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# Is gesture knowledge? A philosophical approach to the epistemology of musical gestures

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## 1. Introduction

With this chapter we want to provide a philosophical approach to the epistemology of *musical gestures* as a perspective to the discussion of *moving imagination*. Our basic question is: “Is gesture knowledge?”

In section two we want to clarify the context of studies on musical gestures in musical scholarship and its interdisciplinary implications. Definitions of musical gestures are introduced with respect to two basic assumptions: meaning and movement. The third section is on classical epistemology. We discuss the definition of propositional knowledge, its Platonic implications and we also focus on critiques. In the next step, and with respect to Michael Polanyi, we reconstruct the limits of propositional knowledge and the potentials of implicit knowledge for an epistemology of musical gestures. In the fifth section the notion of post-Cartesian thinking and gestures as critique on Cartesian dualism are discussed by taking into account the epistemology of Ludwig Wittgenstein and the enactive approach with its implications for sensorimotor knowledge and its embodiment. After these epistemological steps with respect to Bernhard Irrgang, Don Ihde, Marc Leman and Rolf Inge Godøy, we focus on technical mediation of gestural body movements and material, non-linguistic, hermeneutics. Section seven is on cultural and social aspects. We introduce three forms of knowledge, the concepts of dis-embodiment and re-embodiment and the cultural dependence of musical gestures with respect to Western score-oriented music(s) and Indian music(s). The results and thesis are summarised in the last section.

## 2. Musical gestures as subject of musical scholarship and interdisciplinary research

Currently, in musical scholarship interdisciplinary shaped discussions on musical gestures, respectively the relation between music and gestures develops increasingly.

These discussions are characteristic for methodological changes from score centered research to body oriented studies in musical scholarship at the beginning of the 21st century (Leman 2008, pp. 27–49, Godøy & Leman 2010, p. ix, Gritten & King 2006, p. ix). The “First International Conference on Music and Gesture [...] was held in August 2003” (Gritten & King 2006, p. xix). With respect to piano music, for Robert S. Hatten musical gestures became the main topic in his *Interpreting Musical Gestures, Topics, and Tropes* (Hatten 2004). This book is another important contribution to the systematic research of musical gestures (Mazzola & Cherlin 2009, p. 68).

The terminology and methodology in research on gestures depends on the academic context: “What can be said about the nature of gestures is very much dependent on the paradigm in which they are studied.” (Ishino & Stam 2011, p. 6) Studying gestures and especially musical gestures means interdisciplinary research (Gritten & King 2011, pp. 1ff., Jensenius et al. 2010, p. 28, Leman & Godøy 2010, p. 10).

Consequently, the field has attracted researchers from a number of different disciplines such as anthropology, cognitive science, communication, neuroscience, psycholinguistics, primatology, psychology, robotics, sociology and semiotics, and the number of modern gesture studies has grown. (Ishino & Stam 2011, p. 3)

With this chapter we want to add a philosophical perspective to the discussion. To clarify our academic background and the methodological paradigm it is important to indicate that philosophical research on musical gestures does not necessarily mean empirical studies of musical practice. We focus on conceptual analysis with respect to the history of philosophical thinking. Therefore we need a systematic starting point: a definition of musical gesture.

Definitions of gesture in terms of communication or control, and metaphors with respect to the recent discussions are summarised in Jensenius et al. (2010, p. 14–19). The approach of Hatten (2004) is interpreted as the metaphorical definition because of his crucial claim that gestural competency arises from physical, biological, cognitive, social, cultural and multi-stylistic experience. This definition is discussed in Jensenius et al. (2010, p. 18) insofar

he seems not to refer to the body movement or the generating actions that create sound. [...] [And a] somewhat analogous definition to those of [...] Hatten is suggested in (Gritten & King 2006, xx) [...].

Hatten states: “I define human gesture rather inclusively as *any energetic shaping through time that may be interpreted as significant*.” (Hatten 2006, p. 1) Anthony Gritten and Elaine King (2011, p. 1) furthermore are supporting him with this statement: “Hatten’s definition of human gesture as ‘any energetic shaping through

time that may be interpreted as significant' (2006, p. 1) provides a central starting point for researchers." (Gritten & King 2011, p. 1) But most attempts to find a definition of musical gesture remain "vague to some extent" (Jensenius et al. 2010, p. 30, see also Ishino & Stam 2011, p. 4). There is no overarching and adequate definition. But explicitly or at least implicitly, and at first sight, movement (action) and meaning (significance) in relation to sound shape the roots of 21st century research on musical gestures. Rolf Inge Godøy and Marc Leman claim:

We would go so far as to claim that music is basically a combination of sound and movement, and that music means something to us because of this combination. We use the expression "musical gesture" to denote this meaningful combination of sound and movement [...].

