

Constituting the Musical Object: A Neurophenomenological Perspective on Musical Research

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RESUMEN

A pesar de la existencia de un aparente acuerdo común sobre la imposibilidad de definir correctamente el complejo fenómeno de la música, algunos autores continúan buscando explícitamente una definición estricta, mientras que otros asumen implícitamente una noción predefinida, basada a menudo en una concepción modular de la mente/cerebro. Mientras que el análisis musical y la musicología estándar se concentran en la objetividad del material musical, algunas corrientes de la psicología de la música consideran solo los correlatos neurológicos de las capacidades musicales específicas. Puesto que esas perspectivas estudian aspectos distintamente subjetivos y objetivos de la musicalidad, el propósito principal de este artículo es proporcionar un enfoque diferente de la investigación musical, considerando que la relación entre la música y el perceptor/executor es un rasgo inseparable de cualquier experiencia musical. Introduciré, analizando la posición husserliana clásica sobre la intencionalidad (i), la noción fundamental de la constitución de un objeto musical, (ii) consideraré las contribuciones de Merleau-Ponty y el hallazgo en la neurociencia cognitiva de un mecanismo de espejo de comprensión de la acción y sus implicaciones para el concepto de intencionalidad y (iii) defenderé que la intencionalidad musical es intencionalidad modal cruzada, pero intrínsecamente motora.

PALABRAS CLAVE: *fenomenología, intencionalidad motora, neuronas espejo, percepción musical, comprensión musical, pericia musical.*

ABSTRACT

Despite an apparent common agreement on the impossibility to define correctly the complex phenomenon of music, some authors continue to look explicitly for a strict definition, while other contributors assume implicitly a predefined notion of music, often based on a modular conception of the mind/brain. While musical analysis and standard musicology focus on the objectiveness of the musical material, some trends in psychology of music consider only the neural correlates of specific musical abilities. As those perspectives study distinctly subjective and objective aspects of musicality, the main goal of this paper is to provide a different approach for musical investigation, considering the relation between music and the perceiver/executor an inseparable feature of any musical experience. Analyzing the classical Husserlian po-

sition on intentionality, I will (i) introduce the pivotal notion of constitution of a musical object, (ii) consider the contributions of Merleau-Ponty and of the finding in cognitive neuroscience of a mirror mechanism of action understanding, and their implication for the concept of intentionality and (iii) claim that musical intentionality is a cross modal, but intrinsically motor, intentionality.

KEYWORDS: *Phenomenology, Motor Intentionality, Mirror Neurons, Music Perception, Musical Understanding, Musical Expertise.*

I. DEFINING THE INDEFINABLE

It's commonly assumed that the first step in conducting a research on music might be providing a clear and precise idea of the investigated object. But, regrettably, a simple and unproblematic definition which sums up in a bare statement all the different features and nuances of past and present music doesn't exist yet [Nettle (2005)] for "there is no limit to the number or the genre of variables that might intervene in a definition of the musical" [Nattiez (1987), p. 42]. Furthermore, this strategy would also be pointless as not always what *we* – western listeners, scholars or musicians – consider music is intended as such [Bohlman (2002); Delalande (2009)] and the complexity of musical practices, can indeed be described as a set without well defined boundaries [Giannattasio (1998)] impossible to reduce into a predefined and abstracted notion of music. However, this crucial position has not been always accompanied by an adequate epistemological caution and many contributors in current music research still continue to pursue the goal of investigating music given a predefined idea or looking explicitly for a strict definition, two strategies which may lead to rough argumentations and inadequate logical passages.

II. EPISTEMOLOGICAL IMPLICATIONS

Usually, the classic line of reasoning aims to define music from one of its physical properties [e.g. Hauser & McDermott (2005), p. 30] or from one of its specific functions [e.g. Schubert (2009-2010), p. 76]. Criticizing the first speculative paradigm, Cook (1991) states that although "[t]here have been many attempts to define what music is in terms of the specific attributes of musical sounds [...] it is not possible to arrive at a satisfactory definition of music simply in terms of sound" [Ibid., p. 10-11]. Anyhow, Robert J. Zatorre (2003) trying "to make sense of a complex phenomenon such as music" [Ibid., p. 232] justifies his choice to explore the processing of pitches asserting that "pitch appears to be a central aspect of all music" [Ibid.] apparently assuming the problematic [Piana (2007)] distinction between *musical* and

