concept is typically restricted to particular situations in a singular time and space: an event, not a structure" (McGraw 2016: 131). Also central to the idea of atmosphere is the phenomenological concept of *Leib* or the *felt-body* developed by a number of philosophers, especially Merleau-Ponty ([1945] 1962). The felt-body is not the material body and its feelings/sensations (in the everyday sense of those words), but rather the extension of the body through surrounding space to include all (material and non-material) that is felt to pertain to it. Eisenlohr thus defines *atmospheres* as "quasi-objective entities that spread in a given space, touching and enveloping the bodies of those perceiving them in a way that exceeds single, definite sensory impressions" (2018b: 39), and Riedel similarly proposes that "'atmosphere' or an 'atmospheric situation' describes a 'feeling' that fundamentally exceeds an individual body or conscious subject, and instead pertains primarily to the overall situation in which a multiplicity of bodies cohere" (2020b: 4). Riedel further states that "While 'affect' can be said to refer to the ways in which (emerging) bodies relate *to each other*, 'atmosphere' allows for the ways in which a multiplicity of bodies is part of, and entangled in, a situation that envelopes it" (2020b: 4, emphasis in original).

Atmosphere is one of the conceptual underpinnings to the *New Phenomenology* developed by philosopher Hermann Schmitz. Very little of Schmitz's enormous published output has been translated to English; a short article is Schmitz (2016), and useful exegesis is provided by Kazig (2016).

In a way similar to affect, as discussed above, Riedel suggests that music and sound have an especially close affinity to atmosphere (2019: 86). Theorists who developed the concept frequently refer to music to support their arguments (Riedel 2018: 172, 178). Riedel holds that for Schmitz, "sound does not appear as an object in the world with a defined location and surface, but rather, charges an entire place or situation with sonorous intensity due to what Schmitz terms its *surfacelessness*" (Riedel 2019: 91, emphasis in original). The work of Abels (2017, 2018, 2020), Absaroka (2020), Eisenlohr (2018a&b), McGraw (2016, 2020), and especially Riedel (2015, 2018, 2019, 2020a&b), as well as various other chapters in an entire edited volume on music and atmosphere (Riedel and Torvinen 2020), demonstrate the utility of the atmosphere concept for exploring music and sound. Atmosphere's methodological focus on specific situations, as stressed by Schmitz, lends itself particularly well to the kind of ethnographic approach that is ethnomusicology's bread and butter.

Entrainment and Gesture

Two other concepts that have been used to explore some of the relationships between music and the body are *entrainment* and *gesture*. While they are analytically distinct and have separate histories and literatures, within music studies they also to a certain extent cross-fertilise each other and can be understood as complementary aspects of embodied cognition (broadly conceived), forming a conceptual and methodological bridge between the study of bodies that *perceive* and bodies that *perform*. Much of the work in these two areas can also be seen as part of a larger project of exploring the nature of musical meaning, particularly meaning of the kind that can-

not be reduced to language and semantics (Clayton 2001). While they have separate origins in various fields of enquiry (see below), the study of both musical entrainment and of musical gesture today has homes in the psychology of music, especially within the study of perception. But both have come to be studied in an interdisciplinary fashion, with scholars from fields such as music theory, musicology, ethnomusicology, and music therapy also making contributions to both theory and method. Ethnomusicologists studying entrainment and gesture have been especially active in bringing in qualitative methods and moving the study of both outside the laboratory and into real-world music-making situations, while extending the study of both to musical traditions outside of Western European common practice. Both thus have their start in the hard sciences but have more recently been taken up as foci of humanistic and qualitative social scientific study. Entrainment and gesture can be seen as mutually implicated since, for example, one of the ways that one may determine that entrainment is taking place is by observing bodily gestures.[5] Most important for this discussion is that both entrainment and gesture can be understood as processes of embodiment, and both concepts shed light on how music is created and experienced through the body.

