

**DUALITY AND SEXTETS:
A NEW STRUCTURE OF CATEGORIES**

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PREFACE

This thesis presents some results of the work on the structure of a web of categories I have been doing since 1987.

In the initial phases of my research it benefitted a lot from long and frequent discussions with Ivo Vahur and especially Riho Viik who introduced me to the sextets rooting partly in Chinese thought (I Ching). I reinterpreted them as types of relations between opposites and so I envisaged the perspectives of an universal classificatory logic. Later I was influenced by Margus Mägi who worked in the same direction, supported on classical Western philosophy, especially Hegel and Marx. Discussions with him helped me to understand duality structures, originally distilled from Kant's work. So I elaborated a conception of universal thought structures underlying the stocks of categories we tend to apply in different fields of thought.

On Kalevi Kull's invitation I applied my ideas to semiotics, especially biosemiotics, being introduced to semiotic approaches, especially Charles Sanders Peirce's ideas. I borrowed the title of my thesis from the title of his seminal paper "On a New List of Categories". In some substantial aspects my work is a continuation of his work towards a system of semiotics though it is revised in some equally crucial aspects.

Parts of this work have been presented in the international semiotics conferences in Copenhagen, Prague, Imatra, and Tartu.

LIST OF ORIGINAL PUBLICATIONS

This thesis is based on the following articles, which are referred to in the text by their Roman numerals.

- I Luure, Andres 2001. Lessons from Uexküll's antireductionism and reductionism: A pansemiotic view. *Semiotica* 134(1/4): 311–322.
- II Luure, Andres 2002. Understanding life: Trans-semiotic analogies. *Sign Systems Studies* 30(1): 315–325.
- III Luure, Andres 2004. What I am and what I am like: Nature and goal in living things. In: Tarasti, Eero (ed.), *From Nature to Psyche: Proceedings from the ISI Summer Congresses at Imatra in 2001–2002*. (*Acta Semiotica Fennica* 20.) Imatra: International Semiotics Institute, 64–71.
- IV Luure, Andres 2006. The duality of understanding and the understanding of duality in semiotics. *Sign Systems Studies* 34(1): 71–84.

INTRODUCTION

The main aim of this work is to contribute to a future unity of method in semiotics: currently, semiotics is largely divided between the two traditions originated by Charles Sanders Peirce¹ and Ferdinand de Saussure² which are often perceived to be incompatible.³ Attempts to build a bridge between them by denying their incompatibility or even pointing at some possible unifying framework are rare.⁴ Therefore the unity of semiotics is defined by its general topic rather than any received general theoretical framework or method.

The method of this work is somewhat unusual in semiotic research. This is largely due to its intrinsically philosophical character. However, this method has peculiarities from the philosophical standpoint as well. So let me begin from an explanation of my method.

I start from a dilemma which semiotics seems to face from its very beginning. Does semiotics concern everything or it deals with special “semiotic” phenomena? Is it like logic or like linguistics? Logic pretends to apply to everything independently from the specific nature of things⁵; linguistics distinguishes between language and non-language and has no ambition to say anything about non-language.⁶

¹ The core of Peirce’s relevant work has been published in Peirce 1992 and 1998.

² Saussure’s relevant work is contained in Saussure 1916.

³ A recent example is (Lotman 2002): “For Saussure, an isolated sign does not exist at all. From his viewpoint the whole scheme of Peirce’s semiotics is incorrect, a sign is formed not by its relation to an object or a user of sign, but with other signs which belong to the same sign system. [...] Up to now, this fundamental fact, that for Peirce and Saussure, one and the same word ‘sign’ designates completely different objects, has not been explicitly pointed out” (Lotman 2002: 515–516). Parret (1984: 220) even states that the two traditions “seem to have developed separately and without interpenetration”. Their weak and usually superficial mutual influence is attested also by Larsen (1998). Deely thinks that the opposition of those two “traditions or paradigms” depends “on a perverse synecdoche where a part [semiology] is mistaken for a whole [semiotics]” Deely (2005: 9).

⁴ Some examples are Eschbach 1986, Harris 1987: 26, Hervey 1982: 35, Parret 1983; Tanaka-Ishii 2006; Vigener 1979.

⁵ Therefore ordinary logic is called formal logic: the validity of formal logical arguments is considered to be independent from the content of the propositions involved in arguments. In this sense it could be said that logic has no specific content, or in other words, it equally deals with everything. What counts is the logical form (see, e.g., Sainsbury 1991: 35).

⁶ In semiotic discourse, this problem is known as the problem of the semiotic threshold (Eco 1979: 6; Nöth 2000). One asks where is the boundary where the sphere of semiotic phenomena begins. Once the semiotic threshold has been fixed, the semiotic theory can say something general about precisely those things that are included to the semiotic sphere. So semiotics gets bound with a specific content. This is language in a

If semiotics is about everything and asserts something universally valid then how is it distinct from logic? If there are no specifically semiotic phenomena then how can there be any semiotics? On the other hand, if semiotics treats specific semiotic phenomena then isn't its object just fiction? Is it not drawing an arbitrary boundary where there is no boundary?⁷

The horns of the dilemma proceed from the premise that semiotics deals with something universal in a special way or with something special in some universal way. It is a special logic (or otherwise it would be just logic) and a universal linguistics (or otherwise it would be just linguistics). In order this dilemma to be solved, semiotics is to become logic, remaining special in a way, and it is to remain linguistics, becoming universal in a way.

My philosophical semiotics adopts this middle way. It is meant to be a linguistics which conceives its object as something logical⁸ and a logic adjusting its approach to its object, acquiring a classifying character⁹. So, on the one hand, such semiotics is a linguistics that, — independently of what it happens to place under the concept of language, is interested in the language only as much as it is able to see it as something logical; and on the other hand, it is a logic that sees language in everything and sets no limits to language: instead it specifies what type of language, which degree of language, “how much language” it is dealing with. Semiotics as linguistics turns out to be declaring a certain kind of linguistic universals; semiotics as logic turns out to be classifying the ubiquitous linguisticity.

A predecessor in this approach is Charles Sanders Peirce who applied his three categories of Firstness, Secondness and Thirdness¹⁰ to many different classifications. True, one of those classifications took him out of the semiotic sphere.¹¹

more or less generalized sense. This is why I consider semiotics to be (a generalization of) linguistics from one point of view.

⁷ Linguistics deals with the prototypical phenomenon of semiotics; semiotics that doesn't step beyond the semiotic threshold is just a generalization of linguistics, resulting from a generalization of the sphere of linguistic phenomena, so it is another linguistics — a linguistics with a broader object.

⁸ “Of course, this is the way it must be: after all, this is logical!”

⁹ “Well, this is a language of this particular sort.”

¹⁰ Peirce seems to have used these names of categories for the first time in his manuscript “A Guess at the Riddle” (Peirce 1992 [1887]: 245–279). The categories referred to in the title of “On a New List of Categories” are different (though the origin of Peirce's triad can be traced back to that article). They were invented sometime in 1885 (Peirce 1992: 242).

¹¹ Signs themselves are associated with Thirdness: “Genuine thirdness is where of the three terms A, B, C, each is related to each of the others, but by a relation which only subsists by virtue of the third term, and each has a character which belongs to it only so long as the others really influence it” (Peirce 1992 [1888]: 281).

The title alludes to the title of Peirce's articles "On a New List of Categories" (Peirce 1992 [1867]: 1–10). As what I am suggesting is not a new list of categories but a new structure of categories, my title substitutes "structure" for list. I am suggesting a structure of categories consisting not of triads like Peirce's structure but of sextets. The structure of sextets is an extension of the structure of triads. Triads turn out to be different projections of sextets.

The history of sextets dates back to the composition of hexagrams in Yijing (I Ching)¹². Later on, similar ideas have occurred sporadically, for instance, in the neurophysiologist Nikolai Bernstein (1967).

In the main text of the thesis a short presentation of the theoretical basis of and the general conception behind the published articles will be given.

In Chapter 1 (Sextets) the technique of sextets will be introduced. This is the basis of the "new structure of categories" mentioned in the title of this work. Like triads in Peirce's (and, for instance, Kant's¹³ and Hegel's¹⁴ work), they connect sets of concepts in a uniform way. The sextets form a web where different sextets are connected by analogy and the analogies themselves may ultimately grow to sextets of sextets or enter other types of connection.

Mainly by means of examples from semiotics, the idea of sextets will be introduced. The first example deals with the strategies of finding plural forms. The plural forms are found from categories¹⁵ behind the singular forms. Those categories can be conceived as meanings. Subsequently, by analogy, stages of learning and levels of mastery of sextets will be listed using the sextet pattern. As a further example, I will describe a sextet of types of referring (types of relation between a referring expression and its reference). The very classification is innovative from the viewpoint of analytic philosophy of language. Finally, I will sketch six types of meaning and show how the types of relations between opposites ("logical forms") occur in each example.

In Chapter 2 (Duality and triads within sextets) I will scrutinise the structure of the sextets. First I will address duality as a projection of the sextet structure. I will treat duality in terms of matter and form (in a revised Aristotelian framework), describe two approaches to nature from the point of view of semiotics and introduce a double interpretation of interpretants. In the whole, I will try to show that an integral understanding of the object of semiotics requires a conception based on duality.

¹² One of the best-known editions is I Ching 1950.

¹³ Kant's list of categories contains four triads derived from a classification of judgments (Kant 1781/1787: §§9–10, A70–83).

