



Embodied knowledge and communities of knowledge to cohabit the Earth

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Abstract To address the great challenges facing humanity, humans need to feel united as inhabitants of the Earth, to feel that their future is tied to the future of all living beings, and that the universe contains all levels and all relationships that encompass its parts. To achieve this requires widening knowledge of the interconnection and interdependence that govern the world on all scales, accessing an individual and collective understanding that impacts not only the rational dimension but also the emotional and embodied dimensions. This article addresses the theme of embodied knowledge and awareness/consciousness as a key for individuals and the human community to develop the sensory and emotional perception of being part of a greater whole, of relationship as an ontological condition, and of interconnectedness and interdependence as the basis of life and the universe. Embodied knowledge is capable of nourishing aspiration and being nourished by it. Aspiration is needed to guide and to sustain action, and at a point in history like the current time, it is necessary for humanity to feel “in the flesh” that it is in relationship with and a part of a greater whole, to become a peaceful, equitable, sustainable community, in harmony with the Earth.

Keywords Embodied knowledge · Interdependence · Self-awareness/consciousness · Aspiration · Communities of knowledge

Today, the future of humanity and life on Earth are at risk; however, this moment also offers more than ever before the possibility for human collaboration. To address the great challenges facing humanity, humans need to feel united as inhabitants of the common home called Earth. Humanity needs to feel the deep and profound relationship of interdependence that ties its future to the future of all living beings, and to perceive the universe

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as the whole that contains all levels and all relationships between the parts. To achieve this requires widening knowledge of the interconnection and interdependence that govern the world on all scales, thereby accessing a deeper and more profound individual and collective understanding that impacts not only the rational dimension but also the emotional and bodily dimensions.

“To know how we know” is a topic that has interested humankind since the beginning of time. Since the last decades of the 20th century, research on related questions has made advancements in many fields, opening new perspectives. *Knowledge* has become a focus for studies on life (how organisms know; Maturana & Varela, 1984) and for studies on the brain and mind (cognitive sciences, philosophy), as well as for those on artificial intelligence. Having overcome the Cartesian dualism of body and mind (Damásio, 1994), investigations into how we learn are advancing through exploration of the structure of human experience as a link between mind and consciousness (Gallagher & Zahavi, 2007). Investigations into the structure of human experience in phenomenology and neurophenomenology have also overcome the dichotomy between the subjective and the objective. Indeed, even though experience is a personal event, at different levels, one’s consciousness is nevertheless inextricably linked to that of others and to the phenomenal world.

This article addresses the theme of embodied knowledge and awareness/consciousness as a key for individuals and the human community to develop the sensory and emotional perception of being part of a greater whole, of relationship as an ontological condition, and of interconnectedness and interdependence as the basis of life and the universe. Embodied knowledge, developed integrally on all levels (rational, emotional, and physical), is capable of nourishing aspiration and being nourished by it, forming an ascending spiral of development, based on reciprocity. Aspiration is needed to guide and to sustain action; at a time in history like the present, it is necessary for humankind to feel “in the flesh” that it is in relationship with and is a part of a greater whole (as humanity, as biosphere), to become a peaceful, equitable, sustainable community, in harmony with the Earth.

To present the proposed theme, I provide a framework of cultural experiences drawn from various perspectives in cognitive science, philosophy, and the arts, as well as their critiques, in relation to embodied knowledge. To show how embodied knowledge can become a basis for proposals to build communities of knowledge and to contribute to outlining a new social contract for education, I then highlight how some methodological ideas, tools, and practices are already available in the references for this article, to be used both as a basis for research and as a toolkit with which to advance experience and research in education in schools, higher education, and society.

Embodied knowledge

The term *embodied cognition* (Varela et al., 1991) refers to knowledge as an embodied action, not only because of the functions of the brain but because cognition depends on experiences that are produced through the body’s sensory-motor structure. In addition to being understood as a physical and biological structure, the body comprises a phenomenological and experiential structure. Thus, sensory-motor neuronal functions, abilities, and capacities are located in a broader biological, psychological, and cultural context, which both defines a person and is defined by the person. The cognitive process is thus distributed throughout the body and deeply interconnected with the environment in which the

organism lives and acts (Robinson & Pallasmaa, 2015). Intersubjectivity defines the relationship between subjects, who in turn are units involving body, mind, and environment.

