

Music-animated body

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Introduction

When Descartes is mentioned in contemporary deliberations on the mind, it is most often due to his dualistic theory of mind. As it is widely known, this 17th century thinker propagated a rather radical division between insubstantial soul and material body (which was understood as a being of rather inferior quality because of its lack of cognitive abilities). Opening this introduction to the following interview in this manner – an interview that focuses – among other things, on the embodied and enactive dimensions of music cognition – may appear somewhat paradoxical. Yet relatively few people seem to notice that twenty-two year-old Descartes debut treatise *Compendium Musicae* (1618) focused on the theory and aesthetics of music cognition. This short (53-page) work, although important for historical research on the Cartesian legacy (see: Sepper 1996) has not had enduring legacy. It consisted of nothing more than a summary of the state of knowledge concerning music perception. The treatise consisted of three parts: (1) focused on the mathematically-physical aspects of sound, (2) focused on the nature of sensual perception and (3) focused on the influence that music has on emotions of the listeners. For Descartes, this last part of the research was the most subjective and thus irrational component of his analysis – and one that was therefore scientifically impenetrable (Leman 2008). Nowadays, however, with the help of developing research technology – as well as theoretical approaches such as phenomenology, which offer conceptual resources for rigorously describing the structure and character of experience – this subjective, emotional response to music seems to be especially intriguing point of inquiry. The works of the central figure of the following interview serve as excellent examples of this fact; he describes how, from birth, music and musicality plays a crucial role in constructing and regulating our emotional sphere (e.g.: Krueger 2011a).

The main aim of the following short piece is to introduce the research field of embodied music cognition.¹ Firstly, we point out the traditional model of music cognition, indicating its basic problems. Secondly, we present the embodied model, which offers a promising research alternative to the traditional model. These introductory remarks are set to serve as a background for the following interview with Dr. Joel Krueger (Krueger 2011c), whom we would like to cordially thank for his kind cooperation, time and support.

1. TROUBLESOME TRADITION

In contrast to the paradigm of embodied music cognition, the traditional approach (e.g.: Lerdahl & Jackendoff 1983) is entangled in problems arising from adopting some Cartesian premises. To provide an example: the neglect of the contribution of the non-neural body in cognitive processing of music.² Likewise, Descartes claimed that the material body is separated from cognitive abilities. Obviously, most empirically-minded contemporary thinkers do not take soul into the consideration. It does not, however, change the fact that according to the traditional paradigm, music cognition is to take place – paraphrasing a renowned article – all in the head (Clark & Chalmers 1998). The traditional model is focused on research questions concerning the arsenal of mental abilities that one must possess in order to perceive (i.e., understand) music (e.g.: Todd & Loy 1991 or Toiviainen 2000). To put it differently, that sort of disembodied research aims to provide an account of the internal perception and processing of musical structures (rhythm, melody or harmonics). Thus, the traditional approach is based on computational and connectionist theories of the mind: the head of the listener works in a way analogous to a personal computer which receives certain information (input), and encodes it into symbolic representations, in order to provide a certain outcome signal (output). Hence, the non-neural body serves merely as a passive transmitter.

Nevertheless, recent empirical data seem to pose more and more explanatory problems for the traditional approach. To provide an example: in the following interview, Joel Krueger discusses the case of amusia (e.g., Sacks 2007). This neurological state seems to indicate an interdependence between (i.) the ability to bodily (i.e., rhythmically) engage with music on the one hand, and (ii.) the ability to perceive music as music (i.e., as exhibiting an aesthetically coherent structure) on the other. Given that, it may be argued that the disembodied model of music cognition does not do justice to the phenomenology of musical experience: namely, it fails to recognize the way in which our experiential interaction with music is grounded in movement, feelings and expressions. Additionally, this disembodied approach seems to have little to

¹ This text is based on widely available literature. Links to most of the articles cited can be found in the bibliography section at the end of this introduction.

² Body's capacity for rhythmic entrainment with music may serve as an example of such contribution. Thus, the neglect of consideration of the way the movement shapes how and what we hear in music is claimed to be a source-problem for traditional approaches.

say about our everyday interaction with music – that is - from simply moving one's foot to match the rhythm of a song to playing a musical instrument alone or with others, by presenting musical experience in a rather abstract manner (i.e., based on the computational powers of the mind, operating on symbolic representations of music). Another obstacle (of a semantic nature) for disembodied approaches appears for those committed to defending the computational (input – output) model. It seems to be based on the difficulty of providing a plausible explanation of the way in which mental representations of music (if we decide to invoke on these; see e.g.: DeBellis 2005, or Krueger 2011b) acquire their meaning.³

As various researchers suggest, we can make progress on the aforementioned problems by emphasizing the active role of the situated non-neural body – and thus begin the task of provisioning a complete (i.e., going beyond the boundaries of the skull in its explanations) model of music cognition.

2. EMBODIMENT OF MUSIC COGNITION

Studies on embodied music cognition rely on empirical and theoretical investigations of our corporeal engagement with music (for instance, the expression of our musical gestures in the perception and in the production of music; see Godøy and Leman 2010). Therefore, there can be observed a break with the Cartesian idea that mental activity is separated from the movement of the body. What is more, it can be said that the Cartesian idea is reversed – it is the body (engaged in interactions with music) and its expressive movements that seem to show how we react and interpret musical stimuli. The empirical part of the research is based not only on neuroimaging and classical surveying methods, but also on the measurements of recorded sound, video recordings of the body physically engaged in creating and perceiving music (e.g. while dancing), as well as the records of its bioparameters (as based on biology of human body). In other words, the paradigm of embodied music cognition (Leman 2008) aims to recognize the role of both mental (i.e. subjective feelings, emotions) and corporeal systems (i.e. kinesthetic) in their engagement with music. Thus – despite the clear empirical background – this paradigm is not reduced only to physics, or biomechanics of the human body. Additionally, it takes seriously the phenomenology of musical experience, that is, what the experience feels like for the embodied listener.

This model is also potentially open to the theory of extended cognition (Cochrane 2008). Moreover, it should be noted that the social context plays a significant role in research on embodied music cognition. For instance, Krueger argues that music serves as an important tool in the process of training certain embodied skills that lie at the basis of every social interaction (Krueger 2011a). In this particular context, the

³ Detailed discussion on both the traditional and the embodied approach to musical semantics can be found in: Leman 2010. The aforementioned argument is clearly a reference to the so-called symbol-grounding problem posed to the disembodied theories of mind (see: Harnad 1990).

notion of musical empathy (Krueger, forthcoming) also appears noteworthy, as it is extremely interesting from the neuroscientific point of view (e.g., Molnar-Szakacs & Overy 2006).

Relying on the results of the aforementioned types of research, some scholars (proponents of the so-called minimal Cartesianism) highlight the role of (the action-oriented) mental representations in musical research (e.g. Leman 2010). They argue that the movement of our non-neural body is responsible for the calibration (viz. process of signification) of mental representations. Other scholars – such as Joel Krueger, a proponent of the enactive approach – assume that both the process of experiencing and one's perception result from the entire body's engaging in interactions with the (musical) world. Moreover, they tend to suggest a need for reconsidering the explanatory role of the notion of mental representations.

However, it seems that a common denominator for these two approaches (minimal Cartesianism and enactivism) would be based on the statement which appears also in the following interview, namely that: We do not perceive exclusively with our brains. Our brains are always situated in our bodies, which, in turn, are always situated within a (physical and social) environment (Krueger 2011c). Taking this short introduction into account, we thus invite the readers to get acquainted with the interview, as well as with the other texts of our interlocutor.

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