Semiosis as Eigenform and Observation as Recursive Interpretation

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> **Context** • Recent decades have seen the development of new branches of semiotics, including biosemiotics, cognitive semiotics, and cybersemiotics. An important feature of these concepts is the question of the relationship between the linguistic and extralinguistic world: in particular, the constructivist question of the role of observation and the observer in semiosis. > **Problem** • Our understanding of the observer's role in the framework of second-order cybernetics is incomplete without understanding where in the observation the significant activity, semiosis, takes place. By describing this process, we will see that semiosis has the structure of an eigenform. I will concentrate on linguistic semiosis, and will illuminate the role of the sign and interpretation, emphasizing the scheme and logic of this process. > **Method** • I use theoretical and conceptual methods of argumentation, such as logical (deductive) and philosophical (phenomenological) proofs and thought experiments. > **Results** • My argumentation underlines the importance of including interpretation (via the observer) in the process of signification. It reveals the reciprocal connections among all three elements (sign, object and interpretant) and their cyclic nature. I show that semiosis works according to the principle of an eigenform because of the cyclic and recursive nature of semiotic interpretation. > **Implications** • My conclusions have productive implications for epistemic theories, linguistic theories, philosophy of language, theories of semiology, and semantics. They support the idea that we are unable to understand the world beyond language. Linguistic semiosis is an eigenform that creates the world in itself and through itself. The sign and the object are mutually and referentially related to each other. > **Constructivist content** • Using the concept of eigenform helps to clarify how linguistic semiosis allows people to exist in language, bring forth objects and meaning potentials and construct reality. In this process, human beings self-fabricate as observers and, using aspects of "language," become interpreters. > **Key words** • Eigenform, interpretation, interpretant, linguistic semiosis, object, recursion, semiotics, semiosis, sign.

Introduction

«1» The past century was a century of semiotics. In philosophy and many branches of science, it was marked by the recognition that we live in a world of signs. Human activity in the cognition and interpretation of the world, cultural and social interaction is largely sign-oriented. In the first section of this article, I demonstrate that language, and more particularly linguistic semiosis, is a system that can be described as an eigenform. Semiosis (*G. sēmeiōsis,* from *sēmeion,* "sign") is the term accepted in semiotics that refers to the process of generation and functioning of signs (Eco 1979). Signs are used to designate and significantly replace other objects. Objects of various types can act as signs: abstractions, things, phenomena, properties, relations, actions, etc. Of particular interest to me is that various objects might act as signs, becoming such only in a sign situation (semiosis). Charles Morris specifically highlighted the role of semiosis in the formation of a human being:

"Men are the dominant sign-using animals. Human civilization is dependent upon signs and systems of signs, and the human mind is inseparable from the functioning of signs – if indeed mentality is not to be identified with such functioning." (Morris 1938: 17)

«2» The next section identifies *semiosis as a system*, since it is important to show that semiosis is arranged as a global system of signification, which has the following characteristics: inclusiveness, closeness and self-reproduction (autopoiesis).

«3» In the following sections I highlight the importance of the idea of interpretation as a practical communicative activity in semiotics. To this end, it is necessary to mention Charles Sanders Peirce, who used the concept of semiosis to characterize the triadic nature of an elementary sign relation: object, sign, and interpretant. According to Peirce,

"[a] Sign, or Representamen, is a First which stands in such a genuine triadic relation to a Second, called its Object, as to be capable of determining a Third, called its Interpretant, to assume the same triadic relation to its Object in which it stands itself to the same Object." (Peirce 1955: 99f)

«4» By "semiosis" Peirce meant the process of sign formation, where it was revealed that every sign is, by necessity, an interpretation of the sign preceding it (Peirce 1955). In the process of semiosis there is no final object and no final interpretant; nevertheless, only due to the relations between the sign and its object do we recognize something that is located beyond the boundaries of sign systems. Semiosis is the primary process, which cannot be thought of in closed logic, and Peirce's semiotics is one of the possible ways to go beyond the boundaries of the world of binary oppositions as per Saussure's semiology (Collini et al. 1992: 8).

«5» Peirce's triadic structure of the sign plays an important role in my interpretation of semiosis as an eigenform. I aim to demonstrate that signs cannot implement ▶

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their function unless they are interpreted. In other words, signs have to be interpreted in order to be signs. Interpretation is the relation between the sign and the object in the following sign (for example, a certain reaction of a person to the perceived sign, the explanation of the meaning of a word with the help of other words, etc.), and perhaps has no boundaries.