non musical sounds [e.g. Pierce 1983] and generalizing from an aprioristic notion of music, despite a great amount of possible counterexamples: for instance Nattiez [quoted in Giannattasio (2005), p. 989] shows how the Inuit population use the term *nipi* not only for all the facts that we intent as musical, but also for noise and language, Japanese *shakuhaci* music and *sanjo* music of Korea “fluctuate constantly around the notional pitches in terms of which the music is organized” [Cook (1991), p. 10] and some African music [Arom (2000)] – i.e. percussive music – doesn’t require fixed pitches at all. Finally, also in our familiar western music, we can see an emancipation of the so-called non-musical sounds perhaps since Luigi Russolo’s manifesto *L’arte dei rumori*¹ (1913) and, then, in many contemporary musical techniques, from microtonality to electronic music. This kind of approach will, instead of explaining the complexity of musicality, at most, shed light on how the human brain processes pitches through a precise description of its functional organization, a different goal from understanding the *complex phenomenon of music*.

Similarly, an approach based on the study of a single function cannot explain the various manifestations of the musical practices. Let’s take in consideration thus the argumentative scheme used by the evolutionary psychologist Geoffrey Miller (2000) to demonstrate that “music is functionally analogous to sexually selected acoustic displays in other species” [Ibid., p. 338]. Forcing the classical Darwinian approach [Darwin (1871); Kivy (1959)], the author assumes that music and dance are basically two sets of indicators of the executer’s state of health, force and coordination, suggesting that the function of rhythm would be showing the cerebral capacity to put in sequence complex movements [see also Mithen (2005)], while melodic creativity may reveal the singer’s inventiveness and intelligence. Referring to the handicap principle² [Zahavi (1975)] the article stresses the possibility that chant has to be supposed dangerous as it could make the singer observable (audible) by predators. Furthermore, considering Jimi Hendrix’s sexual behaviours³ a current example of how music has conserved its original sexual-selection origins, Miller adds that “[o]ur ancestral hominid-Hendrixes could never say, ‘OK, our music’s good enough, we can stop now’, because they were competing with all the hominid-Eric-Claptons, hominid-Jerry-Garcias, and hominid-John-Lennons. The aesthetic and emotional power of music is exactly what we would expect from sexual selection’s arms race to impress minds like ours” [Ibid., p. 331]. The author’s argumentation seems to be based on a predefined idea of music derived from (only) one of its presumed phylogenetic functions [Huron (2003)] and, not without a hint of irony, Fitch (2006) analyzing Miller’s points, wrote: “for every Bach with many children there may be a Beethoven who died childless, and for every popular conductor or lead guitarist there may be a lonely oboist or bassist” [Ibid., p. 201].

Outside the field of phylogeny of music, ethnomusicology and comparative musicology often make comparisons between different notions of music investigating their social and cultural aspects in local and global contexts [e.g. Blacking (1973)] and, even if defining music “is not the ultimate aim of the ethnomusicologist” [Nettle (2005), p. 25] one of the discipline’s main tasks seems to be “studying the definitions provided by the word’s musical cultures in order to shed light on the way of conceiving music” [Ibid.]. Though not explicitly dealing with any sort of definition, the methodology used by most of music analysis shares an implicit assumption with the ethnomusicological approach: music can be considered as an already structured material shaped in well defined parameters (pitches, rhythm, dynamics etc.) and its *constitution* [Husserl (1901), (1912-29), second book, in particular] is studied only within a sociological and cultural perspective (in the case of ethnomusicology) or through its inner rules (e.g. tonality, modality, etc.) from musical analysis.

