THE UNIVERSITY *of* EDINBURGH

Edinburgh Research Explorer

Agency in embodied musical interaction

OPEN ACCESS

Agency in Embodied Music Interaction
Nikki Moran

Introduction

The study of music as embodied interaction focuses our attention on the time, place and physical bodies required to generate musically-organized sound. As other chapters in this volume illustrate, there are now a variety of approaches to the measurement and analysis of the interactive behaviors involved in creating music, making use of a diverse range of technologies and analytical tools. This chapter presents a cross-disciplinary summary review of literature that addresses the source of the intentions that we imagine to motivate those interacting bodies. I explore the notion of 'agency' and examine what this concept offers to a discussion of the dynamic social forces that we notice in musical experience. I argue that agency can help us to explain the experience of interactivity, which is characteristic of musical engagement.

The notion of agency surfaces in various guises across different disciplines – in music psychology, educational philosophy, sociology, musicology and the cognitive sciences. It typically arises in connection with other key concepts regarding the discussion of musical thought and consciousness, namely subjectivity, identity, voice, and persona. How do musicians experience their own subjectivity during performance? How do audience members perceive the performer's subjectivity? How entangled is the performer's own agency or persona with the imagined presence of a composer or author? At times we can perceive performers – instrumentalists as well as singers – as identifiable individuals simply by listening to the sound trace they create through live or recorded performance, recognizing the timbre of a singer's voice, or the characteristic style of, say, a particular jazz saxophonist. At other times, ensembles like choirs and orchestras will specifically attempt to disguise individuals within one coherent whole. In the case of musical human-computer-interaction (HCI), both listeners' and the performers' own experience of creative identity and authorship

may be dramatically shifted from one interpretation to another during the performance process. Thus, the reality of our experience regarding identity and agency in musical engagement is varied and complex. Music interaction, I argue in this chapter, has a social form which depends on the mutability of subjective and intersubjective awareness; and furthermore, it takes place both through musicians' acts of sound-making – real and imagined – and through the participatory work that is involved in listening to music.

What constitutes interaction for embodied music interaction research?

Accessible technologies for close observation, measurement and scrutiny of musical performance are relatively new, which means that there is yet much theoretical work to be undertaken. The study of music as embodied interaction requires that we look at the relationship between actions deriving from at least two different sources. An important question, then, is: What do we imagine those different sources to consist of? Two distinct types of interaction have received scholarly attention: that between the listening subject and 'musical' subject (variously the performer, the performer-as-interpreter, the performer's persona, the composer, the author, or the narrator); and the empirically accessible interaction between either co-performing musicians, or between performing musicians and audiences (Moran, 2014). But our imagined and realized musical encounters are interactive in more fundamental ways than these. Listening is not a passive engagement with musical sounds (Launay, 2014; Huron, 2006). The act of listening – even listening without analytical intent – is an act of participation, and in this way it is an act with an intentional, social feel.

Scholarship around western classical music has for a long time disregarded the listener-at-large. But recent work has begun to explore the listener's (as opposed to the analyst's) active role in the co-creation and production of classical music's meaning (Cook, 2012; Alessandri, Williamson, Eiholzer, & Williamon, 2015). This trend traces back over earlier musicological discussions of subjectivity, in which the body-centeredness of musical phenomena were brought to the fore, for example in the work of Cone (1974) and Abbate (1991), then prominently in Cumming (2000). In these accounts, voice (actual voice or instrument-as-voice) is body-centered: when we listen to voices, we hear bodies. This recognition – that music-listeners' attend to the

body behind the voice – is consistent with contemporaneous scholarly accounts of popular music's significance. Frith (1996) describes the ambiguous but deliberate evocation of subjectivity in lyrics ('I', 'you', we'); in the role of the singer (who is the subject? Is this a persona of the singer, or the 'real' autobiographical singer?); in the author/composer (distinct from the performer/singer - or not?); and in the song itself as an act of narration. As listeners, the voice we hear is a direct expression of the body; and, as listeners, we respond accordingly. Thus listeners, Frith points out, "perform sociability" (1996, p. 207) – an idea that chimes with music psychology's long-held fascination with the musical mediation of emotional states (Juslin & Sloboda, 2001). Listening remains a participatory endeavor – an interaction with various imagined entities – whether it is undertaken by an isolated audience member, a soloing musician or an accompanist.