Phenomenology seeks to understand and describe the experiential structure of the mental-bodily life of the individual and describes the world through experience (i.e., from the perspective of the “first person”, overcoming the dichotomy between subjective and objective; Merleau-Ponty, 1945; Thompson, 2007). The phenomenon of consciousness is an emergence linked to three permanent cycles of activity: the body, with its processes of self-regulation and with the feeling of existing; the relationship with the world, in the unity of action and perception; and the relationship with others through empathy. Thus, consciousness requires the existence of these three cycles (i.e., with the body, with the world, and with others), and phenomena of consciousness can only exist in the cycle.

Phenomenological reduction is a gesture of voluntary reflection, a means by which phenomenology promotes a new look at experience, to expand the way one relates to experiences of the world, going beyond one’s habitual way. This gesture transforms a naive, or as-yet-unexamined, experience into a second-order reflexive one. In this sense, phenomenological reduction produces new phenomena within the experiential domain and opens up new manifold possibilities.

By adopting the tools and methods of phenomenology, Varela (1996) raised the challenge and emphasized the need for scientific analyses of cognition, not only to investigate mental experience from the outside but also to develop the practice of investigation from the inside, thus bringing the contribution from experience to science. Every researcher should develop the ability to observe both the object and oneself, becoming both subject and object of the investigation and bringing self-awareness training practices into scientific research.

In search of living traditions of an active and rigorous phenomenology, Varela (1996) and other scientists drew on Eastern traditions, and Tibetan Buddhism in particular. They carried some of the Eastern teachings, practices, and techniques into Western science to build a solid tradition of phenomenological analysis in science and Western culture in general. Scholars drew from Buddhist knowledge systems about training the human mind and nervous system with meditation, as well as the application of rigorous mental and emotional training. The synergy between these ways of investigation has been called *contemplative neuroscience* (Davidson & Harrington, 1995). Yet, much of the modern Western world has neglected the development of awareness as a human practice to be learned within formal educational paths.

In Greek and Roman antiquity, philosophical schools trained their students to do practical work on themselves through spiritual exercises (Hadot, 2002), an educational objective that has been lost in modern Western philosophy, which focuses on constructing or expounding conceptual interpretative systems of reality. With respect to the relationship between the self and the whole, in the stoic philosophy of Epictetus, taken up by the philosopher emperor Marcus Aurelius, a ternary structure based on three themes (*tòpoi*) recurs. The first concerns a person’s relationship with the cosmic perspective, the universal order, and the laws of nature; the second concerns a person’s relationship with humanity; and the third concerns a person’s relationship with themselves and the representation/judgment of reality in the way they think and express themselves (inner Logos and outer Logos). Regarding the three *tòpoi*, Hadot (2002) explained that they mutually involve each other, and that they cover the whole field of reality as well as the whole field of psychological life. The three themes are nourished by the reciprocal relationship between them, and each of the three aspects supports the understanding of the others, to progress in the growth of awareness and self-awareness. The three themes also constitute a dimensional scale made

up of different levels, which are interconnected. Today, the ancient knowledge of which the philosophy of Epictetus and Marcus Aurelius are examples seems to find resonances with the phenomenological idea of ontological levels.

The whole and aspiration

Humans experience the world in an embodied way (through the mind, body, emotions, and environment), and embodied knowledge can become an effective way of developing the human competences needed to face today's global challenges in an evolutionary manner. Embodied knowledge is based on the development of consciousness and on the centrality of the relationship, of being part of larger wholes. The development of embodied knowledge—in which the body, mind, emotions, and environment are interconnected and interdependent—enhances the embodied perception of the relationship with others, with the biosphere, the Earth, and the universe. It also facilitates the emergence of aspiration as a commitment to contribute to the evolution of the whole.

Quantum physics and Einstein's relativity speak of a universe that is probabilistic, indeterminate, and interdependent because it is based on relationship, in that it is relative (time itself is relative and local) and in motion. Regarding the relationship as a constituent principle of the universe, we find, for example, the investigation of harmony in the ancient Greek world, which is taken up again in the Renaissance age, in art and mathematics, with the idea of symmetry (i.e., the proportion between each part and every other part and with the whole). The study of proportions (of the human body and of many other manifestations of nature) benefits from the discovery of the golden ratio (Pythagorean philosophical school, 6th century BC) and its algebraic characteristics (Leonardo Fibonacci published his *Liber Abaci* in 1202), with particular diffusion in Renaissance art and culture, thanks to the research of mathematician Luca Pacioli (*De Divina Proportione*, published in Venice in 1509, with Leonardo da Vinci's drawings of Platonic solids).

