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Enhancing Embodied Music Cognition
Through Music Theatre, with Particular
Reference to *Solo* by Michael Pinchbeck
and Ollie Smith

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Introduction

It is widely accepted that the sense of understanding (cognition) music results from an embodied process. This view is supported by developments in modern neurological studies. Our concern in this chapter is to explore the implications of this view of music cognition in relation to forms of music theatre in which the audience is actively engaged.¹ Our overall research question is, whether or not, and to what extent, the physical engagement of audiences in music theatre performances enhances their embodied cognition of the music. The first objective of our research is to define and examine the approaches used to achieve physical engagement by the audience in music theatre. The second objective, which we hope will be the subject of a further research project, is to assess the extent to which these approaches may enhance the embodied cognition of the music concerned.

We start with a discussion of the view that music cognition is an embodied, rather than a purely mental, process, focusing on recent scholarship on embodied music cognition and mimetic engagement in music, as well as theories from the field of neurology. We then analyze four examples of music theatre which attempt to engage their audiences in physical actions in a way which may enhance the process of cognition of the music. We focus in detail on *Solo* by Michael Pinchbeck and Ollie Smith and describe its relationship to Ravel's *Tzigane* (1924), comparing the approaches used in this piece to those used in the other examples reviewed. We argue that *Solo* is the piece that most effectively elucidates aspects of the music (specifically, in this case, the phrase structure and folk-like character of Ravel's

Tzigane) and suggest that this is likely due to the high degree of immersion in the world of the drama and the nature of physical engagement it requires from its audience. In conducting a review of this type, we hope to shed new light on the importance of the body as a vehicle for music cognition.

Understanding through the whole body, and embodied music cognition

The view that music cognition, or indeed any cognition, involves the body, rather than being a purely mental process, is set out by neurologist Damasio in his book *Descartes' Error* (2006) in which he argues against the Cartesian separation of mind and body and presents neurological evidence which shows that human cognition depends on an integrated process rooted in the body as well as brain processes. As he writes, the body '[...] contributes a *content* that is part and parcel of the workings of the normal mind' (Damasio 2006: 226). Through studies of patients with forms of brain damage, particularly those with damage to the brain areas which integrate bodily and other brain responses, he demonstrates that our thinking is inseparable from feelings rooted in our bodies. In particular, our ability to make judgements and choices depends on our capacity to integrate responses from around our bodies, otherwise known as gut feeling.

More recent research by Buzsáki (2019) shows that humans actively construct their own understandings in response to stimuli, rather than by absorbing information presented to them. He suggests that as soon as an infant is born, it is evident that the brain is working, and working on the basis of quasi-understandings which are already there. In his view, this is how humans continue to perceive during life, through the construction of understandings from our own integrated bodily response to stimuli, rather than simply by absorbing information presented to us. Buzsáki's conclusion has been summarized as 'the brain does not represent information: it constructs it' (Cobb 2020: 10).

This neurological perspective is further developed by scholars in the field of music. Lemán (2008) uses the term 'embodied music cognition' for the title of his book and proposes that the sense of meaning in music is experienced through our entire bodies, not just in our minds. As he writes: 'Moving sonic forms do something with our bodies, and therefore have a signification through body action rather than through thinking. This type of signification could be called corporeal signification, in contrast to cerebral signification' (Leman 2008: 17).

This integrated mind-body process is the neurological mechanism behind the sense of embodied music cognition, and the reason why a full response to music requires the operation of a connected brain and body response, enabling us to

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1 experience a sense of understanding music. Cox presents similar arguments, seeing
 2 our engagement in music as active rather than passive since we mentally or physi-
 3 cally imitate the music (Cox 2011). He also comments on the way we sub-vocalize
 4 as we listen, relating to the music as if we were singing (Cox 2001: 196). He consid-
 5 ers that this mimetic engagement in music leads to a sense of music cognition.