On the other hand, implicitly considering the musical signal a unidirectional stream of information coming from the environment, many studies on the physiological basis of music perception aim to localize and describe domain-specific, innate and independent brain centers which would represent a high level interactive system of music processing. Indeed “it is common in this literature to read suggestions that a certain cognitive characteristic (e.g. pitch perception) is governed by neural tissue at a certain location (e.g. primary auditory cortex)” [Tan *et al.* (2010), p. 54]. This methodology refers basically to the theory proposed by Jerry Fodor (1983) about a cognitive architecture set out in specialized vertical structures – *modules* – underlying the mental ability to transform the input into representations afterwards offered to central areas for more complex elaborations. According to Calabretta and Parisi (2005) “modular systems can be defined as systems made up of structurally and/or functionally distinct parts. While non-modular systems are internally homogeneous, modular systems are segmented into modules, i.e., portions of a system having a structure and/or function different from the structure or function of other portions of the system” [Ibid., p.3]. This perspective, heavily drawn on Chomsky’s *neocartesianism* [Chomsky (1965), (1982)] and fundamental for the classic cognitivist approach did influence many scholars involved in music-related issues from the early eighties to the following decades [e.g. Peretz *et al.* (1989)] often through a comparison between music and language [see McMullen & Saffran (2004) for a review] although many statements of this view have been questioned and heavily criticized, in particular its link with the innateness of certain mental abilities [Karmiloff-Smith, (1992)]. More in general, Uttal (2003) arguing that an efficacious taxonomy of all mental processes has yet to be developed, rejects the idea that higher cognitive processes can be localized to particular regions (or networks) in the brain referring to the studies of localization as a modern variant of phrenology.

III. THE SPECTRE OF OBJECTIVISM

In light of these considerations, we could make an approximate distinction between different ways to investigate music and musicality referring to: (i) an *objectivistic* and (ii) a *subjectivistic* perspective. Both these approaches take for granted the relation between music and the perceiver/executer focusing alternatively on the *noematic* and the *noetic*⁴ side, considered as two different aspects of musicality while in the concrete musical activity the subject and the object are two inseparable features of any musical experience [Cook (1991), Leman (2008)]. The above mentioned approaches are two different sides of the same coin, and represent what Husserl (1901), (1907), (1936) called *objectivism*: the scientific and naturalistic claim that reality is objective, and that sense data correspond with it, excluding from the research the first-person viewpoint. Noticing that the natural attitude is an attitude that obscures itself and remains unknown to itself, Husserl invites us to take off our usual blinker to look from a new perspective at the complexity of the world and its various representations going “back to the things themselves” [Husserl (1901), p. 7; (1912-1929), first book]. To show the ambivalence of the objective and the subjective side we might consider the article by Fred Lerdahl (2009) “Genesis and Architecture of the GTTM Project”, written in occasion of the twenty-fifth anniversary of the publication of *a Generative Theory of Tonal Music* (1983) which retrospectively shows the birth of one of the most discussed and influential theories in music psychology [Menin (2009), p. 15]. The author, finding in the Chomskian linguistic theory the crucial influence for structuring the lines of research developed by him and Jackendoff, specifies the reasons of their interest:

Our interest was not in a literal transfer of linguistic to musical concepts, as Leonard Bernstein (1976) attempted. Rather, it was Chomsky’s way of framing issues that attracted us: the supposition of specialized mental capacities, the belief that they could be studied rigorously by investigating the structure of their outputs, the distinction between an idealized capacity and its external and often accidental manifestations, the idea of a limited set of principles or rules that could generate a potentially infinite set of outputs, and the possibility that some of these principles might be unvarying beneath a capacity’s many different cultural manifestations [Lerdahl (2009), p. 187].

In other terms, the two scholars were enamored by the possibility to use a *subjective* methodology in the study of music. However, after a short section about Heinrich Schenker’s attempt to define a fundamental structure (*Ursatz*) at the basis of the tonal music’s complexity, they criticized such a setting of the problem, orienting their research to an apparently opposite side, though conceived in line with the assumptions and interests of the Chomskian approach:

Rather than begin with a putative ideal structure and generate musical surfaces, we would begin with musical surfaces and generate their structural descriptions [...]. Three methodological perspectives borrowed from generative linguistics helped launch the enterprise. First, we would assume as given the musical surface – essentially quantized pitches and rhythms with dynamic and timbral attributes – without worrying about the complex perceptual mechanisms that construct the surface from the audio signal. Second, our quest for cognitive principles would proceed from our own musical intuitions. Only later would we seek experimental corroboration. Third, we would build a final-state rather than processing theory, on the view that it was advantageous to specify the mental structures in question before trying to articulate how they operated in real time [Lerdahl (2009), pp. 188-189].

However this approach has been developed from the original theoretical paradigm it presents a radical form of *objectivism*, showing the common presupposition of both methodologies, namely that it's productive and useful to investigate *distinctly* noetic and noematic aspects of musical phenomena, implicitly assuming that the specific features of music are substantially avulsed from the concrete practices through which it constitutes itself.