« 6 » By using Pierce's theory of signs, one can attempt to trace the evolution of our understanding of the meaning of signs as a function of an observer's experience. The crucial role of experience in semiosis was understood by Charles Ogden and Ivor Richards, who wrote: "If we recognize […] the fact that experience has the character of recurrence […] we have in this all that is required for the theory of signs" (Ogden & Richards 1927: 55; cf. also Varela, Thompson & Rosch 1991). This initial assumption in the analysis of signs – not considering language as a thing but languaging as coordinated behavior of observers in a consensual domain of interactions (Rocha 1996) – opens up the possibility of analyzing semiosis, and linguistic semiosis in particular, as an eigenform.

« 7 » In order to comprehend how semiotics can become a principle that explains many facets of everyday life, the concept of eigenform is applied. I show that the key aspects of semiosis can be interpreted and described as a process arranged according to the principle of eigenform.

« 8 » I understand that using eigenform as a model for language can incite the desire for a certain universal calculation, and those who support this endeavor seek a proto-language of forms with the simplest and maximally plastic alphabet and syntax (Spencer Brown 1969; Kauffman 2003). For me, this is yet another reason to connect eigenform with language. Additionally, the notion of interpreting semiosis as a system supports me in applying the methods of second-order cybernetics to the analysis of language. In particular, I refer to the specific semiotic view that the connection of the *signifier* to the *signified* is not conditioned by any properties of the components of the sign. However, this appears only within the framework of the entire system that unites the signs. Semiosis, as a sign generation procedure, is the process by which the system

functions, and takes place as a result of exchange between various parts of the system (Saussure 2011).

« 9 » Correspondingly, in the first section, I hypothesize that linguistic semiosis is a finite system, the "external" description of which is impossible, as it is not "interpretatively terminal" (Love 2007: 705). In this article, I concentrate on one relatively small aspect of the idea of eigenform suggested by von Foerster: neither the observer nor the thing being observed can precede the other, but instead they mutually cause each other (Foerster & Poerksen 2002). I focus on the *problem of signifying*, and in particular, on how *signs correspond to objects*, and show that the sign (always envisaging the interpreter) and the object do not precede the other or exist apart from each other, but on the contrary, condition each other. Thus, the interpreter creates the world of objects (through interpretation), but in turn is created by the world of objects. It is thus a model of self-referentiality that structures language as an eigenform. In my view, the subject corresponds to the interpreter, and can also be considered the observer, so I use "interpreter," "subject," and "observer" synonymously.[1]

Semiosis as an extensive process

« 10 » According to von Foerster (1977), an eigenform is a recursive form of description-construction (x) of something by a subject, which is a description-construction (x) of this very describing-constructing subject: $x = f(x)$. Kauffman attends to the recursion procedure and then implements the law of inversion on the form and content. An eigenform appears to be a specific part of the form of a cognizing subject: a subject operator capable of producing such content, which immediately becomes the form $E = F(F(F(…)))$, then $F(E) = E$ (Kauffman 2005).

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1 | Since I do not focus on bio- and cyberse-miotics, I refrain from dealing with the concept of Umwelt and the works of semioticians such as Thomas Sebeok, John Deely, and Paul Cobley. For a discussion of the difference between Maturana's "languaging" and Umwelt see Cobley (2010).

« 11 » The following is a typical example of this form: $S(S) = S$, where S is the system. If we imagine a singular world (global system) as existing (S_e), but also know about its existence (S_k), this leads to the following: $S_k(S_e) = S_e$. And if system-knowing is now interpreted mathematically as the function of the system (f_S), and the system-knowing itself (S) as its argument (mathematical x), we get the following formula: $f_S(x) = x$, or $x = f(x)$ in mathematical terms. Since it is this formula, called an "eigenform," which acquired dominance in the modern calculation of forms, I take the following definition as the basis for the next part of my article: an eigenform is a characteristic form that produces non-eigenforms and contents with the help of the same form, acting simultaneously as its own form.[2]

« 12 » One can formulate the following assertion: in order to be able to cognize something it is necessary to build a system of a higher order that includes the examined object of cognition. Taking into account that each object might act as a comprehensive object for the explanation of another object, these objects might be called "forms." Accordingly, a human being as a highly organized system can cognize and equally create any forms within the framework of the systems of a lower level that one is able to cognize. Such forms might be called *improper*, as they might act as external in relation to the cognizing system. As such, a human being cannot create a form that is "genuinely human" or *proper*, as it does not represent and cannot imagine the system of a human being as a whole and cannot take an external position of a higher order in relation to it. Thus, creation in the domain of eigenforms will always remain either incomplete or contradictory. This is analogous to Gödel's incompleteness theorem.