6 On the evidence of the studies quoted above, and our own experience, all
 7 music performance and listening requires and relies on the embodied cognition
 8 of the music by both performers and audience. Even audiences at the most stand-
 9 ard classical music events, in which physical movement is both constrained and,
 10 to an extent, discouraged, are likely to be reacting physically to the music. As
 1 Cox asserts, ‘whenever we are engaged in listening, normally we are mimetically
 2 engaged whether we are aware of it or not’ (Cox 2017: 15). Both performers and
 3 audience members ‘feel’ the music inwardly and bodily rather than processing it in
 4 some form of ‘mind’ distinct from the body, the type of disembodied mind which
 5 Damasio (2006) argues does not exist. We, therefore, take the view that music
 6 cognition is, universally, an embodied process.

7 8 9 *Embodied music cognition and music theatre* 10

1 In music theatre, the audience is not only able to engage with sounds and the
 2 visual spectacle of instrumentalists engaging as they play but is also presented with
 3 characters who enact and personify the musical experience in a variety of ways.
 4 While we do not argue that this process of enactment of the musical experience
 5 makes any difference to the process of embodied music cognition, it does drama-
 6 tize the process and, in some ways, makes it more explicit. This is the case even if
 7 the audience remains largely passive. In another study, Efthymiou and Scheureg-
 8 ger examine the process of embodied music cognition in forms of music theatre
 9 in which the audience is seemingly passive, remaining seated in a fixed position
 10 (Efthymiou and Scheuregger 2021).

1 Our aim here, however, is to examine a small selection of music theatre works
 2 in which audiences engage in physical activity, and we examine the extent to which
 3 this physical engagement might enhance the process of embodied music cognition.
 4 Our focus is on works in which audiences are at least required to stand within
 5 a performance space, which leaves them free to move and change their stance,
 6 however minimally, in response to the unfolding action. We examine how such
 7 forms of music theatre might deepen the process of embodied music cognition. We
 8 look specifically at three contrasting works in which we have either participated as
 9 performers or created/composed ourselves. Using our documented observations
 10 of audience behaviour at the performances of these works, we aim to relate the

level and kind of movement in which audiences were engaged, to the degree of this enhanced experience. The works we discuss are Kagel's *Eine Brise* (1996), Effy and Litha Efthymiou's *Parting* (2014), and Litha Efthymiou's *Myisi* (2015). We then compare these three works with *Solo*, in which attempts were made to take this process of active bodily engagement further by requiring audience members to become fully immersed in the world of the piece in a manner similar to immersive theatre practices, which we also discuss. We critically evaluate the extent to which *Solo* can be accommodated within existing models.

Eine Brise

A number of pieces by Kagel are comparable to the other works which we examine in this chapter. One relevant work is *Eine Brise*, subtitled 'fleeting action for 111 cyclists, a musically enriched sport event in the open'. This has been performed several times in the United Kingdom, including in 1997 in Upper Street, Islington, London, when it was directed by Stephen Montague and in which Taylor took part as one of the cyclists. During this performance, Upper Street was closed to traffic and lined with dense crowds standing on either side. The large body of cyclists passed along the street at a moderate pace and were directed to whistle, shush, ring their bells, and sing a rising sequence of notes at specific points along the street.

The audience was free to move, cheer, act, and engage in whatever way they pleased, other than to move into the path of the cyclists. The performance was part of a larger festival, and audience members were also able to arrive, depart, and visit other attractions as they wished. The action is described as fleeting since each of these 'music' events was expected by Kagel to last for 90 seconds. In this performance, these events were repeated at intervals along Upper Street.