To increase the individual's ability to observe and understand the whole, the parts, and their reciprocal relationships; to observe oneself as part of both the social and terrestrial whole; and to perceive the larger systems of which the planet one inhabits is a part, it is necessary to develop sensory and emotional perception together and through rational knowledge. In Montessori's (1948) educational method, for example, the cosmic education program, designed for pupils aged six to 12, plays an important role. Through pedagogical research in the field, Montessori argued that the development of intelligence and creative imagination in the child is always related to a central and inspiring idea that is the cosmic plan. Curiosity, the emotional dimension, attention, and cognitive openness are stimulated by the relationship of the scale of the universe, of which we are a part and through which we can understand our relationships with every other part as well as life's interconnectedness in its many manifestations. Montessori spoke of human potential and captured the human need to feel part of a cosmic reality and of a space and time that transcend us, which manifests naturally in children around the age of six. This dimension feeds the emotion of belonging, which nourishes one's aspiration and serves as the compass that orients the way one contributes to life as a whole.

The abilities to be resilient and self-sufficient, which are especially central in today's world, where change is characterized by strong and sudden accelerations, should be understood as the ability to respond effectively to change, based on an adequate understanding of the stimuli and in relation to the innermost aspirations that guide one's actions. Paoletti's sphere model of consciousness (Paoletti & Dotan Ben Soussan, 2019), for example, uses

the sphere to describe the phenomenology of consciousness, with its neurophysiological correlates. In this model, the fundamental dimensions of human conscious experience are represented as three perpendicular axes of the sphere, which intersect at the center: time, emotion, and self-determination. The latter dimension is on the vertical axis, where high-low represents aspiration and roots. Indeed, the inclusion of the vertical axis introduces the idea of aspiration and self-determination, which interrupts the mechanical process of a circular life and opens up the possibility of an all-rounded life—an integral experience whose representation in the model is precisely that of a spherical life. Moving from the plane to the sphere, the axis of self-determination introduces a dimension that manages to contain within a higher unity both the opposites of past and future as polarities of time, and of strength and weakness as polarities of emotion. Thus, aspiration is the result of a dialogue with oneself.

A new social contract for education can begin with a commitment to turn away from ordinary approaches to understanding reality, which turn one's gaze outward, and to start turning attention toward the bridge between outside and inside, where representations of the meaning of reality are constructed. Only through a process that encompasses the introspective, self-observing dimension is it possible to return to a radically restructured and effective understanding of the world outside us in order to more deeply understand the issues and adequately address the current challenges of humanity. In this way, the subject is the gateway to the relationship, rather than being the element that leads adrift to individualism. Embodied knowledge focuses its attention on the continuous exchange between the outer world and the inner world.

Communities of knowledge

New frontiers of human investigation through neuroscience, phenomenology, biology, and quantum physics introduce new understandings of knowledge: it is only and always possible to observe a phenomenon from one point of view (the point of view of the subject, who observes in the first person), and the observer interacts with the object of observation and with the process of observation itself (i.e., the observer is always an agent in the process); one's perceptual and conceptual activity involves sensory-motor areas related to one's movement and bodily awareness. Thus, one has an integrated sensory-motor perception, and awareness and thought are fundamentally embodied. As one's cognition is embodied, one relates to the environment on a continuum between outer physical and social space and inner psychic space.

An integrated knowledge between humans and the environment, between culture and nature, and between matter and spirit can be developed by giving value to embodied knowledge and by recognizing its usefulness for renewing educational processes on the basis of the latest knowledge of how cognition works, and the consciousness that is a particular aspect of it. Integrated knowledge has fallen into disuse in much of the world and is often outclassed under the pressure of the cultural colonization of the Western scientist paradigm (de Sousa Santos, 2014; Quijano, 1992). Today, even scientific knowledge is beginning to break through established disciplinary barriers, and the search for ways to integrate views of the world is becoming increasingly urgent to humanity's shared knowledge commons. The investigation of consciousness, a so-called hard problem, pushes scientific and philosophical knowledge to meet, practicing a *de facto* transdisciplinarity.

