



<https://doi.org/10.22363/2687-0088-39530>


EDN: MVZIGT

Research article / Научная статья

Ecolinguistics: A paradigm shift

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Abstract

Unlike other modern sciences that have dramatically transformed our way of life over a historically short period of time, linguistics cannot boast of any serious achievements that affect our daily life. This raises the issue of practicality of linguistic theories and their applicability in our praxis of living. Confined to the methodologically erroneous and theoretically untenable framework based on the code model of language and communication, linguistics of the mainstream persists in viewing language as a cultural tool in the service of the mind rather than a biologically and ecologically functional feature of humans as a species. Reification of language precludes any productive theorizing about its nature and function, and the biological function of language and its role in the evolution of our species is ignored. Based on constructivist epistemology and the biology of language and cognition, the study explores how a systems approach to language as the cognitive domain of humans allows for a new conception of language as part of the organism-environment system in which the flow of linguistic interactions (linguaging) within a community constitutes its ecological self-constructed niche (language) as a relational domain in which humans develop as living systems. It is argued that a systems approach used in theorizing language opens an entirely new horizon in the study of linguaging and language as crucial biological and ecological factors that define the evolution of humans. A different set of core concepts in the study of language as the human praxis of living signals an ascending revolution in the language sciences and a paradigm shift to ecolinguistics — the study of language that addresses the question of what makes *Homo loquens* ecologically special, shedding light on the elusive nature of humanness.

Key words: *ecology, ecolinguistics, language, linguaging, systems approach, organism-environment system*

For citation:


Kravchenko, Alexander V. 2025. Ecolinguistics: A paradigm shift. *Russian Journal of Linguistics* 29 (1). 17–36. <https://doi.org/10.22363/2687-0088-39530>



Эколингвистика: смена парадигмы

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Аннотация

В отличие от других современных наук, самым существенным образом изменивших наш образ жизни за исторически короткий период времени, лингвистика не может похвастать сколько-нибудь серьезными достижениями, повлиявшими на нашу повседневную жизнь. Это заставляет задаться вопросом о практичности лингвистических теорий и их применимости в нашей жизненной практике. Ограниченная методологически ошибочной и теоретически несостоятельной системой взглядов, основанной на кодовой модели языка и коммуникации, лингвистика мейнстрима продолжает рассматривать язык как культурный инструмент на службе у разума, но не как биологически и экологически функциональную особенность человека как вида. Объективизация языка исключает какое-либо продуктивное теоретизирование о его природе и функции, при этом игнорируется биологическая функция языка и его роль в эволюции нашего вида. Основанный на конструктивистской эпистемологии и биологии языка и познания системный подход к языку как когнитивной области человека позволяет концептуально по-новому взглянуть на язык как часть системы организм–среда, в которой поток языковых взаимодействий (языковая деятельность) внутри сообщества образует его экологическую, им самим конструируемую нишу (язык) как реляционную область, в которой люди развиваются как живые системы. Приводятся доводы в пользу того, что теоретизирование языка с использованием системного подхода открывает совершенно иной горизонт в исследованиях языковой деятельности и языка как ключевых биологических и экологических факторов, определяющих эволюцию человека. Иной набор ключевых понятий в исследовании языка как жизненной практики человека указывает на начавшуюся революцию в науках о языке и смену парадигмы в сторону эколингвистики — такого изучения языка, при котором ставится вопрос о том, что делает «человека говорящего» экологически особенным, проливая свет на ускользающую от нас природу человечности.

Ключевые слова: экология, эколингвистика, язык, языковая деятельность, системный подход, система организм–среда

Для цитирования:

Kravchenko A.V. 2025. Ecolinguistics: A paradigm shift. *Russian Journal of Linguistics*. 2025. Vol. 29. № 1. P. 17–36. <https://doi.org/10.22363/2687-0088-39530>

1. Introduction

As a specific venue of research, ecolinguistics today is an established branch of linguistics¹, and the number of researchers interested in finding and exploring possible correlations between our daily linguistic practices and the alarmingly wide range of various ecological issues keeps growing. 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”

¹ For a historical review, see (Couto 2014, Penz & Fill 2022).

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”. However, the purport and the primary aim of ecolinguistics thus defined raise important questions about its epistemological and methodological foundations. For one thing, if ecolinguistics is seen as a branch of linguistics commonly defined as the scientific study of language as a principal means of human communication, and communication is viewed as a process of exchanging information, it is not clear how, if at all, language sustains life in interactions of humans with the physical environment, including other species. It is hard to imagine how the ability to talk affects, in a decisive way, the physiology of a human body and the bodily functions, neither do we exchange information (whatever it is) in linguistic communication with non-talking animals, let alone the physical environment. Moreover, since ecology is a branch of biology, “ecolinguistics” implies a specific focus on the relationship between languaging human organisms and their environment, and if it is just physical environment, it remains unclear what role and exactly how language plays in this relationship other than being a tool used, either constructively or destructively, in human interactions with the environment.

