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Embodiment in musical knowing: how body movement facilitates learning within Dalcroze Eurhythmics

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This paper examines how body movement within the frames of Dalcroze Eurhythmics can facilitate musical knowing. Merleau-Ponty's philosophical ideas seem to correspond with the specific empirical findings of Jaques-Dalcroze. Hence, our viewpoint is based on Merleau-Ponty's notions of 'knowing the world through the body' as well as of gesture, habit and reversibility. We argue, along with Merleau-Ponty, that the body is our primary mode of knowing. Furthermore, we suggest that body movement represents pre-reflective knowing and can be understood as physical metaphor in the process of musical understanding from the concrete doing/musicing to the abstract and (or) conceptual.

Introduction

'This is a quarter note; usually it is black, but here on the blackboard it is white.' This is how the very first music theory lesson for young children began in a Finnish music school last September. But this is nothing new or exceptional: 100 years ago Emile Jaques-Dalcroze (1865-1950), as a professor of harmony, solfège and composition at the Geneva Conservatory, noticed that students were taught theory by rules and writing, not by sound. In fact, he was horrified at the theoretical emphasis and fragmentation of all musical study.

What happened in that first music theory lesson, we presume, reflects the usual way of teaching, not only in music but in education in general. Teaching, even in arts, is often conceptual, non-experiential, non-illustrative, and takes place on the abstract level. Often, decisions to teach through conceptual abstractions are based on assumptions that ignore the crucial facts of our embodiment and instead advance reason and abstraction as the primary, if not exclusive, modes and results of knowing. In general education, the arts and other subjects that rely on and develop bodily knowing are considered less important than and a refreshing supplement to the 'more important' studies that favour the disembodied 'intellect'. Indeed, the valuing of conceptual knowledge over bodily knowing and experiential learning, and the distinct separation of the two modes, reflects the mind-body separation of Cartesian dualism that is typical of Western thinking.

When Jaques-Dalcroze recognised these defects in music education, he started exploring the possibilities for incorporating natural movements into the musical learning processes. Little by little, he came to a conclusion that musical learning and

understanding should be based on bodily experiences. Today his ideas of applying body movement in teaching music are known as Dalcroze Eurhythmics. It is an approach to music education that incorporates rhythmic movement, solfège and improvisation and aims at developing musicianship in a broad sense. It usually complements and supports other musical studies and is applied in various ways in different countries.ⁱ When interviewing the Dalcroze master teachers in the U.S., Juntunen (2002a) discovered that they strongly believe that the approach ‘works’. However, the actual role of body movement in musical learning and knowing has been poorly examined.

This article examines how bodily movement within the frames of Dalcroze Eurhythmics can facilitate musical knowingⁱⁱ and how the body can function as a constitutive attribute of such knowing; and how bodily experience provides a means of developing skills, competencies and understanding necessary to work in the expressional mode of musical knowing. The philosophical ideas of Maurice Merleau-Ponty (1908-1961) seem to support the specific empirical findings of Jaques-Dalcroze; thus, our viewpoint is based on Merleau-Ponty’s notions of ‘knowing the world through the body’ as well as of gesture, habit and reversibility. Along with Merleau-Ponty, we argue that the body is a primary mode of knowing, and that what can be known via bodily experience, while often incapable of being expressed in words, is known at a deeper level. Furthermore, we suggest that body movement represents pre-reflective knowing and can be understood as physical metaphor in the process of musical understanding from the concrete to the abstract, or conceptual. In our exploration of physical metaphor, we lean on George Lakoff’s and Mark Johnson’s (1980, 1999) theory of embodied metaphor from cognitive psychology, rather than traditional theories from philosophy and literature studies.

Body in knowing

In the present quite extensive literature on embodiment, Descartes is cited as the philosopher who, for ‘modern’ philosophy, separated mind and body and thus the material and the spiritual from each other. According to him, we are human beings because of the mind and its capacity for rational thinking. General knowledge can be gained only through an analytical process of itemisation and abstraction. The chain of reasoning that led Descartes to his statement that “*cogito, ergo sum*“ also led him to differentiate the body from the mind (soul) (see Descartes, 1975).

This Cartesian mind-body dualism has been criticised within phenomenology. One outcome of this criticism is Merleau-Ponty’s writings, which cast doubt upon Descartes’ notion of *cogito*. The central feature of Merleau-Ponty’s *Phenomenology of Perception* (1962) is his critique of Cartesian intellectualism. Merleau-Ponty argues that all theoretic thinking, and all achievements of science, are based on the stratum of the primordial experiences that are attained through our bodily contact with the world. In his writings, he studies how man comes to know the world by ‘being-in-the-world’ through the body. He reminds us that the body can never be viewed as an object simply because one can never disengage oneself from it; our lived experience of this body thus denies the detachment of subject from object, mind from body, etc. (Merleau-Ponty, 1962: 27-29, 82, 144, 206, 430). Understanding arises first at a bodily, pre-reflective level; any intellectual processing occurs afterwards. (Ibid.: 203-204; Merleau-Ponty, 1968: 28, 35)