Given those remarks we might consider an alternative approach for studying this still mysterious musical *object*: an *intentional* way, which considers the perceived and the perceiver as two inseparable aspects of musical experience. As pure phenomenological research indeed seeks essentially to describe rather than explain and to start from a perspective free from hypotheses or preconceptions [Husserl (1901)], the investigation of music won't use a merely analytical approach that doesn't take into consideration the subject, nor the cognitive psychology perspective, which tries to explain our musical behaviour in light of aprioristically defined mental processes [see also Gallese & Sinigaglia (2009e)].

IV A FIRST LOOK ON THE NOTIONS OF INTENTIONALITY AND MUSICAL INTENTIONALITY

The doctrine on intentionality provided by Brentano (1874) reintroduced in modern philosophy the discussion on the Latin term *intentio* used among the scholastic philosophers [see Chisholm (1967)] to indicate what is before the mind in thought. This term “literally means a tension or stretching (from the verb *intendere*, to stretch)” [Crane (2001), p. 9] and derives actually from the Aristotelian word *noema* [Ibid.; Knudsen (1982)]. Brentano's main goal, in using this terminology, was to make a clear distinction between physical and psychical phenomena, arguing that intentionality is the main characteristic of all the acts of consciousness. However, this standpoint has been considered too strong [see McIntyre, Woodroof & Smith (1989)] by

many philosophers. Intending consciousness as intentional insofar as it refers to, or is directed at, an object, Husserl [Husserl (1912-1929), first book; (1931)] argued that consciousness may have intentional and non-intentional phases, and intentionality is what gives to it its objective meaning. Indeed, for example, “moods such as depression or euphoria are not always ‘of’ or ‘about’ something; and, as Husserl notes, sensations such as pain or dizziness are not obviously representational or ‘directed toward’ some object” [McIntyre, Woodroof & Smith (1989), p. 149]. Moreover, when thinking about a non-existent object (i.e. Pegasus), there is no actual object, but only an act of thought with a particular intentional content – a particular meaning [Crane (2006)]. Thus, what distinguishes intentional from non-intentional experiences is the former’s having intentional content, so, according to Husserl, the intentional directedness doesn’t consist of a relation to special (mental) objects towards which one is directed, but rather is conceived as the possession by mental acts of a noematic structure. There is intentionality only when there is a duality between the noetic and the noematic side as “intentionality is the name for a certain ‘achievement’ or ‘accomplishment’: that of the consciousness of identity from within the ‘Heraclitean flux’ of flowing subjective life. Any object is a ‘pole of identity’ within such a flux” [Smith (2003), p. 68]. Another problem regards the ontological status of the intentional objects: according to Husserl (1907); (1912-1929), first book; see also Ghigi (2007)] objects in perception are always transcendent because they are *experienced as* perspectively given. Only my consciousness can make sense of that particular transcendental object, and experience it as a unity:

Reflective experience teaches us that there is no progressively perceived thing, nor any element perceived as a determination within it, that does not appear, during perception, in multiplicities of different appearances, even though it is given and grasped as continuously one and the same thing. But in normal ongoing perception, only this unity, only the thing itself, stands in the comprehending gaze while functioning processes of lived experience remain extra-thematic, ungrasped and latent. Perception is not a simple empty “having” of perceived thing, but rather a flowing lived experience of subjective appearances synthetically uniting themselves in a consciousness of the self-same entity existing in this way or that [Husserl (1925-1962), quoted in Smith (2003), p. 67].

As a subject I cannot experience the world. What is experienced is the intentional meaning of the world, while the world itself is the object intended, which is transcendental by definition. Husserl argued that to discover the intimate essence of an object without taking it for granted as we commonly do in our everyday life⁶ the unique useful approach consists in avoiding the natural attitude of the naïve observer with the suspension of belief in the existence or non-existence of phenomena. Husserl (1913) uses for this process of suspension of judgements the term *epochè*, a word derived from the sceptics

where it means a *cessation* [Moron (2000), p. 148]. Suspending the empirical subjectivity, our consciousness (now considered as *pure Ego*) can define the pure essence of a psychological phenomenon. The pure Ego, finally free from the natural attitude has the Cartesian *cogito* as its principle and this “I think” can direct its acts (*cogitationes*) immanently – when the objects are within the Ego – or transcendently – in the realms outside my Ego. In the natural attitude, as a naïve observer, when I look at an external object like a tree, I consider it as a transcendent actual object of the world; but under the bracketing of existence all the beliefs on its actual existence are excluded and the intentional object can be considered as a *determinable x in a noematic sense* [Husserl (1912-1929), first book] for the noema is what relate my thought to the intended object.