¹⁴ In Hegel, the triadic structure is quite universal (see especially Hegel 1811/1812/1816, Hegel 1817/1827/1830).

¹⁵ Here categories as units of classifications rather than underlying general concepts are meant.

Then I will apply the nomenclature of Sebeok's (1976) typology of signs to explain the structure of the sextet on the example of a sextet of types of signs. A metaphysical model will be introduced to be the framework of that sextet.

In the short concluding Chapter 3 (Beyond duality) I will present some considerations on a possible extension of duality to a triad which resolves the inherent conflict hiding in duality.

The appendix of this thesis contains four articles written on the topic of the thesis.

In "Lessons from Uexküll's antireductionism and reductionism: A pan-semiotic view" I tried to apply the sextets to interpret the Uexküllian conception of Umwelten and functional circles. I proceeded from the observation that from the viewpoint of my conception of sextets, the characteristic trait of the Uexküllian view is substituting the third logical form for the fourth form on which the Darwinian view is based.

In the article I rejected Uexküll's idea that humans have Umwelten of the same type as other animals. In order to specify the difference I sketched a framework of six types of semioses and subjects of semioses, locating the Uexküllian Umwelten into the third type and the human "Umwelten" into the fifth type. I formulated them within Uexküll's overall metaphysical (and epistemological) approach but I didn't mean to commit myself to it. So I just tried to extend Uexküll's conception to a logically more complete version.

I applied a conception of semiosis as described by Kalevi Kull, where a translator text translates an original text into a product text. The choice of the specific semiotic framework has no substantial meaning in that article.

In "Understanding life: Trans-semiotic analogies" I tried to make an easily understandable step towards a web of sextets. I abbreviated the sextets to a short form consisting of the third, the fourth and the fifth items, and introduced a web of such triads using the concept of a proportion between relations. I described three semiotic triads with a proportion between them. First, I introduced the triad of the attributive, the referential and the "generative" uses of referring expressions (three different types of referring). I called the types of the relations between opposite categories ("degrees of tiedness") in them "like a sheet of paper", "one-end looseness" and "floating looseness". On the base of the same types of relations and explicitly referring to a "proportion" between the triadic relations, I subsequently introduced the triad consisting of "signifying" (as in Saussure's "signifier" and "signified"), referring and "poetic pointing". In my final move, I proceeded from the peculiar way the anthroposemiotic means, including languages and models, belong to humans. So I by analogy introduced "functional semiosis" and "adaptational semiosis" as biosemiotic concepts. In this way I sketched a way how the peculiarity of the biosemiotic realm could be conceptually characterised.

In "What I Am and What I Am Like: Nature and Goal in Living Things" I addressed the functional semiosis and the adaptational semiosis more closely

in the perspective of their duality. In the framework of my first article, I described three levels of semioses in Uexküll's functional circles. In analogy with them, I introduced three levels of adaptational semiosis.

In that article, I introduced an extended conception of interpretant allowing to conceive the sign in Saussure and other similar construction as interpretants. This is an extension of the Peircean view to the other side of duality. The Peircean interpretant was metaphorically described as a boundary. Later I would find a more formal characterization of those two versions of interpretants in terms of "relations" and "relationships".

In "The duality of understanding and the understanding of duality in semiotics" I introduced a conception of duality in conceiving the concept of understanding. I illustrated this conception by examples from family life, and communication (making sense vs. having significance). The same duality has been cited by Lotman (2000 [1992]: 15–16) as a paradox of communication.

Subsequently I mentioned the way Peirce (1992 [1891]: 288) held the laws of nature (as they usually are conceived by physicists) to be inexplicable. I introduced the terms 'empathy' and 'enlogy'¹⁶ to denote those two modes of understanding (Peirce expected 'empathy' instead of the physicists' 'enlogy'). Lotman (1992 [1981]: 150) distinguished between meaning transmission and meaning generation as two functions of texts; they roughly correspond to enlogy and empathy as two functions or two strategies or two ideals of understanding.

I defined the complexity of a text as the difficulty of its understanding and distinguished between enlogic and empathic complexity. The degrees of enlogic complexity were presented as a sextet.

Further I described the need for semiotics to take seriously the conflicts arising from different expectations as to understanding (enlogy and empathy). Semiotics should address them, and this requires both a unified semiotic understanding of understanding and an understanding within semiotic transcending both enlogy and empathy.

¹⁶ The word *enlogy* (in Russian: энлогия) was introduced by Dvorkin 1983 and later widely used by Sergei Chebanov (e.g., Chebanov 1995) to signify a sensible being's image of world in an 'enlogue'. Here I ignore Peirce's (1998 [1903a]) ethics of terminology.

1. SEXTETS

The sextets are the main tool of the general semiotical approach introduced in this thesis. They are an extension of triads meant to constitute a basic structure of the overall web of a system of semiotics.

In this chapter, some introductory examples and a general presentation of the sextets will be given.

Example 1. Word inflexion

Let me start the introduction of the new structure of categories from an example concerning word inflexion. Scarce as English inflexion is, let us consider the plural forms of nouns. Though the plural forms of most nouns are quite regular and easily predictable, there is in English a notable number of nouns the plural forms of which are difficult for both native speakers and second language speakers, let alone children who still are acquiring English as their first language.¹⁷

What we are concerned with here is the particular ways the language user can find the appropriate (or a less appropriate) plural form.¹⁸ Those ways differ in the required amount of knowledge and the expected degree of creativity. Which way is actually adopted depends on both the degree of mastering the language and the degree of acquaintance with the particular word.

1. The task is properly difficult only when the plural form is somehow to be constructed by the language user's own effort, that is, when she cannot find the form neither in her memory nor in some written or oral source. Nevertheless, this very way of finding the form, i.e., using the form that already is at her disposal, counts as one of the strategies I am citing.

In this context, the plural forms are meant to be found against the background of the known singular forms.

Mistakes are possible as memory and sources might deceive us.

2. The second way is the first one that requires a special effort. It consists in finding a similar case and proceeding by analogy. For example, the plural form of the word *arboretum* can be found by analogy to the word *memorandum*: either *arboreta* (following *memoranda*) or *arboretums* (following *memoranda*); or alternatively, *arboretums* by analogy to the word *album* (plural *albums*) or to the word *fork* (plural *forks*).

¹⁷ A description of the plural of English nouns can be found, e.g., in Jespersen 1933: 198–203.

¹⁸ The task could as well be formulated inversely: to find the singular form from the plural form. In the real process of the acquisition and use of language the singular forms need not have the privilege of being more easily accessible.

The method of analogy doesn't prescribe neither how similar the analogous word is to be nor in what respects it is supposed to be analogous nor in what respects the relation between the singular form and the plural form is to be similar. Therefore it is quite possible that the plural form gets identified incorrectly.

3. The third way consists in recognising a known inflection pattern behind the word at hand. The word is not compared with any other word but the pattern is immediately perceived.

For instance, the word *fork* might be simply recognised as a word with the plural formed by *-s*. Of course, as the process of recognition cannot be controlled, it possibly involves misrecognition.

4. In the case of the fourth way, no ready pattern is immediately perceived. Instead, the plural form is found according to general inflexion rules¹⁹ by analysing the word at hand.

The rules for English plural are quite complex, and their formulation contains many exceptions. However, lists of exceptions can be conceived as part of the very rules. Let us address the example of the words ending in a *y*. The rule can be formulated as an algorithm. First check if the penultimate letter is a consonant or a vocal. If it is a vocal then add *-s*. If it is a consonant then check if it is a common name or a proper name. If it is a proper name then add *-s*. If it is a common name then substitute *-ies* for *-y*.

It might be that these rules proceed from a model of English language which is not quite adequate to the language. In this case there are exceptions not taken into account by the rules. It also might be that the rules require knowledge that the language user happens not to possess. For example, she might not be able to tell between proper and common names. In those cases, the plural form might be formed incorrectly though the rules are followed (or tried to follow).

5. In the case of the fifth way, the plural form is found by immediately knowing the language, without any model mediating the knowledge.

The descriptions of a language (say, English) — both descriptive and normative grammars — including the description of plural formation, have to proceed from the language mastering of the language users. So beyond the helpless attempts to master the grammar there must be a real proficiency. Of course, the language occurs in idiolects of individual speakers, and considerable deviations of idiolects could be called mistakes.

6. The fifth way involves knowledge without knowledge: the plural form is decided by the language user and may become or turn out to be part of the language.

Here the task is reversed: the task turns out to be not just mastering the language but creating the language. When new plural forms are created then

¹⁹ The word 'rules' is, in fact, ambiguous. In the case of the third way we also have some rules but we don't follow them but simply act according to the rules. For the difference see Wittgenstein 1953: §§143–242.

only the future state of language will decide whether they are correct. The same applies to the newly created old forms: the language presents itself in diachrony.

The same result can be obtained by means of any of these six strategies. Independently from the word in question, any strategy can be used, though usually for rarer words strategies with greater numbers are used.

No strategy is infallible and no strategy yields unique results. This is why any strategy leads to the variability of the language.

The use of these six strategies is what the mastering and the functioning of language is based upon. The strategies of finding the inflexion form correspond to levels of language mastering.

The task of forming the inflexion form seems to be divided into two parts: first, one has to establish the category²⁰ the word belongs to, and the second is the task of the very forming of the inflexion form. The main difficulty lies in the first side of the task because the category bears in itself the solutions of the second half of the task as well.