In his later work, Merleau-Ponty (1968: 130-155) introduces his reversibility thesis: my body is a two-dimensional being; it is at once phenomenal body and objective body, the body as sensible and the body as sentient (ibid.: 136). '[T]he body sensed and the body sentient are as the obverse and reverse' (ibid.: 138). This means that sensing and being sensed are intertwined with each other, two different faces of the same thing. Nonetheless, divergence (*écart*) makes them unknown to each other (ibid.: 215-217, 263; also Dillon, 1997: 163). During the last decades of the 20th century Merleau-Ponty's philosophy provoked a growing amount of commentary (e.g., Dillon, 1997; Heinämaa, 1999; Langer, 1989; Leder, 1990; Priest, 1998), as well as applications in numerous scientific areas involving innovative ideas, for instance research in the arts and arts education (e.g. Bowman, 1998; Parviainen, 1998; Rouhiainen, 2003; Sheets-Johnstone, 1979, 1981, 1999) and in cognitive science (e.g. Johnson, 1987; Lakoff & Johnson, 1980, 1999; Varela et al., 1993) In cognitive science there has been a particular interest in the notion of 'embodied mind'. For example, Lakoff and Johnson (1980, 1999) argue that bodily or experiential knowledge is the basis on which new knowledge is built. Their studies explore the body's crucial role in even the most seemingly cerebral type of cognitive activity.

Starting at the end of 20th century, praxial music education has emphasised the importance of action and knowing-through-action in musical learning and knowing (Bowman, 1998, 2000; Elliott, 1996; Regelski, 1996, 1998). In particular, Wayne D. Bowman (2000) stresses the meaning of the body in these processes. In philosophy, Michael Polanyi has written about the embodied nature of truly effective learning. He tries to shed light on the bodily roots of all thought, including man's highest creative powers (Polanyi, 1966: 15). For him, the body is the instrument of all our external knowledge, whether intellectual or practical (ibid.: 15). The core of his philosophy rests on the concept of tacit knowing (see ibid.; Polanyi, 1969), which will be discussed later. Although the strict dualistic way of thinking was not totally adhered to by any of the successors of Descartes (Alanen, 2002: 15), until now this notion has strongly influenced the Western scientific contemplation which emphasises the logical reasoning and conceptualisation that detaches the body completely from the processes of the mind. As Lakoff and Johnson (1999: 400-1) state, Cartesianism has affected not only the field of the philosophy and other academic disciplines but education and popular culture as well. It has also led to laying aside the emotional and aesthetic regions in our culture. This article attempts to dispute the disembodied thinking based on the philosophy of Descartes and to share some light on embodiment in musical knowing.

Bodily knowing in musical action

Instead of focusing only on the technique necessary to play an instrument, Dalcroze teaching aims to develop bodily knowing and an awareness of the physical demands of performing (Juntunen, 2002b). The idea is that the bodily skills developed in the exercises enable the student to manage his/her movements in related activities such as playing an instrument, singing and conducting. Bodily knowing also refers to the

sense through which we know ourselves as whole, which is the backdrop for all our (musical) knowing and sense of self (Stubley, 1999).

Merleau-Ponty (1962) refers to body's skilfulness as habit. For him, habit is 'knowledge in the hands, which is forthcoming only when bodily effort is made, and cannot be formulated in detachment from that effort' (ibid.: 144). In the acquisition of habit, it is the body that 'understands'; in action the body 'catches' and 'comprehends' movement. The acquisition of a habit is the motor grasping of a motor significance (ibid.: 143). Therefore, in Merleau-Ponty's terms, to learn to play an instrument is neither a matter of intellectual analysis and reconstruction nor a mechanical recording of impressions. It is a question, rather, 'of the bodily comprehension of a motor significance which enables me to lend myself completely to expressing the music without having to think about the position of my fingers...' (Langer, 1989: 47).

We can also approach bodily knowing in terms of Polanyi's (1966) notion of tacit knowledge,ⁱⁱⁱ which shares similarities with Merleau-Ponty the implication that we know more than we can tell. In tacit knowing we incorporate an object, an operation, or an understanding in our body (ibid.: 16). Furthermore, one can come to know another person's bodily skilfulness by a tacit act of comprehending it (ibid.: 33). Polanyi compares our tacit knowing of world with the way our bodies are commonly known to us. We do not normally need to focus on our body parts when acting in the world, only when we have a problem with them. Accordingly, the competent performance occurs when a subject has internalised the actions and has no further need to focus on the action of each body part, as the beginner has to do. Merleau-Ponty (1962: 145) emphasises the principal role of intention in this process and uses as an example the ability of an organist to easily adapt his or her movements easily to a structurally new instrument. The choices of which manuals and registers to use are made in a holistic process guided by the musical images of the player.