The tree *simpliciter*, the physical thing belonging to nature, is nothing less than this *perceived as tree as perceived* which, as perceptual sense, inseparably belongs to the perception. The tree *simpliciter* can burn up, be resolved into its chemical elements, etc. But the sense – the sense of *this* perception, something belonging necessarily to its essence – cannot burn up; it has no chemical elements, no forces, no real properties [Husserl (1912-1929), first book; quoted in Moron (2000), p. 157].

Listening or recalling in memory the incipit of Mozart’s *Symphony 40* represent two different modalities of experience that particular melody: but there is something that makes those pieces of music the *same* piece for me, with the same meaning for I know I’m experiencing the same music, even if under different conditions. What makes this possible is the *noema*.



There is a series of sounds, with silences (intentional object); there is my listening to this set of sounds and silences (intentional experienced): The *effective* content of the experienced (sounds and silences per se) cannot be sufficient to reveal its *intentional* content, namely its meaning for me, from my own perspective. Indeed, I have to give sense to this object if I want this melody to constitute as that particular melody, the one I hear in this way. To have sense or to have something in mind is the main feature of every consciousness, which is never a general experienced but an experienced with a sense, a noetic experienced [Husserl (1912-1929), first book]. Pelinski (2005) states that intentionality “is fundamental for a musical aesthetics conceived from a phenomenological perspective: a piece of music doesn’t concretize its

potentialities as a meaningful musical event if it doesn't become the object of an intentional perception". So, musical intentionality comprehends all those intentional acts of my consciousness directed towards a musical object, which receives its configuration through its intentional constitution. But we are directed towards a musical object not only in perceptual and attentive, conscious processes: as emerges from many studies, imagination and perception of music don't share only this phenomenological character but also neural correlates [Lotze *et al.* (2003); Kristeva *et al.* (2003); Zatorre & Halpern (2005); Heroltz *et al.* (2008)] showing the cross-modal nature of this kind of intentionality.

V. A MOTOR APPROACH TO INTENTIONALITY

As reported by Costa *et al.* (2002) many handbooks of phenomenology refer to intentionality with the formulation that whenever there is consciousness then *consciousness is always consciousness of something* [Ibid., p. 94, Husserl (1912-1929), first book; (1931)]. As we have seen, however, this definition seems to be too reductive since its most important feature might be the ability of consciousness to give sense to the musical object. But what does it mean, "to give sense"? And, above all, is this ability limited to our high level cognition? In his masterpiece *Phenomenology of perception* (1945) Merleau-Ponty argues that the real nature of perception is not consciousness, but the body, intended not as the simple piece existing into the physical world, rather considered a *lived* and *living* body. The Husserlian *Cogito*, the principle of pure Ego, becomes now "I can" instead of "I think". According to Merleau-Ponty we are not transcendental subjects, but the very nature of the phenomenological reduction is, on the contrary, its actual impossibility to be completed.

Bodily experience forces us to acknowledge an imposition of meaning, which is not the work of a universal-constituting consciousness, a meaning which clings to certain contents. My body is the meaningful core which behaves like a general function, and which, nevertheless, exists and is susceptible to disease [ibid, p. 46].

Every consciousness is no more consciousness of something; rather it is *perception of something*, a perception strictly linked to our body, assumed as a permanent condition of experience in its constant openness to the world. The study of the motor system in the last 20 years shed light upon many fundamental issues for this crucial position. For decades, one of the most common assumptions in neurological studies was to describe the motor areas of the cerebral cortex as designed for merely executive processes [see Rizzolatti & Sinigaglia (2008)]. This perspective is coherent with the idea that sensations, perceptions and actions, as distinct and hierarchical organized psychological