In all cases, the singular form somehow hides in itself the category, but in a way dependent on the language user. In this context we could conceive the category as a sort of meaning of the singular form. We can follow how the categories in the usual sense emerge through the first and the second ways and how they vanish through the fifth and the sixth ways. Nevertheless, all strategies of plural forming are mediated by some sort of categories.

The paradigm we presented looks like a linguistic theory classifying the degrees of the mastering of inflexion and the psychological ways of the construction of word forms. This theory can be generalised into a classification of degrees of language mastering and the psychological ways of speech construction.

Our semiotic methodology (as presented in the Introduction) requires this piece of linguistics to be neither an arbitrary theoretical construction nor just an empirical generalisation but something required by the very logic. So, for linguistic, semiotic is logic. And for semiotics, linguistics is a paradigm by which the logic can be presented.

The demonstration of the logical character of the classification in this example is a long process. It takes weaving a complicated web of classifications. This can be only started in this thesis.

²⁰ From the paradigm it becomes manifest that only in the case of the third and the fourth ways we deal with a category in the true sense of the word. In the third way, the word is categorised directly, without feedback: the word is just “perceived” under a category, the boundaries of the categories being unfixed. Nevertheless we will use the term “category” for all cases.

Example 2. Learning the sextets

The first example also yields an analogy with learning the web of sextets. We will introduce six levels of commanding the sextets. So, in the following, we at once will introduce a further example and explain the ways sextets can be used.

A sextet consists of six items. Let us follow the acquisition of a certain item, in the scheme, viz., the third one.

1. The third item is acquired within the whole without awareness of using it or without awareness as to why it is the third item. Just studying the Example 1 renders this level of mastery.

2. The third item is acquired only in contexts of comparison. While the whole structures are compared the corresponding items also are compared. A comparison of the third item in Example 1 with the third item in Example 2 will provide the first chance of the mastery of the second level. We shall learn, e.g., that the third item will be recognised by the means of an image. In the Example 1 a similar recognition was mentioned. Now we can link these cases by an analogy. There can be other analogies as well but at this stage we don't know which analogies are essential and which analogies are accidental. In order to interpret an example we have to refer to another example.

3. We have acquired the third stage when we know what the third item means. The knowledge of its meaning includes being acquainted with the item as a "lexical" and "grammatical" unit: when we hear "the third item" then we think "oh, it's this" and when we have to use it then we simply do so. The item is a certain recognisable image and a stereotyped way of activity. What is presented so far probably is not enough for the third stage to be acquired.

4. This level requires a "theory" to be created for a class of real objects, in this case: all learning processes. Then we can use the third item using our knowledge of the third stage of learning in general. "The third" item is a real object (a stage of a learning process) the boundaries of which are to be learned from experience.

5. On this stage we realise that "the third item" need not be monopolised by any theory or model. I conceive it as a logical universal. I interpret it by means of types of relations between opposite categories. E.g., regarding our learning process as learning the meaning of the sign "the third item", the third stage corresponds to the third type of relation between sign²¹ and meaning.

6. On this stage there would be no need to use the term "the third item". We would be able to use sextets without thinking about them. The results of our activity would embody sextets without any explicit reference to them.

²¹ Here nor "sign" neither "meaning" are conceived in nor Peircean nor Saussurean nor any other semiotical framework but rather as words from the common language.

Example 3. Types of referring

Now the concept of referring (a relation between a referring expression and its reference²²) will be split into six types.

1. The first type of referring occurs when an expression is used in a way that its reference wholly depends on the circumstances where it is uttered. The reference is determined token by token rather than by the type expression.

This type of reference is typically instantiated by the deictic use of demonstratives. I might say either “this” or “that” and I might mean by either of them whatever. What I mean should become manifest from the “context”, that is to say, not from the textual environment but from the factual circumstances.

2. The second type of referring occurs when an expression is meant to refer to the referred to by a previous token of the same type expression uttered by the current speaker or someone else. The speaker need not know what or who she is referring to.

For instance, at a party I might join a company of people whom I have never met before. They are talking about the adventures of a Peter I don’t know. Then I might ask: “How old is Peter?” Then I would refer to Peter according to the second type.²³

3. The third type of referring occurs when an expression is meant to pick out a unique object possessing a certain property so that when another object should turn out uniquely to possess that property then it automatically would turn out to be the reference instead of the first object.²⁴

For instance, when I say in November 2006: “In January 20, 2009 the President of the United States will be sworn in”, then I don’t know which person I am referring to.

4. The fourth type of referring occurs when an expression is meant to pick out a unique object possessing a certain property so that it would have the same reference even when another object should turn out uniquely to possess that property.²⁵

For instance, when I say “The President of the United States was born in 1946”, then I mean the person who is the President of the United States in November 2006 though he was not the President in 1946.

5. The fifth type of referring occurs when the objects referred to are distinguished by the very expressions.²⁶

This is typical in mathematics when we say: “Let a and b be natural numbers”. There is no way of distinguishing between a and b beyond using different (type) expressions.

²² For the technical details see my article II.

²³ Mainly this type of referring is attributed to proper names in Kripke 1980.

²⁴ This is the “attributive use” in II.

²⁵ This is the “referential use” in II.

²⁶ This is the “generative use” in II.

6. The sixth type of referring occurs when the reference of the expression is conceived to depend on some circumstance that can change from token to token and doesn't depend on any perceivable context of uttering.

For instance, it may be conceived that when someone mentions God, the word might refer to Devil instead.

Example 4. Types of meaning

In this example, a sextet will be introduced which will be characterized by the types of relations between opposites. This is the most general way of describing the sextets.

To introduce the required pair of opposites, we use the non-technical terms “sign” and “meaning” though these words also are used as technical terms in several semiotical and philosophical senses: “sign” is meant to be anything having a “meaning”. This is judged necessary because the sextet will transcend the boundaries of all semiotical conceptions.

1. The first type of the relation between opposites could be called “identity”. So, in the first item of the sextet, the sign and the meaning are to be identical.

That is to say, the sign is to be the meaning of itself, and the meaning is to be the sign of itself. In this sense, anything can be conceived to be a sign of itself. It could be objected that there is no meaning or no semiotical relation in this case. My reply is that without extending the semiotical framework to its extreme possibilities there can be no integral understanding of the object of semiotics.

According to the first type, in any oral or written text and in any sign there would be an aspect in which the meaning-carrier strictly means itself. Such a meaning relation leaves no room for any meaning beyond what is there.

2. The second type of the relation between opposites could be called “association”. The meaning relation is to be associate meaning carriers with each other. The meaning can be retained only by a chain of associations from one meaning carrier to another. Each subsequent meaning carrier can be regarded as the meaning of the previous one.

This corresponds to a situation in which there still is no ready category; the meaning is of a meaning carrier is directly dependent on other meaning carriers. The reproduction process by associations can be conceived to be repetition. However, there is no criterion of similarity allowing to assess the correspondence between associated meaning carriers.

3. The third type of the relation between opposites is the relation of the “flip sides” as of a coin or a sheet of paper. The sign and the meaning constitute an inseparable whole independent of other meaning carriers. The meaning is immediately recognised in the sign.

The meaning is a recognisable category without distinct boundaries. With this type, the sign and the meaning in their traditional sense are ready.

4. The fourth type establishes a correspondence between the realm of sign and the realm of meaning: the referring. The relation of opposites could be called the excluding difference. The realms are held strictly apart even when a sign happens to refer to itself: the real reference is in a model.

The fourth type of meaning transcends the signs (meaning-carriers) and reaches an autonomous realm of meanings where the retention of meaning is independent from meaning-carriers.

5. The fifth type of meaning abandons the models and is embodied in (type) meaning carriers in a way that meanings are generated along with signs. The relation between sign and meaning is “restless unity” (cf Hegel 1811/1812/1816: Bk. 1, Ch. 1, C, 2).

6. The sixth type of meaning is transcendentally and fully embodied in the sign. This means that meaning transcends the sign, leaving no “sign” in the sign, and on the other side, it is an exhaustive presence of the meaning in the sign. The relation between sign and meaning is “resting unity” (cf Hegel 1811/1812/1816: Bk. 1, Ch. 1, C, 3).

The six types of meaning could be approximately illustrated by the following sextet of the levels of meaning in a text: 1) phonetical and acoustical meaning, 2) phonological meaning, 3) lexical and grammatical meaning, 4) referential meaning, 5) poetical meaning, 6) “mystical” meaning.

In semiotics usually only meanings of the third and the fourth types are treated, and in linguistics and philosophy of language only the third and the fourth levels of texts are treated.

The types of meanings can be divided into two halves: the first three types deal with the formation of meaning as the *sine qua non* of sign systems and the last three types deal with meanings beyond sign systems.

Before I explain the last items once more, let me expand on the structure of sextets. The items in the sextets are distributed in a way that the odd-number items correspond to relations where the related terms (opposites) are in some unity, whereas in the even-number items they are somehow separate. In the first item the opposite simply coincide, in the third item they are different aspects of a static item, in the fifth item they constitute as of a common living body. In the second item meaning is shifted to a peer sign-carrier (relation of association), in the fourth item meaning is projected into an imagined reality (relation of excluding opposition), in the sixth item it is conceived totally to transcend the sign.

The relation in the fifth item could be illustrated as follows. Imagine the duck-rabbit as in Wittgenstein 1953: II, xi. If this picture featuring both a duck and a rabbit were alive then the duck and the rabbit would live in one and the same body. Then, for instance, a duck could move itself only in such a way that it were a movement by the rabbit as well. This is characteristic to the relation of

opposites of the fifth type: they are to share a common dynamical, living body. So, in the poetical level of texts the text as the sign and the text as meaning are meant to have as if a common living body.