From observation, the audience engaged actively with the spectacle by cheering, waving, clapping, and whistling, among other things. The physical engagement of the audience was often aligned with aspects of the unfolding action. For example, the cyclists ringing their bells prompted large numbers of the audience to become visibly more animated, cheering, waving, and clapping accordingly, aligning with Cox's notion of mimetic comprehension. He argues that 'part of how we comprehend music is by imitating, covertly or overtly, the observed sound producing actions of performers' (Cox 2017: 12). This imitation can happen in various ways. Here, in line with Cox, we observed an 'amodal, visceral imitation of the exertion dynamic evident in the sound (a pattern of exertions that would produce the same or similar sounds)' (Cox 2006: 50), rather than a direct imitation of the arm and finger movements undertaken by the performers to execute the sounds what Cox refers to as 'direct matching' or 'intramodal' mimetic engagement (Cox 2017: 13). Similarly, when the cyclists ceased bell-ringing, singing, or whistling,

1 the audience members were clearly less spirited. They moved less, were quieter,
 2 and did not engage in overt physical action. Pertinent here are Cox's ideas on the
 3 physical implications of musical silences. He suggests that silences can 'signify an
 4 act of creating silence by holding a pose [and therefore] silence too can be evidence
 5 of the human actions that produce them' (Cox 2017: 38).

6 The performance was clearly successful in achieving active physical engagement
 7 by the audience, and it is likely that the permission and encouragement of physical
 8 engagement and movement, which mirrored the structural form and energy of the
 9 piece, allowed the audience to feel they better understood Kagel's work.

Parting

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 3 *Parting* is a multidisciplinary work composed and created by Litha and Effy Efthy-
 4 miou. It received its first performance at Kings Place, London, in March 2014.
 5 Original music for various small ensembles (including string quartet, brass quartet,
 6 flute and electronics, and violin and electronics) was performed on stand-alone,
 7 individual, stages within a black box theatre space (Hall Two of Kings Place). Each
 8 musical performance also included an extra musical component such as contem-
 9 porary dance, film, or dramatic action. Audience members were required to stand
 10 in between the individual stages and promenade to the specific stage on which the
 1 performances took place at any one time.

2 The music for each ensemble was distinctive in character and, from observation,
 3 it was clear that audience members were engaged mimetically with each piece. The
 4 clearest example of this could be seen in the two opening works: the first for violin and
 5 electronics, and the second for string quartet. The former uses sustained, undulating,
 6 musical material which repeats extensively with only minor alternation. This music
 7 is static in form, with no discernible pulse and no clear sense of trajectory. It can be
 8 described as fluid, in that phrases do not start and stop on the up and down beats of
 9 bars, nor at the beginning or end of clearly marked climaxes. The accompanying film
 30 displays similar characteristics in visual terms, whereby abstract images 'float' across
 1 the screen, seamlessly merging into other images, defying a sense of beginning, middle,
 2 and end. In contrast, the work for the string quartet is lively, pulse-driven, and displays
 3 a sense of clear forward motion. This piece was performed alongside a contemporary
 4 dancer, whose choreography closely matched the rhythms and phrases of the music.

5 The audience was seen to respond – through bodily movements consistent with
 6 the analyses put forward by Leman (2008) and Cox (2001) – to the different charac-
 7 ters of these two works, exhibiting slow, even flowing, movement, in response to the
 8 undulating sustained musical phrases of the first piece, and more rigid movement,
 9 such as tapping along to the beat and head bobbing, reflecting the lively character of
 40 the second piece. Similar to the Kagel example described earlier, these representations

of the music, in line with Cox, were ‘imitative representations that [were] not confined to the modality in which they [were] produced’ (Cox 2006: 51), but they were the result of ‘something [located] in the gut that somehow matched the energy pattern of the music’ (Cox 2006: 51). Here, the audience’s response was reinforced, perhaps, encouraged, by the extra musical features of the piece (the dance and film). The dancer’s choreography, for example, included a clear emphasis on the downbeat and much lively movement in the body, matching the rhythms and phrases of the music. In their study on musical gestures, Jensenius and Wanderley (2010) describe dancing to music as a sound accompanying movement that can give structure to music and may influence the perception of the music (Jensenius and Wanderley 2010: 26). We argue that audience members of this piece very likely experienced an enhanced form of embodied music cognition, not only due to the freedom they had to stand and move in the space but, crucially, because of the observed extra musical material (the dance and film) with which they could engage mimetically, and which reflected and amplified the character of the music.