Another point of concern is the subject matter of “linguistic theories” to be developed in the framework of ecolinguistics, and the possible number of such theories. Is the subject matter of these theories language, humans, or both? If the latter, as the IAE definition suggests by appealing to larger ecosystems as compared with the ecosystems of human societies, then the nature of the ecosystem of a human society and its constitutive components should be explained, and the relationship between linguistics and biology clarified. As ecolinguistics doesn’t seem to have a common agenda with the so-called “biolinguistics” (Jenkins 2000) propounding Chomskian idea of language as a mental organ, nor is its alleged relationship with biology clearly formulated, what the aforementioned “linguistic theories” are going to be about one can only guess. And how many linguistic theories should one expect to be developed within the framework of ecolinguistics as a branch of linguistics? A theory is a system of ideas intended to explain something; if there are several theories explaining the same thing, then there are several different explanations, and different explanations of the same thing indicate a general lack of understanding of the explained. This takes us to the question, “How well does (eco)linguistics understand its subject matter, language?” One might argue that, in science, pluralism is not a vice, but this brings up another question, “What is science for and what is the purpose of a scientific explanation?”

These and other related issues are in the focus of the discussion of what ecolinguistics is, what its relationship with linguistics is, and what it should be if it aspires to be a science. In what follows, I am going to briefly discuss the role of science in our life, the relationship of language to science, and the status of linguistics as a science as it was envisioned by Saussure. It will be argued that the empirical inadequacy of the epistemological and methodological implications inherent in the very term “linguistics” result in some unresolved core issues that

arise from adhering to the code model of language and communication still dominant in contemporary mainstream language studies (section 2). In section 3, this conceptual-theoretic error of linguistics, along with the reification of language as a communication tool, is shown to be a constitutive part of the objectivist epistemology incapable of shedding light on the biological nature of language and its function and its role in the developmental dynamics of human organism–environment systems from the point of view of evolution. It will be argued that, to make language studies a true science that can affect our praxis of living, a constructivist systems approach should be used along with a new perspective on the function and role of language in human society as a living system. In section 4, a critique of the current concept of ecolinguistics, as a branch of linguistics, and its research domain will be given, and some constructive steps offered to rid the concept of its metaphoric lining, specifically, by clearly and explicitly defining human ecology as the relationship between human organisms and their self-constructed environment, the semiosphere of language. This may serve as a basis for working out a scientific ecolinguistic agenda by identifying the range of issues that should be dealt with in theoretical ecolinguistics and applied ecolinguistics, respectively. It will be concluded, in section 5, that although contemporary ecolinguistic research comes short of becoming a new paradigm in the explorations of language, the prospects are good, and the language science is on the way to a revolution that is bound to change the established view of language, its nature and function, taking us closer to understanding the nature of humanness.

2. Science and linguistics

The role of science in the public eye is to learn something important about the way things are in this world, gaining knowledge that would — or so we believe — help us to better adapt to the world, making our life better. However, as a systemically organized quest for knowledge, science is power that allows humans to not just adapt to the world they inhabit, but to transform it in a radical way. Over the past hundred years or so the changes in our daily life, brought about by the stunning advances in technology, have been mind-boggling. What used to be just figments of sci-fi writers' imagination — videophones, pocket size computers, autonomous robots with AI, cloned organisms, etc., you just name it — has become part and parcel of our routine living in the brave new world we continuously reshape and remold to make our living more comfortable if not downright lazy.

The profound effects of fundamental research in the so-called “hard sciences” of physics and chemistry, geology and astronomy, biology and meteorology are obvious and undeniable. Dealing with tangibles, these sciences have great predictive power, facilitating new discoveries and inventions humans use to their benefit. When scientific knowledge no longer serves that purpose, it becomes questionable and eventually loses its value (Glaserfeld 1984). Compared to the hard sciences, the overall effect on our life of the “soft” sciences dealing with intangibles has been very modest, if not negligible. Although arguments have been

voiced against such a division of sciences on the grounds of their not differing much in general methodology and/or their cumulative effect (Hedges 1987), the difference in the magnitude of their impact on human life cannot be denied. Moreover, while the material aspects of our life have changed to such a degree that our adaptation to the physical conditions of the environment does not seem to be an existential issue anymore, the social dimension of our living as the subject area of the soft sciences has been very little understood despite all the efforts of scientists, remaining largely the kind of research that produces nothing but books instead of social benefit. Instead of minimizing frustrating social tensions and working towards a social harmony that would ensure sustainable global equilibrium, humanity as a whole continues its deplorable practice of ruining the delicate balance between nature and culture, oblivious of the fact that everything in the universe is connected with everything. This makes one wonder whether we really know what we are doing in our persistent attempts to conquer the material world and subdue Mother Nature in our blind desire for unconditional dominance in the world of the living. Do we really know what we are, and why we are what we are and do what we do? Where should our quest for knowledge begin to ensure that the great power we acquire over the world does not bring our own demise in the end?