In terms of phenomenology, according to Jaana Parviainen (2000), tacit knowledge refers to the moving aspect of the body, such as in playing the piano. Focal knowledge refers to the body, which has moved. In piano playing this would mean the fingers being pressed against the keys and giving us feedback of our movement through sounds. Polanyi (1969: 148) writes: 'Every time we make sense of the world, we rely on our tacit knowledge of impacts made by the world on our body and the complex responses of our body to these impacts.' As I reach out to press the keys of the piano, the tactile sensations and a stream of kinaesthesia course through my fingers, but I am not usually aware of them as such. I utilise my body to attend from it to an external world. (See Leder, 1990: 16.) This means that in any act of attention we not only attend to a thematic object but from a set of cues and conditions (ibid.: 15). This 'from-to' structure, which characterises experience in general, has been employed by researchers to shed light upon the phenomenon that Merleau-Ponty (1968) calls 'the chiasm', that is, the reversibility and the reciprocity of sensing and being sensed, which was discussed earlier in this paper. This two-sided, circular alternation facilitates bodily reflection: that is, instead of responding automatically to the world, my moving body is able to reflect and adjust its own actions (Parviainen, 2000).

In skilful movements the focal and tacit dimensions are in balance. For Jaques-Dalcroze, excessive intellectual thinking in action – that is, the imbalance between the intellect and sensing - results in arhythmism, the inability to master rhythmic movements. In musical performance, this presents itself in various faults such as the

tendency to jerkiness when the movement should be flowing, inability to integrate two movements of different types, or starting or finishing too early or too late, just to mention a few. (Jaques-Dalcroze, 1910; 1921/1980: 52.)

When applying Polanyi's terms of knowledge to bodily skills, Parviainen (2000) employs the notion of 'bodily knowledge'. Bodily knowledge is not only knowledge of the body's own internal functioning: it originates in the interaction with the world. We acquire this knowledge through observing our own movements, through listening to our kinaesthetic sensations (O'Donovan-Anderson, 1997). It is as much a question of knowing and understanding the movement as being able to accomplish it. Therefore, one can be extremely skilful technically but still not have understanding of the movement, and vice versa: one can lose the ability to move but still have knowledge about the movement. Likewise, one's bodily skilfulness does not guarantee the ability to lecture about that skill (Parviainen, 2000). Skills are very difficult to articulate and to transfer between individuals as they include a large proportion of tacit knowing. Hence, a person must be able to focus on and be aware of his/her tacit process-of-knowing in order to articulate and communicate it in a social context (see Sveiby, 1997).

Sensing quality through kinaesthesia

One of the basic principles in the Dalcroze approach is that the performance of a fine musician should reflect an inner physical sense of the relationship of time, space and energy in music (Jaques-Dalcroze, 1921/1980: 38-44). Sensing these qualities of movement happens through kinaesthetic sense. Maxine Sheets-Johnstone (1999: 131) maintains that kinaesthetic sense has a central, organizing role in perception of the body as a whole. Being sensitive to kinaesthetic sensations means to listen to and to observe one's own movements. The knowledge we achieve by 'listening' to our body movements is also knowledge about the world; and it comes into being through bodily interaction with the world (Parviainen, 2000; Reuter, 1999, Sheets-Johnstone, 1999). Through kinaesthetic empathy we can understand other people's movements as well (Parviainen, 2000). According to Polanyi (1966), we are able to do that by a tacit act of comprehending. This kind of understanding and learning is crucial, for example, in voice lessons. As one cannot see what is happening inside the body, one can only try to feel and thereby to imitate what is happening in another person's body. Jaques-Dalcroze (1921/1980: 156) argues that people who have had Dalcroze training do not watch other people move by following them only with the eye, but actually with their whole being. They enter into close communication 'to vibrate in unison with those they see expressing themselves in physical movement' (ibid.: 155-6).

In Dalcroze teaching there is a constant call for awareness of kinaesthetic sensations. The goal is to show music's heard and felt qualities in body movement (Juntunen 2002b). In order to help the students to become more sensitive to and aware of kinaesthetic sensations, variations of movements are encouraged. When accomplishing any movement for the first time, we become aware of its felt qualitative character (Sheets-Johnstone, 1999: 142). Thus, in order to get a sense of this original experience in habitual movements, such as walking, we need to try different ways of doing them. 'By making the familiar strange, we familiarize ourselves anew with the familiar.' (ibid.: 143

Other types of Dalcroze exercises can also be applied. One is called the technique of excitation and inhibition in a constantly changing musical environment (see Choksy et al., 1986: 35). For instance, students walk with the pulse of the music. Every time they hear a triplet, they stop or start walking again. However, they are not supposed to react to any other kind of change in the music, for example to stop walking if the music stops; in other words, they have to resist the 'natural' reaction. They have to be simultaneously ready to react and to resist reaction. This sort of exercise forces constant attention and conscious control over the kinaesthetic processes. Another way to increase bodily awareness in relation to musical sounds is to study the gestural points of departure and arrival: anacrusis, crusis and metacrusis (Jaques-Dalcroze, 1924). Choksy et al. (1986: 38) name these phases as preparation, attack and prolongation.

