THE ECOSEMIOTIC PERSPECTIVE IN COMMUNICATIVE TEACHING/LEARNING

Alina-Andreea DRAGOESCU URLICA[1], Carmen DURAU[1], Iasmina IOSIM[1], M. R. LUNGU[1]
[1]USVT 'King Michael I' from Timisoara, Romania
Corresponding author: mariuslungu@usab-tm.ro[1]

Abstract. *This paper introduces some fundamental issues relevant to designing ecological education curricula by means of semiotic and communicational practices which can be conveyed successfully in language classes, as well as communication studies. Teaching these subjects across domains related to the life sciences and natural sciences affords the suitable occasion to expose learners to relevant concepts promoting ethical relationships and healthy attitudes towards our shared habitat and the community of life. The paper focuses on the importance of eco-literacy and learning to communicate and behave in sustainable, ecological ways which take into account the interrelatedness among all forms of life. In designing long-term ecological thinking, the question raised is how to overcome the unsustainable tendencies of dominant systems in place today, including education. We discuss the relevance of the ecosemiotic framework as an applied model for developing sustainable communication in the language class and more generally in communicative activities.*

Keywords*: Biosemiotics, Ecolinguistics, communication, language learning, sustainable education.*

INTRODUCTION

In recent years, linguistic research has shifted explicitly toward ecological perspectives, highlighting the importance of sustainable learning and communication in language learning and across the humanities. It is largely conjectured that the new ecosemiotic and ecolinguistic understanding of the language learning/teaching process is not only more efficient, but it also impacts learners' self-development and soft skill building (VAN LIER, 2004). This study analyses the deeper implications of such a perspective in classroom implementation from a psycho-educational point of view, based on a qualitative holistic approach.

The communicative semiotic approach targets linguistic and conceptual enrichment by means of open dialogue and human interaction, while emphasizing participative meaning-making on complexity theoretical bases. Numerous disciplines have addressed these issues in what is now understood as Complex Systems theory, from ecology, biology, and life sciences to humanist psychology, sociology, education, ecolinguistics, and other fields which are striving to find interconnections from a holistic and transdisciplinary point of view (FEKETE, 2020; KOUTSOURIS, 2009; BOSSELMANN, 2001).

Numerous authors across fields of study on an academic level look at the relevance of a holistic perspective in education so as to help implement sustainable development (STABLES & SCOTT, 2002). As a result, Sustainable learning and environmental education (EE) have often been associated with a quest for a holistic worldview, which provides a regulative depository for educators. Fekete discusses holistic approaches in language education, such as language ecology and complex systems theory, which revolve around the co-constructive potential language learning (BOGUSŁAWSKA-TAFELSKA. 2013; FEKETE, 2021). Furthermore, these approaches have the potential to contribute to the construction of eco-holistic communicative learning as a basis underlying a range of educational projects. Among the most successful learning models for the construction of collaborative communication is the conversational

model which transfers a constructive learning framework to a social semiotic context, which in turn may be extended as a model of language learning and educational curricula in general.

MATERIAL AND METHODS

The theoretical analysis is conducted from the standpoint of biosemiotics and eco-semiotics, at the meeting point with communication theory (FAVAREAU, 2007). The discussion draws on the semiotic framework for recasting an ecological theory of communication which highlights information and dialogic processes at the core of bio-systems (VAN LIER, 2000). Recent research in the life sciences have revealed the basic dialogical dimension of all bioprocesses in living beings, which is essentially underwritten by abundant meaning potential (JOHANSEN, 1993; KELLER 2005).

This rich variety of potential pathways starting from a basic progenitor cell indicates that signs are used to the effect that various semiotic systems are generated, which communicate among themselves, highlighting the existence of meaning at the root of life. Non-human forms of life are shown to display intelligence and therefore are being culturally reconsidered as irreducible subjects which have response-ability and towards which we have responsibility.

RESULTS AND DISCUSSIONS

Contributions from the various interdisciplinary intersections between biosemiotics and the humanities look at processes in nature (especially communication) in relation with culture, pointing to the conclusion that 'biosemiotics needs the humanities' (FAVAREAU & ALL., 2017). All the aspects involved may be included in the sphere of meaning, or the 'semiosphere', regarded as a 'space of dialogue (LOTMAN & CLARK, 2005: 205) or as 'the relational biosphere' (KOTOV & KULL, 2011). Moreover, cultural semiotics looks at relationships within the 'semiotics of nature' (NÖTH & KULL, 2001). Scholars in the field of Interaction Analysis suggest that 'active co-participation' in a mode of language actually occurs in natural processes between 'interacting agents' which mutually re-shape each other through interaction (FAVAREAU, 2007).