Entrainment

Martin Clayton provides a precise definition of entrainment as "the process by which independent rhythmical systems interact with each other" (2012: 49). Following the origins of the concept in physics, in this most encompassing sense these "rhythmical systems" can be mechanical, biological, or psychological. A more limited definition that can be useful as a starting point for studying entrainment in relation to music might be that entrainment is the body in synchronicity with the rhythms of its surroundings, including other bodies, with special focus on situations where bodies are listening to and/or performing music (singing and/or playing instruments). Like atmosphere, as discussed above, the concept of entrainment is thus broadly ecological, in the sense of being concerned with "organisms in relation to their environment" (Clarke 2005: 5, after Gibson 1966, 1979). Work in music psychology has focused on identifying the electrochemical basis of entrainment in the human brain (Clayton, Sager, and Will 2005: 9).[6] Reviewing the relevant literature, Clayton thus notes that "The entrainment of populations of neurons is argued by many to lie at the basis of rhythmical, entrained behaviour and the phenomenon of metre" (2013: 30). Musical entrainment can thus be understood as a physiological and psychological process in the brain and the body. Ethnomusicological approaches to musical entrainment build on this physiological understanding, but also bring to the table the intuition that entrainment within the brain involving neurons firing in synchrony is closely related to the more obviously *social* aspects of musical entrainment between people (Clayton, Sager, and Will 2005), though demonstrating this empirically is difficult.

Research on musical entrainment began in behavioural psychology, with a focus on experimental empirical methods.[7] The first two decades of the twenty-first century saw numerous empirical studies of musical entrainment, many of them emanating from the milieu surrounding the "Experience and Meaning in Music Performance" (EMMP) project based first at the Open Uni-

5 In his comments on a draft of this article, Martin Clayton notes, however, that the movements usually identified as communicative "gestures" are different from the movements typically analysed as indicating entrainment.

6 The literature in psychology, physiology, and neuroscience on entrainment (including musical entrainment) is vast; see note 7 for a few entry points. Otherwise, only a few studies intersecting with ethnomusicology can be mentioned here.

7 Work on musical entrainment has been influenced by research by Schmidt and his collaborators on interpersonal coordination (e.g. Schmidt and O'Brien 1997; Richardson et al. 2007). A separate strand is represented by the work of Mari Riess Jones on the entrainment of attention (Jones and Boltz 1989; Large and Jones 1999), which in turn has provided a basis for London's (2012) theory of musical metre as a special instance of entrainment. Thanks to Martin Clayton for calling this work to my attention.

versity and later at Durham University. In this milieu emerged what might be called a humanistic approach to entrainment, characterised by an ethnomusicological bent that combined the hard science approach (including complex mathematics) with soft science approaches. One contribution of ethnomusicological studies of entrainment is thus found in moving the site of empirical study out of laboratory settings into the messy real world of performance. This research is characterised by the use of mixed methods, combining the qualitative methods of ethnography with hard science empirical methods such as the measurement of micro-timing via frame-by-frame analysis of video recordings, or similar analysis of audio recordings where different instruments in an ensemble are isolated and recorded to separate tracks, made in field settings that try to recreate as closely as possible "natural" performance conditions (Clayton 2007a, 2013; Lucas, Clayton, and Leante 2011; Doffman 2013), thus addressing the issue of "how to study entrainment phenomena in an ecologically valid manner" (Clayton 2007a: 27). This work has expanded the understanding of entrainment from something that happens within the brain to something that happens between people in real-world situations. The move out of the laboratory and into the field has also allowed ethnomusicologically oriented research on entrainment within traditions outside Western European common-practice tonality (Clayton 2007a, 2012, 2013; Lucas, Clayton, and Leante 2011; Doffman 2013; Dueck 2013; Lucas 2013; Will et al. 2015).

Musical entrainment studies have provided an empirical scientific basis to support earlier more general intuitions and assertions (such as those of John Blacking mentioned below) regarding music being the basis for sychronising bodies. Clayton, however, cautions against "the use of 'entrainment' as a metaphor for social coordination of all kinds" (2013: 24) or "as a metaphor through which to explain social phenomena" (2013: 25).

One might ask, where is the body in all this? Classic entrainment theory assumes a *neurological* body – the body of neurons within the brain, firing in synchrony in coordinated biochemical processes. But contemporary ethnomusicological approaches to entrainment also assume a *social* body that interacts with other performing and listening bodies. It is with this in mind that Clayton, Dueck, and Leante refer to "the social entailments of musical entrainment" (2013b: 9).