The relation in the sixth item could be illustrated as follows. in a God's name, God is fully embodied; and yet the name in no way reveals God. Another example: thoughts as pronounced in inner speech. The words pronounced need not have anything to do with the thought. So the thought is fully embodied in the words while the words don't reveal the thought at all.

In the course of the sextet sequence, two processes in opposite directions occur. First, the immediate meaning of the sign according to its relation type becomes more distant from the sign. Second, the ultimate meaning comes closer to the sign. In the beginning, the meaning of the sign is totally present in the sign but no meaning beyond the sign is varried by the sign, At the end, the immediate meaning of the sign is totally absent but the ultimate meaning has perfectly entered the sign.

In Example 1, a sextet was presented where the speaker had to find plural forms. That sextet belong to the third type of meaning, and in analogy with the main sextet, its items specify how the singular form is related to the plural form.

In Example 3, the relations between the referring expression and the reference were involved within the fourth type of meaning were cited. Those relations are in the same "proportion" as the relation between sign and meaning. They specify how the reference is identified by the referring expression.

The structure of sextets will be shown in more detail in further publications and further research. In the next chapter, more of the structure of the sextet will be revealed.

2. DUALITY AND TRIADS WITHIN SEXTETS

In this chapter the structure of the sextets will be further analysed. Duality and triads will be presented to be projections of the sextet.

Duality as matter and form

The concept of duality²⁷ I will address can be located in terms of sextets as follows: in a given sextet, there is a duality between the odd-number items and the even-number items. In most cases, the duality between the third and the fourth item is addressed. The content of this duality will be illustrated first in terms of matter and form.

In the following, I will proceed from Aristotelian terms. However, I don't commit myself to any precise correspondence with the actual thought of Aristotle.²⁸ Rather I will modify his system.

The main idea of my modified Aristotelian framework is that the activity of matter consists in actualising potential forms by choosing them, whereas the activity of form consists in providing a system of potential forms. The apparent contradiction with the Aristotelian viewpoint can be explained as follows. Matter, in order to determine itself, has to give forms to itself. And this can be done only by choosing the forms from the store of possible forms. Therefore matter reveals itself in the actual forms. Matter seems as form! It is this seemingness that counts for form in the traditional approach. In reality, the observable pattern of actual forms has its ground in matter rather than in form. Such material determination in the Aristotelian list of causes is represented by the formal cause and the efficient cause. The formal cause chooses the present actual form of matter, whereas the efficient cause chooses the form towards which matter is changing. As to the formal determination, it is represented by the material cause and the final cause. The material determination is the self-determination of matter via form, whereas the formal determination is the self-determination of form through matter. In contradistinction to matter, the activity of form is not selective and partial but constitutive and impartial. Form as material cause determines the realm of possible forms of matter without respect of its change (the usual conception of a law of nature), and form as final cause determines the realm of the possible ways of change of matter. Here (especially in the case of the material cause) form appears as matter.

²⁷ The prototype of duality is the list of opposites in some Pythagoreans (often attributed to Philolaus), found in Aristotle (*Met.* A5, 986a22).

²⁸ Matter and form are discussed passim in Aristotle *Met.* The four causes are cited in Aristotle *Physics* B3, 194b–195d. A treatment of the final cause similar to mine is found in Deely 2001: 65.

I am trying to attribute the overall conflict between the Peircean and the Saussurean approaches to semiotics to the difference of the metaphysical grounds of the two approaches, the Peircean one conceiving semiosis as material determination, and the Saussurean one implicitly conceiving semiosis (without using the term and the concept of semiosis) as formal determination. The approaches could be reconciled and integrated within a framework involving the two ways of determination.

In the framework of this conception, Peirce reduces all determination to material determination. Signs and interpretants are forms of matter. Semiosis is due to the activity of matter. In fact, the whole process of semiosis is the process of self-determination and self-actualisation of matter. Matter realises its initial inclination. The object involved in semiosis is, in final analysis, the matter itself. The peculiarity or the inclination of matter (as opposed to the universality and impartiality of form) is represented both in the dynamical object and the final interpretant. The inherent order of matter is bound to be revealed in the final order. And this order is the result of the process of choosing the order. Form has its representation in the world of matter in the shape of chaos. Chaos is totally impartial but this impartiality itself is a form selected by matter.

Duality: two approaches to nature

In the contemporary semiotic literature there are many attempts to establish new fields of semiotic inquiry, such as biosemiotics (Hoffmeyer 1996) or eco-semiotics (Nöth 1998; Kull 1998). According to Kull (1998: 350) biosemiotics “is defined as an analysis of living systems as sign systems,” whereas eco-semiotics “can be defined as the semiotics of relationships between nature and culture” and it “deals with the semiosis going on between a human and its ecosystem”. Both enterprises can be conceived as part of the attempt to understand the place of the human (along with the human culture) in the reality (more specifically, the world, or nature). And in both cases, this understanding is being tried to achieve by conceiving the human culture as involved in a trans-human natural semiotic network.

Biosemiotics and ecosemiotics seem to address two different issues: accordingly, the naturalness of the human essence and the naturalness of the human existence. First, do we belong to nature as harmoniously as other living beings do? And second, are we able to maintain our existence in balance with nature?

To begin with, two intuitions about nature tend to force themselves upon us. First: nature is a harmonious whole, a system we belong to as a natural part. Nature acts in and through us, and harmony between nature and culture cannot be corrupted. Second: nature is an aggregate of heterogeneous parts trying to get

along with one another. In nature, everyone has to fight for her existence, and we have to oppose nature as a force alien to us.²⁹

The third intuition is that neither of the two intuitions is adequate. The conceiving of culture as natural leads to identifying culture with nature and ignoring the real nature. Opposing culture to nature results in an ignorance of the deep naturalness of our strivings. Harmony with nature seems to be appearance, while opposition to nature appears to be seemingness.

It will turn out that a technical treatment of the problem of the naturalness of the human in semiotic terms requires a unified semiotic framework. The cleavage between the Peircean and the Saussurean conceptions of sign³⁰ is symptomatic for the lack of such a framework.

²⁹ Often these two intuitions are conceived as a matter of cultural choice, and as such also a subject matter of ecosemiotics. Nöth (1998: 336) distinguishes between “a holistic view of the universe, which emphasizes the unity of human beings and their natural environment” and “the dualistic model of the interrelation between humans and their environment”, “a world view which has led to a cleavage between nature and mind, giving humans priority over nature and culminating in the view of man being the only measure of all things in nature”.

³⁰ According to Nöth (1998: 337) Saussure’s anthroposemiotics lacks “any eco-semiotic perspective”. “Such a linguocentric program of semiosis is bound to impede any prospectives for the study of the ecological determinants in the process of semiosis interaction of the organism and its environment [...]”

Deely (2001: 684) compares Saussure’s semiology and Peirce’s semiotics as follows: “For semiotics, in short, whether we consider the irretrievably dyadic character of the semiological sign or whether we consider the need for a general notion of sign be superior to the division of being in natural and cultural, the semiological perspective simply will not do. It fails: at worst as hopelessly inadequate to the problematic which semiotics sets itself, at best as irredeemably restricted to one part of the semiotic field, namely the part occupied by phenomena of culture considered only in what contrasts them to nature. In full contrast, semiotics insists on seeing nature and culture as compenetrative.

In either case, whether broadly or narrowly conceived, semiology transforms the project of the doctrine of signs by inappropriately anthropomorphizing the whole problematic into a general theory of cultural phenomena.”

Mihhail Lotman (2002) describes the Peircean approach as atomistic and the Saussurean approach as holistic. “For Saussure, an isolated sign does not exist at all. From his viewpoint the whole scheme of Peirce’s semiotics is incorrect, a sign is formed not by its relation to an object or a user of sign, but with other signs which belong to the same sign system. [...] Up to now, this fundamental fact, that for Peirce and Saussure, one and the same word ‘sign’ designates completely different objects, has not been explicitly pointed out” (Lotman 2002: 515–516). The atomistic approach appears to be inadequate, e.g., in the case of poetry (Lotman 2002: 519–521).

Duality: two types of interpretant

I start from a short statement of my idea of two types of interpretant.

According to Peirce, the interpretant is determined by the object via the sign (representamen). The sign and the interpretant may be conceived as states of one substance. The sign may be conceived as a text with the object as its context. The interpretant is 'made' by a 'relationship' (*Beziehung*) entered by the sign and the object.

Another version of the interpretant is suggested by the Saussurean conception of language sign. There are three terms in it: the language sign, the signified and the signifier. Now, in Peircean terms, we interpret the language sign as the interpretant, the signified as the object, and the signifier as the sign (representamen). Analogously to this Saussurean framework, we suggest a timeless logical sort of semiosis where the interpretant is 'forming' the object and the sign. The object and the sign are in a 'relation' (*Verhältnis*). The interpretant and the object are no substances but just forms without any real distinction. This situation, in fact, occurs in the Uexküllian framework where *Zeichen* are signs (representamina) and *Male* are objects.

In 'relations', the interpretants form possibilities, whereas in 'relationships', the interpretants are actualities made.

Now, a more detailed treatment follows.