Myisi

Efthymiou’s work *Myisi*, composed in 2015 and performed at the Tête-à-Tête opera festival in London, in 2015, is another example of a work that engages its audience physically. *Myisi* is a fragmented work with no formalized linear plot, consisting of several separate visual and aural evocations of the Old Hispanic Palm Sunday ritual, arranged into a montage of isolated vignettes (Efthymiou 2017: 3). The action takes place on the outer edges of a black box theatre space (the New Diorama Theatre in London). The audience stands in the middle of the space, creating an inverted form of theatre in the round and is encouraged to undertake physical actions (2017: 8).

The music of the third vignette is the most pertinent. This vignette is for solo flute and electronics, accompanied by contemporary dance. The music is formed of material – thematic, harmonic, and technical – that aims to create a sense of rotation, and could thus be perceived as cyclical in nature. As the music unfolds, members of the audience are invited to undertake actions that enhance their sense of embodied cognition of the music:

1. They are invited to immerse their fingers in water and rub the rim of a glass.
2. They are guided by the dancer to rotate their bodies. The dancer also performs this action of rotation.

These cyclical physical movements performed by the audience closely mirror the cyclical nature of the music – established through motivic repetition, a harmonic language that rotates, and the cyclical nature of the overtone swirls played on the

1 flute (an extended technique achieved by overblowing a *tremolando* in order to
 2 sound the overtones of the written pitches, which start and end in the same place).
 3 The symbiotic relationship between music and movement is intended to encourage
 4 audiences to feel the character of the music in their bodies as they represent it phys-
 5 ically through touch and movement, thus elucidating its cyclical nature. This idea
 6 aligns with Leman's notion of 'embodied attuning' (2008: 112), which he defines
 7 as the way in which corporeal articulations, such as moving in a way connected
 8 to the moving forms of music, can be used to interpret structural forms such as
 9 melody, tonality, and percussive events (2008: 112). In contrast to synchronizing
 10 with music in the form of, say, tapping the beat, Leman defines attuning as '[...]

1 being as much as possible in harmony with features of the moving sonic forms of
 2 music' (2008: 115). In *Myisi*, the audiences are guided in their actions rather than
 3 undertake actions of their own volition, nonetheless, the physical underpinning
 4 of the music, through the glass rubbing action and bodily rotations, may lead to
 5 a similar form of embodied attuning, elucidating the cyclical nature of the piece.
 6 Pertinent here, too, is the use of the hand. As Leman describes 'a simple exam-
 7 ple of a deliberate action that could be considered as a description of music is
 8 hand movement' (2008: 19). In *Myisi*, members of the audience are encouraged
 9 to rub the rim of a glass, and they do so in time to the music, emulating its cycli-
 10 cal nature. Through this overt hand gesture we believe, in line with Leman, that
 1 these audience members' actions embodied the cyclical form of the music, which
 2 was communicated to, and probably understood, as Leman suggests is likely, by
 3 other audience members (2008: 20).

4 The cyclical quality of the music is also reinforced by some of the extra musical
 5 features in the piece. An example is an item of a set with which audiences engage
 6 throughout the performance – a wooden screen with circular peepholes, through
 7 which they are invited to peer. Another example is the sounded spoken text in the
 8 electronic score, which accompanies the flute at this point in the work. This spoken
 9 text is an abstract narration (which repeats extensively) of the story of the wife of
 10 Lot from the Old Testament, whose action of turning around (her cyclical move-
 1 ment) led to her ultimate demise. These various theatrical devices may enhance the
 2 sense of embodied cognition of the music, by providing reinforcement of cyclical
 3 form and contextual information, which the audience can directly relate to their
 4 specified physical actions and the cyclical nature of the music.