Gesture

The trajectory of research on music and gesture is similar to that of work on music and entrainment. It started out as a laboratory-based area of enquiry with methods developed within the psychology of music as an experimental science conducted under carefully controlled conditions, aimed at capturing quantitative data. Also like entrainment, more recent research on music and gesture has moved out of the lab and into real-world musical performance situations, combining quantitative experimental methods with the qualitative methods of ethnography, including participant observation (especially in teaching situations) and interviewing. Work on gesture and music has also been influenced by ethnographically oriented research in linguistics and the psychology of communication (e.g. McNeill 1992, 2005; Kendon 2004); more on this below.

In their introduction to the edited volume *Music and Gesture*, Gritten and King define gesture as "a movement or change in state that becomes marked as significant by an agent" (Gritten and King 2006: xx). Leman and Godøy, starting from the assumption that "musical experience is inseparable from sensations of movement" (2010: 3), expand on that definition while noting that both performers and listeners participate in gestural communication. They further suggest that

> [a] straightforward definition of gesture is that it is a movement of part of the body, for example a hand or the head, to express an idea or meaning. In the context of musical performance, gestures are movements made by performers to control the musical instrument when playing a melodic figure, to coordinate actions among musicians

> (conducting gestures), or to impress an audience (for example, moving the head during a solo performance). In the context of listening to music, gestures are movements that accompany or express the activity of listening, such as tapping along with the beat, swaying, or dancing. (2010: 5).

Another influential definition of gesture is that of musicologist Robert Hatten, who suggests that gesture is "significant energetic shapings through time" (2004: 93). Though the analyses presented by Hatten (like those of Aksnes cited above in relation to embodied music cognition) take as their point of departure not actual performances or specific moving bodies, but the abstracted representations of potential soundings and their associated movements represented in written scores. Hatten's definition ("energetic shapings") further recalls Charles Seeger's physicalist definition of communication as a "transmission of energy in a form" (1977: 19), critiqued by Feld ([1984] 1994) for not taking into account from the very start the social nature of communication.

For purposes of this body-centred discussion, a perhaps less ambitious but more focused definition may be useful: gesture is the meaning-making moving body. In this perspective, bodily movement is explicitly understood to be meaningful action, whether conscious or unconscious, and whether "languaged" about or not by performers and perceivers.

Ethnomusicological work on music and gesture has explored the relationship between the sounds produced and the movements made while producing sounds (e.g. playing instruments, but especially singing in performance and teaching contexts). A key insight emerging from this research, influenced by the work in linguistics and the psychology of communication mentioned above, is that gesture is not just an add-on to the primary goal of producing sound, but is integral to the musical utterance. Taking a cue from work in linguistics by David McNeill, who argues that "gesture and speech arise from a single process of utterance formation" (McNeill 1992: 29), Leante thus suggests that "gesture and [musical] sound arise from a single process of expression" (2009: 186; see also Rahaim (2008, 2012)). Leante further argues elsewhere that "Gesture, image[8] and sound are all non-redundant parts of a single process" (2014: 149). The *meanings* produced through this combination of sound, movement, and imagery are embodied meanings, not necessarily expressed through discourse, but felt through bodily postures and dispositions as the body creates and/or engages with sound. This does not mean, however, that the meanings of musical gestures are pre-cultural or free of ideology. Clayton, Dueck, and Leante note that "Culture imbues certain kinds of movement with social significance, and, conversely, particular gestures and postures mediate important cultural concepts, sometimes in nonlinguistic ways" (2013b: 11). In the same way that, as discussed above, affect and atmosphere mediate between culture and the body, gestures and movements "are influenced by ideology, while ideology is expressed and experienced through movement" (2013b: 8).