Musical understanding as a habit of musical action

It is commonplace to think that concepts are prior to experience, that they give experience its categorical structure (see Määttänen, 1993: 153). Also, musical concepts are often taught prior to the empirical experience of the external world. The Dalcroze approach is based on the principle that students should not be taught concepts or rules before they actually experience the practice in question (Jaques-Dalcroze, 1921/1980: 63). Rhythmic movement experiences are incorporated into musical learning and the conceptual understanding of music is based on those experiences. Through movement the mindful body explores the musical world. In the following, we will examine the role of body movement in musical understanding.

Jaques-Dalcroze (1921/1980: 39) argues that musical consciousness is the result of physical experience. Musical consciousness can be acquired by repeated exercises of ear, voice and movement of the whole body and refers to the ability to 'place' successions and combinations of sounds and time (ibid.: 36-37). For Jaques-Dalcroze, bodily experience is a primary way of access to musical knowledge; just as for Merleau-Ponty (1962: 140) it is a primary way of access to the world and to objects in general. Knowledge gained through bodily experience is not, however, 'objective knowledge' but, rather, contributes to one's unique subjective understanding of some particular matter.

Within the Dalcroze approach it is common to explain that musical understanding is based on bodily experiences that combine music and body movement. However, if we consider the phenomenon of habit more closely, as Merleau-Ponty (1962: 144) invites us to do, it prompts us to revise our notions of understanding and of the body. As Merleau-Ponty states (ibid.: 235), the body is the general instrument of comprehension. It is the body that understands in the acquisition of habit. For him, understanding means experiencing the harmony between intention and performance. In these terms, musical understanding as a habit of action means that the body understands what, for example, a musical phrase means in practice and is able to perform that phrase vocally, instrumentally, or in movement. As I play a musical phrase on an instrument, I experience at every stage of movement the fulfilment of an intention which is not directed at my instrument as an object, but is incorporated into my bodily space (see ibid.). Thus, the musical action is not only a means of showing musical understanding; it is the bodily understanding of a musical phenomenon as a habit of action.

From physical metaphor to musical understanding

One way to understand how body movements may facilitate musical understanding and intensify musical experience is to analyse their use as physical metaphor (see Wis, 1993). In this section we will focus on how bodily-based experience functions as a foundation for abstract cognitive operations in the process of learning music and how this happens with projection from the bodily to the abstract level occurring via metaphor.

Our notion of metaphor builds upon writings by Lakoff and Johnson (1980, 1999). Their findings include that (1) cognition is not only inseparable from, but also dependent upon, bodily experiences (Johnson, 1987), and that (2) metaphor provides a link between concrete, bodily domain and abstract, conceptual domain (Lakoff & Johnson, 1980). Lakoff's and Johnson's viewpoint is based on a belief in a conceptual system that is experientially based and that functions metaphorically to project from the level of bodily experience to the level of abstract thought.

For Lakoff & Johnson (1980), metaphor is primarily a matter of thought and action, a vehicle of understanding, not only derivatively a convention of language. It is a process of human understanding by which we achieve meaningful experiences that we can make sense of (ibid.: 5, 153, 160). They argue that most of our normal conceptual system, the terms in which we both think and act, is fundamentally metaphorical in nature and metaphorically structured; that is, most concepts are partially understood in terms of other concepts (ibid.: 3, 56). Thus, metaphor allows us to understand and experience one kind of thing in terms of another (ibid.: 5). '[W]e typically conceptualize the non-physical in terms of the physical – that is, we conceptualize the less clearly delineated in terms of the more clearly delineated' (ibid.: 58). The understanding of the non-physical can only occur in terms of the physical (ibid.: 59) and what began as a physical experience evolves into an abstract concept. Along with Ramona Wis (1993: 102), we argue that musical concepts that have not previously been known or clearly understood can be taught by seeking similarities which obtain in two seemingly different domains of experience - the concrete and the abstract - and by joining them together metaphorically to create new understanding. Even though bodily activities and abstract concepts represent two different experiential domains, it is possible that bodily movement can be used to express physically what exists temporally in the music being studied. 'The characteristics shared by both domains (the similarities) bind the domains together and make a metaphoric connection possible; but the differences between the domains themselves allow an old idea to be seen in a new light, energizing the learning activity and leading to the acquisition of new knowledge' (ibid.: 103).