A good way to start answering this question is to recall Socrates' philosophical commandment, "Know thyself". Paradoxically, all the knowledge of the world accumulated by humans notwithstanding, we do not even seem to begin to understand ourselves as the knowers, and admiring the tree of knowledge in the garden of our civilization we still do not understand where its roots go and how its fruit can best be used to sustain our civilization and keep it thriving (Maturana & Varela 1987). We owe this awkward situation to the deeply entrenched view that we are genetically endowed with supreme cognitive powers because of the kind of brain we have and its unsurpassed ability for abstract thought and reason. However, were that the case, would it not be natural to expect *Homo sapiens*, "wise man", to live up to the name, using wisdom as a guiding light in our living praxis? Where does science go wrong in its assessment of the nature of humanness as a phenomenon, and what needs to be done if we want to see the light at the end of the tunnel? Much of what makes the grand river of life into troubled waters threatening to wash us off our flimsy civilization raft comes from the failure of the soft sciences to understand the phenomenon of humanness scientifically, by using a systems approach. And the blame lies, above all, on linguistics as a self-defined science.

Although, as a term, *linguistics* appeared in mid-nineteenth century, it began to be used in the sense 'scientific study of language', acquiring the status of an academic discipline, in the first decades of the 20th century, mostly thanks to Saussure and his aspiration to make language studies a true science. The purpose of linguistics as it was envisioned by Saussure was to make the study of language, historically the domain of philology, a true empirical science with a well-defined object of study and a set of scientific (that is, objective) methods. The problem was that while other sciences had clearly identified observable phenomena as their

objects, it was not the case with language studies that lacked a scientific definition of language. Saussure attempted to make up for this by suggesting that language (*langue*) is a conventional semiotic (*semiological*) system with a signifying function manifested in speech (*parole*) as concrete instances of the use of language (including texts), and that linguistics as a science is the study of language as a semiotic system, a tool for the expression and exchange of meanings.

Over the past hundred years there have been changes in the focus of interest of linguistic research, from procedures for describing individual languages to the universal, defining properties of language; however, by and large the instrumentality of language as a specific mode of human communication has not been questioned. Viewed as a communication tool, language was, and still is, conceived as an object “out there”, a social phenomenon within the speech community, a code made up of a system of signs (words as arbitrary pairings of form and meaning, or the lexicon) organized and used according to the underlying system of rules (grammar). Typically, language is analyzed on the levels of phonology, morphology, syntax, and semantics, and because the relationship between words and their meanings is arbitrary, such an analysis should follow the principle of synchrony, without taking the history of language into account. Thus, the main explanatory goal of (synchronic) linguistics is to account for the features of language as a communication tool, both structurally and functionally, by creating a theoretical framework and explaining the theoretical presuppositions of that framework (Rastall 2010).

In the currently established research paradigm, language has been mostly studied and explored as a system of signs “in itself and for itself”, as a cultural tool used in communication to exchange thoughts (mental content). Viewing language as a kind of packaging for thoughts invented by the smart humans results in an inevitable inference that language is secondary to intelligence — a firmly established “scientific” belief similar to the pre-Copernican belief that the earth was the center of the universe. Failing to see language as part of the human bio-ecology (Cowley 2014) — species-specific interactional coordinated cooperative behavior with an adaptational (orientational) function — and reifying linguistic signs as independently existing material objects that contain meanings allegedly exchanged in communication, linguistics with its written language bias (Linell 2005) comes short of identifying its subject matter in a consistent and uncontroversial manner (Kravchenko 2008). Unable to make noticeable progress, it remains, at best, what Kuhn (1962) called a “pre-science”, raising questions about the intellectual health of the discipline of linguistics (Yngve 1986), while some researchers go further and simply deny linguistics its status as a science (Finch 2003, Harris 2005). This poses the question of the relationship between science and language.

Language is prior to science. As was shown by Harris (2005), science itself is a construct of language because scientists impose their language on what they assume is there to be named by that language. Lavoisier (1789, 3d paragraph) argued that it is impossible to disassociate language from science or science from

language “because every natural science always involves three things: the sequence of phenomena on which the science is based; the abstract concepts which call these phenomena to mind; and the words in which the concepts are expressed. To call forth a concept a word is needed; to portray a phenomenon a concept is needed. All three mirror one and the same reality.” This observation, that words, concepts, and phenomena, although interrelated, are separate object-like entities “out there”, informs Cartesian dualist epistemology that underlies the methodology of mainstream linguistic research based on the assumption that the function of linguistic signs is to stand for, or represent, material entities, actions, ideas, and beliefs. This brings up the issue of the roots of our knowledge about what we believe exists in “external” reality: if words (linguistic signs) stand for something external to them, serving as special marks (names) of the various aspects of the world, how do we come to know that particular objects, actions, and ideas exist, in the first place? While our sensory experience of the material aspects of the environment lies at the basis of phenomenology, first-person experiences of thought, understanding, and appreciation of meaning do not have a sensory character, and the debate on whether there is a distinctive ‘cognitive phenomenology’, a kind of phenomenology that has cognitive or conceptual character, has not been settled (Bayne & Montague 2011).