« 13 » This leads to a further hypothesis of this article, i.e., that language, or, to be more precise, linguistic semiosis, is such a proper form (eigenform), in relation to which a human being cannot take the stance of an external observer or a researcher. A human being is always already submerged in the process of operating signs and cannot take a position external to semiosis.

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2 | Escher's well-known image of hands drawing each other ("Drawing Hands") vividly illustrates this interpretation of eigenform.

« 14 » Let us assume that the human world is a language; how does this statement relate to human consciousness? If we pose a simple question about what appeared first in the evolutionary process – human consciousness or language – we will immediately find ourselves at the epicenter of the constructivist problem of language, in which the answer about mutual and circular causality is formulated. In order to clarify the appearance of consciousness, one has to assume the existence of language, but in order to explain language, one needs consciousness. In this matter, I refer to Wilhelm von Humboldt, who wrote that consciousness and language can be disclosed only through cognition of each other, as one defines the development and existence of the other. Thus, he questioned the interpretation of language as arbitrary signs:

" The enlargement of concepts and languages must bring it about that new objects are designated in comparison with others already known, and that the mind's method of forming its concepts is carried over onto the languages as well " (Humboldt 1999: 268).

Humboldt based his theory on the assumption that human beings are predisposed toward creation and the "co-evolution of consciousness and language" (Yunker 1987), which are closely related and implemented in each other.

« 15 » This suggests that when consciousness is explained through language, and language through consciousness, we deal with an eigenform. Consciousness and language exist in co-evolution (Arbib 2001).

« 16 » The form of proper semiosis can be explained by the following example. Being inclusive, it cannot have an external form, and therefore it is its eigenform: or, to put it more correctly, the identity of its form and content. If we represent semiosis as shaping meanings (S_m), but also as immediately signifying these meanings (S_s) (as in the case of the expressions of natural language "it is snowing," "it is true that it is snowing," "it is true that it is true that it is snowing"), the following will result: $S_m / S_s = S_m$. If semiosis is to be interpreted mathematically as a function, and its meaning as its arguments, we get the formula $f_S / x = x$, or $S = f(S)$. This means that language speaks for itself and produces its own meanings, and it means that semiosis is always auto-semiosis (it generates itself). It appears as if self-observation is integrated into the mechanism of linguistic activity. For example, observing one's own speech is manifested in recursion, preunderstanding, self-correction of one's own and another's speech, etc. Speech self-control is part of the general mechanism of cognitive monitoring (Flavell 1979). By using language and also reproducing it recursively from speech, humans implement language as an eigenform. This is only possible due to the specific roles of interpretation and of the interpreter, which are always included in the process of semiosis.

Sign as interpretation

« 17 » Peirce and Morris specifically emphasized the role of interpretation in the process of semiosis (the former in relation to the concept of "interpretants," and the latter with regard to the concept of "interpreter"). In turn, interpretation allows us to consider the role of consciousness and the interpreter as important for the functioning of language. When we try to comprehend the relationship between humans and language, we see that these relationships are not described in terms of non-eigenforms. Language is not an object for the human being (the human being cannot treat language as an object), and the human being is already included in language in order to be a human being. By describing or explaining language, we already use language, and we are located within it. It is impossible to leave the domain of signs, since it encompasses the whole of the human world, as this world is interpreted in signs. Thus, language might be interpreted as an eigenform of the human being.

« 18 » Taking Peirce's triadic structure as a basis, Morris suggested further elaboration, according to which the three stated components of semiosis are to be complemented by another one: the interpreter, that is, the subject producing and interpreting signs. Morris writes:

" The process in which something functions as a sign may be called *semiosis*. This process has commonly been regarded as involving three (or four) factors: that which acts as a sign, that which the sign refers to, and the effect on some interpreter in virtue of which the thing in question is a sign to that interpreter. These three components in semiosis may be called, respectively, the sign vehicle, the designatum, and the interpretant; the interpreter may be included as a fourth factor. " (Morris 1971: 3)

« 19 » Morris, using Peirce's ideas and developing them creatively, builds, in essence, an original semiotic theory. Semiosis is still understood by Morris as a process, where its components interact but are not defined on their own. Morris attributes more gravity to the relationship principle. In semiosis, the following interact:
- a *sign*, interpreted by Morris as a sign means, or a sign vehicle;
- a designatum, i.e., something that the sign refers to;
- an *interpretant*, i.e., the influence, which is the behavior of the interpreter conditioned by the sign; and
- the *interpreter*, the active participant in the semiosis process.