The notion I have used here, of an imagined entity, provides a cross-disciplinary gloss for agency. But the variety of meanings and connotations attributed to agency seem occasionally do more to obscure than to reveal when applied to the complex phenomenon of musical experience. The following summary literature review follows some different applications and developments of the concept of musical agency.

Within and beyond music scholarship, where has agency been theorized?

In its most general philosophical use, agency describes a capacity for action – typically, controlled or intentional action, thus suggesting the existence of an entity. Agency may also be used as a shorthand to connote the experience of control: to have agency is to feel control. For some scholarly purposes it is essential that this reflective dimension is treated distinctly, as captured by the phrase, 'sense of agency' (Gallagher, 2012; Tsakiris, Longo & Haggard, 2010); or as in Pacherie's (2010) 'self-agency', which she uses synonymously with 'agentive self-awareness'. Such terms disambiguate the concept of agency from its phenomenological implications of self or subjective awareness. In other fields such as musical human-computer-interaction (HCI), the concept of agency is used to articulate different debates. As a form of classification, 'agent' categorically defines a system operating in relation to an environment. Beyond this, agency is an important term within (at least) two further areas of discussion. The concept arises in discourse regarding the aesthetic

justification for HCI artistic practice, which is characterized by ambiguous authorship (Kim & Seifert, 2007; Collins, 2011). It is also used to explore the phenomenological qualities of musical listening and playing which are so well revealed through engagement with HCI (Green, 2011; Ferguson, 2013). As we will see in the following brief survey, various literatures dealing with musical phenomena draw similarly on the concept of agency, in order to explain the person-like attributes characteristic of musical experience.

Musicology

Cone's (1972) monograph on musical subjectivity describes music as an 'utterance' form through which the projected persona by the performer-interpreter is always ultimately regulated by the 'voice' of the composer. Postmodern revisions of musical subjectivity first expanded and then (almost) exploded Cone's musical subject. Abbate (1990) proposed that a musical 'voice' is one that is representative of human attitudes and intentions; but noted that if the music narrates in the way that Cone suggested, there must be a narrator; and a narrator – drawing from literary theory – is not one and the same as the author-creator. Kramer (1995) summarizes such postmodern interrogation of the human subject as revealing something "fragmentary, incoherent, overdetermined, forever under construction in the process of signification" (pp. 9-10). The way that musicologists have handled the topic of subjectivity illustrates the very sociocultural and historical contingency of the concept, as it developed and changed again for the twenty-first-century. According to Cumming, "vocality, gesture and agency together, understood in their own right as signs, now become the *representata* for a new synthesis that forms the 'subject' in music" (1997, p. 15). Her autobiographically-informed, philosophical account of a classically-trained western art musician's subjectivity (2000) emphasized a new embodied and social awareness of the constitution of the performer's identity. And yet, Cumming's agency is still clearly traceable to the musical utterance which Cone (1972) accorded to an individual – namely, the authoritative composer. (Parallels to this narrative can be seen in the study of popular music, as in Allan Moore's consideration of the recording as authorial source (Moore, 2013)).

In short, musical subjectivity has been construed differently in relation to the context and historical moment of its discussion: notions of musical subjectivity are not static

(Clarke, 2014). A current trend of phenomenological approaches to the study of everyday listening and musical engagement begin from this starting point, with methods designed to explore the dynamic qualities of musical experience (Gabrielsson, 2011; Herbert, 2011; Clarke, 2014).