Another unresolved issue arising from the representational theory of language as a symbolic system is the biological function of mental representations. Even if we assume that there is, indeed, mental content constituted by representations as images of external reality encoded by linguistic signs (ignoring, for the sake of the argument, the problem of the existence of concepts as part of this reality), and it is this mental content that humans exchange in linguistic communication, it remains unclear why and to what end such an exchange between humans as living organisms should take place. However, thoughts do not travel, and the code model of communication as exchange of linguistically encoded thoughts (information, knowledge) between the “sender” and the “receiver”, or “telementation”, has very little to do with science, constituting the language myth (Harris 1981). And this is the myth mainstream linguistics lives by. Prompted by common sense and sustained by formal education, it has been deeply engrained in our perception and interpretation of the relationship between language and the world, becoming an epistemological trap (Kravchenko 2016a).

As a system of knowledge of the world obtained, first and foremost, through observation and expressed in language, science pivots on the crucial concept of observer and an understanding that there are no observations independent of observers describing the world: “The logic of the world is the logic of the description of the world” (Segal 1986: 4). Because observation is always subject-dependent, scientific arguments cannot be validated on the assumption that objects exist independent of the observer. As was emphasized by Piaget (1976: 13), knowledge arises neither from objects nor from the subject, but from interactions between the subject and those objects, and objectivity is in no way an initial property. In other words, knowledge is not a substance used as a commodity, it is

“the process that integrates past and present experiences to form new activities as nervous activity perceived either internally as thought and will or externally as speech and movement” (Foerster 1981: 194).

When we as observers attempt to describe and explain a particular aspect of our existence in the world, we must not forget that both the world and the observer arise in language (Maturana 1988); therefore, language constrains how we perceive, think, and act. Language is not a mirror-like tool that allows scientists to see the image of the world. As Foerster (2002: 71) put it, the world is “an image of language. Language comes First, and the world is a consequence of it”. The notion of objective reality is generated by denotative language (Midgley 1986: 151, Segal 1986: 8), and because “everything said is said by an observer to another observer” (Maturana 1970), to understand the world we must understand language and the epistemological constraints it puts on our cognitive ability. To get out of this trap, a conceptual jump is needed: rather than viewed as a tool in the service of the mind, language should be reconceptualized in the framework of general systems theory, as the operational mode of humans living in language as their cognitive domain. This was done by Humberto Maturana (1978, 1988) in his seminal work on the biology of language and the role of the observer in understanding the nature of humanness. Maturana’s constructivist epistemology is a good theoretical foundation on which a true language science could be built (Raimondi 2019, Kravchenko 2022a). This requires a change of perspective on language as part of the dynamics of humans as organism-environment systems.

3. From the pre-science of linguistics to a language science: changing the perspective

Various authoritative online resources, such as *Encyclopedia Britannica*, *Merriam-Webster Dictionary*, *Oxford English Dictionary* etc., define linguistics as the study of language and its units, and language as a system of symbols used by humans in communication as exchange of information. However, loaded at its very inception with a host of unsubstantiated assumptions about the nature and function of language, the notion of linguistics as a science bears the birthmark of structuralism, including the view of language as an abstract system underlying communication (speech). As argued by Yngve (1986), thus understood, language as the object of study is created by a certain point of view not supported by empirical evidence, and the goal of linguistics as a science is, therefore, incompatible with the goal of studying language.

Methodologically, identification of the function of language with communication as exchange of information is the cornerstone of contemporary linguistic orthodoxy² and the root of all trouble with disparate theoretical

² I am aware that there is a host of various views on language circulating in the academia that began to arise decades ago, when the conceptual-theoretic limitations of Saussurean linguistics became more and more obvious. However, these ideas have not gained enough momentum to replace structuralism as the “normal science”, and the name “contemporary linguistic orthodoxy” refers to

frameworks constitutive of modern linguistic theory that is, in fact, an assortment of various, often incompatible points of view (Koshelev 2019). All living organisms communicate; biologically, communication is “the action on the part of one organism (or cell) that alters the probability pattern of behavior in another organism (or cell) in a fashion adaptive to either one or both of the participants” (Wilson 1975: 176). Communication is part of the adaptation mechanism of everything living, and to identify it with language is to make a category mistake: while any linguistic interaction between humans is communication in the biological sense, not any instance of communication between organisms is language. With its focus on linguistic signs as a denotational symbolic system used in an instrumental function, mainstream linguistics reifies language as part of “external” reality, failing to see the biological centrality of talk in understanding humans (Jennings & Thompson 2012) and acknowledge that language is our Rubicon that other animals cannot cross (Müller 1861: 340).