functions, are located in different cortical areas, where the stream of information would proceed from a *brain that knows* to a *brain that does* [Ibid.; Boria (2009), p. 32]. Actually, the discovery of *canonical* neurons, which fire when someone observes, without performing any movement, objects whose size and shape is congruent with the type of hand shape coded by the neuron [Rizzolatti *et al.* (1988); Rizzolatti & Sinigaglia (2008)] and *mirror* neurons which become active both when performing a motor action and when observing or hearing a similar action made by another individual [Gallese *et al.* (1996); Rizzolatti *et al.* (1996); Kohler *et al.* (2002); Rizzolatti & Sinigaglia (2008)] show that the motor cortex is not isolated from the other cerebral activities, suggesting a representational equivalence between perception and action. Indeed many ideas of the classic cognitivist position have been subjected to a gradual renewal process. Let's consider for example the analysis of the relationship between movement and perception: following this approach

[...] sensations would prevail in the primary sensory areas, and perception would be the product of primarily tempo-parietal, associative areas, while movements would be controlled by motor and pre-motor areas located in the frontal lobe's posterior portion, also known as agranular frontal cortex. The analysis of the external world would be configured as a unidirectional stream of information which proceeds from the (associative and sensory) posterior cortical areas to the frontal motor areas where they would integrate with the prefrontal cortex' elaboration product, location of the decisional processes and, more generally, of the more sophisticated aspects of our intelligence. Experimental data acquired during the last twenty years, however, show us a completely different scenario. Frontal lobe's motor cortex, as the posterior parietal one, is construed by a mosaic of distinct anatomo-functional areas, which relate each other forming distinct cortico-cortical circuits [Gallese (2007a), Rizzolatti, Sinigaglia (2008)]. Each of those parieto-premotor circuits integrates motor and sensorial information related to a particular body area ensuring its control within the distinct systems of spatial and reference coordinates [Gallese (2010), *my translation*].

But a new model of the motor system implies not only a radical separation from the classic cognitivist position but also a redefinition of many assumptions at the basis of physiology and neuroscience: indeed, as reported by Boria (2009) the evidence that sensorial and motor information are ascribable to a common format codified by specific parieto-frontal circuits [Gregoriou *et al.* (2006)] suggests that, beyond the organization of our motor behaviours [Rizzolatti *et al.* (1997)] also some processes commonly considered high-level like space perception [Ibid.; Sakata *et al.* (1997)], action understanding [Rizzolatti & Matelli (2003)], and others' motor intentions predictions [Fogassi *et al.*, (2005); Fogassi & Luppino (2005)] have their neural substrate in the motor system [Rizzolatti & Sinigaglia (2008)].

The Mirror Mechanism, given the present state of knowledge, maps the sensory representation of the action, emotion or sensation of another onto the perceiver's own motor, visceromotor or somato-sensory representation of that action, emotion or sensation. This mapping enables one to perceive the action, emotion or sensation of another as if s/[he] were performing that action or experiencing that emotion or sensation her/[him]self [Gallese & Sinigaglia (2011), p. 512].

Given this theoretical background, the papers by K. Overy and I. Molnar-Szakacs (2006-2009) were the first to apply systematically this new neuro-cognitive paradigm to music research, developing the SAME (shared affective motion experience) model, suggesting that "musical sound is perceived not only in terms of the auditory signal, but also in terms of the intentional, hierarchically organized sequences of expressive motor acts behind the signal" [Overy & Molnar-Szakacs (2009), p. 492]. Other studies in the last few years, have focused in the neural aspects of this sensory-motor integration, stressing in particular the cross-modal plasticity of the motor cortex through the development of musical expertise: among the others, Bangert and colleagues (2006) showed with fMRI an activation of the left premotor regions during passive listening tasks for musicians, compared to non-musicians, implicitly suggesting that a *musical vocabulary of acts* could develop through musical training, underlying our musical understanding [for a TMS study see D'Ausilio (2006)]. Lahav and collaborators (2007) explored the brain areas recruited when musical naïve subjects listened to sounds associated with sequences of actions they did learn during a prerecording training period, finding that "music one knows how to play (even if only recently learned) may be strongly associated with the corresponding elements of the individual's motor repertoire and might activate an audio-motor network in the human brain" [Ibid., p. 309]. According to these findings it seems we should reconsider many assumptions at the basis of the standard view that considers music as a *cognitive ability* [Sloboda (1985)] focusing more on a *musical intentional* perspective which considers the goal directedness of the musical acts mirrored by the MNS for the constitution of musical meaning, the nature of musical ontogeny, the development of musical expertise, the perception-action coordination in collective music making and the emotional response to music as the auditory mirror-like properties seem to be valid for a wide range of functions which can elicit very different behaviors [D'Ausilio (2007)]. Finally, let's think about Igor Stravinsky (1935), who pointed out that "music is, by its very nature, essentially powerless to express anything at all, whether a feeling, an attitude of mind, or psychological mood, a phenomenon of nature, etc.... Expression has never been an inherent property of music. That is by no means the purpose of its existence" [Ibid., [1975], p. 53]. From a neurophenomenological standpoint, indeed, we can say that it's