Sociology and philosophy of education

Sociology offers a means of thinking about the dynamic relationship between structures in society and individuals' organization of action and experience (DeNora, 2011). In this disciplinary approach, the concept of agency is a necessary one, to articulate the capacity of individuals and social groups to influence these structures through their own actions and decision-making. Thus, "music comes to afford a variety of resources for the constitution of human agency, the being, feeling, moving and doing of social life" (DeNora, 2000, p. 45). For DeNora, the parameters of agency essentially include all the aspects of individual cognition that psychological sciences might examine: "feeling, perception, cognition and consciousness, identity, energy, perceived situation and scene, embodied conduct and comportment" (DeNora, 2000, p.20). Meanwhile, educational philosophers use agency to account for the possibilities of an individual's learning and development in a given set of music-educational circumstances. For Green (2009), for example, agency is an attribute of a music student's autonomy; a combination of the circumstantial opportunities afforded to them and their capacity to direct their own musical learning. This usage arises from the sociological notion of the autonomous individual, who acts within the structuring effects of social life. According to Karlsen's review (2011), in educational research musical agency may derive from an individual's capacity for physical or technical control in instrumental performance; musical agency thus ultimately provides a means of social influence and contributes to individual and cultural identity-formation. At other times in the literature, 'agent' may be used synonymously with 'individual' (student or performer). For Macdonald, Hargreaves and Miell (2002), for example, agents (individuals) may use music to signal belonging.

Music and the cognitive sciences

Music research topics and methods are shared with various disciplines and sub-disciplines in the social sciences. In music psychology, as in the fields of educational and social psychology, the term agency arises occasionally, suggesting again nuanced

and varied connotations. For example, Alessandri et al. (2015) examined the apparent source of listener-critics' attention, revealing an important role played by 'the musical agent perceived behind performance actions' to whom the critics attributed presumed qualities. In comparison, Fritz et al. (2013) report an empirical study that explored the effect of an additional sound/music-making component to a physical exertion task. This component of sound-making is described as musical agency, defined by the authors as 'a performance of bodily movement guided by an agent and governed by a goal or intention'. In this usage, again, the word 'agent' may be substituted by the word 'individual'. Clarke's (2014) more direct enquiry of musical agency asks how and why, from a psychological perspective, do we hear person-like attributes in musical sound? For Clarke (2014, p. 358), musical activity comprises "actions and events in a real world ... and the actions and events of that virtual world [of] structures, spaces, motions and transformations". His explanation is that the integration of perception/action systems imply pre-conscious engagement between individuals and their environment (which includes other individuals); so "the products of human action ... can give rise to a strong sense of abstracted or implicit human agency" (p. 364). Consistently - across musicology (Cone, 1972; Abbate, 1990, Cumming, 2000; Gritten & King, 2006) as well as in empirical or scientific music research (Leman, 2007; Godøy & Leman, 2010; McGuiness & Overy, 2011) - the attribution of music's person-ness is granted according to the gestural or 'utterance' forms that it takes.

As Launay (2014) describes, neuroscientific accounts of the mechanisms behind such attributes and experiences are currently under investigation and debate with recourse, once again, to agency. Steinbeis and Koelsch (2009) offer evidence that individuals can be primed to infer authorship - agency - in automatically generated sounds, and that they do so with recourse to the same neural pathways that are typically reported for interpersonal interaction (Tomasello, Carpenter, Call, Behne & Moll, 2005). Alternative accounts have focused on the possibility of a pathway from musical experience to socially meaningful behavior through the capacity for motor resonance (Molnar-Szakacs & Overy, 2006). Thus, as in the case of sociology's own disciplinary usage, the cognitive and brain sciences also rely on a generally shared definition of agency, this time with regards its relationship with consciousness and the experience of intersubjectivity. Such explanations of mind need to account for the

source of intentional behavior, both as it emanates from the individual, and as the individual might perceive it in others. Recent empirical research has focused on the consequences of musical (rhythmically synchronized) behavior for socially-relevant dimensions such as trust and affiliation. Findings from studies dealing with face-to-face (Hove and Risen, 2005) and virtual (Launay, Dean & Bailes, 2013; Launay, Dean & Bailes, 2014) scenarios have emphasized the importance of the perceived role played by the interactive 'agent' (partner). Where sociologists use agency for explanations of change and dynamism in conceptual social structures, here the term points to an attribution of intentional action and therefore – according to principles of ecological action-perception – its locus.