Interestingly enough, a commonly stated aim of linguistics is “to define the notion of ‘human language’” (Crystal 2019: 351). However, the very phrase “human language” implies the existence of “non-human language”, and some researchers promote the idea of continuity between animal and human behavioral capacities, including communication, and cognitive powers (Savage-Rumbaugh & Lewin 1994). The institutionalized instrumental view of language as something external to human organisms is responsible for the recklessness with which it is used: because the objective world appears as independent of what we as cognizers think and say about it, and because we think that language is used to represent (denote) external reality, we can use this denotational tool in any good old way we choose because — or so we believe — what we do in and with language does not affect the way things are in reality. However, not only can we *do* things with words, but we can also *make* things with words (Kravchenko 2024a), thereby bringing new objects into the world as “objectivity with parentheses” (Maturana 1988) that begin to affect our ability to orient others and self in this world because of its forever growing complexity. Such an understanding comes with a systems approach to language as our cognitive domain. A change of perspective is needed to begin to see that objectivity is what the language we speak, our “house of being” (Heidegger 1978), allows us to see. And what we see, how far and how deep our gaze can go, is constrained by the architectural design of our very home, that is, language in which we arise as observers.

As was noted by Whorf (1956: 214), “all observers are not led by the same physical evidence to the same picture of the universe, unless their linguistic backgrounds are similar, or can in some way be calibrated”. Ontogenetically, similar linguistic backgrounds are the result of a history of fine structural coupling of individual humans with their environment, when a human organism forms a

the general body of knowledge that informs the public attitude to daily social practices constituted, primarily, by linguistic interactions, or discourse (the “use” of language, both spoken and written, in communication in specific social contexts) — such as education and mass media responsible for maintaining the currently established worldview.

dynamical system with its ecological niche constituted, first and foremost, by a community of languaging observers in a consensual domain of interlocked conducts, that is, the relational domain of language. Developmentally, it is not as if prelinguistic but already thinking humans first acquired knowledge about the “objective” reality and then language as a tool for processing this knowledge: “Thinking and language belong together. A child learns a language in such a way that it suddenly begins to think in it” (Wittgenstein 1975: 5). Because “all doing is knowing, and all knowing is doing” (Maturana & Varela 1987: 248), the established view of the world as self-contained “objectivity” is nothing more than a distorted picture that we are allowed to see from our epistemological trap. The co-evolution of language and the brain (Deacon 1997) is the core aspect in understanding the developmental dynamics of human organism–environment systems as units of interactions with the medium that contains these systems — language, the human cognitive/existential domain.

As observers, we live in a world constructed in language through the fundamental operation of distinction, the specification of an entity operationally cleaved from a background:

[T]hat which results from an operation of distinction and can thus be distinguished, is a thing with the properties that the operation of distinction specifies, and which exists in the space that these properties establish. Reality, therefore, is the domain of things, and, in this sense, that which can be distinguished is real. Thus stated, there is no question about what reality is: It is a domain specified by the operations of the observer (Maturana 1978: 55).

The properties of a thing specified by an operation of distinction form a concept — a dynamic neuronal structure or mental representation (state of relative neuronal activity) caused by the organism’s experience of external or internal interactions and “grasped” by the word/name (that is, by its mental representation in the above sense). And our belief, largely instilled by linguists, that words are objects in the world, is at the root of our belief in “objectivity without parentheses”:

“Once a concept is constructed, it is immediately externalized so that it appears to the subject as a perceptually given property of the object and independent of the subject’s own mental activity. The tendency of mental activities to become automatized and for their results to be perceived as external to the subject is what leads to the conviction that there is a reality independent of thought” (Elkind 1958: xi–xii).

However, because everything said is said by an observer to another observer, there are as many realities as kinds of distinctions the observer performs (Maturana 1988: 11). These realities are established through evidence of a second observer: “Reality is that which can be witnessed: hence, rests on knowledge that can be shared, that is, “together-knowledge”, or *con-scientia*” (Foerster 1966: 4). Depending on the stance taken by a particular observer with regard to language—whether it is seen as evolutionarily preceding or following sapience—the distinctions he makes may affect the entire architecture of the universe as his “house

of being” constructed as an image of language witnessed by another observer. This raises two interrelated questions important for understanding why linguistics remains a pre-science and what steps must be taken to change this dismal situation: (1) How is “together-knowledge” achieved in general? (2) How can it be achieved with regard to language as the object of scientific explorations? Coherent answers to these questions are impossible without moving the focus of research from linguistic “objects” to interacting human organisms (Yngve 1986). Interacting human organisms are living systems, and their interactions are mostly linguistic interactions — coordinations of coordinations of behavior in a consensual domain. If we want to understand language and explain its nature and function, we must approach it as a biological phenomenon, and “nothing in biology makes sense except in the light of evolution” (Dobzhansky 1973).