Summary of the three works reviewed

1 The extent of the embodiment of musical expression varies considerably between
 2 the examples quoted in this section. At one end of what could be considered a

spectrum lies Kagel’s work, which encourages, rather than stipulates, the physical participation of audiences. The audiences in this piece undertake unspecified physical actions that relate to the broad structure of the work, and some of the dynamic nuances of its mood (such as clapping in response to the high-energy bell-ringing and standing still in response to the less animated sections). Close to this example is *Parting*, in which audience members responded to the sounded music and the dance and film which reflected the overall structures of the music. The audiences of these two works were visibly mimetically engaged with the broad structural features of the pieces, but did not have the opportunity to engage, overtly at least, with the more nuanced musical details, or gain a deeper sense of the connections between their own actions and the works’ broader aesthetic ideas.

Myisi lies at the other end of the spectrum, as it goes further in attempting to enhance the process of embodied cognition of the music. It does so by inviting the audience to undertake specified physical actions directly related to nuanced aspects of the musical material. These actions closely reflect the detail of the music, allowing audiences to gain a stronger sense of it in their bodies, corresponding to Leman’s notion of embodied attuning, described earlier. *Myisi* goes further still, by providing a degree of contextual information for the audience in the form of (recorded) narration that outlines, albeit abstractly, a related biblical story, enabling the audience to connect the act of rotation in the music to the events in the narration and their own physical movement. There is also strong reinforcement of cyclical structure in a prominent item of set, which displays circular formation. We argue that the multimodal reinforcement and contextual information provided by the extra musical features of the piece, coupled with encouragement and direction of audience movement, could heighten the process of embodied music cognition for the audience. *Myisi*, then, goes further, in this regard than the other two pieces reviewed.

Solo

The main focus of our discussion is *Solo* by Pinchbeck and Smith, and we compare and contrast it with the works described in the previous section. *Solo* is a ten-minute theatrical ‘experience’ inspired by Ravel’s *Tzigane* for violin and piano.² It is an intimate work in the sense that it is performed to, and by, two people at a time. Since these people are participants rather than simply audience (i.e. listeners and observers), we will refer to them as audience–participants. They take on the roles of violinist Jelly d’Arányi and the composer, Ravel, and enact the story of how the music came to be composed and premiered at the Aeolian Hall in London in 1924. The audience–participants are guided through their actions by separately recorded

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1 narrations which they follow through headphones. The text of the narration is
 2 structured into Movements, which correspond to specific sections of the music:
 3 Movement 1 of the text, for example, corresponds to bars 1–14 of the score, and
 4 Movement 2 to bars 15 and 32.

5 Two additional performers (not audience members) guide the audience-
 6 participants to different locations in the performing space engaging with props,
 7 costumes, and items on set, which bring the story to life.³ The action is presented
 8 as taking place in various locations, including restaurants, Ravel’s garden in Paris,
 9 and onstage at the Aeolian Hall. The action unfolds alongside a recording of
 10 *Tzigane*, which is heard from start to finish throughout the duration of the theat-
 11 rical work. It is played through a sound system in the performing space, and the
 12 audience–participants hear this music whilst they are simultaneously listening to
 13 the two separate narratives of Ravel and Jelly d’Arányi, transmitted through their
 14 respective headphones.

15 In contrast to the pieces reviewed above, *Solo*’s audience–participants are fully
 16 immersed in the world of the drama. They are briefed about the characters they
 17 will perform before the show commences and, during the performance itself, they
 18 wear costume, interact with set and props, and carry out physical actions related
 19 to the dramaturgy and the nuances of the music. This physical engagement echoes
 20 that which is required of audiences of immersive theatre, which invites participa-
 21 tion in the form of touch, role play, and wearing costume (Machon 2016: 38). It
 22 is through overt somatic engagement that audiences of immersive performances
 23 or ‘immersive interactors’ to use Machon’s term (2016: 38) are able to embody
 24 the themes and ideas of a given work. As Machon states:

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 26 The physical immersion in the world of the play allows for a unique appreciation of
 27 the work at hand [...] It enables the interactor to comprehend narrative and theme
 28 from the inside [...] This multiperspectival form grants visceral access to the literary
 29 and scholarly discourse of the source material. Ideas are felt, experiences shared and
 30 understood in an embodied way.