Let us take a practical example from Dalcroze teaching used with children. As a child explores a world around him, his sensory perceptions evoke active movements in which rhythms are spontaneously developed. He also receives aural and visual rhythmic experiences, for example of a horse galloping (Findlay, 1971). In Dalcroze teaching, these original rhythmic experiences are deepened by imitating, for example, the galloping of a horse along with pertinent musical accompaniment. The physical, visual and aural rhythmic experience of a horse galloping connected with music functions as a bodily metaphor

for understanding how the rhythmic pattern feels and what it means. Especially, such concepts as high /low, fast/slow or soft/loud in music can be reflected by analogous body movement embodying these abstract musical qualities and can thus be understood in the most primal way, based on bodily experienced, spatial concepts (Wis, 1993: 16). The bodily realisation of qualities of music enables the learner to experience them without naming them, thus avoiding the use of language, a discursive form, as a means of grasping a non-discursive form (ibid.: 122).

This level of knowing is situated between the pre-reflective and the conceptual domains, and could be called 'mindful'. Later, when the student is taught to become aware of the bodily experience in relation to, for example, a written form of this rhythmic pattern (a quarter and an eighth note), the conceptual level of knowledge is reached based on the earlier experience. In short, the bodily metaphor for a musical concept, which could be referred to aurally in teaching, is explored through bodily movement and put in musical context. Within the Dalcroze approach, teachers are encouraged to emphasise the bodily, the pre-reflective level of knowing with young children and to consider carefully when reflective, conceptual thinking is meaningful. Nevertheless, the children are always encouraged to use their imagination, to find various ways to move with music as well as to become aware of the qualities of movement and music.

A musical phenomenon such as ternary form (ABA) can also be explored as a metaphor. In the bodily exploration of this form, it is possible to experiment with how the movement is similar to, or different from, what is understood as ABA. The understanding of ABA guides the movement while the movement reciprocally mirrors, or possibly transforms, this understanding and reversibility occurs (Stubley, 2003). Such exploration may even initiate much richer and certainly dissimilar understanding than that of the teacher. It can also initiate new ways of applying musical symbols. Concepts that occur as metaphorical definitions (or define other concepts) are those that correspond to natural kinds of experiences (Lakoff & Johnson, 1980: 118). Therefore, natural kinds of experiences should be used also when teaching musical concepts. That actually happens in Dalcroze teaching as it aims to bridge natural, habitual movements such as walking, pulling or pushing, picking up or reaching out, etc. to musical concepts or phenomena.

It is important to note that there is no one single way to combine body movement and music because there is no one single movement appropriate for a certain musical phenomenon. On the contrary, as metaphor unites reason and imagination, and as our conceptual systems operate in terms of an inconsistent set of metaphors (Lakoff & Johnson, 1980: 193, 221), it is useful to have a rich range of physical experiences joined to a single musical idea. Hence, when transferring the bodily experience to a musical performance, one can apply a large store of metaphors or images.

Movement as metaphor applies within music education situations where the sense of the musical meaning is transmitted or illustrated by gesture in order to solve a technical problem or to enliven musical expression. According to Timothy Caldwell, this is one reason why Jaques-Dalcroze insisted that music teaches music. '[M]usical behavior, on the teacher's part, facilitates the learning of new musical and technical behaviour on the student's parts because few words from the teacher are needed' (Caldwell, 1995: 109-10). Since we know more tacitly than we can tell (Polanyi, 1966), there may not even be words for what we want to communicate.

As Jonathan Matthews (1994: 130) notes, metaphor implies imaginative bodily engagement; further, verbal metaphor connects to one's earlier bodily experiences. However, this requires the learner to have had embodied learning experiences relevant to the current domain that can serve as a store of representations, or images, which the new educational challenge can apply through imagination. We also need to be aware that all metaphors are culturally determined, which means that when approaching a musical concept via metaphor, one has to find body movement that is meaningful within the particular musical culture. In fact, this applies to bodily experience in general: it cannot be adequately studied in abstraction from the belonging of the body-subject to a particular culture. Monica Langer (1989: 174) has a valid point when she suggests that Merleau-Ponty's description of perception might well need to be much more culturally specific than in fact it is.

For Lakoff and Johnson, a metaphor works as a functional connection between concrete and abstract thinking in general. We have applied the same idea to teaching music by arguing for body movement as a physical metaphor between musical activities and conceptual thinking. Jerome Bruner's (1974) notion of iconic mode of knowing can also be understood as a metaphorical transference between immediate experience and conceptual thinking.^{vi} If we apply this idea to teaching music the iconic mode reaches new dimensions. For example, a line drawn to illustrate a melody can be an icon of that melody. If that line is drawn by hand in the air the icon is kinaesthetic. A visual icon of a chord could be the positioning of the hand on the keyboard or on the guitar's fingerboard, but the sensation in the fingertips of the positioning could also be an icon – a sort of tactile icon (see Hyvönen, 1988). Hence, although Bruner writes only about images and pictures as icons, the same phenomenon can also happen in tactile and kinetic areas. For instance, Wis's (1993) notion of physical metaphor could refer to such icons.