Some work on music and gesture also makes use of concepts of movement and metaphor related in a general way to Johnson's work on embodied cognition discussed above (see for example various chapters in Gritten and King (2006) and in Godøy and Leman (2010), as well as Leante (2013)). This approach allows researchers to draw on insights from the theory of embodied music cognition, such as cross-modal relationships between imagery and sound, while also leaving the door open to the consideration of flexible gestural processes emergent in actual performance. This research, grounded both in careful ethnography of specific performance events and in attention to the details of musical sound, thus represents a kind of synthesis of (some aspects of) the theory of embodied cognition (though with a more flexible and emergent approach to movement

8 In this context, *image* can be understood to be a mental representation that can be described in visual terms, though the point here is that rather than being described in language, images are embodied in sound and gesture.

in performance than Johnson's image schemata) and ethnomusicology's focus on the ethnography of performance.

While researchers in the psychology of music began to seriously study the role of bodily communication in performance beginning in the mid-1990s,[9] music and gesture came of age as an identifiable topic of research ca. 2005, around the same time as interest in entrainment picked up. Edited volumes focusing on music and gesture from interdisciplinary perspectives but anchored most strongly in music psychology (Gritten and King 2006, 2011; Godøy and Leman 2010), helped set the agenda. An interest in practical technological applications has also motivated work in this area, as researchers focused on developing "methods for capturing and processing gestures" (Leman and Godøy 2010: 11) for applications such as computer graphics, video games, robotics, visual gesture recognition in motion tracking, mapping of gesture to sound synthesis, etc. (Camurri and Moeslund 2010; Gibet 2010; Johannsen and Nakra 2010).

Also approaching the topic from an interdisciplinary perspective, the "Experience and Meaning in Music Performance" (EMMP) project, mentioned above in relation to entrainment, brought a more ethnomusicologically based approach (including qualitative methods, as alluded to above) to research on music and gesture (Clayton 2006, 2007b; Leante 2009, 2014; Clayton, Dueck, and Leante 2013a). In the same way that the move out of the lab and into real-world situations expanded the scope of musical entrainment studies, the study of music and gesture was also broadened to include musics outside of Western common practice with field studies of gesture in the classical music of both North India (Clayton 2006, 2007b; Rahaim 2008, 2012; Leante 2009, 2014) and South India (Pearson 2016), enabling a cross-cultural perspective on music and gesture (Fatone et al. 2011).

Reading Bodies

In the wake of the corporeal turn in the humanities and the social sciences, the humanistic field of cultural studies also began to engage more thoroughly with the study of bodies and embodiment. Scholars soon began developing methodologies for reading the body as a kind of text, often in terms of critical categories such as gender and sexuality, race, able-bodiedness, and indigeneity. The polemics regarding music and the body referred to in the first paragraph of this article represent the influence of the corporeal turn on musicology and music studies more generally. More recent work in cultural musicology (e.g. Railton and Watson 2011; Hansen 2017) and ethnomusicology (e.g. Livermon 2020) has applied the text-reading methods of cultural studies to musicking bodies, analysing them in terms of the politics of representation they perform; such analyses are often referred to as "close readings" (Solomon 2012: 87).

An exemplary early study in this vein is Steve Waksman's (1999) chapter about Jimi Hendrix, titled "Black Sound, Black Body." Waksman provides readings of various media texts portraying or commenting on Hendrix's performing body, such as videos of concert performances, sound recordings, photographs, comments in published interviews, and other written texts, to analyse corporeal performances of race and gender – specifically Hendrix's performances of Black masculinity – and how those performances articulated with prevailing discourses that triangulated race, authenticity, and music during Hendrix's career. Nicholas Cook (2013) provides a follow-up of sorts to Waksman's chapter, titling his own piece on Hendrix "The Signifying Body."

9 See for example the work of Jane W. Davidson (1993, 1995, 2001, 2002, 2006a&b, 2007, 2009), Clarke and Davidson (1998), and Davidson and Correia (2001, 2002).

Some parts of Stephen Amico's (2014) monograph, discussed above in the section on phenomenology, employ the method of reading the body as text, as he spends significant space analysing the representations of bodies in textualised and mediated performances such as video clips and the broadcast of events including the Eurovision Song Contest. Amico's book, however, should not be understood simply as a set of "readings" of media texts, since these analyses are embedded in a larger argument about the embodied construction of non-normative sexual subjectivities, and Amico's methods also include ethnography.

