Didactic “Harmonies” in a Bioeducational Perspective

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Abstract: While singling out the dialogue between biology and culture as a privileged site where musical language can be read as “complex phenomenon”, this essay moves from a bioeducational perspective in order to analyze learning as a fundamentally adaptive process i.e. the result of a synergic pathway, permeated by inter-active dynamics that involve subjects in their inseparableness of mind, body and organism. The relationship body, sounds and action promotes original didactic musicalities, which, hinging on a bioeducational perspective of the teaching-learning process, represent a simplicity, as an accessible variation of the didactic action.

Riassunto: Individuando nel dialogo tra biologia e cultura un orizzonte entro il quale è possibile leggere il linguaggio musicale come “fenomeno complesso”, il presente saggio parte da una prospettiva bioeducativa per analizzare l’apprendimento come processo sostanzialmente adattivo, ovvero come il risultato di un percorso sinergico, permeato da dinamiche inter-attive che coinvolgono i soggetti nella loro inscindibilità di mente, corpo e organismo. La relazione corpo suono ed azione favorisce originali musicalità didattiche che, ancorandosi ad una prospettiva bioeducativa del processo apprendimento– insegnamento, rappresenta una declinazione semplessa dell’azione didattica.

Keywords: Music, Didactic, Simplexity, Bioeducational perspective.

Introduction

If understood as a symbolic language, music translates a system of codified symbols into what presents itself to our auditory perception as a non-codified union of sounds, which seem structured and fluid in their succession, even if they do not show any link with the visual formalization of the score.

This symbolic-perceptive language stands out as the prerequisite of a significant representation that is perceived independently from the know-
ledge of the system it represents, from its regularities and its regulatory and adaptive constraints.

“The development of symbolic language, a unique event in the biosphere, opened up the road to another evolution that led to the reign of culture, of ideas, of knowledge… Rudimentary symbolic communication would later encourage the development of the linguistic performance itself and then of the performance of the brain, which according to Monod, depends on it.” (Frauenfelder, 1983)

The research project

This research project positions itself in this perspective: it aims at delineating, in the light of a bioeducational vision (Frauenfelder, 1983), a pedagogical reading of the musical phenomenon by singling out, in the dialogue between biology and culture, a privileged site where musical language can be included among the complex symbolic-emotional communicative tools with educational and formative potential.

This research project also entails the hypothesis of reflecting on the development of verbal language by trying to retrieve possible co-acting elements on the birth and evolution of the musical discourse, starting from the organized vibration of a physical datum named sound.

In the perspective of bioeducational sciences, learning is configured as a fundamentally adaptive process, that results from a synergic pathway, permeated by interactive dynamics that involve subjects in their inseparableness of mind, body and organism. In this vision, learning, in its most disparate forms, can be seen as the result of a cum-plexus pathway, rich with potentially multiperceptive experiences, that co–act through different communicative forms and utilize different languages. The relationship between word, music, images, gestures, writing and learning processes is linked then to a multiplicity of variables, dependent on biological constraints, on epigenesis, on neuronal modifications and subsequently strategies and tools, available to humans for their interaction with the environment through adaptive processes.

In this light, a bioeducational vision of music necessarily recalls Maturana and Varela’s studies (1992) that promote a theory of human knowledge in a biological and evolutionary perspective through the concept of “natural drift”, derived from Darwinian theory. This concept hinges
on the assumptions of structural coupling – i.e. co-adaptation and compatibility of organism and environment in their sharing of transformations and changes – and structural determinism, which explains the interaction, the co-evolution of the organism with the environment through adaptation processes perceived as “cognition acts” necessary to this process (Maturana and Varela, 1992).

According to this perspective, knowledge is the result of a form of adaptation that can be determined by the inter-action of the organism with the environment in the process of co-evolution. “The concept of adaptation tends nowadays to involve more and more significantly both terms of the adaptive relationship, individual and environment – likewise it inseparably links the terms nature and culture – through systemic, multifactorial and integrative positions of the process of development of knowledge” (Santoianni, 2012).