All of these components implicate one another. Signs are multifunctional. They
- signify and denote their objects;
- determine interpretants; and
- imply one another.

« 20 » According to Morris, it is possible to highlight and specify the syntactic, semantic, and pragmatic aspects of language and, accordingly, the disciplines studying them (parts of semiotics): *syntactics, semantics,* and *pragmatics* (Morris 1964). The focus of my research lies within the pragmatic aspect, as it provides the most efficient way to see how the process of interpretation works and what role is given to interpreters. In particular, one can ascertain that the pragmatic side of semiosis might be implemented only in the community of interpreters, amongst whom there is accord regarding the rules of interpretation. However, one can achieve this accord only in the course of interpretation, which is reproduced all the time. The activity of a society is continuous semiosis.

« 21 » In order to clarify how I understand the correlation of sign and interpretation, I will provide a simple illustration. For example, if we define a traffic light from the point of view of objective signs (a device with three conventional colors – red, yellow, and green – kind of basic, or objective sign

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s_o), and place it at a crossroads, the lights stimulate conventional behavior – stop, prepare to stop (caution), and go. However, by perceiving these signs, an individual generates new information and provides an assessment of the sign based on their knowledge, experience, and culture. As a result, in the individual's consciousness, the sign s_s (subjective sign) is formed. Let us consider the situation with an empty crossroads at night, with the sign as a red light (s_o). The subject's reaction to this situation might be the creation of the sign, s_s, in their consciousness, denoting the situation at the crossroads as safe and allowing movement ("go"). The individual knows what the red color of the traffic light means, but behaves according to the specific perception that the red light at the empty crossroads at night is also a sign of safety. In other traffic situations, the individual sign s_s might be completely different. The subject must apply *interpretation* for the process of signification to take place. This example is important because it demonstrates a situation in which one can talk about the objectivity of the sign only conditionally; the subject reading the information on the red light as the command "go" brings their own interpretation of the sign to this particular situation.

« 22 » Consequently, the characterization provided above allows for strengthening the role of the interpreter, and also allows us to say that signs do not form separate classes of objects outside the activity of the *subject* in *the process of semiosis*. There is no sign outside of the activity of the *interpreter*, which sets the triadic sign relation. The sign does not exist without exerting influence on the subject. Even if we keep the objective sign (s_o), its participation in the process of semiosis is reinterpreted repeatedly. Strictly speaking, one can reinforce the original statement as well by assuming that the objective sign itself is also always a temporary, conditional, and situational convention. That is, s_o is also s_s, however, temporarily provided with the current status of s_o by the participants of communication. We will stipulate here that the spectrum of interpretations of the sign might be marginally wide:

- Signs can cause certain emotions (emotional or direct interpretants).
- Signs condition any action (energetic or dynamic interpretants).

- Signs influence the course of thoughts or behaviors (logical, normal, or final interpretants).

« 23 » It is possible to say that with certain stipulations the idea of s_s **could be related** to the interpretant (Peirce 1955), meaning (Husserl 2001), German *Sinn* (Frege 1948), the signified (Saussure 2011), content (Hjelmslev 1963), thought, or reference (Ogden & Richards 1927). However, in our discussion the sign is understood not by its exceptionally referential (and in this respect static) correlation, but as a dynamic activity. In this way, the interpretant works as the "triggering" factor of the semiotic process. It appears at the moment the subject starts to interpret. Therefore, it holds both of the poles (sign and meaning), which in turn hold it. It can therefore also be aligned with the pragmatic force as it is understood by Geoffrey Leech (1990).

« 24 » It could, therefore, be claimed that meaning should be considered in light of immediate practice, practical results, and expectations, from the point of view of the choice of actions. The interpretant plays the key role, being implemented because of the activity of the interpreter-subject. In this context it is important to note the inclusion of the subject, as well as the rigorous characteristics of the sign's pragmatic types of influence on the subject (the interpreter) in the general theory of signs. It is also important to consider the sign-object not as a part of a static system, but as part of a process. For the purpose of this article, it is particularly important that all interpretants are the responses of the interpreters.