Research using textual approaches to reading bodies has drawn attention to the discursive webs of power that lie behind representation. Anthropologist Paul Stoller critiques, however, writers who "consider the body as a text that can be read and analyzed," arguing that "This analytical tack strips the body of its smells, tastes, textures and pains – its sensuousness" (1997: xiv).[10] Textual approaches thus, somewhat ironically, miss the distinctive materiality of bodies in the very act of supposedly accounting for them in their historical, social, and cultural contexts.

Music and the Body in Ethnomusicology

Since this article has its origin as a presentation at the European Seminar in Ethnomusicology (ESEM) and is part of a collection originating in that seminar, it is appropriate to mention the work of ESEM founder John Blacking on music and the body and his influence on continuing research in this area. Blacking had already during the 1970s anticipated the most basic insight informing cognitive semantics when he wrote, in a chapter published ten years before Johnson's *The Body in the Mind*, that "As conscious movement is in our thinking, so thinking may come from movement, and especially shared, or conceptual, thought from communal movement" (Blacking 1977: 23). Note, however, Blacking's insistence from the beginning on the *social* nature of the movement-thought nexus, through his evocation of the *communal*.

What might be called "mainstream" ethnomusicology has at least since the late 1970s considered the question of the embodied nature of musical communication, focusing particularly on performers and performance. Blacking argued that music functions as a "mediator between nature and culture" (1979: 5) and insisted that researchers should consider the relationships between biological and cultural aspects of human musicality, with the body as locus and mediator of that relationship (1973). Some of Blacking's students, especially John Baily (1977, 1985, 1992, 1995, 2001; Baily and Driver 1992), have approached these questions in terms of issues such as how musical instruments can be considered an extension of the player's body, and how "some of the essential structures of music are rooted in the human body" (Baily 1995: 28). As Stokes usefully summarises, work in the 1980s derived from this approach "increasingly drew on the cognitive theory of the time to substantiate the links between musical style and economies of gesture and movement" (2001, section 10 Music theory and analysis; see also Moisala (1995) and Hutchinson (2010) for reviews and critiques of this research). Interestingly, Baily's approach to embodied musical knowledge can be characterised as beginning with the body and working outward. The starting point for Baily's research is thus not sound structures as end products to be analysed and used to "reverse engineer" the cognitive structures that give rise to them, but rather the patterns of *body movement* themselves that produce and structure the sound, foreshadowing the later work on music and gesture discussed above. Baily's work, however, contrasts with the embodied cognition approach I discussed earlier, which can be characterised as starting with the

10 See Deborah Wong's (2015) article "Ethnomusicology without Erotics," mentioned below, and Amico (2024, chapter 6) for related critiques from within ethnomusicology.

internalisation within the body of experiences that come from the outside into the body and are incorporated into it.

Following on polemics about the place of sound and the senses in musical research (Bendix 2000; Feld and Brennis 2004; Samuels et al. 2010), a number of ethnomusicological studies since the mid-1990s have further explored the embodied dimensions of musical performance, often also including dance (Herbst 1997; Kisliuk 1998; Meintjes 2003; Becker 2004; Fox 2004, esp. chapter 5; Shannon 2006; Spiller 2010; Hellier-Tinoco 2011). These works represent not a single unified theory and methodology for studying music and the body or embodiment, but rather employ an eclectic set of approaches that draw on various strands of anthropological theory.[11] What many of these studies *do* have in common is an ethnographic orientation toward performance as social activity. Various kinds of subjectivity or group identities are often an explicit focus of this work, much of which explores what Stan Hawkins, writing in the context of humanistic popular music studies, usefully describes as how "bodily sonorities articulate identities within social contexts" and how "musical performances mobilise subjectivities" (2002: 18).

From the Body to Embodiment

The term *embodiment* is used above most specifically in relation to the theory of embodied music cognition. But the concept of *embodiment*, like *body* itself, has multiple meanings and applications. All of the concepts discussed above (embodied cognition, phenomenology, affect, atmosphere, entrainment, gesture, the body as text) can be understood as variations on, or approaches to, the more general theme of embodiment. Many of the studies mentioned above deploy somewhat ad hoc conceptualisations of embodiment to account for the data they analyse. Leante (2009), for example, defines embodiment as the giving of a physical form to an image via gesture (i.e., bodily movement), a very relevant approach for her field material on how North Indian classical music performers conceptualise *rāgas* in terms of imagery and actualise that imagery through gesture during performance.