(2016: 44)

31 Similarly, we argue that it is the bodily immersion in the multidimensional world
 32 of *Solo*, which includes music, text, and an elaborate set, that may enable the
 33 music to be felt and understood more deeply. This immersion is combined with
 34 prescribed physical movement that closely mirrors the nuances of the music, similar
 35 to Leman’s notion of embodied attuning (described earlier). Two specific features
 36 of Ravel’s *Tzigane* may be perceived, and felt to be understood, in an embodied
 37 way through the audience’s immersion in the piece. These are the phrase structure
 38 of the opening cadenza, and Ravel’s use of the exotic in the form of aspects of
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musical styles from outside the main western musical tradition. In the next section, we examine the potential enhancement of the sense of embodied cognition of Ravel’s *Tzigane* which may result from this bodily immersion in the piece.

The embodiment of phrase structure in Tzigane

The opening of *Tzigane* takes the form of a long cadenza, which lasts for almost half the piece. This cadenza is free and recitative-like in form (DeVoto 2000: 112). Although it includes parts of the principal theme of the piece, it is difficult to fully distinguish its component parts simply through listening. Through analysis of the relationship between music, text, action, and the resulting embodiment of the music by the audience-participants in *Solo*, it is, however, possible to gain a clear understanding of the shape and pace of this cadenza.

There is an obvious similarity, which ought to be clear to the audience-participants, between the number and length of the musical phrases that make up the cadenza and the narrated text heard through the headphones. The music in bars 1–6, for example, is structured in seven distinct phrases, with the end of each marked either by a long note or a rest. Correspondingly, both narrated parts follow a structure of seven sentences which have a close relationship to the length of the musical phrases, even though the two are not strictly aligned. For example, the short first sentence (‘Thank you for coming to *Solo*’) mirrors the short two-note phrase in the violin which begins the piece, and which lasts for three musical beats. The contrasting fourth musical phrase, which is a development of the first phrase and of greater duration (4.5 musical beats), is more rhythmically complex. The corresponding sentence is similarly longer, and more nuanced than the first, as it informs the listener (the audience-participant) of their role in the piece: ‘You are working on a piece of music for its premiere’. A pattern of growth and complexity begins to emerge when all the musical and narrative phrases that are included in Movement 1 (bars 1–14) are examined, with the longest phrase found at the end.

The lengthening musical phrases are paralleled by the actions which audience-participants execute as they embody the characters of the story. These actions, which include walking to the appropriate spot in the performing space, donning a shawl, taking a walking stick, and sitting in a chair, slowly build a picture of the relationship between the two protagonists and set up their motivations. More about each character is revealed as their actions progress, mirroring the development of the melodic phrases in the score. These evolving actions correspond with *Tzigane*’s opening passage, though they are not precisely synchronized with it.

The incremental development of the narration and actions mirror the development of the musical phrases as they are heard, and we argue that this close

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relationship between music, text, and action, involving all the senses in more vigorous activity by the audience than in the other works reviewed, could contribute to a deeper sense of embodied music cognition, potentially allowing audiences to gain a strong sense of the work's developing phrase structure.

Taking this further, we also suggest that this multi-sensual experience of the audience-participant in *Solo* could trigger what Machon describes as embodied watching. She defines this as the 'noticing of internal feelings (both emotional and sensational) as much as external occurrences – a giving attention moment by moment' (2016: 40). She states that:

the watcher remains active, attending to the moment, to what it looks like but, more significantly, what it feels like both internally and externally. By doing this, the interactor becomes [...] 'attendant' [...] as in attending to an action or experience.

(2016: 40)

We argue that this 'attendance' could occur more deeply in *Solo* than in *Myisi* and the other works reviewed because here the audience-participant is a role-taker, engaged in an activity at every moment of the piece and more deeply immersed in the world of the work. Machon states that this full immersion contributes to a 'lividness of the performance moment' (2016: 39), leading to embodied watching.