Inclusion of the interpreter and the question of the limit of interpretation

« 25 » The essence of the sign is revealed in the process of interpretation, which allows us to understand why meanings are not frozen in a closed, absolute system. "The semiotic process of interpretation is present at the very core of the concept of sign" (Eco 1984: 1). Consequently, the sign could be implicitly considered a communicative mechanism.

« 26 » One can argue that there are instances of complete interpretations, e.g., the

literal meanings of words. Intuitively this seems acceptable. Those are the meanings for simple concepts that can be found in a dictionary and are fixed in a language at that historical moment.

« 27 » However, this is a naive view, as there are practically no literal meanings in a language at any given time. For example, any statement (linguistic expression) might be interpreted metaphorically. The limit for any complex linguistic structure will always be a simple word construction that corresponds to a particular object. This can be shown with the help of ostension, via direct indication. However, even in this case one needs to understand that the final element will be the result of interpretation. "World" can be demarcated (categorized with the help of words) without limitation (Rosch 1978). As Willard Van Orman Quine (2013: Chapter 2) has shown, the impossibility of exact verification of variants of isolated objects in the world (as in the case of calling a rabbit "gavagai") generates the problem of inscrutability of reference. However, it is this inscrutability that demonstrates the active role of the interpreter in the formalization of such elements of language as signs. Thus, interpretations help to generate and maintain the process of semiosis. These interpretations owe their existence to the interpreter.

« 28 » The interpreter does not stand out (metalevel) or take a fixed position with regard to the process of interpretation. For example, to see a theatrical performance (which is without any doubt an interpretation), I have to perceive myself as a person who understands what theater is, and because of this I interpret myself and my perception in a certain way (for example, I interpret myself as the audience). The position of the observer is not fixed either, as after the interpretation is completed the result is passed on to the next interpretation. Semiosis can be characterized as an ongoing process, i.e., at no moment should interpretation stop. In this respect, the activity of the interpreter is maintained continuously.

« 29 » Still, if literal meaning is unattainable, and any interpreter brings their own flow of interpretations, why is there no absolute arbitrariness in our linguistic communication? Why are different interpretations synchronized one way or another? The answer is that this happens because some

interpretations are limited by other interpretations. The flow of interpretations always encounters other possibilities. This process of limiting interpretations has different grounds for different observers. For example, one can point out interpretations that became natural (accepted as permanent) in this or that culture or historical period. As a result, they limit and dominate other interpretations. Or static effects can be triggered – with the majority of votes, the most common knowledge will be acceptable.

« 30 » Thus, semiosis is always unfolding with the help of interpreters. From this we can conclude that the process of signification is not someone's personal experience; society confirms it. If it is impossible to define which interpretation is preferable, one can at least take into account that, contextually, some interpretations are not valid. We can thus maintain that unlimited semiosis, freely generated by various interpreters, while accepted as a hypothetical idea or epistemological abstraction, necessarily takes the form of limited and certain interpretations that are sanctioned by society.

Semiosis as an eigenform and the recursion of signs

« 31 » The equation $x = f(x)$ is special: the identity of the form with the content emerges within it, a property that is absent in any other form. Conventional (non-proprietary) forms only reflect external objects and primary content (Cariani 1991). However, if the form is able to direct its secondary attention to the forms themselves, then images pertaining to a higher level, which are called metaphors, appear. Finally, if these metaphors remain part of a primary form, we are dealing with something containing its own form: in other words, an eigenform.

« 32 » The idea of an eigenform is closely connected to the concept of recursion. Von Foerster (1977) placed emphasis on human cognition as an embodied eigenform. Thus, we see a so-called "looped," "self-oriented," and recursive type of knowledge, where reflection on that knowledge is smoothly integrated into the subject of knowledge (Pierce 2016). An eigenform expresses the nature of various final objects productively; in essence, for approaches that do not envisage

metalanguage as an attempt to construct a metadescription, there will be a contradiction. Above we confirmed that the linguistic sign constitutes a three-term relation, where the following act as terms:
- a *sign*;
- inner sign produced by the *interpreter's perception*; and
- the *object* represented by the sign.

These three have a *mutually referential connection*, i.e., one exists only by referring to the other; neither the sign nor the object precedes the other.