The triadic structure of sign in Peirce consists of three elements: the representamen, the object and the interpretant. Peirce explained its idea many times. The following concise formulations should convey the idea. "A *Sign*³¹, or *Representamen*, is a First which stands in such a genuine³² triadic relation to a

³¹ In a loose sense, Peirce uses the word "sign" as a synonym of "representamen" (cf. Deely 2001: 641, note 90). In the passage quoted Peirce introduces the sign as the genuine triadic relation via the representamen standing in such a relation. "Sign" and "Representamen" in that passage are used as synonyms except that a "[...] *Sign* is a *Representamen* with a mental *Interpretant*" (Peirce 1998 [1903]: 273).

³² What the genuineness of the triadic relation involves can be seen from the following: "The triadic relation is *genuine*, that is, its three members are bound together by it in a way that does not consist in any complexus of dyadic relations. That is the reason that the *Interpretant*, or *Third*, cannot stand in a mere dyadic relation to the *Object*, but must stand in such a relation to it as the *Representamen* itself does. Nor can the triadic relation in which the *Third* stands be merely similar to that in which the *First* stands, for this would make the relation of the *Third* to the *First* a degenerate *Secondness* merely. The *Third* must, indeed, stand in such a relation, and thus must be capable of determining a *Third* of its own; but besides that, it must have a second triadic relation in which the *Representamen*, or rather the relation thereof to its *Object*, shall be its own (the *Third*'s) *Object*, and must be capable of determining a *Third* to this relation. All this must equally be true of the *Third*'s *Thirds* and so on endlessly; and this, and more, is involved in the familiar idea of a *Sign*; and as the term *Representamen* is here used,

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 1998 [1903]: 272–273). “A Sign is a Cognizable that, on the one hand, is so determined (i.e., specialized, *bestimmt*) by something other than itself, called its Object [...], while, on the other hand, it so determines some actual and potential Mind, the determination whereof I term the Interpretant created by the Sign, that that Interpreting Mind is therein determined mediately by the Object” (Peirce 1998 [1909]: 492).

Saussure’s conception of sign involves three items: sign, signifier and signified.³³ Let the following correspondence between the Peircean elements and the Saussurean items be suggested:

representamen — signifier;
object — signified;
interpretant — sign.

The direction of determination is meant to be different: in the Peircean scheme it is from the object to the representamen to the interpretant, whereas in the Saussurean scheme it is meant to be from the sign to the signified to the signifier.

Let us turn to an analogous conception in Uexküll. Uexküll (1973 [1920, 1928], 1980, 1982, 1992) many times described the functional circle (*Funktionskreis*). An initial fragment of one of these descriptions follows: “The whole life of animals occurs in the form of actions by the animal as the subject upon its meaning-carrier as the object. As I have shown it is possible to reduce all actions by animals to a very simple schema which I called the functional circle. From the object’s certain qualities, which I describe as perceptual cue carriers, stimuli depart which are received by the sensory organs (also called receptors) of the subject. In the receptors the stimuli are transformed into nervous excitations running towards the perceptual organ. As we know from ourselves, in the perceptual organ sensations start ringing which we in a very general way will call *perceptual signs*. The perceptual signs are projected outside by the subject and are transformed to either optic, or acoustic, or tactile qualities of the object according to the sensory circle they belong to. These qualities constitute the *perceptual cues* of the subject.” (Translated from Uexküll (1980: 371); as part of the whole description also in the article I (312 (translation), 320 (original).)

Perceptual signs are apparently conceived as events (tokens). As to the perceptual cues, it is not quite clear whether they are tokens or types. In any

nothing more is implied” (Peirce 1998 [1903]: 273). The concepts of Firstness, Secondness and Thirdness and of a First and a Second are introduced in Peirce (1998 [1903]: 267–272).

³³ These concepts are introduced in Saussure (1916: Part One, Chapter I, § 1).

case, the relation between perceptual signs and the perceptual cues presuppose a system of type-type relations between types of perceptual signs and types of perceptual cues. In those relations, types of perceptual signs and types of perceptual cues are related like signifiers and signified. So we have an analogy with the Saussurean scheme. Our reinterpretation of the interpretant along with the determination succession can be transferred to the Uexküllian case as well:

representamen — perceptual sign type;
object — perceptual cue type;
interpretant — the composite of a perceptual sign type and the corresponding perceptual cue type.

Sebeok's sign typology reinterpreted as a sextet

Here I will sketch a metaphysical model in the framework of which I will reinterpret the nomenclature of Sebeok's (1976) sign typology as a sextet. In this connection the structure of the sextets (involving duality and triads) will be closer shown.

I postulate that the human reality (the reality accessible to humans, the reality that is the human) has a sign character. So, by itself it is neither objective nor subjective. Nevertheless, reality is objective and subjective for the human as it appears objective and seems subjective.

The way the human reality is determined is experienced in two ways by the human: as being form by the object and being made by the subject. The sign character seems to have emerged from the lack of sign character along with the emergence of the human but appears to form the whole world to have a sign character.

For the human, life is communication between the object and the subject. Proceeding from a model where the object has the role of the addresser and the subject has the role of the addressee, Peirce reduces the object to the "object" and the subject to the "interpretant". The object is what forms and what is formed, and the interpretant is what makes and what is made. For the human, the object is what is thought and the interpretant is what is experienced.

The opposites coincide if they are fully independent from each other, fully separate. Then they are in a mutual "relation". This relation is by what they are formed. The opposites exclude each other if they have impact on each other and an immediate mutual contact. In this case they enter a mutual relationship. They are what makes this relationship.

The object is a relation, the interpretant is a relationship. The sign is a relationship being in a relation with the object and a relation entering a relationship with the interpretant. The sign is a connection between the object and the

interpretant, the relation and the relationship, combining the relation character and the relationship character.

A sign may mediate between the relation and the relationship, the object and the interpretant in several ways. To denote those different ways I will apply the nomenclature of Sebeok's (1976) typology of signs in a reinterpreted sense:

	left	right
the third level	5. symbol	6. name
the second level	3. icon	4. index
the first level	1. signal	2. symptom

In the left column we deal with objects (relations), in the right column we deal with interpretants (relationships). The sign character is manifested in the objects as being determined by the interpretants, in the interpretants as being determined by the object. The determining interpretant forms the sign, the determined interpretant is made by the sign.

There are two sorts of examples. In one sort of examples (Peirce's metaphysic, biosemiotics) the real sign character emerges only as symbolicity. In other examples (anthroposemiotics) the typology of signs really is a typology of symbols. Therefore the words denoting the types are not to be taken literally.

On the first level, the object is the "signal", the interpretant is the "symptom". For instance, the signal could be conceived as the thing in itself and the symptom could be conceived as a perception. The symptom is a symptom of the signal, the sensual manifestation of the signal. The signal is the object in itself manifesting itself only symptomatically. In Peirce's metaphysics, the spontaneous chance is the signal and the feeling is the symptom. To motivate these words we could say that the signal is the non-subjective that elicits the subjective reactions and the symptom is that subjective something by which the non-subjective is manifested. The body is the signal of the consciousness and the consciousness is the symptom of the body.

In Aristotle's framework, the "signal" is the prime matter, that is the form taken in the most abstract way. This is form as undetermined by anything else. We define it as what cannot be defined. In its determinedness it is closed into itself: its determinedness is internally uniform. The signal can be conceived as the interpretant forming the object and the sign by the circumstance that it is itself not just the object but the sign as well. It is the sign lacking dependence on any sign system (the sign without sign system). However, the characterisation of the signal as having a sign character is purely external since in itself it is not a sign. In its communication with the symptom, the signal remains untouched by the symptom but it is a signal only via the symptom. The signal is in itself the pure relation but it is a signal only via a relationship with the symptom — a relationship with the relationship.

So the symptom is the manifestation of the signal (and the signal is the essence of the symptom). The being of the symptom consists in its being externally mediated with itself via itself: the symptom is the repetition of the repetition of itself where the interpretant repeats the object via the sign (being repeated is here the object's making the interpretant via the sign); yet the difference between the three is just external. The symptom is nothing else as differentiating itself. It is, as it were, context without text. For instance, in the case of oral speech we have sign carriers, and the burdens they carry are to be distinguished even independently of the identification of the use of language signs (by repeating like parrots, we can transmit even messages we don't understand at all). What we repeat in this case is the symptom, in contradistinction to the sign carrier as the signal. The symptom is the relationship in the relationship with the relationship, all three being one and the same. The relationship is present here as that identity.

On the second level we have signs in a sign system and texts against a context (indices). The signs are formed by the sign system and the texts are made by the contexts. The icon in its pure form is well represented by the Uexküllian sign and — in the framework of symbolicity — the Saussurean language sign. As indices, their counterparts are the adaptational sign (adaptational text) — which has not been studied³⁴ — and the speech text (message).

So, in what sense are the language signs iconic? At first glance it seems as if iconicity should mean that, say, a word is similar to the thing it refers to. Saussure distinguishes between the signifier, the signified and the sign. According to my interpretation, the sign is here the interpretant, the signified is the object and the signifier is the sign (the representamen). The interpretant (the sign) is the relation that forms the object (the signified) and the sign (the signifier). The interpretant (the sign) has ultimately been formed by the sign system. Further, the relation (the language sign) is the relation between the relation (the signified) and the relationship (the identifier); here, the relation is the same as the relation: the language sign is the same as the signified. One and the same relation occurs in two hypostases: as the interpretant (the language sign) and the object (the signified). An analogous situation is found in Aristotle's conception of the hylomorphic substance. The substance is both the unity (relation) of the (substantial) form and the matter, and the form itself. The form itself already is a unity of form and matter as the signified itself is a unity of the signifier and the signified. The matter is just the reverse side of the form, like the signifier is just the reverse side of the signified. So the language sign is a relation that is the relation between itself and the relationship. The relationship is that element alien to the relation which represents the relation in the communication. This relationship (the signifier) is the sign that represents the language sign in the communication with the speech text. The language sign is an icon because the signifier and the signified are reverse sides of each other.

