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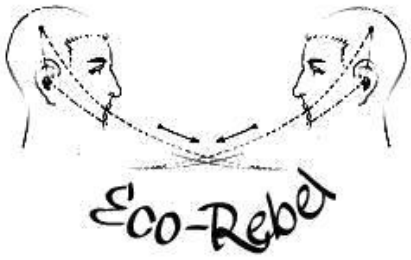

WHY ECOLINGUISTICS?

Alexander V. Kravchenko (Irkutsk State University, sashakr@hotmail.com)

Abstract: I will argue in this article that the emergence of ecolinguistics as a new field of research is not just a fad caused by a desire to mark a new territory for the explorations of language (as in the case of socio-, anthropo-, psycho-, cognitive, and other special linguistic disciplines), but an evolutionary stage in the development of language sciences driven by the realization that language is not a tool out there nor a mental organ in the brain but an essential ecological factor that defines us as a biological species, *Homo sapiens*, in phylogeny and ontogeny.

Key-words: Ecolinguistics; Language as Biological Phenomenon; Language and *Homo Sapiens*; Phylogeny and Ontogeny.

Resumo: Neste artigo eu tento mostrar que a emergência da ecolinguística como um novo ramo de pesquisa não é apenas um modismo devido a um desejo de demarcar novo território para a investigação da língua (como no caso de socio-, antropo-, psicolinguística e outras disciplinas linguísticas), mas uma etapa evolucionária no desenvolvimento das ciências da linguagem motivada pela constatação de que a língua não é um instrumento que está aí nem um órgão mental no cérebro, mas um fator ecológico essencial que nos define como uma espécie biológica, *homo sapiens*, na filogenia e na ontogenia.

Palavras-chave: Ecolinguística; Língua como Fenômeno Biológico; Língua e *Homo Sapiens*; Filogenia e ontogenia.

1. Introduction

Ecology is a scientific study of the relationship of organisms with their environment (Haeckel 1866), and over the past hundred years our concerns about the environment in which we live and with which we interact – just as the environment interacts with us – have been growing as the humanity came to realize the devastating effects it has on the world in which we live and on which

we depend as organisms. Yet, being living organisms, we don't like to think of ourselves as animal forms, and to call a person an animal is taken as an insult because animals are not sapient while we, humans, are: we can *think*, we have *minds*, and we *know*. And the fact that mainstream cognitive science today cannot offer coherent answers to the questions what is thought, mind, or what it is to know, doesn't deter many of us from agreeing with Descartes' famous thesis: *Cogito, ergo sum.* However, "to understand living things requires reference to higher-order principles of system organisation – indeed, it is the essential fact that they are organisms, that do things, that requires explanation" (MITCHELL, 2017, p. 6).

Humans are socially organized higher-order animal forms, and as such they may be studied at two different levels depending on the biological order of their organization – as second-order and third-order living systems (individuals and societies), the cell being an instance of first-order living system (cf. MATURANA, 1970). To understand humans as living organisms that differ from all other animal forms, we must understand what they do and why they do it as *living systems.* And what they do, and what makes them so unique among all other living systems known to biologists, is languaging as a specific form of interactional behavior of complex dynamics characteristic of human society. A formalistic approach doesn't help to understand the nature of linguistic activity because it doesn't take into account ecological, experiential, behavioral, perceptual, and cognitive dimensions of human interactional behavior (Raimondi 2019). We can know ourselves only when and if we can explain what language is and what language does *to* us and *for* us as a biological species. This, it would seem, is the job of linguistics as a scientific study of language. But is it?

Strikingly, linguistics as a science does not seem to have a clear understanding of its object of study – language as a unique feature of our biological species. Entrenched in our everyday discourse on language and its function, the code model of linguistic communication – the hallmark of mainstream Cartesian linguistics – obscures the nature of linguistic semiosis as a *biological adaptation*, a crucial evolutionary factor in the development of our species both in phylogeny and ontogeny. This has dramatic consequences for humans, individuals and communities alike, as they are not prepared to acknowledge human responsibility for the well-being of the living world.