Evolutionarily, language is an extension of the human sensorium:

The response to things through the intermediacy of signs is [...] biologically a continuation of the same process in which the distance senses have taken precedence over the contact senses in the control of conduct in higher animal forms; such animals through sight, hearing, and smell are already responding to distant parts of the environment through certain properties of objects functioning as signs of other properties. This process of taking account of a constantly more remote environment is simply continued in the complex processes of semiosis made possible by language, the object taken account of no longer needing to be perceptually present. (Morris 1938: 32)

The senses in higher animals help them to orient in their adaptive interactions with the environment; therefore, biologically, the function of natural language is *orientational*. For the species *Homo sapiens*, the ability, through linguistic semiosis, to take account of perceptually absent objects in controlling their interactions with the world becomes, to use Bateson’s (1972) catchphrase, “a difference which makes a difference”, setting humans apart in the world of the living as talking animals, *Homo loquens*. Therefore, if we want to come up with a scientific explanation of language, we must approach it and describe it as species-specific interactional semiotic activity with a biological (orientational) function.

It should be noted that such an understanding of the function of language is not similar to the function of language in systemic functional linguistics. For Halliday (2003), all languages have evolved to serve three interwoven metafunctions, ideational (meaning making), interpersonal (linguistic enactment of interpersonal relations), and textual (a distinct mode of meaning responsible for managing the flow of discourse); these metafunctions are mapped onto the information structure of the clause as the object of linguistic analysis (“information is made of language” — Halliday 2001: 191) that aims to explain the organization of the semantic system of language as a social semiotic system. The view of language as a network of interrelated sets of options for making meaning and information conveyed in messages bears the birthmark of linguistics as an objectivist science with all the inherent implications, particularly, the assumption of rationalist epistemology that sapience evolutionarily precedes language. By contrast, an

understanding that the biological function of language is to orient others and self in adaptational interactions with the environment marks an epistemologically novel approach to the evolution of language, mind and consciousness. Such an understanding comes with the integration of scientific semiotics with Maturana's constructivist ontology and helps us to arrive at a holistic view of language. However, the way to a holistic view of language is handicapped by our failure to understand the subject-dependent nature of science as a cognitive domain defined by descriptions that researchers make in language as observers. This cannot but tell on the adequacy of scientific theories, and the mainstream theory of language as a system of signs used in an instrumental function is no exception.

Maturana's systems approach has two epistemologically important implications: (i) the system becomes defined by the organization that it conserves rather than the structures through which that organization is instantiated and the functions that we ascribe to those structures, and (ii) a "double view of systems" is needed, when any system is described simultaneously in two separate non-intersecting domains, one operational (system as a collection of components) and the other phenomenological (system as a singular entity in interaction with a medium which contains the system and makes it possible). Viewed as a (social) living system, a human organism is a unit of interactions that exists in the niche as that part of the environment (including other humans) with which it interacts and which it specifies. Because these interactions are, first and foremost, linguistic interactions (linguaging), they become the defining feature of the system's organization that the system (a community of linguaging humans) conserves. Thus, the call to study language "in itself and for itself" is, strictly speaking, unscientific.

Neither can mainstream linguistics see the conceptual difference between language viewed as a structured system of tangible objects — vocalizations (signs as unities of form and meaning) — produced by human organisms (language system as a collection of components), and language as a manner of living of human organisms in recurrent interactions with their self-constructed medium, the relational domain of coordinations of coordinations of consensual behaviors, or, linguaging (human living system as a singular entity described in the phenomenological domain). As collections of structural elements, languages may be very different, yet these differences do not specify linguaging as orientational behavior that helps conserve the system's organization. And because orthodox linguistics describes language mainly in the first domain, the established view of the function of language (transfer of information via linguistic sign vehicles) is far from being adequate, much less scientific. A scientific description of language is impossible if the phenomenal domain is ignored, in which the system (an individual human) is viewed as a singular entity, a unit of interactions with the medium (a community of talking humans) that contains the system and makes it possible. Such a view takes us to the realm of human ecology and informs a systemic approach to language as a crucial ecological factor in human evolution (Kravchenko 2021). As was argued in (Kravchenko 2020), organisms as living systems do not exist in a vacuum but form a functional unity with their immediate environment, 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 organization of the human organism-environment system, to become a true science linguistic explorations need a radically new perspective on the function and role of language in human society as a living system.

4. Ecolinguistics: defining the agenda

Such a change of perspective characterizes, to a certain extent, *ecolinguistics* as an emerging new paradigm in the scientific explorations of language (<https://en.wikipedia.org/wiki/Ecolinguistics>). However, it is not enough to proclaim something a new paradigm to really make it so; a new paradigm replaces what used to be “normal” science, and if this does not happen (and it hasn’t yet), any talk of a new paradigm is premature. In its current, largely underspecified metaphorical use, “ecolinguistics” serves as a cover term for various venues of research concerned with the role of language in addressing, discussing, and finding possible solutions to ecological issues (Fill & Penz 2018). In this, it remains largely Haugenian ecolinguistics (Haugen 1972), a methodologically inconsistent venue of research because of the implicit biomorphic metaphor, the language myth, and indiscrimination between the two different approaches to language known as cognitive internalism and cognitive externalism (Kravchenko 2022a: 32) — in other words, all the ungrounded epistemological assumptions implicit in the very term “linguistics”.