³⁴ See however III.

The same holds for Uexküll's perceptual and impulse-to-operation-signs (*Merk- und Wirkzeichen*). In biosemiotics, an icon corresponds to each function of the organism, and a sign system corresponds to the whole system of functions. In Peirce's metaphysic, in our context the law corresponds to the icon.

Let us see what corresponds to the indices in Peirce's metaphysics in our connection. The functioning of a law (habit) is experienced as a "reaction sensation" to something's immediate presence; it is itself lawlike (habitual). But the realisation of the laws is only approximate, such as the functioning of a habit is only partial. The subject is free in its functioning (its resistance to the object). The interpretant is the subject such as it becomes in the context of the presence of the object. The sign (the text) is the subject such as it "reacts" to the presence of the object. The object is the presence of the object. This schema is applicable to the adaptation in biology as well. The adapting subject functions in general lines according to the laws of its functioning but it reacts to the changes of its environment with a freedom transcending the limits of its functioning. The direction of translation is not from the interpretant through the object to the sign but from the object via the sign to the interpretant. The interpretant is the result of the change (translation, adaptation) of the sign (text). The text is the substance of the translation, manifesting itself both as the sign and the interpretant. The text is the relationship of itself with the relation (the object, the circumstance). As the sign it is the relationship partner of the object, and as the interpretant it is the relationship itself. The object manifests itself as the context of the text. This also holds for speech texts (messages). The language as a system of language signs (functions) is realised in its approximate functioning. The texts can be adaptive due to free deviations from the language. The information the text accumulates by self-interpretation is information about the object. This should motivate the word 'index' here.

On the third level we have symbols and names. In terms of above, we could say the symbol is the system without signs and the name is the text without context. The symbol is what renders the signs possible, and the name is what renders the text actual. The symbol is the initial (real) object and the name is the final (real) interpretant.

I conceive the sign systems to be systems limiting the universal all-significance rather than systems calling forth significance. In the symbol the all-significance is still there. If the sign system is like an axiomatic system then the symbol is like a system of propositions where each proposition is all other propositions. Aristotle doesn't explicitly describe the counterpart of the symbol; it is found in Plotinus, as *Nous*. This is the form in which even matter has become form, or in other words, a system in which everything that actually is is logically necessary. It is a relation which is the relation (interpretant) of the relation (object) with itself (sign): one relation occurs in three hypostases. All relationships have been turned into this relation, and the relation itself is a relationship as far as the difference of its hypostases. This is the perfect form of the object. Any object (any circumstance) has been derived from it.

Ultimately we interpret only this object, the perfect symbol. The sign character in general and the symbol in the framework of symbolicity is a finite projection of the initial symbol. This is the subject transcending itself (its substance).

In Peirce's metaphysic, the "name" in our nomenclature is unending evolution (thought). The name is a relationship which is in a relation with a relation (the symbol). The name doesn't tell anything anymore: the interpretation ends with the name. Nevertheless, the Named is embodied in the Name. The name is a process containing nothing accidental. Every relationship is ennobled with a relation. The name is the sign; the end of the name it doesn't reach is the interpretant; what is embodied in it is the object.

Semiotics concentrates on icons and indices. However, they can be understood only if the other types of signs are understood as well.

Peirce's Firstness, Secondness and Thirdness correspond to our first level, second level and third level. Peirce follows how the interpretant emerges and concentrates his research to our right column. Peirce introduces the relationship of the interpretant with the object by means of his principle of continuity.

In a next, more perfect model, between the object (the left column) and the interpretant (the right column) the sign should stand. Those columns should be interrelated like the icon, the index and the symbol.

More detailed exposition of this sextet along with its metaphysical background will follow in my further publications.

Peirce's triads within sextets

In the previous section it was mentioned that in Peirce's metaphysics, Firstness, Secondness and Thirdness may be interpreted as the first, the second and the third levels in our sextets. Feeling, reaction and thought as three levels of consciousness correspond to the second, the fourth and the sixth items of our sextet.

Peirce's triads may have other correspondences to sextets. So, it seems that the icon, the index and the symbol correspond to the third, the fourth and the fifth items of a sextet whereas the qualisign, the sinsign and the legisign seem to correspond to the first, the second and the third items in another sextet.

So if I am right then Peirce's triads turn out to be different projections of the sextet. The detailed exposition of the extension of Peirce's triads to sextets will follow in my further publications.

3. BEYOND DUALITY

On several occasions I already alluded that duality is not enough for proper understanding. Of course, it constitutes a component of the sextets as the triad does as well. The structure of the sextet even requires duality being combined with a triad. But on the other hand, it seems that duality somehow reproduces the two first levels of the sextets. In any case, it always presents two strategies being in a complex mutual collaboration and conflict. In IV, I described it as an interrelationship between two strategies of understanding (enlogy and empathy). A third item would transcend the limits of understanding inherent in each side of duality. This would mean a new strategy of understanding — an understanding without strategy and without conditions. If the purpose of semiotics is to advance understanding in communication then understanding the triad-concluding strategy of understanding should be a major challenge for semiotics — a challenge to transcend itself the methods based on enlogy and empathy. I can have just some guesses about how this could be done.

Above I constructed a model comparing Peirce's and Saussure's semiotic conceptions in terms of interpretants and other Peircean concepts. So in the Saussurean (enlogic) conception the interpretant turned out to stand in the beginning of the semiosis rather than at the end like in the Peircean (empathic) conception. I guess that in the concluding member of the triad, the interpretant should be in the central and intermediate position and embody "connection" (*Verknüpfung*) rather than "relation" (*Verhältnis*) or "relationship" (*Beziehung*). In the case of the connection the reality would not "appear" (as in relation) or "seem" (as in relationship) but truly manifest itself in its sign character. Then the sign character would turn out to be an original treat of reality rather than something superimposed on it; rather the "hard" components would turn out to be secondary.

In the sextet the triad in question is presented both as the items three, four and five and the levels one, two and three. The ordinary semiotic research involves the second level and the items three and four (or just one of them).

For instance, in the model of material and formal determination duality could be transcended as follows. I described a stock of forms material determination could choose between. This situations corresponds to the second level. On the first level, the stock would be limited by one single possibility, leaving no choice. On the third level, the choice by material determination would change the stock itself. This would be an exit from the predetermined character of semiosis.

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PUBLICATIONS

Lessons from Uexküll's antireductionism and reductionism: A pansemiotic view

ANDRES LUURE

Introduction

Biosemiotics¹ is trying to extend semiotic concepts to biological phenomena and demarcate the biological sphere from the non-biological sphere using the applicability or inapplicability of semiotics as the demarcation criterion. We could call it antireductionist² in the first part of its enterprise as the world of life is interpreted in quasi-human terms; and we could call it reductionist in the second part of its enterprise as, for example, causality is excluded from the semiotic sphere.

This article promotes a view according to which applicability of semiotic concepts cannot serve as a demarcation criterion to partition reality plainly because the extensions of the concepts of *semiosis*, *cognition*, *subjectivity*, and — surprisingly — *causality*, coincide. Both positive and negative lessons will be taken from Jakob von Uexküll's ideas by both developing and criticizing them.

More about antireductionism and reductionism

The concepts of *antireductionism* and *reductionism* appear to presuppose that the world is divided into different levels, and for each level specific standards of explanation and/or a specific conceptual framework are needed. Then antireductionism transfers some standards of explanation or conceptual framework from higher to lower levels, whereas reductionism transfers them from lower to higher levels. So in the case of biosemiotics, as mentioned in the Introduction, semiosis and cognition (which ordinarily are taken to be specific to humans) are antireductively attributed to all organisms and even living cells (and why not to 'bio-molecules'). From the other side, biosemiotics attacks the reduction of life to physical causality and insists on a non-physical conceptual framework and non-causal explanation for the biological sphere. If it is

thought — as I do — that the ‘anthropomorphic’ conceptual framework could be extended even to the non-biological sphere then the reductionist character of biosemiotics becomes apparent: it obstinately denies the legitimate right of the non-biological sphere to be conceived in semiotic terms.

My own view is that the distinction between levels of reality does not require another conceptual framework for each level. Instead the same conceptual framework is to be retained for all levels but used in accordance with specific application standards (such as explanation standards) for each level. In this article standards will be delineated for six different levels allowing at each level different conceptual frameworks to be used compatibly. Thus this viewpoint is both antireductionist and reductionist as to the conceptual frameworks, and is neither antireductionist nor reductionist as to the application standards.

**Lesson one: The functional circle is a non-human semiosis;
The human semiosis is like a functional circle**

Let Uexküll himself describe the functional circle.³

The whole life of animals occurs in the form of actions by the animal as the subject upon its meaning-carrier as the object. As I have shown it is possible to reduce all actions by animals to a very simple schema which I called the functional circle.⁴ From the object’s certain qualities, which I describe as perceptual cue carriers, stimuli depart which are received by the sensory organs (also called receptors) of the subject. In the receptors the stimuli are transformed into nervous excitations running towards the *perceptual organ*. As we know from ourselves, in the perceptual organ sensations start ringing which we in a very general way will call *perceptual signs*. The perceptual signs are projected outside by the subject and are transformed to either optic, or acoustic, or tactile qualities of the object according to the sensory circle they belong to. These qualities constitute the *perceptual cues* of the subject.