Until recently, man has proudly seen himself as the king of nature. The roots of this haughty belief lie in the philosophical tradition of segregating man and world and viewing them as two independent realms, the subjective (thinking humans) and the objective (unthinking and, therefore, non-human objects). The job of the former is to cognize the latter as something out there that can

be made use of to meet the needs of the thinker: "Knowledge is power". This led to the 'consumer' approach to nature, when advances in science and technology made it possible to change the surrounding world in many ingenious ways, adapting it to the ever-growing needs of human society. It is only now, when many of such changes have turned out to be nothing but disasters on a planetary scale caused by 'thinking' humans (suffice it to mention the Aral Sea disaster), that we begin to understand the simple truth that, in this world, everything is connected with everything. Ecological issues have become a hot topic as it started to dawn on us that neither the world is independent of us, nor are we independent of the world, and this is something that real science has to take into account (cf. CHARDIN, 1956; SCHRÖDINGER, 1959; SEARLE, 1984; MATURANA, 2000). In this context, one is tempted to ask, "How real is the science of linguistics?" Or, even more radically, "Is linguistics really a science?" If, according to Harris (2005, p. 84), "it takes more than thousands of linguists chanting in unison "Linguistics is a science" to make it so", what *does* it take to make linguistics a science?

2. The problem of method

As a science, linguistics owes its status to Ferdinand de Saussure (1916) who insisted that, to claim the status of an 'objective' science, linguistics must study language "in itself and for itself", as an object to which analytical (decompositional) procedures could be applied. This point of departure defined the methodology used in the study of language as a structured system of signs, marking the emergence of structuralism which soon became the dominant scientific paradigm in the humanities in the 20th century. Thus, from the very start linguistics chose to view language as something 'out there', a thing that existed on its own in external reality and was used by humans just as they use other material objects to meet their pragmatic needs. And of course, this thing 'out there' could be nothing else but texts – material cultural artifacts created and used by humans.

As an object of inquiry, language is defined by the method chosen for its study. Viewing writing as a technique for representing speech and positing a one-to-one correspondence between the written and spoken word, linguists focused on analyses of texts as material objects which consist of words and sentences as things (cf. LINELL, 2005). This naturally led to a conclusion that any text (and, by extension, any live discourse) was the result of combining and recombining words into sentences (utterances) organized according to a set of rules – not unlike atoms are combined into molecules in chemistry. Saussure himself understood the limitations of such a methodological

move, pointing out that a study of texts could tell no more about language than a study of a photograph of a man about the living man himself. However, if linguistics wanted to have a clearly defined object of study analyzable in terms of structure and function and claim the right to be called an objective science, it had to pay a price, which is not uncommon in the history of science. But the history of science also shows the relative nature of 'scientific' knowledge (note the tautology implicit in the expression *scientific knowledge*: *science* 'knowledge acquired by study', from Lat. *scientia* 'knowledge' from *scire* 'know'). What was known for a scientific fact yesterday often turns out to be a fallacy, delusion, or misinterpretation of a particular phenomenon today (a classic example is the concept of atom as something indivisible – from Democritus to this day). The ability to abandon old beliefs and see something in a new light is what marks real science whose progress depends on constant reassessment and re-evaluation of accumulated knowledge (KRAVCHENKO, 2009a). Yet over the past hundred years the science of linguistics has not only failed to reassess its initial assumptions in the form of structuralist maxims and dichotomies (langue vs. parole, synchrony vs. diachrony, arbitrariness of sign, etc.); it has shown remarkable tenacity in sustaining the segregationist approach to language as if it existed apart from languaging humans.

The established, orthodox view of language as a symbolic system – a set of abstract forms that somehow relate to aspects of the world which exists independently as 'external reality' – accounts for the so-called representational function of language; thus, language becomes a tool, a material intermediary used in communication which, in its turn, is seen as exchange of immaterial thoughts between linguistically interacting individuals. The picture drawn by orthodox linguistics is quite straightforward: (i) language as part of the world (external reality) is some objective substance that can be identified, localized, and analyzed – very much like substances in chemistry; (ii) as such, language is external to thought: first, we think thoughts, and then we look for suitable words to express (encode) our thoughts according to the meanings contained in the words we use; hence (iii) to know a language is to know the code used by a given community – an inventory of code units (linguistic signs aka symbols), or lexicon, and a set of rules which govern the use of symbols, or grammar. This picture of language, christened by Harris (1981) as *the language myth*, seems quite appealing to both structural linguists and laymen alike because of its apparent simplicity and what looks like good old common sense. No wonder this view of language and how it is 'acquired' lies, for example, at the basis of educational practices in the area of foreign language teaching –

despite the well-known fact that children learning their mother tongue do not follow anything even close to this 'acquisition' procedure. And it is another well-known fact that it is simply impossible to learn a foreign language, reaching a native speaker's level of proficiency, by following the procedure prescribed by the code-model of language (KRAVCHENKO & PAYUNENA, 2018) – for the simple fact that *language is not something external to man*.