By analyzing evolutionary trends based on communication across cultures, we identify an arrow pointing in a meaningful evolutionary direction for all living beings. As creative communicative processes unfold, this underlying evolutional trend seems to result an increasing state of complexity, along with the acquisition of more knowledge in self-generating systems, which has taken us farther away from nature towards culture. The various possibilities of understanding the notion of culture enable a non-restrictive conceptualization which allows for all meaning-making living beings to co-exist in an enriching way. Besides human culture, there may also be a culture of plants or a bacterial culture, or even a 'culture of growth' or a 'culture of excellence'.

Besides encompassing behavior and norms typical in given human societies, the notion includes meanings that guide our existence and take us in certain very particular directions in the evolutionary history which presents us with permanent ramifications. Depending on the choices made, on the type of education or knowledge acquired, and on the major conceptualizations of the world which surface in the planetary culture, radically different outcomes may emerge. It is therefore our responsibility to gain deeper understanding of the world around us in order to enable dialogic and plurivocal values to be shared in a sustainable manner.

These analyses indicate beyond doubt that sign processes pervade nature at all levels, and signs encode meaning into what 'molecular biocommunication' scientists have called

'protosemiosis' (SHAROV, 2017). Such conceptualizations are based on the approaches provided by ecosemiotics, ecolinguistics, and biosemiotics. Biosemiotics as a developing field of research which looks at life processes in relation to semiosis and aspects crucially related to communication, such as meaning transfer, information coding/decoding and dialogic stances throughout nature. The understanding of semiosis proposed by C. S. Peirce (1958) is largely used to decode such meaning-making processes, which enables us to perceive meaning exchange and communicational processes across living systems in a holistic, unitary manner.

Peirce's semiotic theory may also be used to address some important issues for the development of sustainable education, among which the paper traces the most important ones we have in view: communicative patterns, interrelatedness, and kinship in nature, Communications is found at the core of living systems and it is inextricably linked to accumulating knowledge and being 'educated' in the evolutionary process. If education might be acquired by ingesting plants, it may be related to the fact that biomelocules in essence represent messaging molecules. The discussion also includes concepts like dialogue and transmission of knowledge across all forms of life, which are not taken in a figurative sense.

Peirce (1958, 5.484) understands semiotics as 'the doctrine of the essential and fundamental nature of all varieties of possible semioses'. Peirce's concept of semiotics provides a theory of meaning-making and meaning interpretation as it describes the structure of semiotic processes, whether inside cells (cytosemiosis), among tissues and cell populations, or at the human 'cultural' level by construction and exchange of symbolic meta-representations.

According to Peirce (1958), learning is a semiotic process per se including the following postulates: (1) there is an essential relation between learning and the flow of time; (2) learning is a continuous process; (3) learning is virtually reasoning; (4) learning is interpretation; (5) and finally learning is representation'. Meaning is communicated from the Object to the Interpretant by the mediating Sign, which leads to an increase in the antecedent information and corresponding decrease in the vagueness of its consequent, which is the crucial aspect of 'learning' an Object. If our object of learning is nature, including all forms of life, then it follows that the meanings of plants, animals, etc. need to be accurately communicated and interpreted so as to form a representation which, when shared, becomes a 'culture' (HULSWIT, 2001: 339).

This worldview highlights interrelatedness and cooperation, which also represent the guidelines we are targeting in our pedagogical endeavors (DRAGOESCU URLICA & STEFANOVIĆ, 2018; URLICA & ALL., 2021; BOGUSŁAWSKA-TAFELSKA, 2016). According to these basic principles, we conjecture that communication and dialogue are fundamental bricks at the core of educational and evolutionary cultures. An increasing number of scientists demonstrate with rigorous research that plants have ways of knowing, forms of intelligence and of transmitting information that we are only beginning to grasp. In anthropological settings, such reports pervading shamanic accounts and other native sources from so-called 'primitive' cultures were considered merely metaphorical in nature.

But scientists across natural sciences in many fields of research corroborate the fact that these conceptions about nature are rooted far beyond metaphoricity. Amazonians believe that we can acquire knowledge from plants by way of literally ingesting it, as in the case of ayahuasca and other plants seen as 'teachers', as shown by cultural anthropologists (WHITTEN, 1993). In this worldview, plants are regarded with reverence as being our ancestors, thus recognizing the kinship of species in the web of life. Moreover, they also act as guides and we – their students – can learn from them/ingest information, provided we know how to integrate the phenomenology of shifting points of view. Just as one may receive education by ingesting knowledge or one becomes educated by taking in plant foods, plants and other 'primitive'

organisms themselves have evolved to some of the highest levels in nature by means of similar processes along billions of years.