Agency in this literature has thus taken on a particular explanatory role. As in the sociological usage, agency describes a source of exerted action or influence not technically restricted to an autonomous individual subject – but typically conceived as such. In this way, accounts of intersubjectivity follow a fundamental assumption, central to the historical epistemology and consequent methods of psychological science, that interacting minds and bodies are fundamentally motivated by the interaction of individual and autonomous (mental) spectators (Goldman, 2006). An alternative way to conceptualize human cognition and behavior, as De Jaegher and Di Paolo (2007) explain, is to focus foremost on the dynamic processes of systematic interaction between humans and their niche (environment and social milieu), and to conceive of cognition as enacted, primarily, through participatory sense-making work. Schiavio and De Jaegher (this volume) propose a participatory sense-making account of joint performance, in which they highlight the relational nature of musical experience and circumvent the 'spectatorial' explanation of musical experience. In this account, the actions of two engaged performing musicians interact in such a way that the musical outcome – the 'object' – is emergent and can be explained fully only with reference to self-sustaining properties of their joint system. Such enactive theories of mind and behavior make a bridge between efforts to describe on one hand the experience of musical engagement – which is, as we have seen, deeply complex in its evocation of agency – and a systematic account for the processes underlying the experience (Clayton, 2012; Clayton, Dueck & Leante, 2013, Schiavio & Høffding, 2015).

How might 'agency' be most useful to the study of embodied music interaction?

Schiavio and De Jaegher's (this volume) account of joint performance is promising, and the wealth of emerging empirical and theoretical ideas represented by this very volume herald an exciting near-future for music interaction research. Focusing as it does on the interaction of performing musician with performing musician, there are yet unanswered questions beneath our discussions of whom (or what) interacts with whom (or what). As evidence from this cross-disciplinary review indicates, the experience of social interaction is of central importance to apparently passive music listeners as well as to those making the musical sounds. This listener role appears to be a constitutive component of all our socioculturally-embedded musical encounters, but one that has only lately received serious musicological attention. Human consciousness and behavior depends on an inherently interactive and socially reactive state of being. Performances of various kinds, not only music, but those associated with sacred and secular ritual behaviors, and temporal arts such as story-telling, and dance, are characterized by an alteration of our sense-of-being in relation to the world around us (Bauman, 1992). Listeners are also performers: as listeners, too, we experience an altered sense of identity and imagined social relationship when we attend to music, and thus engage with musically-ordered and delivered sounds. So it is that the various experiences we have of subjectivity, intersubjectivity and empathy in music as both performers and listeners serve to illustrate the experience of sociability which permeates our engagement.

The literature review suggests that this description may characterize non-formal music making scenarios as they occur in everyday life, and that it is also a central feature of popular music listening (Frith, 1996; Dibben, 2006). Although agency is not such a familiar term in musicological literature, we have seen that the matter of musical subjectivity has been a cornerstone of debate (Whittall, 2000). The subject as conceived in relation to western classical music is a particular case, and has been the influential focus of a great deal of speculation and theorization. The familiar instruction, for example, that students of music performance submit in some way by 'giving oneself up' to the music is not unknown beyond western classical music worlds, and in fact – as Gabrielsson (2011) and Clarke (2014) point out – it is a familiar experience to performers, non-performers and listeners alike. But it would be misleading for any researcher with scientific intentions to imagine or conceptualize

musical interaction according to western classical music's norms. As the case of musical HCI makes clear, certain values of authorship and attribution frame aesthetic judgements about musical performance and interaction in a way that is not transparent through the discourse of musicology; 'the music' cannot only exist as the work of a composer, since this does not account for the immanent situation of performance and the enactment of musical forms (Cook 2012). And yet, the reified object in that metaphorical act of submission attaches irresistibly onto the culturally-apparent notion of an authoritative musical work, with its complex relationship to an autobiographical, individual composer- or creator-figure.