We suggest that embodied watching could help to enhance the level of embodied music cognition in the audience-participant of *Solo* as they become attendant to the feelings elicited through their active engagement in tasks that mirror the nature of the music.

Embodying the exotic

The characteristic Gypsy-like quality of *Tzigane* is typical of Ravel's explorations of exoticism. Exoticism is reflected here through the use of certain compositional devices that permeate the work, such as the augmented second intervals, the close ornaments, and the slides and trills. Some of *Solo*'s dramatic elements are also shaped by the music's Gypsy-like character. Examples are the various costumes and props with which the protagonists interact at different points in the dramaturgy, such as the score of Liszt's *Hungarian Rhapsodies* (1846–53) which is based on Hungarian folk themes, a violin, as well as an eastern European style shawl which is placed on the shoulders of the violinist character as she gives a private performance of Gypsy music. The narration, too, directly acknowledges the Gypsy-like properties of the music. One example is in the line: 'There are tremolos and glissandos', and another is through a reference in the narration to Liszt.

It is through analysis of the ways in which these musical and dramatic exoticisms interact, and how the music is transmitted to audiences – through a recording – that we demonstrate, below, how *Tzigane*'s inherent exoticism is embodied by the audience–participant.

As we noted above, a recording of *Tzigane* is played throughout the performance of *Solo*, and so the music is heard in the absence of the performer who is playing it. Because the sound of the music is heard, the presence of the physical performer is implied. This corresponds to Armstrong and Redhead's notion of the 'body as source', in which 'the body becomes source, rather than object' (2015: 161). In their concept, the body may be physically absent (as object) but present as source through sound (2015: 161). Although they refer specifically to the human voice – which they state 'is defined as something that is simultaneously embodied and not embodied, and whilst speech can be owned by the speaker, voice cannot necessarily be' (2015: 158), this concept can extend beyond the voice and encapsulate sound that is produced using the body, such as playing a musical instrument.

Even though there are references in the narration to the performer's physical presence ('you are the violinist, Jelly d'Arányi'), the connection between the sounded music and the performer playing it remains only implied. We argue that the disembodied nature of the (recorded) music and yet the presence of the audience-participant may enhance the sense of embodiment of the music. This potential sense of embodiment is made clearly visible at the point at which the audience-participant with the role of Jelly d'Arányi takes hold of a violin. At this point in the piece there is an important change in the narrated text away from relating future events ('you will be working on a piece of music'), and towards an action-based description of the present ('you play violin' and 'you...play passionately for two hours without stopping'). We argue that this critical moment would encourage the audience-participant to make a direct link between the music they hear, the act of playing the violin they are now holding, and their own body. By placing the instrument in playing position with bow poised, and by standing in front of a music stand on which a score is placed, the audience-participant is brought into the constructed locale of a concert performer and begins to embody their gestures (left arm lifted above right to steady the neck, and right arm operating the bow). At this moment, the notion of the body as a source is potentially transformed, as the disembodied recorded music finds a body in the form of the audience-participant with the role of Jelly d'Arányi. If Leman and Godøy's notion that '[...] we conceive of musical gestures as an expression of a profound engagement with music' (2010: 3) is correct, then the performance of these gestures by the audience-participant could be expected to lead to a deeper understanding of, and connection with, Ravel's *Tzigane*.