(Godøy & Leman 2010, p. ix, see also Leman & Godøy 2010, p. 3)

Whether or not Hatten addresses the notion of body movement and action for studying musical gestures adequately (Jensenius et al. 2010, p. 18), even for Gritten and King movement and significance seems to be a "ground assumption":

a gesture is movement or change in state that becomes marked as significant by an agent. This is to say that for movement or sound to be(come) gesture, it must be taken intentionally by an interpreter, who may or may not be involved in the actual sound production of a performance, in such a manner as to donate it with the trappings of human significance. (Gritten & King 2006, p. xx)

And in 2011 both authors highlight the significance of physical movement:

Indeed, all of the chapters are grounded in the premise that musical gestures are cross-modal and that gestures include non-sounding physical movements as well as those that produce sound. (Gritten & King 2011, p. 6)

For Jensenius et al. (2010, p. 30) "most authors seem to agree that gestures involve both body movement and meaning." Guerino Mazzola and Paul Cherlin accept movement as an implicit aspect of what they call "hypergesture" in their *Flow, Gesture, and Spaces in Free Jazz*. Gestures are "complex configurations of curves" and thereby the abstract form of complex movements (Mazzola & Cherlin 2009, p. 80). "The problem is not only one of realistic representation of body movement." (Mazzola & Cherlin 2009, p. 82) But without body movement there would be no gesture at all. Another assumption of gestural action and meaning is formulated in Gale Stam and Mika Ishino's volume *Integrating Gestures, The interdisciplinary nature of gesture*:

Nevertheless, the gestures that each author in this volume deals with are all visible bodily actions employed intentionally and meaningfully. This is a broad definition that covers the many different aspects of gestures. (Ishino & Stam 2011, p. 4)

One can argue that movement (action) and meaning (significance) are not only characteristic of musical gestures, but also for gestures in dance or in theatre, as well as for any other gesture in human life. From a philosophical point of view, we have the following reason to answer the question “Is gesture knowledge?” with respect to *musical* gestures: As Georg Mohr argues, for epistemological investigations, music is an interesting and outstanding topic. Music is a basic part of human everyday life as well as subject of specialised scientific investigations (Mohr 2011, p. 1318). Because of its peculiar combination between abstract symbols for example in musical scores and complex bodily and technical interpretations of music(s) we can illustrate the main epistemological theses in a paradigmatic way.

### 3. Classical epistemology and propositional knowledge

*Epistêmê* is the ancient Greek word for knowledge (Horn & Rapp 2002, pp. 146f.), and thus epistemology means philosophy of knowledge and knowing. Classical epistemology is specialised in investigations about certain terms and linguistic concepts. Thereby the notion of visual perception is often seen as more important than acoustical perception, and the meanings and understandings of music(s) are systematically blended out (Mohr 2011, p. 1317). This narrowing of classical epistemology is related to the concept of propositional knowledge.

The discussion of propositional knowledge shapes modern epistemology (Hardy & Meier-Oeser 2004, p. 855) and was strongly presented in the standard analytical epistemology of the 20th century by Edmund Gettier (Anacker 2004, p. 897). This epistemology, Gettier argues, attempts to

state necessary and sufficient conditions for someone’s knowing a given proposition [...] can be stated in a form similar to the following:

S knows that P IFF

- (i) P is true,
- (ii) S believes that P, and
- (iii) S is justified in believing that P.

(Gettier 1963, p. 121)

His basic assumption is that knowledge needs to be analysed as *justified true belief*. In analytical epistemology, knowledge is seen as a term with necessary and sufficient conditions: we can say what we know in strict and clear words and we can even explain in strict and clear words the necessary and sufficient conditions for what knowledge is (Baumann 2006, p. 2, Rehkämpfer & Wachtendorf 2009, pp. 79f.).

Edmund Gettier identifies Plato as the basic ancient root for this approach: “Plato seems to be considering some such definition at Theaetetus 201, and perhaps accepting one at Meno 98.” (Gettier 1963, p. 121) In the philosophy of Plato we can find this classical understanding of knowledge as *justified* (“anchored”) *true belief* (Hardy 2004, p. 861; Meixner 2007, p. 109). In Plato’s words:

The problem is that they [true beliefs] tend not to stay for long; they escape from the human soul and this reduces their value, unless they’re anchored by working out the reason. And this anchoring is recollection [...]. When true beliefs are anchored, they become pieces of knowledge and they become stable. That’s why knowledge is more valuable than true belief, and the difference between the two is that knowledge has been anchored.