I propose that the notion of agency could be most useful for the study of music interaction when it is used more specifically. It has to do more work than as a synonym for 'person' or 'author' or 'composer'. It is a necessary concept to account for the co-constitutive response we have when we perceive intentionality in the patterns and activity of (gestural) utterance forms, and by which we recognize organized sound as 'music'. We experience confusing and multiple subjects in musical engagement, including imagined voices in recognizable patterns of style, of voice, of motion, of timbre, of groove, etc., and react to these as though they possess agency: as sources of intended influence extending, perhaps only fleetingly, into our present world and experience. We attribute subject-ness to these prior to further identifications of, for example, style, or persona. The attribution of subject-ness must necessarily vary in many dimensions – personally, socioculturally and historically. Music experience is, in part, characterized by its sociability: our engagement in musical activities comes with some implication for our sense of subjectivity, dependent as it is on our sense of relationship between (what is) self and (what is) other. It has been argued that musical forms of sound and behavior are in fact musical *by virtue of* their apparent intentionality – from Cone (1970) and Leman's (2007) gestural utterances, to Cross' (2009) 'floating intentionality'. Agency gives a name to the imagined pre-subject from which emanates that 'floating intentionality'. Not an imagined entity in the sense of a composer or author, but a means to identify that experience of a non-localized source of perceived intention or influence with which we – as embodied cognitive systems – must interact. The concept can do more work, then, when used to capture the inferred sociality that we react to (or rather, enact with)

long before we as individuals attribute to it the subject-status of composer, persona, author, narrator, or co-performer, or so on.

Conclusion

The current focus in this volume on interaction is important: the next step is to understand how not only joint but also solo acts of performance are themselves events of interaction. This is possible when we treat cognitive systems as participatory sense-making systems, inseparable from a social world and non-reducible to the psychology of individual people. The varying, shifting and fascinating rearrangements of subjectivity and intersubjectivity that characterize musical experience arise from cognitive systems that are fundamentally participatory, fundamentally oriented towards sense-making in relation to others in the world. We engage in musical forms as though with others, and our own sense of subject-hood is altered in that process of engagement. But the 'subject' in music-listening is neither single nor static. The experiences we have in musical encounters are varied, interactive and intuitively social; as we move to a more corporeally and phenomenologically-enlightened scholarship of human musicality, it is more important than ever that we take care not to substitute one gloss ('music interaction') for the old one ('the music itself'). The concept of agency can help to do this by offering the means to identify essentially 'musical' qualities of human interaction across styles, genres and modes of engagement.

In any modality, musical engagement transforms our immediate experience from something quotidian to something… different. When we engage with music – as organized sounds, as culturally-circumscribed convention – we interact with performative, durational, expressive behaviors which alter our real-time engagement with the world around us, not only affecting our sense of self and relationship but highlighting the mutability of these. This is the case whether we are actually making sounds ourselves as performers, or imagining sounds, or imagining making sounds, or performing live as a listener.

References

Abbate, C. (1991). *Unsung voices. Opera and musical narrative in the 19th century*. Princeton, NJ: Princeton.

Alessandri, E., Williamson, V. J., Eiholzer, H., & Williamon, A. (2015). Beethoven recordings reviewed: A systematic method for mapping the content of music performance criticism. *Frontiers in psychology, 6, 57*.

Bailes, F., & Dean, R. T. (2007). Listener detection of segmentation in computer-generated sound: An exploratory experimental study. *Journal of New Music Research, 36*(2), 83-93.

Bauman, R. (1992). *Folklore, cultural performances, and popular entertainments: A communications-centered handbook*. New York, NY: Oxford University Press.