From contemporary ecolinguistic research one can learn, for example, that “central to ecolinguistics [...] are the core concepts of language, the environment, and the *interaction between them*” (Zhou 2017: 125, emphasis added). Haugen’s idea that a natural language interacts with its environment was also shared by Halliday (2001: 195), and is reiterated, for example, in *The International Encyclopedia of Linguistic Anthropology* (Stanlaw 2021), where ecolinguistics is defined as a “subfield of language scholarship which takes into account the physical and social ecological context in which language operates, and in turn, how language and discourse affect the environment and ecology”. However, language is not an agent-like entity that ‘interacts’ with, or operates in, the environment, much less affects it; it is humans that do. Neither does it make much sense to speak of the ‘relationship’ between language and the environment, unless we subscribe to the biomorphic metaphor “LANGUAGE IS A NATURAL ORGANISM”, forgetting Haeckel’s (1866) definition of “ecology” as the relationship of particular organisms with their particular environment. Therefore, to avoid the metaphor becoming a theory, ecologically oriented research 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, by treating languages as *integral* to living and the ecology (Steffensen, Döring & Cowley 2024: 5), as the organizational principle of the human organism-environment systems as living (cognitive) systems.

This poses the question whether the term “ecolinguistics” should continue to be used in its current sense, “a branch of (traditional) linguistics”, or as a general name for the new science of language grounded in constructivist, rather than rationalist, epistemology. In the latter case, a clear distinction should be made between the range of issues that form the theoretical fundamentals of the ecologically oriented language science, or *theoretical ecolinguistics*, and the broad range of ecological problems facing the humankind that could be effectively resolved by utilizing the theoretical principles, or the domain of *applied ecolinguistics*. Understandably, the ability of applied ecolinguistics to bear fruit and transform our praxis of living to the better by eliminating the clear and present danger of global ecological disaster will depend on the epistemological consistency and explanatory clarity of the principles of theoretical ecolinguistics. Remarkably, Halliday’s influential 1990 talk “New ways of meaning: The challenge to applied linguistics” (Halliday 2001), in which the ecologically potent use of language as a system of constructing experience of the world was emphasized, was a resolute step towards reconceptualizing the role of language in our life. Continuing the Whorfian tradition and stressing how our world view is constructed by language, he outlined three problematic spheres for a new applied linguistics (what I would call “applied ecolinguistics”): language planning, the register of scientific discourse, and of language and prejudice, involving the deployment of resources within the system that constructs sexism, racism, growthism and classism. However, because Halliday did not address the function of language as a biological phenomenon that played a crucial role in the evolution of our species, becoming our operational mode of living in the recursive flow of consensual coordinations of coordinations of behavior, his rallying cry to change the “tactics” of linguistic research was not backed up by a well-developed new “strategy”. And this is the major problem with the contemporary ecolinguistic movement as a whole, largely confined to the SFL and CDA frameworks (Law & Matthiessen 2023).

Notably, the emergence of ecolinguistics, while being a step forward in bridging the gap between linguistics and life sciences, does not signal a radical conceptual departure from the established view of language as a code (Kravchenko 2016b). As Steffensen & Baggs (2024: 75) observe, “ecolinguistics has adopted its linguistic toolbox from twentieth-century linguistic methodologies which rest upon the view that the foundational function of language is to transmute mental representations into publicly shareable (vocal or graphic) meaning-bearing symbolic structures”, and the ‘conduit metaphor’ continues to underpin the majority of ecolinguistic writings (Mühlhäusler 2019), sustaining the externalist account of language. For example, Steffensen, Döring and Cowley (2024: 1) argue that activities involving language are ecological and that much is masked by the verbal focus of linguistic theories. However, when one starts speaking of “human activities involving language”, the implication is that there may be human activities that do not involve language, and this is possible only if language is viewed as something external to human organisms as living systems. This takes us back to the question of the nature of humanness and the language-mind relationship, without a clear prospect of finding a resolution acceptable both theoretically and empirically.

On the one hand, speaking of the role of language in life-sustaining interactions makes sense only if there is an adequate understanding of the biological mechanism of life-sustaining processes in general. If, indeed, linguistic interactions 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. There is a necessity to address the question of the biological function of language — something that ecolinguistics in its current guise seems unwilling or unprepared to do. On the other hand, without understanding the 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. As observed by Mühlhäusler (2019: 20), “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.: 18).

To give more impetus to the already started process of reconceptualizing language as a scientific object of study approached holistically, 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 (Kravchenko 2024b), 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: 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. And the core part of this environment is the relational domain of language that characterizes and conserves the organization of human communities as living systems. This resonates with Piaget’s insight (1976: 15) that “[t]he living organism itself is not a mere mirror image of the properties of its environment. It evolves a *structure* which is reconstructed step by step in the course of epigenesis, and which is not entirely preformed” (emphasis in original. — A.K.).