(Plato 2005, p. 139/Meno 98a)

To understand the implications of this statement, one needs to pay attention to the sentence: “And this anchoring is recollection”. Justification (anchoring) turns true beliefs into knowledge. But justification in that sense is *recollecting* (remembering) bodiless *ideas* (Frede 2007, p. 142). A human body can die, but the soul lives on and gets to know all true beliefs (*ideas*) when it leaves the sensory and material human world. But once the soul is reborn in a human body, all ideas are forgotten. In a Platonic way, learning in the everyday live means *recollecting* forgotten *ideas* (*anamnesis*). Insofar, knowledge is a state of the non-material soul, but not a matter of the sensory human body (Seitschek 2007, p. 330). Sense-data could be a first impulse for starting recollecting knowledge, but never sufficient for learning new knowledge (Seitschek 2007, p. 331). Insofar, Plato develops an approach of the apriority of knowledge, meaning that knowing is separated from the empirical everyday life (Seitschek 2007, p. 332).

Since Plato’s theory of knowledge is a theory of recollection and separateness between soul and body (Thurner 2007, p. 99), it is only if one accepts these two premises (as Edmund Gettier and the analytical epistemology in his tradition implicitly do) that you can say that knowledge is *justified true belief*.

Plato diminishes the epistemic dimension of human bodies and empirical perception (Borsche 1980b, p. 186; Brinker 2007, p. 254; Meixner 2007, p. 114; Thurner 2007, p. 99); an impact that characterised European philosophy until modernity and analytical epistemology till today (Böhme 2003, pp. 11ff., pp. 51ff., p. 224; Irrgang 2005, p. 7, pp. 29ff., p. 208; Irrgang 2009a, p. 109). The concept of propositional knowledge with its Platonic implications is, however, not sufficient for explaining physical, material or sensory body-movement (Perkams 2007, p. 56). Insofar, this approach is not sufficient for explaining knowledge of musical gestures and needs to be criticised and complemented.

Plato himself provides all aspects of the classical definition of propositional knowledge, but he also included strong critique of this concept in his philosophical work (Meixner 2007, p. 109). His far reaching insight into the inadequacy of the classical definition of knowledge has been forgotten until Gettier reactivated this insight in the mid-20th century (Meixner 2007, p. 116). He is criticizing propositional knowledge, because justification (I) of true (II) beliefs (III) seems not to be sufficient: a fourth (IV?) parameter needs to be added (Gettier 1963, p. 121ff.). A rich discussion on the missing parameter or alternative definitions shapes analytical investigations till today (e.g. the overviews in Baumann 2006, Rehkämpfer & Wachtendorf 2009). But alternative philosophical approaches exist.

#### 4. Implicit knowledge

Every justification needs a starting point. A justification for a true belief needs to be supported by a knowledge basis. But is this unjustified knowledge at the beginning of one certain justification really knowledge (Meixner 2007, p. 110)? Plato formulates this problem in Meno 80:

The claim is that it's impossible for a man to search either for what he knows or for what he doesn't know: he wouldn't be searching for what he knows, since he knows it and that makes the search unnecessary, and he can't search for what he doesn't know either, since he doesn't even know what it is he's going to search for.  
(Plato 2005, p. 113/Meno 80e)

Plato didn't find a final solution for this problem (Meixner 2007, p. 110). In the 1960s, nearly the same time when Gettier published his influential paper about propositional knowledge, Polanyi captured the paradox of Meno 80:

He [Plato in the Meno] says that to search for the solution of a problem is an absurdity; for either you know what you are looking for, and then there is no problem; or you do not know what you are looking for, and then you cannot expect to find anything.  
(Polanyi 2009, p. 22)

Polanyi's solution is not an approach of propositional knowledge with respect to explicit, strict and true words or linguistic concepts. The basis of Polanyi's solution is implicit knowledge: "I shall reconsider human knowledge by starting from the fact that *we can know more than we can tell.*" (Polanyi 2009, p. 4) Within this insight, Polanyi criticises one premise of Plato's epistemology: the assumption that recollecting (*anamnesis*) is remembering forgotten ideas by a separated, bodiless soul. Polanyi argues:

The solution which Plato offered for this paradox was that all discovery is a remembering of past lives. This explanation has hardly ever been accepted, but neither has any other solution been offered for avoiding the contradiction.  
(Polanyi 2009, p. 22)