Towards the reflective level of knowing through words

Usually, the notion of metaphor is primarily connected to verbal metaphors. Nevertheless, according to Johnson (1987: 7), verbal metaphor is only the propositional result of a much more 'complex web of connections in our experience'; and while language may be the only way we have to describe this metaphorical process, the process is not reducible to the verbal or linguistic description of it. Put simply, verbal metaphor presumes the pre-existence of metaphorical process and is therefore an after-the-fact, linguistic description of the way in which we naturally think (Wis, 1993: 14).

Verbal metaphor can also be related to one's own verbal expression of bodily experience. Eleanor Stubley (2002) uses the notion of 'my words, moving words' when referring to such a case. This echoes what Dalcroze teachers note about students having words to talk about their embodied experiences (see Juntunen, 2002a). It necessitates, as discussed earlier, a reflective and listening attitude toward moving and kinaesthetic sensations. Following Merleau-Ponty's thinking, 'my words' imply a linguistic expression of corporeal reflexivity. It is the level where the tacit cogito, 'I can', becomes cogito, 'I think' (Dillon, 1997: 110-11).

In action, the pre-reflective level of knowing includes intuitively the same elements as the reflective level. For instance, a child masters the grammar of a language before being able to articulate the rules of it. In music, musical behaviour reflects embodied musical knowledge, for example being able to sing without being capable of knowing the intervals between the notes. An experienced listener can also recognise the style and the structure of music based only on culturally shaped intuition (Lerdahl & Jackendoff, 1985: 3).

In music making, the pre-reflective level of knowing is extremely essential. However, the pre-reflective level and the reflective, conceptual level of knowing are not really comparable. Bodily knowing cannot replace conceptual knowledge and vice versa; they are two faces of the same thing, which positively interact and complement each other (see Parvianen, 2000). Yet, as Merleau-Ponty (1962: 242) reminds us, the reflective ideal of positing thought should have its basis in experience and the 'reflection does not itself grasp its full significance unless it refers to the unreflective fund of experience that it presupposes'. Therefore, in teaching it is the teacher's task to provide students with embodied experiences that can serve as the basis for conceptual, reflective knowledge, and to be aware of which level of knowing it is meaningful to reach in a certain situation. Much learning can take place through embodied activities without reflection, but a reflective attitude or awareness is necessary in order for the thought in the act to emerge (Clifton, 1983: 37).

It also may be noted that the task of reflection is never-ending, as the chiasm is never-ending. The properties of an object are not fixed, but are experienced by a person located in a definite time and place (Clifton, 1983: 37). As Merleau-Ponty (1962: 153) states, in new situations new clusters of meanings are formed through bodily interaction with the world. Therefore, within Dalcroze practice this means that even accomplished musicians can benefit from experiences that combine music and body movement by attaining a richer or transformed musical understanding and by receiving enriching experiences. Also, in general, as Matthew (1994: 122) notes, even though the students were perfectly capable of comprehending formal operations, they could benefit from enriching, embodied context.

Listening through the body

For Jaques-Dalcroze, good hearing is one of the most important qualities of a musician (Jaques-Dalcroze, 1945/1981: 227; 1930/1985: 49-50). In Dalcroze exercises the body and the ear form a dynamic partnership. In this partnership listening inspires movement expression, while moving guides and informs listening. Body movement is used to reinforce musical experience and to improve musical hearing. But there are other aspects too. Let us think of an exercise which Juntunen recalls from her early music theory studies. The students were asked to identify major and minor triads and to write down on the paper 'M' for a major and 'm' for a minor triad. In a Dalcroze lesson, the students might be asked to cross their arms when hearing a minor triad and to keep their arms open when hearing a major one. The question is, what is the difference in experience between these two exercises from the student's and the teacher's perspective? If we take a moment to think about it, we realise that the bodily involvement compels the student to react in bodily 'terms' and - in order to be right - to concentrate. The bodily reaction gives the student something concrete to do, at the same time as it supposedly clarifies and reinforces listening and understanding the musical

phenomenon. The students learn from each other without having to be afraid of being judged for a wrong answer. In addition, the teacher is able to see the responses of all of her students at the same time.

For Jaques-Dalcroze (1921/1980: 98), musical training should specifically develop inner hearing, which is, according to him, a capacity for hearing music mentally as distinctively as physically. Inner hearing enables the student to make up sound images that serve as bases for reading and writing (idem, 1930/1985: 107). Stublely (2002) maintains that we also employ inner hearing when we move: that is, we listen to our bodies' mechanisms though we may not be conscious of doing so.

One reason for integrating body movement into the teaching of music is that musical sounds naturally vibrate in the whole body and cause bodily reactions. This is especially evident with little children; as David M. Levin (1989: 45) notes, the infant's ears are the body as a whole. When we listen to a musical performance, we do not just hear or think, we participate with our whole bodies; we enact it. We feel melodies in our body as much as we process them in our brains (Bowman, 2000). As Jaques-Dalcroze (1921/1980: viii, 49) states, perceiving music does not depend only on hearing, but aural sensations need to be completed by muscular sensations. He wanted his students to enter into closer communication with music through movement, to have them respond with everything in their being that is capable of vibrating (e.g. Jaques-Dalcroze, 1927). Following Merleau-Ponty's (1962: 211) assertion that a musical interval can be heard based on the 'the final pattering of a certain tensions felt throughout the body', we could say that as students generally become more sensitive to and aware of their kinaesthetic sensations they also become more capable of recognising the felt qualities related to hearing music.