The uniqueness of the human organism-environment system lies in language as a cognitive niche of the community of humans speaking the same language. It is this niche in which humans ‘happen’ as living systems: the ability to talk distinguishes human agents from non-human agents, it is a biological adaptation responsible for making us not only ecologically special but what we really are, *Homo sapiens sapiens*. To ignore the biological groundedness of human societies in language as that which organizes and conserves them as living systems, is to

overlook the obvious, that human society in general is an *ecological phenomenon*. To avoid becoming just another fashionable venue of research within the pre-science of linguistics, falling in line with socio-, psycho-, ethno-, bio-, neuro- etc. linguistics, ecolinguistics must clearly and *non-metaphorically* define its agenda as a science, that is, something that can help us understand our place and role in the world of the living better. Such a tentative agenda has been outlined in (Kravchenko 2022a) and includes issues that fall into three main categories: methodological issues, conceptual-theoretic fundamentals, and applied tasks.

Methodologically, to come up with a coherent answer to the question of what and why should be the object of the ecologically oriented language science, linguistic research should focus on the biology of language and cognition as a non-dualist (constructivist) epistemological framework, using a systems approach that synthesizes scientific knowledge across various disciplines bearing on particular aspects of humanness, such as evolutionary biology, (bio)semiotics, interaction studies, cognitive psychology, neuroscience, etc. Applied consistently and unwaveringly, such a methodology will allow language scientists to formulate the *conceptual-theoretic fundamentals* of the ecologically oriented language science in the form of coherent answers to questions about the subject matter of linguistic research, such as: What is languaging as uniquely human behavior? What is the role of language in defining and sustaining the human organism–environment system? What is the role of language in human ontogeny and phylogeny? What bio-ecological mechanism makes abstract thought possible? Answers to these and other related questions should *inform the social praxis of humans* in solving applied tasks, with a special emphasis on the ideology of education (Kravchenko 2016c), which must be divorced from the socially destructive code model of language and given back its original purpose — to bring out the potential of the human self that arises, together with the world, in the cognitive domain of language as the source of humanness.

5. Conclusion: What's next?

In science, a change of paradigm is a revolution (Kuhn 1962) — “a great change in conditions, ways of working, beliefs, etc. that affects large numbers of people” (www.oxfordlearnersdictionaries.com). The advent of Saussure’s structuralism as a unified theory in linguistic research was such a revolution in the 20th century, and the scale and magnitude of its effect on the “soft” sciences and, understandably, on much of social practices, first and foremost in education, is yet to be assessed and evaluated. It is often claimed that there was another, “cognitive” revolution in the soft sciences (Gardner 1985) that marked the emergence of “cognitive” linguistics as an interdisciplinary research project aimed at understanding the mind through the study of the role of language in cognition. However, despite the progress in its conceptual-theoretic development from first-generation (disembodied) cognitive science to the embodied, and then the enacted cognitive science, cognitive linguistics still may not be described as a unified theory; it is “a flexible framework rather than a single theory of language”

(Geeraerts 2006: 2), comprising various strands in contemporary research. As such, these strands may be compared, metaphorically, to crafty tactics in the absence of a general strategy (Kravchenko 2022b: 64), and without a well-defined strategy any revolution is doomed from the start.

Are there grounds to believe that ecolinguistics can bring about a revolution in the language sciences that would affect humanity by dramatically changing our beliefs and social practices, bringing hopes for a better, more balanced and harmonious world for everything living? I am certain that a paradigm shift signaled by the change of perspective in the study of language is not just imminent, it's been long overdue. Moreover, not only is it possible, but it is also inevitable, if we are determined to do our best to sustain all life on Earth. It is our responsibility as the key species in the world of the living. This simple truth will dawn on us if we take a view of language based, not on a metaphor (either biomorphic or instrumental), but on an understanding that language is a crucial functional feature of humans as a species biologically, ecologically, and evolutionarily. Ecolinguistics is not about language and ecology. It is about the origin and nature of humanness.

However, from nothing comes nothing. To facilitate the slow process of abandoning the time-old beliefs and misconceptions about language to which linguistic research has been held hostage far too long, a consorted effort should be taken by the community of ecologically oriented language scientists to show, clearly and convincingly, what is wrong with linguistics as the “normal” science and why it has been unable to affect, in any noticeable way, the human praxis of living, failing to meet the standard criteria for theory adequacy — accuracy, consistency, scope, simplicity, and fruitfulness (Kuhn 1977: 321ff). The road to new knowledge and a new worldview may be long and winding, and it is going to take time. But ecologically minded language scientists must not be discouraged, because only the one who walks will master the road. And the road itself is created through walking.

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Article history:

Received: 13 June 2024

Accepted: 16 January 2025

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