Polanyi's conclusion is that explicit knowledge is not sufficient for explaining human knowing. Moreover, we need to pay attention to silent intimations:

For the *Meno* conclusively that if all knowledge is explicit, i.e. capable of being clearly stated, then we cannot know a problem or look for its solution. And the *Meno* also shows, therefore, that if problems nevertheless exist, and discoveries can be made by solving them, we can know things, and important things, that we cannot tell. The kind of tacit knowledge that solves the paradox of the *Meno* consists in the intimation of something hidden, which we may yet discover.  
(Polanyi 2009, pp. 22–23)

His basic insight is that “Knowledge is an activity which would be better described as a process of knowing” (Polanyi 1969, p. 132). This statement illustrates Polanyi's sensitivity for the non-propositional basis of human knowing and the limits of reasoning.

This conception of knowledge as personal knowing departs two closely related respects from the ideal of a strictly justifiable knowledge. It accredits man's capacity to acquire knowledge even though he cannot specify the grounds of his knowing [...].  
(Polanyi 1969, pp. 133f.)

Implicit knowledge is a matter of meaningful human corporeality (“understanding physiognomies”), competent activities (“performance of skills”), successful sensory actions (“proper use of sensory organs”) and successful handling of instruments (“mastery of tools”):

We have now established analogous structures in several processes of knowing: namely, (1) the understanding of physiognomies, (2) the performance of skills, (3) the proper use of sensory organs, and (4) the mastery of tools and probes.  
(Polanyi 1969, pp. 128)

The bases for implicit knowledge are not bodiless Platonic ideas, but sensory activities in everyday life. “A peculiar combination of skilful doing and knowing is present in the working of our senses.” (Polanyi 1969, p. 126).

Implicit knowledge is an adequate concept for describing the subsidiary dimension in performing musical gestures. This means that a musician has knowledge in realising meaningful body movements that are related to sound, but is not able to explain his knowledge in strict and true words.

If we start from the premise that musical gestures are meaningful (significant) movements (actions) with respect to sound and assume that these movements

are body-movements with respect to physiognomies, performing skills, the use of sensory organs and the mastery of instruments, then implicit knowledge is the epistemological basis for musical gestures.

Polanyi's differentiation into explicit and implicit knowledge shows strong similarities to Gilbert Ryle's approach in the ordinary language philosophy and his differentiation into *knowing that* and *knowing how* (Anacker 2004, p. 897; Ryle 1946). But this is not the only similarity. 20th century philosophy is shaped by strong intellectual movements against the primacy of Cartesian mind-body-dualism and its implications on philosophy of consciousness and knowledge. In the tradition of the Platonic distinction between soul and body, René Descartes established an ontological version of the mind-body-dualism that influenced early modern and modern philosophy (Böhme 2003, p. 54; Borsche 1980b, p. 186). Within his dualistic approach, the *res extensa* (physical body, corpus) and *res cogitans* (soul, mind) are thought as two separated substances (Descartes 2009, pp. 79–97). Criticising this mind-body-dualism means going beyond Plato's and Descartes' belief, that the mind (soul) is separated from the human sensory body and its actions during everyday life.

Polanyi and Ryle are important authors in the tradition of post-Cartesian thinking (Irrgang 2009a, p. 215; Rentsch 1980, p. 201). The fundamental critique on the distinction between mind and body makes these philosophical approaches appropriate for a philosophical epistemology of musical gestures.

## 5. Gesture as critique on Cartesian dualism

Critiques on Descartes' dualism are central in current discussions on musical gestures in musical scholarship. "The main advantage of using the term gestures is that it surpasses the Cartesian divide between physics and the mind." (Jensenius et al. 2010, p. 19) In his book *Embodied Music Cognition and Mediating Technology* Marc Leman develops a post-Cartesian approach:

In particular, neuroscience has provided compelling arguments that the Cartesian division between mind and matter can no longer be maintained and that a disembodied mind as such does not exist [...]. [...] From that perspective, the subjective world of mental representation is *not* an autonomous category but a result of an embodied interaction with the physical environment.

(Leman 2008, p. 13)

And with respect to this methodological observation, Jensenius et al. (2010, p. 13) state:

The notion of gesture somehow covers both aspects [movement and meaning] and therefore bypasses the Cartesian divide between matter and mind. [...] The crossing of this boundary is at the core of the entire embodiment paradigm and it forms the strength of the current extension from disembodied music cognition to embodied music cognition [...].