Thus, plants have learned to establish cooperative relationships with mycorrhizal fungi and learning together takes place as co-evolution is permanently unfolding. Scientists refer to 'dialogue' in a non-metaphorical manner, where plants are taken not only as companions, but as subjects and interactive partners (GAGLIANO, 2015). Building on traditional knowledge which admits of the interconnectedness with our plant relatives, Gagliano is an evolutionary ecologist who leads the way into a new way of thinking which connects people and the natural world. Her research into the communication of plants demonstrates cognitive abilities of plants such as learning and memory which take phrases like 'plant communication' or 'vegetal speech' outside the realm of metaphorical language, while examining the experimental possibilities of making contact with these forms of intelligence.

Thereby, Gagliano (2017) emphasizes a creative approach to science by employing imagination in the formative processes of learning in order to find solutions to 'the eco-cultural'. This is not limited to scientific mind, but also engages our imaginal mind, as in myth wisdom and indigenous knowledge which are pervaded by the symbolic language of nature. If plants exhibit forms of intelligences that our current scientific positivism inhibits us from accepting, it is crucial that preconceived ideas be readdressed in terms of inter-subjectivity and reciprocity. Etymologically, imagination refers to creating images of something, or representing something. It is thus critical to enable students to think of alternative possibilities as trial-and-error mechanisms are encouraged and imagination is not hampered, as in recent techno-scientific trends. Scientific culture dictates cultural trends at large, which is how creativity becomes minimized in human culture, despite the fact it is pervasive in nature at all levels.

If life is, in essence, creativity, the effects of our restrictive patterns which tend to limit speculative thinking may be consequential in our highly artificial cultures. Even top scientific quarters such as *Nature* have published more papers on plant behaviour in relation to intelligence, seriously discussing issues like plant intelligence, decision making, or awareness of their environment (TREWAVAS, 2002). However, it is seen merely as a metaphor that plants 'act like' brains, as they have neurotransmitters and use signaling, which has enabled the use of conceptual 'anthropomorphic metaphors' (PUNGA, 2016: 73). More recently, several scientists, as discussed above, have turned from what was initially considered metaphorical language to more literal interpretations of intelligence in non-animal forms of life. Plants have been granted personhood, relational qualities, abilities of learning communicative skills. Students in the Life Sciences will be able to learn such skills more accurately and to connect with peers more constructively, provided they understand the importance of paying attention to nature, learning from other life forms, and opening up human culture towards other types of culture/crops (OKROS, & ALL, 2018).

One way to a more open culture would be to extend the 'range of interpretability', i.e., the range of possible effects that a sign may produce in a semiotic process while minding the possibility of misinterpretation (JOHANSEN, 1993:166-167). It follows that nature/culture should not be seen as a divide, but as a co-evolved reality, as in the concept of nature-culture (HARAWAY, 2016), where all living forms are cultured, educated, and organized in highly coherent and cooperative processes, in the universal lineage of life where we are all interrelated. By acquiring this profound eco-semiotic understanding, education must unfold through cooperation and dialogue, not only between members of our species, but also among other species which have different kinds of 'languages'/cultures through inter-species transmission of information.

CONCLUSIONS

Prevalent attitudes and perceptions in the life sciences are re-shaping the way science is understood, which educational pursuits must also follow. The exploratory research conducted by our group is intended as a platform for learning ESP for the life sciences in a supportive environment. Our aim was to identify critical aspects in sustainable education with positive outcomes on educational programs.

In undergraduate studies relating to the life sciences and natural sciences, education should be based on the development of a culture of sustainability which includes deeper aspects brought to the forefront by biosemiotics and eco-semiotics. Seeing that the educators' education or lack thereof may act as impediments to the growth of a learning culture, our results would benefit from insights shared by fellow educators in all ecological fields of study, as well as educational policy makers.

BIBLIOGRAPHY

BOGUSŁAWSKA-TAFELSKA, M., 2016 – *Ecolinguistics. Communication Processes at the Seam of Life*. Frankfurt am Main: Peter Lang. https://doi.org/10.3726/978-3-653-06416-2

BOGUSŁAWSKA-TAFELSKA. M., 2013 – *Towards an Ecology of Language, Communication and the Mind*. Frankfurt am Main: Peter Lang. ISBN:978-3-653-03106-5. https://doi.org/10.3726/978-3-653-03106-5

BOSSELMANN, K., 2001 – University and sustainability: compatible agendas? *Educational Philosophy and Theory, 33*(2), 167-186.

DRAGOESCU URLICA, A., STEFANOVIĆ, S., 2018 – Ecolinguistic Qualities of the Optimal English Language Learning Experience. *International Journal for Quality Research 12*(2):537-546.

FAVAREAU, D. & ALL., 2017 – How Can the Study of the Humanities Inform the Study of Biosemiotics? *Biosemiotics, 10*(1):9-31. https://doi.org/10.1007/s12304-017-9287-6

FAVAREAU, D., 2007 – Collapsing the wave function of meaning: The epistemological matrix of talk-in-interaction. In: Hoffmeyer, J. (ed.) *Bateson as a Precursor for Biosemiotics*. Dordrecht: Springer.