« 33 » As the sign and the object refer to each other, firstly, the object cannot be isolated (removed from the structure of the language), and secondly, it is impossible to define what precedes what: the sign or the object. If we accept this structure, then we should agree that there is no relation of precedence whatsoever between them. They exist *at the same time*, concerning and in relation to each other; i.e., whenever there is one (the sign), there is always another (the object). In this sense, the concept of an eigenform works well: form does not precede content, and content does not precede form. Within the boundaries of the sign, the structure of productive circularity comes into play (Füllsack 2014). This insight corresponds to Peirce's "unlimited semiosis," which postulates that a sign can be interpreted by another sign or a chain of signs, and that the development of the sign's meaning occurs only in this manner. This means that the semiotic process has a circular organization (Kravchenko 2004: 12). If we take into account that the sign does not precede the beginning of interpretation and does not exist prior to it or beyond it, then the mutual retention of the sign and the interpretation will be the second most important principle of semiosis. This shows us the relation to the eigenform model: von Foerster (1977) suggested that the things we are accustomed to calling "objects" (tables, trees, houses, etc.) must be understood as the results of the system's operators, which can be compared to the structures of quantum mechanics, where the values appear in relation to the conditions of observation.

« 34 » I try to enhance this concept using Ludwig Wittgenstein's theory of language, according to which the only activity of speech is propositions (sentences) and

the only content of the world is facts (Wittgenstein 1922: 1.1). Facts and sentences have the same *structure*. To illustrate this, we can think of a sheet with two sides. "It is raining" is simultaneously a fact and a proposition describing the fact. Using the structure of an eigenform to understand this structure, it is possible that "it is raining" is a sentence that describes the fact that "it is raining," which is constructed by the sentence "it is raining," which describes the fact that "it is raining." This structure envisages an infinite regress, according to Kauffman's model (if $OA = A$, then in place of A one can put OA, getting $OOA = A$. One can continue like this endlessly, gaining $OO…OOA = A$).

« 35 » To sum up, we can try to present language or the specific procedure of semiosis as a standard eigenform model: the signified world (W_s), which is also the existing world of objects (W_o), will be formalized as $W_s / W_o = W_s$. The world is always the signified world (which means that it is interpreted by the subject) and language always already signifies (particularly) *this* world. The world is structured and categorized by signs. The world = the signified world. This formula can be read vice versa: the signified world is the world in which we live; it is the only world, that which we know and assume to be "mind-independently real."

« 36 » Thus, linguistic semiosis can be understood as the process of constructing the experienced world. Still, signs do not create the physics of the world. However, they do create the meanings (interpretations) of objects. To use language is to deal with interpreted signs and not directly with "objects." Correspondingly, to speak or to think means to deal with meanings. Meanings are always set up by language. However, in this model, the necessity of dividing the world into "the world in itself" and "the world given to us in signs" is lost. Depending on what language "tells" us, the world will be produced for us as a certain "reality" signified in advance. The model of language as an eigenform presupposes that language does not "fix" "reality," but rather "constitutes" it. However, prior to semiosis, there are no signs; they have to mean something to be signs. Such is the world as an eigenform. The sign (of an object) = the sign or meaning (of the object) = meaning: $S(R) = S$. Language first "creates" the world and then recognizes

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it. It is possible to say that it creates it in the first cycle and recognizes it in the second. However, this sequence is meaningful and not chronological. These two stages are always simultaneous. As Humberto Maturana says, "[w]e human beings exist in language" (Maturana 1988: 78). Linguistic semiosis and the multiple meanings generated by it are the very world that human beings can cognize (Kravchenko 2008a).

« 37 » Using one of the literal meanings of *recursion*, it is possible to demonstrate that semiosis is a *recursive* process. The simplest linguistic demonstration of recursion is the following model. If we are given a sentence, the meaning of this sentence will be another sentence, which in turn will require another sentence to clarify its meaning, *ad infinitum*. For something *meaningful* to be uttered, it should be formulated as a sentence, consisting of words, for which we would need to formulate sentences to disclose their meaning. Consequently, we have to introduce new words that demand explication in new sentences, and so on. The meaning might be conveyed, if at all, by the object of the following sentence, the meaning of which is not conveyed, either (Russell 1905). This partially accords with Kauffman's model of "signifying shift," in which he develops the idea of a situation in which the name becomes part of the object in the composition of a single whole (Kauffman 2005). In this model, the endless composition of the operator of a metaname is the structure of the denotation operator. This is an example of semiotic interpretation of an eigenform.

