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COGITO (ET MOLIOR) ERGO SUM: BETWEEN EMBODIED COGNITION AND THE PERFORMING ARTS

COGITO (ET MOLIOR) ERGO SUM: TRA EMBODIED COGNITION ED ARTI PERFORMATIVE

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Abstract
Neuroscientific discoveries since the second half of the last century have revealed the mechanisms underlying mind-body functioning, going beyond Cartesian dualism and highlighting a relationship of interdependence between the two elements in a complex stimulus-response system. The results obtained restored to the body dimension a role of primary importance in the elaboration of experience, which is first and foremost of a sensory-perceptual nature. The assumption on which this dialogue hinges is that the mind, which is thus embodied, cannot be separated from the body in the mechanisms of knowledge acquisition; therefore, the aim of this paper is to investigate the ways in which the performing arts can be configured as innovative embodied didactic methodologies, starting with an epistemological excursus that recovers, with a historical slant, psychological and neuroscientific theories on emotions and perceptions in educational practice, continuing with the description of some concrete examples to be adopted in formal educational contexts.

Le scoperte neuroscientifiche, a partire dalla seconda metà del secolo scorso, hanno rivelato i meccanismi sottesi al funzionamento mente-corpo, andando oltre il dualismo cartesiano ed evidenziando un rapporto di interdipendenza tra i due elementi in un complesso sistema stimolo-risposta. I risultati ottenuti hanno restituito alla dimensione corporea un ruolo di primaria importanza nell'elaborazione dell'esperienza, che è prima di tutto di natura sensopercettiva. Il presupposto su cui si impernia questo dialogo è che la mente, che è dunque *embodied*, non può essere scissa dal corpo nei meccanismi di acquisizione della conoscenza; pertanto, scopo di questo paper è indagare le modalità

[1]paragrafi così attribuiti: abstract e conclusioni a G.A. Toto; 1 e 2 a M. di Furia; 3 e 4 a F. Finestrone

attraverso cui le arti performative possano configurarsi come metodologie didattiche innovative incarnate, partendo da un excursus epistemologico che recupera, con un taglio storico, teorie psicologiche e neuroscientifiche su emozioni e percezioni nella prassi educativa, proseguendo con la descrizione di alcuni esempi concreti da adottare nei contesti formali dell'istruzione.

Key-words

music, didactics, biodanza, neuroscience, emotions
musica, didattica, biodanza, neuroscienze, emozioni

1. Educating on emotions: pedagogical perspectives

To them the famous bard was singing, while they in silence sat and listened.
(Homer, *Odyssey*[2])

Music is one of the most seductive and evocative media that human beings have conceived in the history of communication. Conveying meanings through sound is as natural and intuitive as it gets: humans are the only animals capable of articulating sounds to express complex thoughts, producing linguistic codes of innumerable variety - it is estimated that there are between 6,000 and 7,000 languages spoken in the world (Lorenzetti, 2010). Before sight, touch and taste, by its physical and compositional nature, sound reaches the senses as the first perception. If walking through the corridors of a university we hear words that, though muffled, seem interesting to us, we are drawn to them: before we visualize a teacher's face, before we sit in a chair or rest our hands on a desk, it is their charismatic, sonorous arguments that reach us first; so imagine a classroom, or any other educational space, physical or digital, where music plays the leading role: the element of attractiveness would be even more effective. Music, in fact, seems to be closely linked to the emotional dimension of the human, descending deeper than other forms of art or communication, evoking feelings that we share with all components of the society in which we live: joy, fear, love (Nussbaum, 2001). Bringing emotions back to the center of the pedagogical perspective means educating the individual to a greater awareness of self and one's relationships, in a comprehensive exploration of both the inner and outer worlds. Taking up again the thought of Martha Nussabaum, which in turn is hooked on that of Marcel Proust or Gustav Mahler, through the arts approach we rediscover the intrinsically pedagogical value of emotions and feelings, thanks to which the individual epiphanically realizes his own atavistic need for completeness, in an attempt to fill an inner void that characterizes the developing human (Alessandrini, 2014); all the more so since, among the "ten capabilities" essential for the well-being of any society, the great philosopher from New York places precisely "feelings" and "senses, imagination and thought", the former

[2] For the verses of the *Odyssey*, we chose to quote the text edited by R. Squillace in 2003.