From a philosophical point of view, disembodied music cognition is related to analytical epistemology which focuses on propositional knowledge. Embodied music cognition is appropriate for research on musical gestures and close to post-Cartesian philosophies such as the approach of implicit knowledge.

Next to Michael Polanyi and Gilbert Ryle, other authors of 20th century philosophy like Ludwig Wittgenstein, Martin Heidegger or Maurice Merleau-Ponty could be added because of their contribution to post-Cartesian thinking and its epistemological implications. Exemplarily, we focus on Ludwig Wittgenstein. Like Michael Polanyi, he presented a concept of implicit knowledge (Funk 2010, pp. 78ff.; Gröbl-Steinbach 2000, p. 39), like Gilbert Ryle, he formulated his epistemology with respect to ordinary language (Anacker, HWP 12, p. 897) and like Martin Heidegger, his approach is characterised by highlighting the philosophical significance of everyday life and its implemented background-knowledge (Irrgang 2010, pp. 45ff.; Rentsch 2003, p. 15).

The *Philosophical Investigations* of Ludwig Wittgenstein are characterised in many passages by an extensive critique of Cartesian epistemology and the premise of a mind-body-dualism (Rentsch 1980, p. 202). Wittgenstein argues:

78. Compare knowing and saying:

how many metres high Mont Blanc is –

how the word “game” is used –

how a clarinet sounds.

Someone who is surprised that one can know something and not be able to say it is perhaps thinking on a case like the first. Certainly not of one like the third.

(Wittgenstein et al. 2010, p. 41e)

“If one knows the use of the word, one can say something about it, but one cannot specify what one knows in the way one can specify one’s knowledge about the height of Mont Blanc.” (Lugg 2000, p. 137) Wittgenstein “draws attention to the fact that we cannot always state what we know [...]” (Lugg 2000, p. 137, see also Rentsch 2003, p. 15). But this non-propositional knowledge is not the physical opposite of a *justified true belief* of the bodiless soul. There is no distinction at all and that is why Wittgenstein rejects a grammatical dualism between “conscious” and “unconscious” (Wittgenstein et al. 2010, p. 60<sup>eff.</sup>). Once the mind-body-dualism and its implications are philosophically

overcome, the methodological basis for a perspective on non-propositional knowledge and its implications is reached:

150. The grammar of the word “know” is evidently closely related to the grammar of the words “can”, “is able to”. But also closely related to that of the word “understand”. (To have ‘mastered’ a technique.) (Wittgenstein et al. 2010, p. 65<sup>e</sup>)

Mastering a technique, we can also say “skill”, and “understanding” are aspects of knowing, which are not detachable from human sensory and bodily life. Here we find the epistemological parallel to Polanyi’s approach on implicit knowledge:

Though we may prefer to speak of *understanding* a comprehensive object or situation and of *mastering* a skill, we do use the two words nearly as synonyms. [...] A peculiar combination of skillful doing and knowing is present in the working of our senses. (Polanyi 1969, p. 126)

Skills, mastering of techniques and understanding of objects are equal and closely associated processes of sensory knowing.

The paradigmatic movement from theory-centred observations to body-oriented research is not only characteristic of musical scholarship. The same could be said for the cognitive sciences (Jensenius et al. 2010, p. 12). Thereby, the close relation between action and perception constitutes the enactive approach and its impact on *sensorimotor knowledge*:

In a nutshell, the enactive approach consists of two points: (1) perception consists in perceptually guided action and (2) cognitive structures emerge from the recurrent sensorimotor patterns that enable action to be perceptually guided. (Varela et al. 1997, p. 173)

The paradigm of embodied knowledge plays an important role in this approach. With respect to Johnson (1987) and Dreyfus (1979) Varela et al. introduce the term “embodiment” as epistemological category:

By using the term *embodied* we mean to highlight two points: first, that cognition depends upon the kinds of experience that come from having a body with various sensorimotor capacities, and second, that these individual sensorimotor capacities are themselves embedded in a more encompassing biological, psychological, and cultural context. (Varela et al. 1997, pp. 172f.)