It might seem that an internalist account of language and cognition – the hallmark of mainstream cognitive science which views cognition as something autonomous that takes place entirely within the brains of cognizers (HARNAD & DROR, 2006; for a critique, see KRAVCHENKO, 2007) – is a plausible alternative to externalism, aiming to overcome the impasse of the segregationist approach to language. Indeed, if language is a biologically based feature of the brain (CHOMSKY, 1965), if language "grows in the mind" (CHOMSKY, 1980, p. 134) and can, therefore, be regarded as a "mental organ" (ANDERSON & LIGHTFOOT, 2002) to be studied by developmental biology (JENKINS, 2000) – isn't it *embodied* as a biologically determined capacity, a kind of 'instinct' (PINKER, 1995)? The answer is both 'yes' and 'no'.

Language *is* embodied, but not in the sense that it is some 'organ' as a structural part of the human biological makeup – just as mind is not (part of) the brain as mainstream cognitive science would have it. It is embodied in the sense that, viewed as biologically functional behavior of humans as social animals, it is *adaptively meaningful orientational interactions of human organisms with their environment with which they form a unity*. Far from regarding these interactions as the basis for language and cognition, internalist accounts of language see them as "performance capacity" (*E*-language) arising from the processes that go on in the brain (*I*-language). Thus, internalism also sustains Cartesian dualism in explaining man and world and the relationship between them.

A major (though not often acknowledged) theoretical stumbling block for both externalist and internalist views of language is the concept of linguistic sign as a bilateral unity of form and meaning (Saussure), or the plane of expression and the plane of content (Hjelmslev), firmly established in linguistic discourse. While word forms are material and, therefore, external to mind (granted that mind is not equated with brain, as is often the case in cognitivism), meanings (mental content, thoughts) are immaterial and internal. This creates an insurmountable problem of explaining the ontological status of thoughts as mental phenomena inaccessible for direct observation by others but somehow accessible to these others through the material vehicles of linguistic signs used as a tool in communication. Attempts to explain language systems in terms

of use and language use in terms of systems create a vicious circle and are, therefore, not particularly productive because they cannot explain how communication is possible. Understanding text as structure and equating it with speech, or positing internal language as something that grows in an individual and contrasting it with external language that belongs to a community as part of the world (but is not, apparently, an organ that grows in the world!) amounts to not understanding language at all.

As I have argued elsewhere (KRAVCHENKO, 2008), many issues posed by both externalist and internalist accounts of language and cognition are easily avoided if, instead of focusing on inner concepts and how they are manifested externally through language as a system of material symbols, we turn to the interactional features of language that enact joint activity (CLARK, 1996). On the one hand, as a semiotic system, "language has an emergent architecture to the extent that its structure is a product of spontaneous bottom-up self-organizing interactions, not top-down imposition of structure or constraint by any pre-existing template. This requires conceiving of basic linguistic units as differentiated end-products of a cognitive process rather than as fundamental atoms of analysis (DEACON, 2005, p. 274). On the other hand, as interactional behavior, language consists in the continuous making of linguistic choices from a wide and unstable range of variable possibilities in a manner which is driven by highly flexible principles and strategies grounded in the praxis of our living as linguistic organisms. A more comprehensive view of language as "the form in which human experience is construed" (HALLIDAY; MATTHIESSEN, 1999, p. 510) must include the human 'conceptualizer' and the world as it is experienced by him (DIRVEN; VERSPOOR, 1998).

Language is embodied in our bodily dynamics and embedded and enacted in social interactions as orientational (cognitive) behavior that characterizes us as living systems (cf. DI PAOLO; CUFFARI; DE JAEGHER, 2018). An understanding that the dualistic picture of language drawn by orthodox linguistics impedes progress in the study of human linguistic behavior as something that makes *Homo sapiens* so uniquely special, has been growing in the academia over the past several decades. New approaches to the study of language and cognition build on the realization that dualism is a halting move in explaining the relationships between the body and the environment, and between the mind and the body (VARELA; THOMPSON; ROSCH, 1991; CHEMERO, 2011; CARVALHO; PEREIRA; COELHO, 2016). Because organisms as cognitive systems do not exist in a vacuum but form a functional unity with their immediate environment

(HUTCHINS, 1995), or an organism-environment system (JÄRVILEHTO, 1998), and because language is not an artifact used as a tool in human interactions with their environment but biologically functional behavior that defines the human organism-environment system, to become a true science linguistics needs a radically new perspective on the function and role of language in human society as a living system (KRAVCHENKO, 2016a).