Berger outlines the general premises of a phenomenological approach to embodiment, arguing that "To say that a phenomenon like mind, text, or social life is embodied is to say that it necessarily depends on our existence as corporeal beings and the particularities of our physical bodies" (Berger and Stone 2019: 30). But it can be useful to have a more focused understanding of what embodiment entails.

In her historical and ethnographic study of two folk performances in Mexico, Ruth Hellier-Tinoco (2011: 40–1, 200–4) discusses what she calls three definitions or "applications" of the notion of embodiment relevant to her argument: "firstly, to be in the body and take form in human flesh; secondly, to make an idea actual or discernible, and to represent, stand for, symbolise or express something abstract in tangible or material form; and thirdly, to make something part of a system or whole" (2011: 40). She further elaborates the first of these by noting that the core of her analysis of these two expressive forms is "the presentation, re-presentation, and reactualization of symbolic systems through living bodies," and explaining that she aims "to examine the potency and efficacy of the body in these representational practices, where the bodily practices are used to produce meaning, and where the weight of history is felt in, on, and through the body" (2011: 40). Similarly, she further elaborates the second of these three definitions of embodiment by clarifying that it "focus[es] on the use of bodies in dramatizing, reproducing, and repre-

11 A useful book-length interdisciplinary synthesis of theory and method for embodiment in qualitative research, including especially ethnography, is Ellingson (2017).

senting ideological and political positions" such as Mexicanness, indigenousness, and difference (2011: 41). She relates the final definition to the way in which bodies designated as indigenous are incorporated and appropriated "as national symbols of authentic Mexicanness," noting also that the very term *incorporate* includes within it the root word *corp* (body) (2011: 41). The monograph as a whole is about how indigenous bodies are made to signify Mexico, thus "imagining the nation through corporeal acts" (2011: 110). Combining history and ethnography, Hellier-Tinoco considers both textualised bodies (for example illustrations of indigenous people on historical postcards and contemporary touristic posters and in travel guides) and actual live performing bodies. While Hellier-Tinoco develops this understanding of embodiment within the context of a specific historical and ethnographic study, her approach is suggestive for a more general theory of embodiment that could be applied (with some adjustments) to other cases.

A compelling and theoretically sophisticated example of work that consistently engages with and accounts for the body and embodiment is Deborah Wong's (2019) ethnographic study of Asian American *taiko* drumming. Wong's account of the emergence of "a North American taiko subjectivity" (2019: 102) concretely follows up on her earlier polemic about the importance of accounting for pleasure and desire in musical research (Wong 2015). The key theoretical terms here are *erotics* and the *body politic*. *Erotics* can be defined as a space where visceral pleasures (including, but not limited to, pleasures connected to sexuality) emerge in the articulation of affect, power, and performance. Wong thus argues that the creation and maintenance of an Asian American *body politic* constitute a collective endeavour that emerges in the intersection of disciplined and affective bodies, the historical memory of the WWII-era internment of Japanese Americans in the USA,[12] and performance that articulates visceral pleasures and experiences such as joy and pain. Wong attends ethnographically to the body at every stage of her study. For example, rather than provide a conventional analysis of the structure of *taiko* pieces using transcriptions, she describes the bodily experience of actually playing the pieces, including *kata* (stance), the movements of the arms and shoulders, the coordination of arm movements with breathing, the tension and relaxation of the abdominal muscles, etc.[13] The embodied experience of playing *taiko* is not just pleasurable in the usual sense, but includes the experience of pain, for example blisters on the palms and aching muscles. Wong argues that such experiences of pain articulate metaphorically with the historical pain of internment and contemporary experiences of racism (see also Granger, this issue). The book as a whole accounts for the multitude of ways that power is experienced, constructed, appropriated, and performed through the body in the context of "[c]ommunity making that calls new collectivities into being" (Wong 2019: 206). While Wong uses the term "embodiment" at various places in the book, she finds it limiting (referring at one point to "the tired trope of embodiment" (2019: 16)); as an alternative, she points to the more recently emergent concept of *aurality* (Ochoa Gautier 2014). Wong's 2015 article and her book together constitute an important critique of, and intervention in, ethnomusicological approaches to the body and embodiment, arguing for an approach to the body and power that is thoroughgoingly experientially, rather than textually, based, and that takes seriously a musical erotics that mainstream ethnomusicology has largely ignored.[14]