« 38 » Based on these assumptions, one might abandon rationalist interpretations of meaning. We can draw a conclusion from here that it is not possible to talk about objects as "things in themselves" outside the space of semiosis. Objects have no sense whatsoever without the background of sign operators and can only arise in the substantial sign medium, represented as the system of operators of semiosis. "Inner objects" also arise as forms possessed by the operators of signification: our thoughts, feelings, conditions of consciousness, and lastly, our own "I"-thoughts. It is possible for the operators themselves to be represented as invariants of other operators (Kampis 1991). Moreover, it is this principle that underlies what I will say below in §46 about the interpreter,

who must become a part of the interpretation. The ability of arguments to become operators, and vice versa, is also one of the characteristic peculiarities of the "eigenform calculation."

« 39 » When the message is perceived, the interpreter applies what has already become the result of interpretation. Additionally, by interpreting something, interpreters change themselves; the interpretations transform them, and that means inclusion in new interpretation, which interprets them anew. By interpreting the object, the subjects also interpret themselves.

« 40 » Thus, similarly to the inclusion of the observer into the thing being observed, the interpreter is indispensable to the interpretation. However, we cannot put the interpreter and the interpretation into a metaposition. Thus, the principle of an eigenform means that the interpreter takes the same place in semiosis as the object she interprets. Semiosis embraces the observer exactly as envisaged by the formula $x = f(x)$. Such a mechanism brings to mind the basic tenet of autopoiesis: "Everything said is said by an observer to another observer who can be himself or herself" (Maturana 1978: 31).

« 41 » Any indication, by definition, is a reference to something external to a language. At the same time, this indication is performed *exclusively within* the process of semiosis. Differences between a tree and a "tree" do not exist in the world. This differentiation is generated by semiosis, and correspondingly inside of it, for all that the tree is understood as part of the external world (Medina-Martins & Rocha 1992). Notwithstanding its "external" character, this "object" remains *part* (or *another side*) of the differentiation, created by the sign that includes the interpreter. In this sense, the external world belongs to semiosis as a part of a differentiation generated by semiosis.

« 42 » Such a model is possible because the "object" to which the "sign" refers also acts as a "sign" itself. The "object" exists because there is a dynamic referential network of signs and, therefore, interpretations. The "object" as a specific effect is intrinsic to semiosis itself, and the interpreter plays a significant role in its formation.

« 43 » Here the most important principle of recursion becomes essential for maintaining the eigenform model. Mutual

referentiality does not simply involve going around in a circle, such that the object and the sign remain the same. It occurs according to the recursion model – with a multiplication of references, where each new sign takes the place of the object in a new cycle of semiosis.

« 44 » This eigenform model means that the process of cognition, as a part of semiosis, always has the form of recursive narrowing or widening, thus, going beyond into infinity. Similar recursions can be found in the natural language. The circular and recurrent nature of semiosis also reveals itself in the correlation between language and praxis. All of human praxis (culture, social norms, traditions, and ways of social interaction) bears the imprint of language. Language outlines for us the domain of potential meanings and, therefore, actions. In this respect, language mediates a person's activity and shapes the communicative environment that creates the whole domain of human praxis. The role of interactions as a productive domain of adaptive activities is crucial at this point (Kravchenko 2008b). However, it is also obvious that language itself is influenced by human praxis in its many manifestations. Language bears within itself an imprint of the epoch and culture; it is derived from historical and social domains, is immersed in these domains, and sprouts from them. Thus, we receive the circular structure of an eigenform, in which language influences culture and society. Neither language nor culture precedes the other, and neither can exist apart from the other. Recursion in this model will be revealed at every new "spiral" of formation. Some form of social communication may be explained by a language norm, but to explain this language norm we have to learn more about social communication, the explanation of which requires a language norm, etc. Each of these recursive steps will be a product of interpretation.

« 45 » The following question might arise: is it not possible to reach a finite number of steps in signification, and finally point at an object not interpreted by anything or anyone, i.e., at the object sui generis? To answer it, we can introduce the concept of reiteration (the analogue of George Spencer Brown's *condensation*, Spencer Brown 1969), where the *appearance of a world is a reiteration or processing of signs* (tokens). One can

pay attention to the object or the sign, but the differentiation itself cannot have any contradiction, or, in other words, the external referent of this differentiation will be an uncertain space, as stated by Spencer Brown's second axiom. Thus, an uncertain space turns out to be the consequence of the delimitation (marking) of the boundary, or the differentiation (ibid). In this sense, one can talk about an endless approach toward the object. Even if certain objects are beyond the boundaries of language, we can endlessly approach them, producing new iterations and reiterations. Following Peirce's theory, we assume that the object is the result of the application of the sign in the course of active interpretation. The sign shapes the object, and the object is shaped by the sign. To the extent that this process is impracticable without an interpreter, it is more correct to say the following: the interpreter shapes the object, and the object shapes the interpreter. This is how the eigenform reveals itself. It presents its internal and external structure and thus generates the productive semiosis, and hence useful ontology. It turns out to be "alive."