Music necessarily requests a form of structural coupling that is the prerequisite of listening and consists in the subjective recognition of the musical meaning of sounds. Identifying the musical sequence that subtends melody is then a process of co-adaptation and sharing of the symbolic structure that subtends the musical score and configures itself as the result of a human auditory signification process. In this sense, the structural determinism required by music belongs to the learning process that follows the listening and sharing of the meaning of the melody. One recognizes a melody by interpreting subjectively the meanings it assumes for the subject, who thanks to it evolves emotionally and cognitively vis-à-vis the environment and the musical language.

“On the one hand, the environment as information producer, but on the other hand, the potential human skills and genetic features are the elements that synthetically constitute human knowledge processes that enable the human control of the environment” (Frauenfelder, 1983).

The scientific debate on this research field enjoys great resonance in trans-disciplinary areas through contributions such as M. Alinei’s and J.P. Changeaux’s that come from different perspectives.

Some suggestions emerge from R. Wallasheek’s (Primitive Music, 1893) and K. Bücher’s studies (Labor and Rhythm, 1896) that refer to the rhythm of walking or of reproducing the heartbeat in its regularity and that highlight prenatal and functional forms in the relationship between rhythm, adaptation and cognition.

Ethnomusicological studies, while trying to retrieve in primitive civi-
lizations the possible origins of the sistematization and formalization of musical language, have often drawn attention to the difficulties of a chronological reconstruction of musical communication in a structured and codified form.

Sound and music, and their historical evolution, can be reconstructed in an easier way starting from vocal forms, as many researches in this field underline: “the oldest musical pieces are exclusively vocal and consequently are pure melodies” (C. Sachs, 1962).

In this sense, C. Sachs in *The Well-springs of Music*, starting from M. Schneider’s reflections, proposes the concept of *tonic language* to fix a first point of explicitation of the original relationship between verbal and auditory systems. According to this theory, a *tonic language* can manifest in two different modalities:

- in the first one, there is a tendency to give peculiar resonance to the spoken work without changing its meaning (we will call this case *inflexions* within the same language family)
- in the second one, e.g. languages such as Chinese or Thai, there is a need for an auditory mutation, a different intonation, a modification of the vocal emission within the same word, which determines the substantial modification of the meaning of that word.

This would confirm a hypothesis according to which the prerequisites of *linguistic competencies* can be equated to those of *metalinguistic competencies* and both of them can be the result and the foundation of adaptations that rely upon the *plasticity* of the nervous system, “which can be evidently increased in both spontaneous and induced situations.” (Frauenfelder, 1983).

Music would then be a complementary development, different from and parallel to language and in this sense the process of perfecting the vocal tone would have generally advantageous features, so that a more comprehensive organization, structuring and variegation of the metalinguistic structure would ensue (Stumpf, 1911).

In actual fact, if on the one hand we know that the formalized use of the linguistic act in different societies has given life to different languages, on the other hand, also the elaboration and the selection of auditory models and modules has generated, in different cultures, multiple musical systems. “The ‘anthopological revolution’ that has characterised the past century and that has enabled different cultures to reveal themselves to others reciprocally, has also helped us understand that even the smallest and most isolated societies have some form of musical expression” (Giannattasio, 1998).
On a didactic level, the sound is a specific potential value for teaching, it can be destructured to renovate itself, become autonomous and then become subject and object in the learning process. In didactics, the relationship between music and learning is a potential value of the action, it expresses subconscious, but effective cognition, it accomplishes a simplification of the complex system of relationships between sound, representation and meaning. In actual fact, the expert or non-expert listening of a melody puts in action the human features of giving meanings and recognizing and mirroring oneself in the implicit characteristics of the musical piece, extremely complex and at the same time immediately understandable, independently from the articulated structure that subtends artistic masterpieces, such as Beethoven’s Ninth or the imaginative and inconsistent genesis – if compared to the compositional canons of its time – of one of Gesualdo’s madrigals.