Clarke, E. F. (2014). Lost and found in music: Music, consciousness and subjectivity. *Musicae Scientiae, 18*(3), 354-368.

Clayton, M. (2012). What is entrainment? Definition and applications in musical research. *Empirical Musicology Review, 7*(1-2), 49-56.

Clayton, M., Dueck, B., & Leante, L. (2013). *Experience and meaning in music performance*. New York, NY: Oxford University Press.

Clayton, M., Sager, R., & Will, U. (2004). In time with the music: The concept of entrainment and its significance for ethnomusicology. *ESEM CounterPoint, 1*, 1-45.

Collins, N. (2011). Trading Faures: Virtual musicians and machine ethics. *Leonardo Music Journal,* (21), 35-39.

Cone, E. T. (1974). *The composer's voice*. University of California Press.

Cook, N. (2012). Music as performance. In M. Clayton, T. Herbert, & R. Middleton (Eds.), *The cultural study of music: A critical introduction* (pp. 184-194). Taylor & Francis Ltd - M.U.A.

Cross, I. (2009). The nature of music and its evolution. In S. Hallam, I. Cross, & M. Thaut (Eds.), *The Oxford handbook of music psychology* (pp. 3-13). Oxford, UK: Oxford University Press.

Cumming, N. (1997). The Subjectivities of 'Erbarme Dich'. *Music Analysis, 16*(1), 5-44.

Cumming, N. (2000). *The sonic self: Musical subjectivity and signification*. Bloomington, IN: Indiana University Press.

De Jaegher, H., & Di Paolo, E. (2007). Participatory Sense Making. *Phenomenology and the Cognitive Sciences, 6*(4), 485-507.

DeNora, T. (2000). *Music in everyday life*. Cambridge, UK: Cambridge University Press.

DeNora, T. (2011). Emotion as social emergence: Perspectives from music sociology. In P. N. Juslin, & J. Sloboda (Eds.), *Handbook of music and emotion: Theory, research, applications* (pp. 159-183). New York, NY: Oxford University Press.

Dibben, N. (2006). Subjectivity and the construction of emotion in the music of Björk. *Music Analysis, 25*(1-2), 171-197.

Ferguson, J. R. (2013). Imagined agency: Technology, unpredictability, and ambiguity. *Contemporary Music Review, 32*(2-3), 135-149.

Frith, S. (1996). *Performing rites: Evaluating popular music*. Oxford: Oxford University Press.

Fritz, T. H., Hardikar, S., Demoucron, M., Niessen, M., Demey, M., Giot, O., Li, Y., … Leman, M. (2013). Musical agency reduces perceived exertion during strenuous physical performance. *Proceedings of the National Academy of Sciences, 110*(44), 17784-17789.

Gabrielsson, A. (2011). *Strong experiences with music: Music is much more than just music*. New York, NY: Oxford University Press.

Gallagher, S. (2012). Multiple aspects in the sense of agency. *New Ideas in Psychology, 30*(1), 15-31.

Godøy, R. I., & Leman, M. (Eds.). (2010). *Musical gestures: Sound, movement and meaning*. New York, NY and London, UK: Routledge.

Goldman, A. I. (2006). *Simulating minds: The philosophy, psychology, and neuroscience of mindreading*. Oxford: Oxford University Press.

Green, L. (2009). *Music, informal learning and the school: A new classroom pedagogy*. Hampshire, UK: Ashgate Publishing, Ltd.

Green, O. (2011). Agility and playfulness: Technology and skill in the performance ecosystem. *Organised Sound, 16*(02), 134-144.

Gritten, A., & King, E. (Eds.). (2006). *Music and gesture*. Hampshire, UK: Ashgate.

Herbert, R. (2011). *Everyday music listening: Absorption, dissociation and trancing*. Hampshire; UK: Ashgate Publishing, Ltd.

Holland, S., Wilkie, K., Mulholland, P., & Seago, A. (2013). *Music and human-computer interaction*. London, UK: Springer.