functional to the development of social intelligence and solidarity with others, the latter useful so that the individual can move freely in the world of education and knowledge and develop autonomy, free will, personal satisfaction (Nussbaum, 2010). Affective education is useful for the development of critical sense, since through affectivity we are able to attribute weight and value to people and situations. If such a critical sense is grafted in from the beginning, it leaves room for the formation of empathy, sensitivity and respect for the other who is different from us, teaching the codes and languages of an instinctive inclusion of otherness. Empathy, consequently, leads to sympathy: if I truly reflect myself in the other, I understand him or her, I feel connected to them, and this leads me to produce democracy and a sense of justice (Alessandrini, 2014). In short, before *learning to know*, one must *learn to feel*; and music, as we will explore later, being a universally shareable art, can genuinely be intended as a privileged channel for the development of the human's social-emotional capacities.

2. Knowing about emotions: biopsychological theories

But how do precisely emotions work? During an emotional manifestation, the mind-body link cannot be evaded: what happens inside us is "ex-pressed" (from Latin ex-prĭmo[3], "squeezing out") outside. In his well-known treatise on emotions, James (1890) spoke of them as consequences of physiological events, so that "*the bodily changes follow directly the perception of the exciting fact*" (James, 1890, p.449). According to the American psychologist's theory, therefore, there is an imbalance between body and mind in emotional processing: emotion arises from the perception of a physical change (the receptors indicated by James are, for example, facial expressions or visceral motions), which means that without these physiological "symptoms" there would be no emotion. Cognition and emotion, according to James, concur together, since these are, essentially, responses to changes experienced by the body. Obviously, as James himself pointed out, each of us reacts emotionally in a completely subjective way, responding to different scenarios in different ways; however, if we were to refer this to music, it is legitimate to think of it as one of the very rare stimuli that allow broad masses to perceive the same emotions, unlike what happens with other art forms, such as literature or visual art.

The nineteenth-century theory of William James initiated a series of reflections on emotional feelings and cognition, inspiring, for example, the experiments of physiologist W.B. Cannon on the connection between visceral motions and emotional experiences: he, in contrast to James's theories (Cannon, 1927), conducted experiments consisting of the voluntary induction of visceral arousal - by means of adrenaline injections - finding that this resulted in almost no emotional experience in the subjects observed. Cannon's studies, while interesting, were nevertheless limited to exploring only the link between visceral motions and emotional experiences; however, the scholar's merit was that he inaugurated the neurological tradition of emotion studies (Plutchik, 1984).

[3] From "exprimo", in Lewis and Short Latin dictionary (1876), which is now available online: http://www.perseus.tufts.edu/hopper/text?doc=Perseus:text:1999.04.0059:entry=exprimo.

The cognitivist current emphasized the inescapable link between emotions and knowledge/perception of stimuli from outside, through a mind-body response that comes from the cognition of situations experienced by the individual: in other words, emotion occurs at the moment when a particular situation is cognitively *evaluated* by the individual. In this regard, it is useful to mention at least M. B. Arnold's (1960) theory of appraisal, according to which cognitive evaluation of a given situational stimulus precedes the development of emotion. According to Arnold, appraisal is an intuitive evaluation, which follows the immediate logic of the *hic et nunc*, and not a rationally mediated process; moreover, the psychologist also spoke of the determining factor of "action tendency," explaining that, in a given potentially recurring pattern (e.g., danger situation) an instinctive emotional response is "activated" - such as the urge to run to escape (Toto, 2020). Similarly, it could be said, listening to a rhythmic symphony can instinctively induce following the rhythm, with cadenced motions of different body parts, such as head, hands or feet.

In the words of Lazarus & Smith (1990), a psychophysical emotional response, in order to be elicited, cannot be limited only to the individual's momentary appraisal of the environment: instead, it is a response to the *relationship* the individual holds with the surrounding environment ("Above all, the emotional response is not a reaction to a stimulus, but to an organism (person)-environment *relationship*", Lazarus & Smith, 1990, p. 614). So, the authors continue, emotions are feedbacks determined by "abstract meanings conveyed by just about any set of circumstances" (Lazarus & Smith, 1990, p. 615).