The increasingly evident complexity of human reality and its relationship with the environment, with others, and with the whole, highlights on one hand the opportunity to

acquire a phenomenological practice to increase consciousness, and on the other hand the urgency of interweaving the multiple fields and perspectives of investigation developed in the established disciplines. Moreover, with the development of neuroscience and the acquisition of the cognitive value of emotions, favorable conditions have been created for integrating scientific knowledge with humanistic and spiritual-contemplative knowledge (Hammond, 2014).

Varela (1996) focused on the idea of a community of researchers equipped with new pragmatic tools for the development of a science of consciousness, through the systematic exploration of the structure of the human experience of consciousness. To investigate consciousness, such researchers must turn part of their attention inward, toward their own minds, developing self-awareness to observe inner phenomena and processes as they occur. Varela's proposal represents a courageous challenge, because "it demands a re-learning and a mastery of the skill of phenomenological description" (p. 346), with constant and rigorous learning, capable of producing a transformation in the researcher.

Recently, the number of educational experiences with a focus on mindfulness and integrated forms of mind/body work has increased. Ergas and Todd (2016) spoke of a contemplative turn in education and documented its spread in school and university courses. In several articles, Ergas investigated the topic of contemplative practices in relation to education and distinguished two main models under development: mindfulness in education, which mostly includes interventions aimed at improving psychophysical health, social-emotional learning, and cognitive functions; and awareness *as* education, which is a more transformative approach characterized by contemplative pedagogy, which is beginning to be introduced in higher education in some cases, and through sporadic implementations in schools as well (Ergas & Hadar, 2019; Ergas et al., 2018).

New communities of knowledge (Authier & Lévy, 1992) can be the expression of *Esperanto*—a syncretic approach that finds a common denominator in the ideas being defined within emerging scientific disciplines or scientific disciplines that are being radically renewed; in the elements and structures of ancient systems of knowledge that have become archaeological, to be recovered for use; and in the basic assumptions of traditions of thought that have been marginalized within processes of cultural colonization.

In early Western civilization, self-knowledge was a founding practice in the formation of the individual and their social role, while philosophy, which dealt with this aspect of formation, was psychological discourse aimed at *metanoia* (i.e., transformation of the level of being; Hadot, 1953). Today, not only is that ancient experiential knowledge not outdated but it should be recovered in formal education systems, precisely because of the need to deal effectively with the complexity of the times in which humanity is living. In the light of the theme of this article, the slogan "learning to become", from the UNESCO Futures of Education initiative, can be read as learning that produces *metanoia*, a profound change of mind through the development of self-knowledge and the exercise of self-awareness.

Just as ancient Greek civilization, from which many traditions of the Western world derive, preserved elements that match the most recent discoveries about the physical and psychic reality of the world and of humans, many elements or systems of ideas can be found in traditions of other civilizations. Recovering these can be of great use in current times, especially for the heritage of tools and practices developed and verified through long experimentation throughout history (Mbembe, 2022). The reactivation of such a heritage of experiential knowledge, together with the most up-to-date scientific knowledge, would contribute to the development of embodied knowledge and the construction of local educational courses based on the overall goal of becoming a more capable, peaceful, and

integrally sustainable humanity; of advancing the process of humanization; and of becoming individually and collectively responsible for the common good and for the Earth system.

Only knowledge can support change. A renewed and jointly epistemological and processual knowledge is required to support the construction of a global vision, to effectively investigate and manage complexity, and to contribute to the sustainability goals to be achieved.

Conclusions

An education based on the perspective of embodied knowledge adheres to the way humans learn and experience the world. The embodied knowledge perspective encompasses the development of consciousness through educational practices that can retrieve tools and methods from the heritage of humanity's ancient and modern knowledge, understood as a community of knowledge. Embodied knowledge and the development of consciousness, which is an integral and fundamental part of it, facilitate the embodied perception and understanding of each person's relationship to every other part and to the whole of life (humanity, the biosphere, the Earth, the universe). This understanding nurtures aspiration, which guides people's conscious contribution to life and to the evolution of the whole. Through embodied knowledge and the development of consciousness, humanity can become a community of strategic knowledge to face the current challenges in an evolutionary manner and become capable of cohabiting planet Earth as a common home.

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