We will come to the cultural context later. In this section it is important to clarify in what sense sensorimotor knowledge is not propositional knowledge. Following Alva Noë,

the mastery in question be purely practical and not a matter of the knowledge of propositions [...]. Instead of comparing perceiving to speech, we should instead compare it to gestural devices of communication. (Noë 2004, p. 120)

Propositional knowledge is somehow subordinate to the bodily movement and active perception. “Sensorimotor knowledge is basic.” (Noë 2004, p. 120) As such, the enactive approach provides an epistemological basis for the adequate understanding of musical gestures in the tradition of post-Cartesian thinking. Sensorimotor movements and its meanings are not separable from biologically shaped body motions and its cultural forms of gestural communication. Performing free jazz for example is per se an active circle of perceiving and communicating significant movements:

Listening to and understanding intelligent music is by no means a passive activity; a fortiori, a quality performance of free jazz requires an optimum of activity in order to be able to throw back the gestures one has received. This type of active listening, of course, is not exclusive to free jazz [...]. (Mazzola & Cherlin 2009, p. 95)

Important roles, not only in free jazz, play musical instruments that influence sensorimotor knowledge and moving patterns.

## 6. Musical gestures and technologies

Implicit knowledge and the enactive approach are a methodological basis for Bernhard Irrgang’s philosophical concept of technological development and his phenomenological-hermeneutical anthropology of the *Leib*. The term *Leib* (human lived body) does not include the assumption that the *Körper* (physical body) is separated from the mind, as is the case in the tradition of Platonic or Cartesian thinking (Borsche 1980a, p. 174).

Bernhard Irrgang has argued that “*Umgangswissen*” (knowing in handling) and remembering sequences of long sensorimotor movements, for example while playing piano, is a reason for the biological and cultural difference between human *Leib* and the body of apes (Irrgang 2009a, pp. 47ff., pp. 68 ff.). In other words: what makes humans become humans is not only propositional knowledge, but moreover the ability of corporeal understanding and remembering long sequences of body movements and its social meanings. Sensorimotor patterns are the basis for cognitive structures and the fundament for becoming a “being with abstract reason in adulthood” (Varela et al. 1997, p. 176, see also Piaget 1954). These patterns shape skills in handling technical tools or handcraft technologies and its historical development; they are the fundament for human societies and cultural traditions (Irrgang 2009a, pp. 109ff., Irrgang 2009b, pp. 7ff.). *Umgangswissen* is mostly related to implicit knowledge in using technical or scientific tools. This phenomenon is not new; it shapes in its basic structure human mankind since the first use of hand axes in the Stone Age and even earlier (Irrgang 2009b, pp. 91ff.).

For Don Ihde, music is a certain kind of embodied technical praxis. The role of scientific instruments “in the production of knowledge often could be seen in both comparison and contrast to the role of instruments in producing music.” (Ihde 2007, p. xii) One lesson we can draw from music is that knowing crucially involves the body and the materiality of technologies:

At the outset it can be seen that phenomenological epistemology is “materialist” at least insofar as it centers in actional, perceiving embodiment. And, on the other side, technologies are also material – at least as one component in the larger technological context. The “hardware” aspect of technology is its “bodily” characteristic. It is at this very point, in the analogization of human embodiment with artificial embodiment, that an *expanded hermeneutics* is called for.

(Ihde 1998, p. 44)

In the tradition of 20th century phenomenological and hermeneutical philosophy Don Ihde develops an approach on expanding hermeneutics. Human understanding and interpreting is not only initialised by written texts or musical scores. It involves the material dimension of scientific tools, technical artifacts or musical instruments (Ihde 1998, p. 40; Irrgang 2009b, p. 102). In the trajectory of Martin Heidegger, technological mediation becomes a central aspect of our bodily praxis: we understand ourselves while understanding our environment by using certain tools (Ihde 1998, p. 42; Irrgang 2010, p. 50). We are what we are able to do. This insight even influenced the philosophical framework of Varela et al. (1997) and the enactive approach:

We should note, however, that the philosophical source for this attitude is [...] based in the early work of Martin Heidegger [...]. The term *hermeneutics* originally referred to the discipline of interpreting ancient texts, but it has been extended to denote the entire phenomenon of interpretation, understood as the enactment or bringing forth of meaning from a background of understanding.

(Varela et al. 1997, p. 149)

Music(s) are embedded in technical praxis, the use of and understanding through certain instruments: “as Heidegger had already noted in his tool analysis, so very much of our relation to an environment is *mediated through the use of tools or artifacts*.” (Ihde 1998, p. 45) One can argue that singing is not a matter of using instruments. But at least singing “is directly *bodily expressive*” and “should also be expanded to variations on whole body movement such as dance, even self-percussion such as slapping oneself or other objects.” (Ihde 2007, p. 254).