12 Though Wong prefers the term "incarceration" over "internment."

13 Classical cellist Elisabeth Le Guin (2006) takes a similar approach in her account of her bodily experiences performing works by the composer Boccherini, offering what she calls a "carnal musicology."

14 Though see the books by Amico (2014, discussed above) and Livermon (2020) as well as several articles by Guilbault (2010, 2011, 2019) for additional examples of work that takes pleasure seriously and interrogates the relationship between music and erotics.

Conclusion: From Cognition to Performance

This article has surveyed a number of approaches within music studies (with special attention to ethnomusicology and ethnomusicology-adjacent work) to the study of music and the body. The contribution of ethnomusicology (broadly defined) to this area of research is a general attention to and set of concepts and methods for studying sounding, listening, and moving bodies, and concomitantly an approach to performance as embodied social act. Having the theoretical and methodological tools to move beyond the purely textual and to focus instead on the embodiment of subjectivities and ideologies in musical performance, as well as to move from the abstracted structures of the sounds themselves to how they are actually produced, felt, heard, and made sense of by performing and listening bodies in specific places and times, ethnomusicology has the potential to explore the lived, embodied experiences of making, listening to, and moving to music.

In an echo of Scheper-Hughes and Lock's description of three perspectives on the body, it may be useful, when talking and thinking about music and the body, to ask which body we are talking and thinking about. Is it the body of embodied cognition? The entrained, neurological body, or the gesturing body? The experiencing, phenomenological body? The textualised body of discourse and representation? The performing body? The affective and affected body, or the body engulfed in atmospheres? Or perhaps some other body not yet defined by scientific paradigms? To seek answers to these questions is to query the ontological status of the body – a necessary first step for any effort to assess the relationships between music, the body, and embodiment.

Music studies as a whole, and especially studies of the ethnographic type that are the bread and butter of ethnomusicology, need not be derivative, riding on the coattails of work in other fields. Given the increasing acceptance of the idea, repeatedly approached above from various angles, that not all meaning is purely linguistic, and that there are important realms of action and experience that take place outside of language, music studies more generally – and ethnomusicology more specifically – contribute theoretically and empirically to the study of bodily based musical meaning making, with its focus on embodied experiences that take place outside of language, or that have complex cross-domain relationships with language and other modes of sensing. There is much room, though, for both theoretical and methodological expansion, as indicated in Wong's critique (mentioned above) of an ethnomusicology that has largely ignored pleasure and its articulation with power.

Perhaps because of the multi-sensory nature of musical experience, ethnomusicologists in particular have also been reflective on the embodied nature of ethnographic practice (see many of the above-mentioned monographs, as well as several chapters in the collection *Shadows in the Field* (Barz and Cooley 2008)). Ethnomusicological ethnography often entails observing and participating in meaning-making practice, including (especially) practice beyond the strictly linguistic. People certainly do talk (and write) about musical experience, and the texts resulting from such talk and writing are important sources of information. But careful empirical participant observation of musical situations – including performance, production, and listening – provides unique access to embodied primary realms of musical experience that are not always easily reducible to language, though they may be intensely felt by moving, musicking bodies.

Acknowledgements

An early version of this article was presented at the XXXV European Seminar in Ethnomusicology in Durham, UK (3–7 September 2019). Thanks to Stephen Amico for reading a draft during the final stages of writing and sending many very helpful comments clarifying his own work and reminding me of the importance of Deborah Wong's critique of ethnomusicology without erotics. Thanks also to Martin Clayton and an anonymous reviewer for their comments including tips for additional literature and suggestions for further points to incorporate in order to historicise parts of the discussion within the larger landscape of research, especially in relation to entrainment and gesture.

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