Hearing is a very physical thing. It is a form of vibration that starts off as a kinaesthetic sensation. The eardrum receives sounds initially as tactile vibrations that resonate through the body (Stublely, 1999). Visual, tactual, gustatory, and even olfactory imagery may be in some degree aroused by a stimulus reaching the mind through the ear alone (Ferguson, 1973: 13). According to Merleau-Ponty, such cross-activation of the senses is always happening: 'The sound and the colour are received into my body, and it becomes difficult to limit my experience to a single sensory department: it spontaneously overflows toward all the rest' (Merleau-Ponty, 1962: 227). Merleau-Ponty refers to this as 'synaesthetic experience' (ibid.: 229). Dalcroze teaching aims to reinforce this cross-activation so that all sensations from different senses fuse into one synergetic experience.

Jaques-Dalcroze (1920: iii) shares with Merleau-Ponty (1962: 234; see also 1968: 144) the view that music is not purely intellectual; it works through the senses and sets the whole sensory being echoing to the vibration of sound. In fact, although Merleau-Ponty talks about sounds, he uses this notion metaphorically to note that the human body as a whole holds a listening attitude. Listening to music with the whole self refers not only the physical reactions of the body, but also to the listening that comes from a 'felt' bodily understanding of what it means (see Levin, 1989: 84; also Merleau-Ponty, 1968: 155). Levin (1989) uses the notion of 'preconceptual' listening: a listening that involves the entire body, the body of felt experience. It is a listening structured not only by the intentionality of conceptual grasping, but is rather listening attuned through feeling (ibid.: 21-2). The skilful listening of a musician is developed, according to Levin, by allowing his/her body to become itself a medium, an instrument, for the resonance of sound (ibid.: 84). Stublely (1998) employs the

notion of ‘being in the sound’ as she describes how the musician can fuse with his music, when the sound opens up the channel that enables him to encounter the music as a living being. If we understand musical listening as received and felt through the whole body, we find in listening the reciprocity, a sense of a ‘double belongingness’, discussed earlier. As my body sees itself seeing, touches itself touching (Merleau-Ponty, 1964/1989: 162), it analogically also listens to itself listening. As Stublely (1999) notes, this implies that music is simultaneously both heard and felt. The two-sided, circular alternation discussed in relation to bodily skills is present in listening too.

The Dalcroze approach develops this type of listening that is tuned to one’s self. As a teacher asks students to listen to the reactions in their bodies, he is enabling them to connect, not only to music but to their own response to music, to themselves (see Juntunen, 2002a). It seems that this echoes what Levin (1989) tells us about the skilful listening in general. He argues that the cultivation of listening is a ‘practice of the Self’ which enables us to listen to our body’s felt needs (ibid.: 38). That kind of listening happens in our inner ear as a capacity of the body in its ontological wholeness (ibid.: 62). It seems that Jaques-Dalcroze had ideas similar to those of Levin, but in the context of music education: namely, how to make ‘musicing’ more personal and connected to one’s own self. In this perspective, Dalcroze teaching, by encouraging students to listen sensitively to their own reactions in the body, that is, sensing the psycho-physiological self, includes the practice of self. Thus, the moving and sensing body, by resonating through sounds, contributes a sense of wholeness (Stublely 1999). In the bodily exploration of the world, the knower and the process of knowing become inseparable.

Listening and expression

Dalcroze teaching is based on the musical challenge to listen carefully and to find ways to express, usually through bodily movement or voice, what is heard, felt, understood and known (e.g. Choksy et al., 1986: 127). Classically, movement, as well as speech, is viewed as translated thought (see Wis, 1993: 40). Merleau-Ponty disputes the paradigm of a stimulus-response, mind-body connection and views speech and gestures as completed thought. For him, thought is not realised or completed until put into words or expressed in something other than words. Speaking and gesturing accomplish thought and emotion. Thought is, therefore, dependent upon bodily involvement, and thought and expression are one and the same (Merleau-Ponty, 1962: 174-99.) Likewise, there is no thinking paralleling or following listening; listening is thinking (Langer, 1989: 59).

Sheets-Johnstone’s (1981) notion of ‘thinking-in-movement’ in improvisational dance and Stublely’s (1998) notion of ‘being in the sound’ in musical performance apply this. The latter was discussed earlier in this paper. Sheet-Johnstone’s words echo Merleau-Ponty’s (1964/1989: 178) words about Cézanne’s thinking in painting as a process in which ‘vision becomes gesture’. Thinking-in-movement is obviously a bodily phenomenon; the body inhabits movement in the literal sense of living in it. In thinking-in-movement, perception is interlaced with movement to the point at which it is impossible to separate when perception begins and movement ends, and vice versa (Sheets-Johnstone, 1981). In the Dalcroze approach, in a typical musical learning situation students listen to music and express in

improvised movement what they hear. If we apply the notions mentioned above, we could say that listening to music is thinking and the body movement that comes out of it is a completed emotion or thought. Thus, there is no 'one-after-the-other' process, but listening and moving inform each other.