1 The audience–participants’ physical connection to the music at this point is
 2 potentially deepened by the description in the narration, which alludes to *Tzigane*’s
 3 folk-like quality (‘he asks you to play some Gypsy folk music’), and the correspond-
 4 ing sounded music, which represents this character through the use of the popular
 5 tropes described above. Hearing the description of the music in the recorded narra-
 6 tion at the same time as hearing the music could result in an imagined embodiment
 7 of the music, an experience close to that described by Wanderley and Vines as ‘[...]’
 8 gestures being perceived by a listener without a direct correspondence to a move-
 9 ment of a performer’ (2006: 165). The authors suggest that changes in note artic-
 10 ulation and melodic variation are examples of features of music that may conjure
 1 up mental images of physical gestures (2006: 165). Cox makes similar arguments.
 2 He uses the term Mimetic Motor Imagery, which is the process whereby listeners
 3 of music imagine physical movement either of performers playing or other physical
 4 movements as part of their own embodied engagement with what they are hearing
 5 (Cox 2017: 12). The mental images that might be conjured up in this case are those
 6 that capture the gestures involved in playing the slides and trills that contribute to
 7 the folk-like character of the piece. This imagined embodiment, coupled with the
 8 reality of holding the violin, could awaken the audience–participant to the nature
 9 and depth of Ravel’s exoticism in *Tzigane*.

Conclusions

1 Our aim in this chapter has been to assess the degree to which forms of music
 2 theatre which involve audience movement and action can enhance the process of
 3 embodied cognition of the music concerned. We examined four contrasting works
 4 and used our documented observations of the audiences’ bodily engagement with
 5 these works, and we supported this with reference to studies of embodied music
 6 cognition, mimetic engagement with music, and neurological evidence that demon-
 7 strates the body’s involvement in music cognition, to assess the potential of this
 8 enhanced experience.

1 We have explained how, in the three pieces analyzed in Section 2, the physical
 2 freedom offered to the audiences to move and engage in the music, led to clearly
 3 observable patterns of physical involvement, which we argue would have affected
 4 the audiences’ cognition of the music concerned. In our view, *Solo* is likely to
 5 enhance the process of embodied music cognition to a greater extent than the
 6 other works reviewed because it is based on a more ambitious approach to the
 7 physical engagement of the audience–participant. Not only are audience members
 8 likely to engage in what Leman calls embodied attuning, whereby their physical
 9 actions outline aspects of the music (as was also found to be the case in *Myisi*),
 10

but they would also do so in the context of full immersion in the dramatic action, through role play, costume-wearing, and movement. Unlike the audience's experience in *Myisi*, the actions that audiences undertake in *Solo* are given full contextual meaning through the audio narration which provides an explicit narrative understanding of the characters' backgrounds and motivations, allowing them to make robust connections between their movements and the drama, and consequently form stronger links with the music. The extra musical components, too, are more explicitly linked to the music in *Solo* than those in the other works reviewed.

The potential for embodied watching which results from *Solo*'s immersive qualities could also contribute to a heightened sense of embodied music cognition, as the audience-participant becomes emotionally and sensationally attendant to the actions they perform and the context in which they are performed. We argue that this kind of visceral and emotional connection offers the potential for more powerful elucidation of the sense of the music. It is this crucial element of more complete immersion in the world of dramatic action that distinguishes *Solo* from the other works reviewed. We believe that *Solo*, then, has the potential to enhance the process of embodiment of musical communication in a different and more extended way from that possible in the other works we have reviewed.

Because the scope of this study did not allow for direct communication with audiences, we hope to carry out a further study in which the reactions and understandings of the audience-participants in *Solo* are assessed, through questionnaires and forum discussions. The results of such a study will enable us to ascertain whether the potential greater depth of cognition of the music in *Solo* was in fact achieved, and to what degree. This, in turn, will facilitate a deeper understanding of the role that such forms of music theatre can play in the process of embodied music cognition more generally.

NOTES

1. By this, we mean physically engaged with their bodies.
2. We note that we are looking here at overt observable physical engagement rather than the covert kind described by Cox as mimetic motor imagery (MMI). He describes MMI as 'muscle related brain processes that do not manifest as overt actions' (Cox 2017: 12).
3. The programme note states: '[...] *Solo* is a poetic, poignant 10-minute experience based on real-life events'.
4. At the time of writing, the piece has been performed at a former hospital, a medieval guild-hall and a church.
5. Exoticism is defined by Bellman as the '[...] borrowing of musical materials that evoke distant locales' (Bellman 1998: 9).

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