Another great theorist of emotions was Colwyn Trevharten, the father of communication theory and the development of emotions (Toto, 2020). Departing from appraisal theories, the New Zealand biologist and psychologist suggested the idea that emotions are part of a universal language, so they have a purely communicative value, developed from the earliest relationship with the parent. For Trevharten (2020), emotions are "symptoms of mental activity adapted to communication (p. 197)," codes that are transmitted in an inter-personal mechanism for coordinating "inner psychological states between subjects (p. 198)." In this vein, the scholar has devoted some interesting publications to the role that music, as a communicative tool par excellence, plays in supporting social life (Trevharten & Malloch, 2000; Trevharten, 2002; Malloch & Trevharten, 2018). In 2009, with colleague Panksepp, he wrote:

> Music moves us. Its rhythms can make our bodies dance and its tones and melodies can stir emotions. It brings life to solitary thoughts and memories, can comfort and relieve loneliness, promote private or shared happiness, and engender feelings of deep sadness and loss. The sounds of music communicate emotions vividly in ways beyond the ability of words and most other forms of art. It can draw us together in affectionate intimacy, as in the first prosodic song-like conversations between mothers and infants. It can carry the volatile emotions of human attachments and disputes in folk songs and grand opera, and excite the passions of crowds on great social occasions (Panksepp & Trevharten, 2009, p.105).

The two authors thus propose a fascinating "neuroevolutionary" theory of musicality in humans: like any other social mammal, they need to align their needs or feelings (e.g., those of danger) with other members of the group; the communicative mechanism comes into play here. In pre-verbal times, this mechanism must have been acted upon by means of "rhythms

and...emotional sounds (p. 108)" discernible in other animal species, such as birds or other mammals. Therefore, it is presumable that such innate musicality or rhythmicity were the frequencies through which our ancestors socialized in very ancient times, not only to build affective connections, but also interpersonal relationships necessary for survival - hence the two authors bring back the image of the human group coming together to hunt large animals.
On the basis of such considerations, grounded in long-standing philosophical-pedagogical and psychobiological theories, and of which, here, we wanted to compose a useful synthesis for what will be said later, it can be said that affectivity and emotional perceptions represent one of the fundamental prerequisites for an education that aims at effective learning of knowledge and skills for life, as neuroscience has shown (Immordino-Yang & Damasio, 2017). Exploring the role that music and the performing arts in general can play in such emotional processes for learning is the focus of the arguments and proposals offered in this essay.

3. Embodied cognition and the dawn of the Performing Arts

As mentioned, artistic performances produce significant circumstances in terms of involvement, entertainment, and the sharing of emotionally relevant experiences; in particular, we are faced with a common, yet personal dialogue between the performer and the spectator. What is established between the individuals involved in the performative moment is a narrative phenomenon, in which different elements are integrated, producing a spectator/artist correspondence, and configuring itself as an elitist means of expression, capable of conveying images and ideas and giving rise to emotions and action.
Indeed, art is never suffered passively, it does not invest us aseptically nor does it slip over the spectator without leaving a trace; the performing arts nurture the concrete aspiration of declining the unconscious of the individual into a social dimension (Carlotti, 2018).
The practice or observation of performance leaves neither the performer nor the spectator indifferent, and is an activity that is as much cerebral as it is motoric, given the absence of the Cartesian-rooted dualism of body/mind and the intuition of experience as a multi-systemic and multi-dimensional fact, characterised by the dialogue between the reception of stimuli and the cognitive - and therefore exquisitely personal - processing of the same. An eminent neuroscientist, Antonio Damasio[4] , defines art as "'a homeostatic device for the benefit of the artist and the receiver, and also as a means of communication" and, in particular, as "a means of inducing emotions and feelings capable of enriching those who enjoy them: something in which, over time, music has proved to excel [...] a way of exploring one's own mind and that of others". Paraphrasing Damasio's words, art, and specifically music, is able to connect one's own personal microcosm with the other small worlds that inhabit the minds of those around us who constitute the *communitas* of reference. Anthony Storr[5] emphasises precisely the communitarian value of music and how a sort of 'neurogamy' is established between the participants in the same musical event; this bond is sanctioned precisely by rhythm, which makes listening an active and motorised process and produces in the participants a sense of collectivity and shared emotionality, creating a sense of belonging, inducing pro-social behaviour and strengthening group cohesion.
With regard to performative experience and understanding the underlying neuropsychological