In the creative process it is essential that thinking and doing are integrated. The basis for this is the capacity of thinking-in-movement (ibid.), or, more generally, thinking-in-action (Schön, 1987). Improvisation offers one example, whether by playing a musical instrument, singing or moving/dancing. According to Sheets-Johnstone, dancing towards somebody, which embodies thought while emerging within the experience of the ongoing present, does not need to interrupt the flow of movement. Dalcroze teaching aims at this goal - that is, at training musicians who are able to interact while 'musicing' without losing the flow of movement in their embodied actions (see Juntunen & Westerlund, 2001).

Conclusion

Based on this study, we conclude that within Dalcroze Eurhythmics body movement is primarily related to bodily knowing, musical understanding, listening, expression, and sense of self. Dalcroze Eurhythmics seems to be a practice that awakens our possibility of experiencing music and movement in a sensitive way by attuning the body's sensitivity towards the quality of its movements and that of music. Applying body movement in teaching music develops above all bodily knowing of music. In this mode musical understanding is manifested in bodily action, which can be seen as a physical metaphor bridging the concrete and the abstract. Within education, Bruner (1974) has referred to this mode of knowing as iconic.

Our study challenges (music) educators to recognise the importance of embodiment in the arts as well as to reconsider the meaning of bodily knowing in education in general. Bodily knowing is a non-linguistic and non-propositional style of cognition and cannot be articulated in the same way as conceptual knowing, yet it is not therefore either deniable or less important. Rather, it forms the basis for all knowing without which conceptual knowing remains mechanical and thin. Although it may be difficult for some of us to acknowledge, bodily involvement and awareness can serve as educational tools for meaningful experiences and, consequently, for more embodied learning.

Notes

- i. Within music education the Dalcroze approach is currently applied by some conservatories and music schools to the study of various subject, e.g. solfège, music theory, rhythm, instrumental technique, conducting, and performance studies generally. It is also used in early childhood music education as well as in primary and secondary schools (Juntunen, 2002b). This paper does not study the approach itself in detail. However, several authors have written about the principles and practical applications of Dalcroze Eurhythmics. For the development and principles of the approach, see, e.g., the writings of Aronoff (1979), Bachmann (1991), Becknell (1970), Choksy et al. (1986), and Carter (1972); for practical teaching ideas, see the books by Abramson (1997), Caldwell (1995), Findlay (1991) and Mead (1994).
- ii. In this article, musical knowing equals the phenomenologists' definition of knowledge as a product of a personal intentional act having social and historical dimensions (Stubley 1992: 8). In content, musical knowing includes all the skills and understanding that musicians gain and require within a certain musical practice.
- iii. Polanyi uses the terms 'focal' and 'tacit' when referring to two dimensions of knowledge. Tacit and focal are not levels in hierarchy; they are two complementary dimensions of the same knowledge. Tacit knowledge functions as a dynamic background knowledge, which assists in accomplishing a task in focal awareness. For instance, when we read a text, words and linguistic rules function as a tacit subsidiary knowledge while the attention of the reader is focused on the meaning of the text (Sveiby, 1997). In action, we change from one level to another constantly. The action that yesterday required focal knowledge can become tacit knowledge today. The tacit dimension of knowing is reached when we can incorporate a new skill in our body 'so that we come to dwell in it' (Polanyi, 1966: 16).
- iv. These qualitative aspects shared by music and movement are of course separable only reflectively; experientially, they are all part of the qualitatively felt dynamic movement (see Sheet-Johnstone 1999: 143).
- v. Jaques-Dalcroze (1921/1980: 156) and Merleau-Ponty (1962: 206) use the notion of the sixth (the muscular) sense. Kinaesthesia is a term used in classical psychology, meaning the body's ability to monitor, feel or sense movement (e.g. Smyth 1984: 122; Bloom & Anderson 1988: 90; Ferguson 1973: 59). Kinaesthetic sensations refer to the immediate awareness in which bodily movements are completed without the need of any intermediate step to link intention and action (Langer 1989: 38).
- vi. Bruner argues that there are three modes of representational systems: enactive, iconic and symbolic. Enactive representation means knowing through doing. It is a pre-conceptual level and comes before reflection. The symbolic level is achieved later through reflection over a long period. The iconic mode places itself within that period: it means knowing through images and pictures. It stands for a highly stylised analogue of the enactively experienced event (Bruner, 1974, 316-17). Bruner developed the three modes of knowing mainly when studying mathematical thinking and linguistic learning.

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