A similar approach is developed by Leman and Godøy, who claim that “[...] gesture can be defined as a pattern through which we structure our environment from the viewpoint of actions.” (Leman & Godøy 2010, p. 8) And “embodied music cognition [...] conceives the musical mind as embodied, that is, as mediated

by the human body.” (Leman 2008, p. 235) For Marc Leman technical instruments and especially

New media technologies call for a new theory for music research. [...] The suggestion is that an action-oriented approach, based on the notion of corporeality, provides a possible epistemological foundation for bridging the gap between musical mind and matter. (Leman 2008, p. 26)

Embodied music cognition and expanding hermeneutics in combination with the concept of implicit knowledge and the enactive approach provide a fruitful fundament for understanding the technical dimension of musical gestures: meaningful sensory movement in combination with bodily and technically mediated sound.

## 7. Musical gestures as cultural and social phenomenon

We cannot separate a philosophical epistemology of musical gestures from epistemological questions of technological mediation, its development and the cultural or social contexts: “technologies are always *culturally embedded*” (Ihde 1998, p. 48) and also musical gestures are often related to cultural and social meaning (Leman & Godøy 2010, pp. 9–10).

We can distinguish three forms of knowledge, which are strongly interrelated and shape musical understanding and cultural meaning (see also the pre-study Funk 2011). First, theoretical knowledge: notation, semantics and theory of harmonic structures, musical scores, musical tablatures. Second, sensorimotor knowledge: bodily skills (also in handling musical instruments). And third, perceptual knowledge: embodied skills in sensory interpretation of music.

The first form is the linguistic, score oriented aspect of musical knowledge. This explicit knowledge is related to musical theories. For example, we can say in clear and strict words: “I *know that* Beethoven composed the first movement of his Moonlight-Sonata in c-sharp minor.” These words are true; this is *justified true belief*. Philosophically this can be explained by using the classical analytical methodology, which focuses on propositional knowledge. “The propositional character of a linguistic description of a musical experience implies symbolic communication.” (Leman 2008, p. 15).

But as we have already seen, this form is not sufficient for developing a philosophical approach to the epistemology of musical gestures and gestural communication. How can we explain in strict and true words the meaningful movements of a pianist that *knows how* to play the Moonlight-Sonata? The second and third form of knowledge are implicit knowledge: more than we can say. Following the enactive approach, both are the sensorimotor embodied fundament

of *knowing how* musical gestures. The second and third form are very close to one other: when we know how to execute a movement, we usually also know how to realise a sensory perception that belongs to it.

What we share is not only the theory of notation or scores (form 1) and the sequences and techniques of movement (form 2); we are also sharing knowledge in handling emotions and perceptions (form 3). That is why aural training is an independent subject in the academic education of music(s) (Kaiser 2009, p. xi ff.). The second and third form belong together but are not exactly congruent.

Following the enactive approach, sensorimotor movements and active perception are basic, and theoretical knowledge (words, notation, any kind of formalization or musical scores) is somehow subordinate to bodily knowledge. An appropriate philosophical understanding of musical gestures is related to implicit knowledge and non-linguistic understanding of interpreting body actions while handling instruments (hermeneutical approach). We are not able to explain the proper understanding of our human bodies and the piano in strict and true words, but we are able to perform it. While interpreting bodily and technically mediated movements, our implicit knowing of certain meanings and significances develops. We can try to make this implicit understanding explicit. But we cannot separate the genesis of meaning from sensory movement and active perception. In this context, the concepts of dis-embodiment and re-embodiment can be explained.

These concepts can be illustrated with respect to the cultural impact of score-oriented music(s). Rolf Inge Godøy explains:

Western musical culture has been able to create highly complex organizations of musical sound with large-scale forms and large ensembles, thanks to the development of notation. But this has happened to the price of splitting music into a “score” part and a “performance” part, where the score part is essentially a set of symbols for discrete actions, [...]. (Godøy 2010, p. 109)

The score-part is related to theoretical knowledge, the performance-part to knowledge in terms of movement and perception. “Dis-embodiment” means bringing a performance-part into a score-part, thus translating embodied knowledge into dis-embodied knowledge. For example, if a piano player improvises a piece of music and is notating it afterwards, then this is a process of dis-embodiment: transforming movement and perception in a theoretical form. When another pianist reads this musical score and interprets it while playing the instrument, this is a process of re-embodiment: transforming symbols into movement and perception. And here we can see why musical gestures are related to technical mediation and non-linguistic hermeneutics: performance and sound would be different, if the musician(s) would interpret the same score while playing another set

of instruments. This could be happen if, for example, a jazz-trio (bass, saxophone, drums) would interpret and translate the same piano-score into significant movements. Different musical instruments cause different technical mediations and musical gestures.