[4] Damasio, A. (2022).
[5] Storr, A. (2015)

dynamics, the discovery of mirror neurons has forced us to rethink the role of the body in the construction of knowledge, in a circular and interdependent relationship with the environment (Limone, 2022).
Operational applications and the ferment of intervention hypotheses in the educational sphere, based on the osmotic body-mind relationship, can be seen in *embodied cognition,* which aspires to restore formative dignity to sensory experience and, in this case, to movement, which induces the production of neurotrophic factors and synaptogenesis (Chaddock-Heyman, 2015), with the related effects on cognitive functions and, therefore, on learning processes.
We mentioned earlier the elitist role of music among the performing arts, as it involves the integration of different stimuli by different neural networks, as well as being able to provoke emotional perturbations through its own language, which is universal and moulds intangible emotional matter into a corporeal and sensitive product.
In its essence as metaknowledge, art induces neurophysiological modifications in the brain, as if it were following "a full-scale neurological-musical gymnastics programme" (Sacks, 2018). For this reason, art is configured as a technology at the service of the individual, in processes of psycho-social rehabilitation, but also of the community, as practising artistic experiences in group is equivalent to sharing life experiences, which have positive repercussions on the overall functioning of the individual.
The techniques borrowed from art therapies (music therapy, dance therapy, theatre therapy, playful activities) encourage the expression of thoughts and emotions, as well as constituting a moment of entertainment, and owe their birth and definition to the American psychologist Margaret Naumburg, who identified in the artistic production of individuals, a preferential channel of access to the unconscious, which does not require the aid of verbal communication, but speaks through other primary codes.
The use of the performing arts as a tool for psychosocial rehabilitation has manifested its benefits through targeted interventions on the body and sensory input mechanisms, which in effect constitute a perception of reality.
The shared and social dimension of the performing arts restores the spatial-temporal dimension of the acted, promotes self-esteem and socialisation and the rules of being together, facilitates contact with one's own emotionality, reshaping fragmented existences; in fact, empathy can be conceived as the consequence of our natural tendency to experience interpersonal relationships, first of all at a level of intercorporeality (Gallese, 2017), making explicit what we already recognised as familiar and proper.
Not only are the positive effects found not only in the social dimension, but also in the personal dimension, with an improvement in cognitive functions and self-design skills (Orecchio & Piccolo, 2022).
The new embodied perspective, which restores dignity and importance to sensory perception, and thus to the body, in the process of constructing and representing reality, restores to us the idea of the body and the sensory-motor processes related to it, as the scaffolding of cognitive processes (M.Palmiero, M.C. Borsellino, 2018) and thus not as independent processes. Therefore, even our ability to look at the world and interpret it derives from the meaning we attribute to our lived experiences and how these are mapped in our brain.
The experiential and phenomenological approach of knowledge at the basis of embodied cognition constitutes the genesis of several innovative motor approaches used in rehabilitation processes, both psychosocial and motor; in particular, in the next section we will analyse the methodology of biodanza in this embodied perspective, reporting some virtuous examples of experimental workshops, which have infiltrated even very *conservative* contexts.

4. Biodanza and future prospects

Although the term Biodanza (made up of the prefix bio= life and dance= natural, rhythmic movement of the body) may make us mistakenly think of a particular type of dance or a recent contamination of gender, biodanza is understood as "a system of human integration, organic renewal, affective re-education and re-learning of the orginal functions of life in an enriched environment. Its methodology consists of inducing *vivencia* by means of music, singing, movement and group meeting situations"[6] .
In other words, it is a system that tends towards harmony and yearns for integrity, understood as the perfect synthesis of thinking, feeling and acting, and thus, a state of health, which encompasses the sphere of physical, mental and social well-being[7] .
This practice sees in Rolando Toro Araneda, the creator, and is based on the syncretism of several apparently irreconcilable disciplines, at least that is how they were in the last century: psychology, pedagogy, anthropology, biology, physiology, anthropology, sociology, neuroscience and performing arts. Specifically, the essential and characterising elements of biodanza are three:

1. music;
2. movement;
3. vivencia (the coenesthetic perception of one's body, positive or negative sensation of being *hic et nunc*).

This innovative practice finds fertile ground in heterogeneous areas, as it can be implemented in work, school or informal contexts, to improve individual and group well-being, pro-social skills, a sense of confidence in oneself and in others, and self-esteem, reconnecting with one's own body.
Biodanza contributes to a positive and welcoming environment, a place that includes and accepts the other in respect of their own peculiar characteristics, breaking down any possible form of prejudice (Ghedin, 2016); in a healthy environment, in which the subject feels safe, connecting to one's own emotionality, re-elaborating one's own experience and transforming it into a personal and free performance (according to one's own potential), lays the foundations for a harmonious (re)construction of one's own identity, in accordance with the principles of embodied cognition, according to which every form of knowledge is embodied.
The prerogative of this system is to nullify or substantially reduce verbal communication, so during biodanza sessions, the only expressive medium will be the body, which will interact with the environment and the other people in it. Hands, feet, glances, legs and arms will take the place of words and interact with other bodies to the rhythm of music, arousing or evoking only positive feelings. The aim of biodanza is not to learn a movement pattern or to learn to dance according to the canons of a particular genre, but to develop authentic and personal expressive skills, especially where verbal communication is lacking, as in the case of classes with foreign pupils or pupils from poor educational backgrounds.
The experience can be enjoyed by all, there are no prerequisites for participation other than the willingness to take part; indeed, it is a particularly suitable tool for people with disabilities, as