If the perceptual organ is differentiated enough to form associations of perceptual signs which could be called *perceptual schemata* then it also is capable of attributing a form corresponding to the perceptual schema to the object. The *operational organ* is influenced by the perceptual organ. In the operational organ certain *impulse series* are elicited which give rise to nervous excitation rhythms. When they meet the muscles of the executive organs of the effectors then the muscles are occasioned to fixed movement series, which manifest themselves as an accomplishment, by the animal. In a way not yet found out these processes as an accomplishment tone are stamped onto the perceptual cue, which only this way obtains its real meaning.

The accomplishment aimed at by the movement series always consists in that an *operational cue* is attributed to the object. The object's qualities concerned with the operational cue are described as *operational cue carriers*. Between the operational cue carriers and the perceptual cue carriers of the object its objective connecting structure is placed which is meaningful to the subject only insofar as it connects the qualities carrying operational cues with the qualities carrying perceptual cues. This connection provides that each action comes to its natural end, which always consists in that the *perceptual cue is extinguished by the operational cue*. This closes the functional circle.⁵ (Uexküll 1980: 371–372)⁶

Why is the functional circle a semiosis? Let us turn to the definition of *semiosis* in the programmatic article by Kull:

I define semiosis as a process of translation, which makes a copy of a text, suitable to replace the original text in some situations, but which is also so different from the original text that the original cannot be used (either spatially, or temporally, or due to the differences in text carrier or language) for the same functions ... I also state that the one carrying out the translation (the translator, which includes memory) is itself a text, i.e., the result of some translation process. (1998: 302)

As mentioned, the text is to be used for some functions. We can see that the translator text has translation as its function. In the same article we read: 'another fundamental feature of the asymmetric semiotic triad is that each of its three members is a participant in other semioses, albeit in a different function. For instance, ribosomes in cells are functioning as translators when making new proteins, but they are themselves products of another translation process which synthesizes ribosomes' (1998: 303). Here the word 'function' apparently refers to the position of a text in Kull's semiotic triad, which involves the original text, the product text, and the translator text. Further, Kull appears to assume that its carrier individuates a text. The carrier is a spatiotemporal entity (a process). The semiosis connects the carrier of the product text with the carrier of the original text. It is difficult to individuate the carriers. For instance, the translator text should be able to survive many semioses, and its carrier should be the same through all its semioses. I suggest concentrating on copies instead of carriers. The original text and the product text are two different copies. I also suggest conceiving a semiosis by a translator text as a copy of the translator text. Then a semiosis is the product text of the translation process in which the translator text translates itself into the semiosis (and the original text into the product text). Each copy of the translator text is a semiosis. The translator text is the subject of the semiosis. The 'life' (translation activity) of a translator text consists in its copying itself.⁷ According to my conception below, every text is the translator in some semiosis.

Let us scrutinize the functional circle from this viewpoint. First, we should notice that according to Uexküll there is no common world scene,⁸ and that the functional circle is to be described on the basis of our own Umwelt (i.e., our own world scene). We ‘observe the animal in our Umwelt, which is its environment, intending to learn to know its Umwelt’⁹ (Uexküll 1980: 322). According to Uexküll, the cue carriers of the animal are constituted by our cues. Our task is to reconstruct the animal’s cues constituting its Umwelt. ‘Though the existence of the Umwelten is due to the perceptual signs and schemata projected outside, they are quite real and material entities just like our own Umwelt having the same origin’¹⁰ (1980: 324). Further, according to Uexküll, the task of the biologist is to ‘discover relations between the material and the immaterial, between object and subject, between perceptual cue and perceptual sign’¹¹ (1980: 325). The words ‘subject’ and ‘object’ have a double use. First, the subject is the animal acting upon an object in its environment and our Umwelt. Second, the subject is the animal acting upon the object in its own Umwelt. The subjective (in the first sense) side of the functional circle (and the animal’s life, as it consists of functional circles) consists of signs including perceptual signs and impulses (described as impulse-to-operation-signs [*Wirkzeichen*] in T. von Uexküll 1986: 1133), and cues. In terms of the last two quotations, the signs are immaterial and subjective (in the second sense) for the animal and the cues constituting the animal’s Umwelt are material and objective (in the second sense) for the animal. We understand the animal’s Umwelt as a representation of objects (in the first sense).

What about our own Umwelt? Uexküll suggests that it is a special case of the Umwelt of an animal. My own view is that it is expedient to modify Uexküll’s conception of the human Umwelt in order to understand how the human observer understands an animal’s Umwelt. Therefore, let me build anew a suitable conception of the human Umwelt. First of all, the human lives in its own subjective world, her Umwelt, just like the animal lives in its own subjective world, its Umwelt. The animal’s inner (subjective) reality consists of signs that have complex relations to each other, and its outer (subjective) reality — its subjective world or Umwelt — is an interpretation of its inner reality. The signs have meaning: there is a plan-like functioning of perceptual forms and operational patterns. The human’s inner (subjective) reality is a complex world picture, a model of what and how there is, there was, and there will be, and her outer (subjective) reality — her subjective world or Umwelt — is an interpretation of her inner reality. The picture has meaning: what there is, is an expression by subjects. The animal’s Umwelt is meaningful or functionally relevant. The human’s Umwelt is meaningful or hermeneutically relevant.

The animal's meaning-carriers are functionally relevant objects included in functional circles. The human's meaning-carriers are hermeneutically relevant subjects included in hermeneutic circles. The animal's meaning-carriers are represented by forms and patterns in the animal's Umwelt. The human's meaning-carriers are represented by inhabitants of the human's Umwelt. She is able to understand both animal subjects and human subjects due to her Umwelt constructed by her understanding. The animal subject perceives forms and operates in patterns. The human subject understands subjects and expresses herself in order to be understood by subjects (animal subjects are understood as having partial understanding).

Uexküll's view is that the human observer has an animal Umwelt including the animal's environment. He describes this Umwelt as material, implying that the animal's inner reality (though including the animal's Umwelt material for the animal itself) is immaterial for the observer. Nevertheless, if we want to describe the Umwelt as material by definition, and if we want to admit the animal's inner reality as part of our Umwelt, we, paradoxically, must describe the animal's subjective reality as material. And according to my interpretation of the human Umwelt, we must describe the objective reality of the animal (involving its environment and body) as immaterial. Thus another task for us is implied: We are concerned with the relations between the subject and the object (in the first sense), between the material and the immaterial within our own subjective reality. In Uexküll's description of the functional circle, at first sight, the subject seems to be delimited from the object by the animal's body.¹² But the subject proper seems to be located in the perceptual organ and the operational organ. And even so, these organs seem to carry both subjective and objective processes. So the subject seems to be constituted by subjective signs and cues associated with the perceptual organ and the operational organ. Then the question arises: Why are the subject and the object harmonically related while they have no impact on each other? Uexküll's standard answer to this sort of question is that there is a plan involving the subject and object;¹³ they are melodies related to each other as point and counterpoint. According to my interpretation, in the functional circle we have a semiosis where the object (the objective process) is the original text, and the subject (the subjective process) is the product text. The functional circle is a copy of the translator text. The translator text copies itself according to a plan forming a functional circle of 'a new organism' including the original text and the product text as its parts. So the copy of the translator text is a whole consisting of two copies — the original text and the product text — as its parts. This is the characteristic way how the text

copies relate to each other in *functional semioses* (i.e., semioses that are functional circles).

In fact, we performed an act of understanding. We attributed what was happening in the functional circle to a subject — the animal subject (the translator text). This subject's life consists of all of the animal's functional circles occurring either in different times or synchronously and involving different objects, different 'new organisms'. Its life is a whole consisting of all its copies (functional circles) as its parts. This is the way we understand an Uexküllian living subject (an animal): It is a whole consisting of its subjective life and its objective life as its parts. Its objective life is included in our inner reality, and its subjective life is included in our Umwelt. To understand the animal means to project its objective life within our inner reality into its subjective life (including its Umwelt) outside of our inner reality. Of course, the result of the projection representing another subject is included in our Umwelt. The act of projection is an act of translation where the original text is the animal's objective life in our inner reality, and the product text is the representation in our Umwelt of the animal's subjective life outside our Umwelt. I, the subject of my subjective reality, am the translator text. Further on, to understand the 'pre-established harmony' of the different animal Umwelten we attribute it to the life of a 'world subject' consisting of the lives of all animals ordered according to a plan.¹⁴ However, this does not explain how human subjects can represent in their Umwelten other subjects outside of them.

Now let us return to the second sense of the words 'subject' and 'object': The subject is the animal acting upon the object in its own Umwelt. In the subject two translation processes are found. First, perceptual schemata (consisting of perceptual signs) and perceptual forms (consisting of perceptual cues) are translated into impulse series (consisting of impulses) and patterns consisting of operational cues. '*Perceptual signs and impulses are the carriers of the life melody of the animal*'¹⁵ (Uexküll 1980: 375). The plan of the translator is the melody it plays as its copy. The melody is played in two parts — the perceptual part and the operational part. Second, schemata are translated into forms (and impulse series into patterns). The subject's inner reality consisting of signs is translated into its outer reality consisting of cues. This is the process of 'constructing the Umwelt'. The animal does not construct its Umwelt from scratch but on the basis of its schemata. The process is similar to how the observer constructs a representation of a subject in the process of understanding.