3. Language, human ecology, and the project of ecolinguistics

Viewed from a naturalist perspective, language is an extension of the human sensorium (MORRIS, 1938). The function of our sensorium is to orient our moving bodies in their interactions with the environment which provides opportunities for action, or affordances (GIBSON, 1979). Humans are social animals that can talk (JENNINGS; THOMPSON, 2012), and their consensual domain provides social affordances that affect how individual humans develop and function in society as a third-order living system whose unity is sustained by the unity of linguistic interactions. In other words, affordances mean.

As the medium of human interactions, language is an adaptation for coordination of joint activity of humans in their consensual domain. It is behavior in a second-order consensual domain (MATURANA, 1978) in which components of the first-order consensual domain (contextualized vocalizations as immediately perceived indices that cue interactional behavior) may be, and typically are, used without the (first-order) consensual domain. Being grounded in first-person experience, utterances orient each of the communicating parties with respect to their consensual domains (both first- and second-order) which may be similar but never identical. This creates an interpretation problem in assessing affordances provided by linguistic behavior: an utterance may refer to something immediately perceived by the parties (a component of the first-order consensual domain), or it may refer to remembered past experience categorized as knowledge (a component of the second-order consensual domain). In our adaptive (linguistic) behavior much depends on how an utterance is interpreted: it may cue an immediate adaptive response (an action) 'here-and-now', or it may provide an opportunity for a delayed response as a potentiality to be realized in our future adaptive behavior. This is *the merging point of our sensorium and language*, and it plays a crucial role in the interactive emergence of linguistic meaning.

Rationalizing language, Cartesian linguistics (in both its externalist and internalist brands) fails to see the continuity between life and language as a distinctive feature of human ecology; it denies

the systemic character of relationships in the human organism-environment unity. However, as Bateson (1972) warned at the time, this is unwise:

> Lack of systemic wisdom is always punished. We may say that the biological systems – the individual, the culture, and the ecology – are partly living sustainers of their component cells or organisms. But the systems are nonetheless punishing of any species unwise enough to quarrel with its ecology (p. 442).

By and large, humans have been busy doing precisely this – quarreling with their ecology defined by the relational domain of language. By turning a blind eye to the systemic nature of the biological, ecological system around the individual human being, Cartesian linguistics fails to take an adequate view of language and its role in the life of humans both on the individual and societal levels, as living systems that exist in the unique ecological (bio-cultural) niche constituted by linguistic interactions (KRAVCHENKO, 2016b). In a community of linguistic organisms viewed as a living system, languaging is the constitutive activity of the system components (individual humans as components of groups of individuals). Human unique cognitive abilities *emerge* in the process of the development of the system components into fully functional agents; language "transforms human agency as we cease to be human infants and, over time, become particular characters" (COWLEY, 2014, p. 67).

While the systemic behavior of human society depends on the cognitive properties of the components themselves, these cognitive properties emerge in the domain of languaging as systemic behavior that becomes a cognitive niche for human organisms. It is this crucial circumstance that highlights the ecological nature of the relationship between human society and its domain of linguistic interactions. Because "the evolution of the living systems is the evolution of the niches of the units of interactions defined by their self-referring circular organization, hence, the evolution of the cognitive domains" (MATURANA, 1970: 4), ignoring the ecological nature of language as a relational (cognitive) domain obscures our understanding of the processes that shape both individual and social cognition.

The prevailing view of language as a thing used in an instrumental function by sapient organisms is incoherent and must be abandoned. The ecological niche of humans is saturated with affordances provided by linguistic interactions in the experiential domains of speech and writing (KRAVCHENKO, 2009b); moreover, the semiotic technology of writing 're-configures' our agency and cognitive powers (DAVIDSON, 2019). Linguistic interactions in these domains

become a decisive ecological factor that both affects and sustains the development of individuals and society as living systems. Therefore, unlike Cartesian linguistics, the study of language as a major factor in human ecology (FILL; STEFFENSEN, 2014) may become a true science of (human) life (COWLEY; MARKOŠ 2018).