« 46 » As a result of such self-arrangement, the world knows about itself. Via the observer (interpreter) and in observation (interpretation), the world arranges itself in language, which is the world itself. Or the world generates the interpreter, who generates the world, which can be read backwards – the interpreter generates the world, which generates the interpreter. Hence, we get the uroboros image, which is the best illustration of an eigenform. In this context, this means that while the interpreter shapes the world, the interpreter itself appears *in this world as belonging to the world*, and in this sense does not form a meta-level.

« 47 » When we bracket the "real" or "extralinguistic" dimension, the interpreter might have an unrestricted freedom of signification. Unrestricted by the imperatives of reference, it is possible to communicate. As Niklas Luhmann (1990) stated, the major part of these communications will be communications about communication. It is only possible to attribute meaning to an object inside semiosis, i.e., within the boundaries conditioned by the system itself. The object sign is then an "object sign" that constitutes semiosis by indicating the objects of the "ex-

ternal world." One is able to talk about this world only when running an internal circle of semiosis, or "making a loop." Each circle of this loop is a meaningful interpretation (from micro- to macro-formations), which constitutes the world as a whole and is always meaningful in language.

Conclusion

« 48 » My results support the idea that we are unable to understand the world beyond language. In a certain sense, I have also tried to show that research into the "world external to language" is unproductive and pointless. We are by nature the inventors of ourselves; we construct *our* world and *our* meaningful surroundings, which, principally, *are always already ours* (Glasersfeld 1990). There is nothing "external" to language, or, more correctly, what is external to language is the other side of the internal (on extralinguistic objects, see Mitterer 1992; Riegler & Weber 2013).

« 49 » Signs enable systems of communication and systems of consciousness since they make self-separation, self-isolation, and closure of said systems possible, where their separation from the rest of the extralinguistic world is understood as the second external side of the sign (Umerez 1995). We cannot deny that this cognitive *world*, inaccessible to the stated systems, might be comprehended as a form of chaos, as the place where differentiations and boundaries have not been made *as yet* – as "wild" is similar to our understanding of primitive societies, like a transcendental god or noumenal world when it comes to philosophy. It might even be considered a primary singularity in modern scientific interpretations. However, all things considered, this world cannot serve as a referent of communicatory signs.

« 50 » Thus, language is our own eigenform par excellence. A constant recursion creates an always-arranged world of experience, where the object and the sign make up an inseparable unity. Descriptions are always self-descriptions. I applied this model to language, defining the stance taken by language to the world.

« 51 » Underlying this model is the problem of generating meanings – namely semiosis – and in particular, the problem

of how signs acquire their meaning. As we have seen, in order for an object (e.g., a "tree") to be recognized by a subject, we need to apply language (the system of observation-signification). We cannot say that language and world are independent from each other. On the contrary, if we consider them to be mutually referential, we can offer a more coherent model. The principle of the relation between the sign, object, and interpreter helps with this. Everything that happens in the process of semiosis happens inside interpretation. However, this "inside" also has its "external side" – the world itself, which is meaningful to the degree to which it appears to be interpreted. Its form is a whole and is represented by two sides – signs and objects, sentences and "facts" – which cyclically or mutually referentially create and support one another by means of interpretation. Signs are not given in themselves and do not form separate classes of objects outside of the subject's activity. They appear in the process of semiosis. Without the interpretant there is no sign and there is nothing being taken into account. However, the role of interpretant is itself caused by something's functioning as a sign, as the interpreter acts as such due to the necessity of taking something into account indirectly, i.e., the interpreter is acted upon by a sign.

« 52 » Thus, semiosis is an eigenform that creates the world in itself and through itself. The sign and the object are in a mutual, referential relation. However, their mutual referentiality does not simply form a circle where the object and the sign remain the same. It forms a model of recursion – a multiplication of references, where each sign takes the place of the object in the new cycle. This means that every interpretation becomes the subject of another interpretation. To understand what is being said in this or that interpretation, we have to generate a new interpretation. This is how the principle of recursion works: by means of enclosure of interpretations into one another we move toward understanding. In this respect, the interpreter is always part of the interpretation, which has a looped appearance. Strictly speaking, as a result of such a scheme the world must appear, which, if we look closely, is always the result of semiosis – comprehension. The human world = the interpreted world.

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