Hove, M. J., & Risen, J. L. (2009). It's all in the timing: Interpersonal synchrony increases affiliation. *Social Cognition, 27*(6), 949.

Huron, D. B. (2006). *Sweet anticipation: Music and the psychology of expectation*. Cambridge, MA, London, UK: MIT press.

Juslin, P. N., & Sloboda, J. A. (2001). *Music and emotion: Theory and research*. New York, NY: Oxford University Press.

Karlsen, S. (2011). Using musical agency as a lens: Researching music education from the angle of experience. *Research Studies in Music Education, 33*(2), 107-121.

Kim, J. H., & Seifert, U. (2007). *Embodiment and agency: Towards an aesthetics of interactive performativity.* In C. Spyridis, A. Georgaki, G. Kouroupetroglou, & C. Anagnostopoulou (Eds.), *Proceedings of the 4th Sound and Music Computing Conference (pp 230-237). Lefkada, Gr.*

Kramer, L. (1995). *Classical music and postmodern knowledge*. California, US: University of California Press.

Launay, J., Dean, R. T., & Bailes, F. (2013). Synchronization can influence trust following virtual interaction. *Experimental psychology, 60*(1), 53-63 .

Launay, J., Dean, R. T., & Bailes, F. (2014). Evidence for multiple strategies in off-beat tapping with anisochronous stimuli. *Psychological research, 78*(5), 721-735.

Leman, M. (2007). *Embodied music cognition and mediation technology*. Cambridge, MA: MIT Press.

MacDonald, R. A., Hargreaves, D. J., Miell, D., Davidson, J. W., & North, A. C. (2002). *Musical identities* (Vol. 13): Oxford, UK: Oxford University Press.

Magnusson, T. (2009). Of epistemic tools: Musical instruments as cognitive extensions. *Organised Sound, 14*(02), 168-176.

McGuinness, A., & Overy, K. (2011). Music, consciousness, and the brain: Music as shared experience of an embodied present. In D. Clarke & E. Clarke (Eds.), *Music and consciousness: Philosophical, psychological, and cultural perspectives*. New York, NY: Oxford University Press.

Molnar-Szakacs, I., & Overy, K. (2006). Music and mirror neurons: from motion to 'e'motion. *Social cognitive and affective neuroscience, 1*(3), 235-241.

Moore, A. F. (2013). *Song means: Analysing and interpreting recorded popular song.* Surrey, UK: Ashgate Publishing, Ltd.

Moran, N. (2014). Social implications arise in embodied music cognition research which can counter musicological "individualism". *Frontiers in Psychology, 5*(676), 10.3389.

Pacherie, E. (2010). Self-agency. *The Oxford handbook of the self* (pp. 440-462). Oxford, US: Oxford University Press.

Schiavio, A. (2014). *Music in (en) action. Sense-making and neurophenomenology of musical experience* (Doctoral dissertation, University of Sheffield).

Schiavio, A., & Høffding, S. (2015). Playing together without communicating? A pre-reflective and enactive account of joint musical performance. *Musicae Scientiae, 19*(4), 366-388.

Smalley, D. (1996). The listening imagination: Listening in the electroacoustic era. *Contemporary Music Review, 13*(2), 77-107.

Steinbeis, N., & Koelsch, S. (2009). Understanding the intentions behind man-made products elicits neural activity in areas dedicated to mental state attribution. *Cerebral Cortex, 19*(3), 619-623.

Tomasello, M., Carpenter, M., Call, J., Behne, T., & Moll, H. (2005). Understanding and sharing intentions: The origins of cultural cognition. *Behavioral and brain sciences, 28*(05), 675-691.

Tsakiris, M., Longo, M. R., & Haggard, P. (2010). Having a body versus moving your body: Neural signatures of agency and body-ownership. *Neuropsychologia, 48*(9), 2740-2749.

Whittall, A. (2000). Subjectivity, synthesis, and hermeneutic narrative: Dissenting voices. *The Musical Times, 141*(1873), 7-14.