However, as I have argued elsewhere (KRAVCHENKO, 2016c), the emergence of ecolinguistics as a new field of linguistic research (for a historical review, see Couto (2014)), while being a step forward in an attempt to bridge the gap between linguistics and life sciences, does not signal a conceptual departure from the established view of language as a code, and the 'conduit metaphor' (REDDY, 1979), as Mühlhäusler (2019) points out, continues to underpin the majority of ecolinguistic writings.

On the homepage of the *International Ecolinguistics Association* (http://ecolinguistics-association.org) ecolinguistics is defined as the exploration of "the role of language in the life-sustaining interactions of humans, other species and the physical environment" with the primary aim "to develop linguistic theories which see humans not only as part of society, but also as part of the larger ecosystems that life depends on". Although the role of language in the life-sustaining interactions of humans, other species and the physical environment cannot be over-exaggerated, and the approach taken by the *IEA* appears to be holistic on first sight, both the IEA definition of, and approach to, ecolinguistics are quite problematic.

On the one hand, speaking of the role of language in life-sustaining interactions makes sense only and if there is an adequate understanding of the biological mechanism of life-sustaining processes in general. This means that if linguistic interactions are claimed to sustain human life, an explanation is required of what (and how) actually happens in the world of the living that allows us to speak of human life as essentially different from all other life-forms, such as the great apes, for example. Thus, we inevitably face the necessity to address the question of the biological function of language – something that ecolinguistics seems unwilling to do.

On the other hand, without understanding the biological – or, better still, biosocial – function of language one cannot hope to approach it holistically, taking into account all the intricate relationships between humans and their environment viewed as an integral whole, an organism-environment system. One can only agree with Mühlhäusler (2019, p. 20) that "it may be desirable to have a holistic approach, but in the absence of any clear understanding what the whole actually is, the best we can do is to enlarge the number of parameters we consider – an indefinitely large

number, many of them beyond our comprehension". Regretfully, this is precisely what seems to inform much of ecolinguistic discourse, showing "a discrepancy between what ecolinguistics wants to be and what it actually is" (ibid., p. 18).

Contemporary ecolinguistic research focuses on the problem of the relationship between language and ecology, when "central to ecolinguistics […] are the core concepts of language, the environment, and the *interaction between them*" (ZHOU, 2017: 125; emphasis added). Thus, language is reified, becoming something *sui generis* that possesses agency, while "ecology" becomes synonymous with "environment". However, being interactional semiotic behavior of humans in a consensual domain, language is not an entity that 'interacts' with the environment: it is humans that do. Neither does it make much sense to speak of the 'relationship' between language and ecology if ecolinguists want to be precise in their definitions of the core concepts. According to Haeckel's original definition, "ecology" is the relationship of particular organisms with their particular environment, so the problem above may be reformulated as "the relationship between language and the relationship of some (which exactly?) organisms with their environment". To avoid such absurdities, ecolinguistics must focus on defining language as a whole, and this is possible only by using a systems approach to language as a *biological feature* of our species.

It is not enough to view language as multi-scalar dialogical activity distributed over space-time (COWLEY, 2014; HODGES, 2014), as something that extends the human ecology (STEFFENSEN, 2011); ecolinguistics must address the question of what makes *Homo sapiens* ecologically special (ROSS, 2007), or how human ecology is different from non-human ecologies, because "neither genes nor culture, singly, can account for what […] makes humans different from other species" (SINHA, 2009, p. 291). This is possible only if the concept of human ecology is clearly and explicitly defined – specifically, the human environment must be identified as that which makes our species so unique. This was done by Lotman (1990) who introduced the concept of semiosphere as the constructed meaningful environment reproduced from generation to generation with the human organism itself (cf. KRAVCHENKO, 2014). And the uniqueness of this organism-environment system lies, apparently, in language as a cognitive niche in which humans 'happen' as living systems: it is the "difference which makes a difference" in distinguishing human agents from non-human agents, a biological adaptation responsible for making us – not only ecologically special – but what we really are, *Homo sapiens sapiens*.

What makes humans unique is a capacity for linguistic semiosis as a requisite for abstract thought (LURIA, 1982). This opens up a radically new venue for the explorations of language, bringing together biology, ecology, psychology, semiotics, neuroscience, and interaction studies, thereby making the study of language part of life sciences. When this happens, there will be no more need in such sub-branches of linguistics as socio-, anthropo-, psycho-, ethno-, bio-, neuro-, cognitive linguistics and so forth. This will mark an approach to language that could be truly called holistic – a new paradigm in the study of man that could help understand what the traditional humanistic sciences could not: *the origins of humanness*. I hope ecolinguistics is up for the job.

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