[6]http://www.biodanzarolandotoro.com/it/
[7]https://www.salute.gov.it/portale/rapportiInternazionali/dettaglioContenutiRapportiInternazionali.jsp?area=rapporti&id=1784&lingua=italiano&menu=mondiale#:~:text=According%20to%20the%20WHO%20Constitution%20,absence%20of%20disease%20or%20infermit%C3%A0%E2%80%9D.

it allows the expansion of their motor repertoires and movement patterns (Schmidek, Schmidek, W. R., & Pedrão, 2019). In fact, art-centred neurorehabilitation therapies are increasingly being proposed to patients suffering from neurodegenerative diseases, with a view both to improving the execution of movements, but also to the sphere of human relations and emotionality (Guidi & Censi, 2004).

The body becomes the privileged interlocutor in this innovative system, a *medium* between I and Others, which is aimed at uniting, rather than fragmenting; a virtuous and perhaps little-known example took shape at the 'Nino Rota' Conservatory of Music in Monopoli (BA), where prof.ssa Anna Guerriero, a chamber music teacher, but also a synaesthetic artist, carried out the experimentation of a biodanza workshop with the students of her course, moved by the firm (and shared) conviction that, to be able to play together, one must not only excel in instrumental/vocal technique, but also be in tune with others. When playing together (in a concert or during a chamber music/ ensemble music lesson) there is no space or time for words, but the notes must flow and resonate thanks to the silent chord of the musicians' bodies, which in turn *resonate*[8] together.

A Biodanza lesson model could follow a similar outline, accompanied by different pieces of music:

- arrange themselves in a circle (archetypal figure) and introduce themselves by chanting their name in rhythm, which is elaborated by each in a very personal way, identifying with it;
- arrange themselves in a circle in a round of celebration and hold hands;
- walking aimlessly, savouring the sensations produced by the body as we go out into the world;
- walk and meet the other, greeting him by meeting his hands;
- each encounter is an opportunity, walking in feedback in twos, listening to the rhythm of the companion;
- experimenting with listening to diversity, playing the game of 'clapping' and finding a common rhythm;
- moving lightly around the room, taking flight and leaving burdensome thoughts behind;
- move lightly around the room in pairs, changing partners until the music stops;
- perform a transformation *ronda*, a metaphor for the past giving way to the present: form several circles and stay in that patrol as long as you wish, then say goodbye to your comrades, thank them for the experience and go elsewhere when you wish;
- dance melodically in feedback, avoiding leading or feeling led, but seeking harmony;
- flowing in the sea like seaweed, feeling the seaweed, with eyes closed;
- loosen the cervical plexus, with eyes closed;
- exploring the space around, standing still at one point;
- forming groups of 3-4 people, with eyes closed, meeting each other's hands, feeling that you belong to something bigger, where it is important to be yourself;
- reform a single large *ronda* and go rhythmically looking into each other's eyes;
- proceed on *ronda* at a slow pace;
- proceed on *ronda* at a faster pace and take their leave by embracing each other.

[8] the term is to be understood in the context of the acoustic phenomenon of resonance.

Conclusions

Practising the performing arts together with others, sharing them and building an artistic and human relationship with other people is one of the fundamental experiences for the formation and growth of any individual. Constructing educational contexts in which the dimension of corporeity finds its own precious space, means pursuing a significantly inclusive educational trajectory, which often only finds fictitious fulfilment in the empty rhetoric of a 'special normality'. Although art does not always play an eminent role in the weekly curriculum of educational institutions, the proposed interventions, which snake their way into other extracurricular channels and are recently creeping into 'traditional' institutions as well, find a possible outcome in a multidisciplinary perspective, as they allow a magnifying glass to be pointed at multiple areas of interest. Existing studies and research show important implications for the positive development of those involved, improving the acquisition of fundamental life skills.

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