The split between score-part and performance-part in music(s) seems to correlate with the linguistic gap between theoretical knowledge and embodied knowledge. European philosophy, especially in the Platonic and Cartesian tradition, has been over-emphasising the importance of theoretical knowledge and often has been blind to the other forms, since “Western philosophy over-emphasizes propositional knowledge” (Irrgang 2009a, p. 109, translated by the authors). Varela et al. (1997, p. 149) claims “it is fair to say that analytic philosophy in general resists this notion of cognition as embodied understanding.” And Don Ihde summarises, that positivistic and analytic philosophy of science “where largely linguistic or propositionally oriented and placed theory building at the center of their concerns.” (Ihde 1998, p. 42) With respect to musical scholarship Rolf Inge Godøy continues:

Western musical thought has not been well equipped for thinking the gestural-contextual inclusion of tone-events in music [...]. An embodied perspective on music could turn this around. (Godøy 2010, p. 110)

And here we can find the paradigmatic shift:

For music research, this embodied perspective is a significant change of paradigm, as it shifts the focus away from more abstract symbols of music notation towards the holistic experience of continuous sound and movement in relation to our bodies. (Godøy & Leman 2010, p. ix)

The over-emphasising of theoretical knowledge in Western culture, before the paradigmatic shift in philosophy, cognitive sciences and musical scholarship, itself is one concrete cultural achievement. In classical music it seems that improvisation is the ideal in Indian music, whereas composition is the ideal in European music:

If music can be understood as expression of culture, this contrast could be generalized in this way: classical Indian music mirrors the concept of improvisation as cultural ideal – classical European music mirrors the concept of composition as cultural ideal. (Kurt 2009, p. 184, translated by the authors)

In other words: in Indian culture, for example Raga-music(s), the bodily dimension (second and third form of knowledge) is more idealised. In contrast, the European culture highlighted the semantic dimension within complex compositions and score orientated notations. “And, as with so much late, or even postmodern scholarship, it was only by mid-twentieth century that the parochialism of

Eurocentrism concerning scores was broken.” (Ihde 2007, p. 257) Free jazz is not the only one, but one example as Mazzola and Cherlin explain. Because

the question of semiotics of gestures arises when we display the overall image of traditional Western musical performance [...]. This process starts from the score, which is a text of more or less analyzed symbols. [...] In other words, the semiotic approach to gestures in music is traditionally related to the score-driven production of music. But there are many musics that are not score-driven, and free jazz is one of them [...]. (Mazzola & Cherlin 2009, p. 69)

It is important to see that theoretical knowledge is not only related to musical scores in Western highly educated music culture, but also to tablatures or other visualisations of many music(s) in many social and cultural contexts. But the score-orientation and over-emphasising of theoretical knowledge in classical Western culture has an impact on musical gestures. Since musical gestures are shaped by all three forms of knowledge, in classical European culture the gestural performances of musicians are embedded in a highly developed theoretical context that is score and notation oriented.

In other cultural contexts, like classical Indian music(s) or free jazz, the theoretical embedding of musical gestures is different and not so complex. Musical gestures in a score oriented culture are not similar to musical gestures in cultures that highlight improvisation. The peculiar idealisation and emphasis of the three forms in relation to each other are different. In other words: it is not possible to understand musical gestures adequately by investigating meaningful movements in relation to harmonic theories, linguistic concepts, or semiotics, if the gestures are performed in a cultural context where scores do not or less influence musicians.

## 8. Conclusion

Is gesture knowledge? Movement of a bodiless soul is seen as knowledge in the tradition of dualistic Platonic and Cartesian thinking. Following analytical philosophy, propositional knowledge is linguistic-oriented and we can make this knowledge explicit by using strict and true words. *Moving imagination* in that sense could mean the ideas of a bodiless soul. But because of its dualistic Platonic and Cartesian premises, this concept is not sufficient for developing a philosophical approach to the epistemology of musical gestures.

When it comes to knowledge, mind and body cannot be separated. As we have seen, current paradigmatic turns in post-Cartesian philosophy, musical scholarship and the cognitive sciences illustrate this fundamental insight. Knowing means sensory activity in everyday life and bodily movement: more

than we are able to tell. Therefore gestural movement is *sensorimotor knowledge* and *perceptual knowledge* that is bodily and technical mediated. *Moving imagination* in that sense means human embodied sensory activities. There is no passive and bodiless imagination, even in classical Western culture that idealises propositional knowledge and musical scores.

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