Teaching can be then potentially contaminated by music in virtue of the complexity of the teaching-learning process, by using simple basic unities such as sounds in order to simplify the learning processes in the construction of meanings with formative values. “The personal vision of reality and of the meanings we give to it, even if subjectively understood, can be shared through communicative interactions that involve every form of language, be it verbal or not” (Sibilio, 2011). In other respects, musical composition can be a specific synthetic act of physics (sounds) and culture (styles, forms, musical languages) that translates itself in an apparently merely performative dimension.

According to this perspective, every performance or concert, in its most elaborated forms, is linked potentially to the union of multiple factors: loyalty to an original text/score, the use of instruments or artefacts, the combination of sounds, the relationship of the performers.

Furthermore, sound and teaching through music respond to the need of recognizing the complexity of the teaching-learning system and its systemic structure, in biological but also, as we mentioned above, historical-social contexts and that can be analyzed “thanks to the interaction of different actors, none of which on its own determines the evolution of the system” (Rossi, 2011).

In this perspective, the multitude of communicative phenomena available in teaching help us reclaim a potential explication in the double textual and musical dimension (La Face Bianconi, 2012), without neglecting the link between the cultural dimension and the biological order of individuals.
The real challenge here is integrating between biological elements, such as the cognitive roots and the educational potential of the bodily-kinesthetic dimension (Sibilio, 2002), and culture (Frauenfelder, 1983; Santoianni, 2012), both intended as elements of evolutionary adaptation vis-à-vis the environment. The bodily-kinesthetic dimension “opens the way for the ‘swift recapitulation of rational processes’ (Ginzburg, 1979) that is rooted in the senses, the ability to go in an instant by known to the unknown, based on clues, returning to the brain processes the proactive dimension (Berthoz, 2012) sacrificed on the symbolic level” (Di Tore, Aiello, Di Tore, Sibilio, 2012).

Music, in this didactic and bioeducational perspective, can be redetermined in the awareness of the presence of biological and historical-social constraints.

It is worth remembering here that the discovery of the neurological bases of our emotions (Rivoltella, 2012) is pivotal in learning processes. Also Nussbaum (Nussbaum, 2009) references this, while retrieving at the same time its great complexity and inevitable contradictions. In this research field, teaching cannot be – and is not considered – a neutral zone with no emotional components. Rivoltella is right in claiming that “abstraction and generalization can profitably engender learning only if they have been constructed starting from the bodily experience of the world.” Music, then, being a source of emotional potential, would fit in as a possible way to involve people in their totality. Furthermore, bioeducational research always fosters the comprehension of subjects in their entirety and peculiarity: this is a perspective that requires the construction of hypotheses of global education, within which a special attention to musically-evoked emotionality does connect pedagogical care with the role of musical communication. These perspectives are particularly significant in the learning-teaching setting, because they represent incisive conditions in the growing-up and changing experience and help us construct hypotheses of global education that are respectful of singularities and intersubjectivities. In light of these reflections, the significance of the environment as a foundational element stands out in research project hypotheses. The learning environment, understood as a synthesis of nature and culture, determines the substance, the personal plot, what Bräm calls the ‘grit’, through pathways that involve senses, emotions, knowledge (Bräm, 2012), by reconstructing some matrices of a sensory operational take which underpins pedagogy itself (Baldacci, 2007).
In conclusion, music, didactics and educability, according to a bioeducational perspective, recall forms of recognizable and available complexities in the learning processes, which depend on human biological evolution, itself the result of an extraordinary process of “cross catalysis with cultural performance” (Eccles, 1972; Frauenfelder, 1983), which is able to interpret and comprehend cognitive processes and the formative potential of music in teaching.

References