LANIGAN, R. L., 2008 – Communicology: towards a new science of semiotic phenomenology. *Cultura: International Journal of Philosophy of Culture and Axiology*, vol. 8, 212-218.

LANIGAN, R. L., 2010 – The verbal and nonverbal codes of communicology: The foundation of interpersonal agency and efficacy. In *Communicology: The New Science of Embodied Discourse*. D. Eicher-Catt & I. E. Catt (eds.). Madison, NJ: Fairleigh Dickson University Press), pp. 102-128.

FEKETE, A., 2020 – Desire, freedom, and pain in English learners' emotional responses to SLA: a holistic look at English learners' multilingual identity construction. *ERL Journal, 2*(4):84-99. https://doi.org/10.36534/erlj.2020.02.10

FEKETE, A., 2021 – Examining teachers' well-being during the pandemic: a mixed methods study on teachers' psychological, emotional and identity responses to online education. *Educational Role of Language Journal 2*(6): 46-65. https://doi.org/10.36534/erlj.2021.02.05

KOTOV, K., KULL, K., 2011 – Semiosphere is the Relational Biosphere. In Claus Emmeche (ed.) *Towards a Semiotic Biology: Life is the Action of Signs. Imperial College Press*. pp. 179-194.

LOTMAN, J., CLARK, W., 2005 – On the Semiosphere. *Sign Systems Studies 33*(1):205-226.

GAGLIANO, M., VIEIRA, P., & RYAN, J. C., 2015 – *The Green Thread: Dialogues with the Vegetal World*. Lexington Publishing.

GAGLIANO, M., RYAN, J. C., VIEIRA, P., 2017 – *The Language of Plants: Science, Philosophy, and Literature*. Minnesota University Press.

HARAWAY, DONNA J., 2016 – *Staying with the Trouble: Making Kin in the Chthulucene*. Durham, NC: Duke University Press.

HULSWIT, M., 2001 – Semiotic and the cement of the universe: a Peircean process approach to causation. *Transactions of the Charles S. Peirce Society*, XXXVII(3): 339-363.

KOUTSOURIS, A., 2009 – Sustainability, Crossdisciplinarity and higher education – From an agronomic point of view. *US-China Education Review* 6(3), (Serial No. 52), ISSN1548-6613.

NÖTH, W. & KULL, K. 2001 – *Semiotics of Nature*. Kassel University Press. ISBN: 978-9985-56-576-6.

OKROS, A., BORCEAN, A., MIRCOV, V. D., MIHUȚ, C., BOTOȘ, F. N., 2018 – Production evolution for the main agricultural crops from the central Banat area. *International Multidisciplinary Scientific GeoConference: SGEM*, vol. 18 (4.3):347-355.

PEIRCE, C. S. ,1958 – *The Collected Papers of Charles Sanders Peirce*, vols. I-VI. 1931-1935. Hartshorne, C. & Weiss, P. (eds.), vols. VII-VIII. 1958. Burks, A. W. (ed.), Cambridge-MA: Harvard University Press. Charlottesville: Intelex Corporation.

PUNGA, L., 2016 – Anthropomorphic metaphors in winespeak. A conceptual and context-based analysis. In Pungă, L. (ed.) *Language in Use. Metaphors in Non-Literary Contexts*. pp. 73-91. Newcastle: Cambridge Scholars Publishing. https://doi.org/10.1515/rjes-2016-0021

SHAROV, A., 2017 – Molecular biocommunication: sign-mediated interactions between cells and organisms. *Biocommunication*, 3-35.

STABLES, A., SCOTT, W., 2002 – The quest for holism in education for sustainable development. *Environmental Education Research*, 8(1):53-60.

URLICA, A. A., COROAMA L., IOSIM, I., SAVESCU, I., LUNGU, M. R. & PASCALAU, R., 2021 – Is virtual education a sustainable option: insights from online communication classes. *RJAS*, *53*(2):15-119.

TREWAVAS, A., 2002 – Plant intelligence: Mindless mastery. *Nature 415*, 841 https://doi.org/10.1038/415841a

VAN LIER, L., 2004 – *The Ecology and Semiotics of Language Learning: a Sociocultural Perspective*. Dordrecht: Kluwer Academic Publishers.

VAN LIER, L., 2000 – From input to affordance: social-interactive learning from an ecological perspective'. In Lantolf, J. P. (ed.), *Sociocultural Theory and Second Language Learning: Recent Advances*. pp. 245-259. Oxford: Oxford University Press.

WHITTEN, N. E., 1993 – Social/Cultural Anthropology: Ayahuasca Visions: The Religious Iconography of a Peruvian Shaman. *American Anthropologist 95*(2). https://doi.org/10.1525/aa.1993.95.2.02a00580