our ability to be directed towards the musical object and to constitute it that makes the experience of music possible, and not *viceversa*.

In perception we do not think the object and we do not think ourselves thinking it, we are given over to the object and we merge into this body which is better informed than we are about the world [Merleau-Ponty (1945), p. 238].

However, as Pelinski (2005) states, “it would be a mistake to interpret the insistence on the embodiment of our musical experiences as a naïve attempt to substitute reason with the body, or intersubjective rationality with subjective experience. Neither is the body in the mind nor is the mind in the body: both phenomena are imbricated in musical experience to such an extent that it seems meaningless – and unnecessary – to create ‘clear and distinct’ representations of one or the other.”

VI CONCLUSION

In providing the basis of neurophenomenology, Varela [Varela (1996); (1997)] wished to generate “phenomenological accounts of the structure of experience and their counter parts in cognitive science relate to each other through reciprocal constraints. The key point here is that by emphasizing a co-determination of both accounts one can explore the bridges, challenges, insights and contradictions between them. This means that both domains of phenomena have equal status in demanding a full attention and respect for their specificity” [Varela (1996), p. 343]. Narrowing the research field to music cognition, we might think that only a genuine collaboration between phenomenology and neuroscience can develop our current knowledge in music and musicality assuming that “as an intentional object of perceptual experience, music doesn’t symbolize; it doesn’t reflect reality: it is reality” [Pelinski (2005)]. In this paper I have argued that no definition of music is needed for a genuine reflection on related issues. The use of such predefined notions may lead to epistemological misunderstandings and to study distinctly noetic and noematic aspects of musical experience, while in the concrete musical activity they are inseparable features. Only a phenomenological approach aims indeed to consider both aspects in order to shed light on the continuous constitution of musical objects. But the sense-giving ability that Husserl associates with the Cartesian “I think” reveals its nature not in some high level mental abilities, but, rather, in the power of action of my body, as showed by the re-definition of the motor system in humans provided by many neurophysiological evidences. Given the whole theoretical paradigm I presented, I hope to encourage scholars to focus their researches on the *intentional* aspects of musical

understanding and to develop their argumentations with a systematic confrontation between phenomenology and cognitive sciences.

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NOTES

¹ Translated as *The Art of Noises*, the book contains the main ideas of his *futurist* aesthetics, namely that the industrial revolution had given modern men a greater capacity to appreciate more complex sounds than the traditional ones used in music. That's the reason why he construed the *intonarumori* (noisemaker) a noise generating device to be used in concerts and performances.

² The handicap principle is an argument for sexual selection that suggests that reliable signals must be costly to the signaler, as a kind of handicap. The handicap, indeed, acts as an indicator of the animal's genetic quality and has to be costly to guarantee that signaling is honest. Males with handicap are considered in phylogeny stronger than ones without this trait because only the first ones have high quality genes and, because of these, can survive possessing a handicap. So, a female who mates preferentially with handicapped males will only mate with males with good genes.

³ "He did have sexual liaisons with hundreds of groupies [...]. As Darwin realized, music's aesthetics and emotional power, far from indicating a transcendental origin, points to a sexual selection origin where too much is never enough" [Miller (2000), p. 331].

⁴ Using Husserl's terminology, *noematic* refers to that which is experienced (it's that through which the object is grasped) while *noetic* is "the concretely complete intensive mental process approached in such a way that its noetic components are clearly emphasized" [Moran (2000), p. 156]. In an intentional relationship between a subject and an object, the *noetic* is real and fundamental (as acts of consciousness), while the *noematic* is dependent and unreal because that which is perceived is constituted, thus far as it is perceived, by the subject's intentional acts.

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