I conceive *understanding* to be characteristic of human semiosis. If human semiosis is like functional semiosis characteristic of animals it has

to consist of circles of understanding or *hermeneutic circles*. Just as the animal's functioning in the world occurs in its own subjective reality, so the human's understanding of the world (including subjects) occurs in her own subjective reality. The human subject is a translator text, and its semioses are acts of understanding which are copies of the translator text. The human subject's life consists in that she understands herself and expresses herself to herself. Strictly speaking, she does not understand other subjects, though in her understanding herself, other subjects are represented (this justifies the use of the expression 'hermeneutic circle'). How is such representation possible? Analogously to how all animal subjects can be conceived as parts of a text (a symphony) involving all the world, all human subjects can be conceived as products of a text's understanding itself.

**Lesson two: We cannot escape our Umwelten;
Our Umwelten are not Uexküllian**

Now we can see that our task is understanding — ultimately understanding ourselves. We cannot understand the world in a way radically different from the way we understand ourselves and each other. And in order to understand what we do understand we also have to understand understanding. This is what semioticians cannot avoid doing.

What does it mean to understand the world? It seems to me that this means to find explanations to everything. And this 'everything' itself is a product of understanding. Thus we are trying to understand the products of our understanding. Is this chain of understanding endless? It is and it is not. There is no beginning of understanding where there would be nothing to be understood, and there is no end of understanding where everything would have been understood. However, understanding has its beginning and its end.

Let us see how we understand speech. Our understanding goes in several steps (which may be synchronous). Step one: We identify something as a copy of a linguistic text. Step two: We identify the phonologic or graphemic structure of the text. Step three: We identify the lexical and grammatical (including syntactic) form of the text. Step four: We identify the message of the text (what is asserted or asked or demanded). Step five: We understand the text as a poetic expression. Step six: We take the text mystically to embody a subject. Each step presupposes the preceding step (step one presupposes taking something as existing). Of course, we need not take all these steps in each case.

The way we understand the world is similar. Step one: Sensations are given to us. Step two: Sensations are ordered by relations. Step three: Familiar forms are recognized. Step four: Things and their properties are perceived, imagined, and conceived. Step five: The things are taken to be a symbolic expression (the steps in this step — understanding proper — are as described in the last paragraph). Step six: The world is taken to be a creation.

To each step a specific type of subject and of understanding and explanation corresponds. The sensations are the Type One subjects. They are the first component of our subjective reality. Each sensation is the understanding of it and explains itself. A plurality of sensations is a sensation again. The second component of our subjective reality is constituted by relations between sensations or between relations. The relations are the Type Two subjects; understanding them provides an explanation for sensations and their relations. The third component of our subjective reality simulates the Uexküllian Umwelt. Here Type Three subjects (plan subjects), if understood, provide explanation for relations and plans. The fourth component of our subjective reality is constituted by Type Four subjects — things with their properties they change in their adaptation processes, advancing new models. Understanding them provides an explanation for plans and models. The fifth component of our subjective reality (the human Umwelt, as I understand it) is constituted by expressions. Understanding the (Type Five) subjects of these expressions provides an explanation to models and expressions. The sixth component of our subjective reality is a product of constructing of some Type Six subject — some creator of subjects and what is beyond the subjects. Understanding the creator is limited to taking everything as created by the creator. The way this subject ‘perceives’ and ‘operates’ is not understood. Understanding this subject provides an explanation to subjects and what is beyond the subjects.

So the human understanding understands all types of subjects. We understand the subjects of Type One to Four to have partially the way of understanding we have, and the Type Six subjects to have a more complete understanding than we have. My suggestion is to generalize the Uexküllian concept of Umwelt by stipulating that the Umwelt of a subject of a given type includes the part of its inner reality, representing the subjects involved in the semiosis of this type. For instance, the Umwelt of a Type Two subject contains relation members, and the Umwelt of a Type Four subject contains properties.

Let me propose a formula for the simple links between the conceptual frameworks of semiosis, subjectivity, cognition, and causality. *The translator text is the subject and cause¹⁶ of the semiosis, and it cognizes*

the original text. A semiosis is explained by its cause. A list of the first three types of subjectivity (and semiosis, cognition, and causality) follows.

Type *One: Infrasubject.* The semiosis *is* the translator. The original and the product *are* the translator. The semiosis *is* its own cause. Cognition is possible since the subject *is* the object.

Type *Two: Relational subject.* The semiosis is a *relation member* of the translator. The original and the product *are relation members* of the semiosis. The cause of the semiosis is a *relation* involving the original and the product (and itself and the semiosis). Cognition is possible since the subject is *related* to the object.

Comment. According to the physical world picture, according to a strong causality events are determined by preceding events. This sort of causality is thought to be non-semiotic. It is, however, generally ignored that if the event A causes the event B then this causation is mediated by the relational event C consisting in that A causes B. The event C is the subject causing that A causes B. So causation is a triadic relation. The subject of causation translates one text into another as if according to an algorithm of translating a state of the world into the next state of the world. Analogously, any case of algorithmic translation is explained by a relational subject.

Type *Three: Autonomous or functional subject.* The semiosis is a *part* of the translator. The original and the product are *parts* of the semiosis. The cause of the semiosis is a *whole* having the original and the product (and the semiosis) as its *parts*. Cognition is possible since the subject and the object are parts of a *whole* according to a *plan*.

Comment. ‘If we describe the unlocatable relational center of a thing as its *sense* then we may say: The plan contributes to the sense’s accomplishment by ordering all material means’¹⁷ (Uexküll 1980: 378).

We understand the world according to the ontology of subjects determining the character of our Umwelt. Therefore I contend that Uexküll is mistaken when trying to reduce all subjectivity to Type Three. This reduction also is a reason why Uexküll cannot accept Darwinian arguments — ‘speculation with ancestors’¹⁸ (Uexküll 1980: 384): they presuppose some Type Four subject.

Conclusion

In my view it turns out that the biological sphere and the non-biological sphere, similar to the alleged semiotic sphere and the alleged non-semiotic sphere, form a continuum where both life and semiosis are involved from the very beginning. This is due to the circumstance that both biological

and semiotic concepts are a general means and a product of human understanding in the human Umwelt.

In my opinion biosemiotics could be the first step in a general semiotic understanding of the world, which takes into consideration that everything we understand about the world, is included in our Umwelt and determined by its structure. This synthesis would bridge the gaps between physics, biology, and humanities.¹⁹

Notes

1. The classic of contemporary biosemiotics is Hoffmeyer (1996).
2. I learnt the word 'antireductionism' from Chebanov (1988: 160). According to Chebanov, antireductionism as a variety of reductionism is reduction of 'simple' matter to 'complex matter', whereas reductionism proper is 'reduction of complex matter to simple'.
3. Uexküll describes the functional circle (Funktionskreis) many times in different versions.
4. See Uexküll's figure of 'functional cycle' at the beginning of this issue.
5. 'Das ganze Leben der Tiere spielt sich in Form von Handlungen des Tieres als Subjekt mit seinem Bedeutungsträger als Objekt ab. Es ist, wie ich gezeigt habe, möglich, alle Handlungen der Tiere auf ein ganz einfaches Schema zurückzuführen, das ich den Funktionskreis genannt habe (Abb.1). Von bestimmten Eigenschaften des Objektes, die ich als Merkmalträger bezeichne, gehen Reize aus, die von den Sinnesorganen (auch Rezeptoren genannt) des Subjektes aufgenommen werden. In den Rezeptoren werden die Reize in Nervenerregungen verwandelt, die dem *Merkorgan* zueilen. Im Merkorgan klingen, wie wir das von uns selbst wissen, Sinnesempfindungen an, die wir ganz allgemein *Merkzeichen* nennen wollen. Die Merkzeichen werden vom Subjekt hinausverlegt und verwandeln sich, je nachdem, welchem Sinneskreis sie angehören, bald in optische, bald in akustische oder taktile Eigenschaften des Objekts. Diese Eigenschaften bilden die *Merkmale* des Subjektes.

Falls das Merkorgan genügend differenziert ist, um Verbände von Merkzeichen auszubilden, die man *Merkschemata* nennen kann, ist es auch befähigt, dem Objekt eine dem Merkschema entsprechende Form zu verleihen. Vom Merkorgan wird das *Wirkorgan* beeinflusst. In diesem werden bestimmte *Impulsfolgen* ausgelöst, die sich in nervösen Erregungsrhythmen auswirken. Wenn diese die Muskeln der ausführenden Organe der Effektoren treffen, werden diese zu ganz bestimmten Bewegungsfolgen veranlaßt, die sich als Leistung des Tieres äußern. In noch nicht aufgeklärter Weise werden diese Vorgänge dem Merkmal als Leistungston aufgeprägt, das dadurch erst seine wahre Bedeutung erhält.

Die von den Bewegungsfolgen erzielte Leistung besteht immer darin, daß dem Objekt ein *Wirkmal* erteilt wird. Die vom Wirkmal betroffenen Eigenschaften des Objekts werden als *Wirkmalträger* bezeichnet. Zwischen Wirkmalträgern und Merkmalträgern des Objektes schiebt sich sein *Gegengefüge* ein, das für das Subjekt nur insofern von Bedeutung ist, als es die wirkmaltragenden Eigenschaften mit den merkmaltragenden verbindet. Durch diese Verbindung ist dafür gesorgt, daß jede Handlung zu ihrem natürlichen Abschluß kommt, der immer darin besteht, daß das *Merkmal vom Wirkmal ausgelöscht wird*. Dadurch ist der Funktionskreis geschlossen'.

6. I borrow the translations of Uexküll's terms from T. von Uexküll (1986). In that article a semiotic interpretation of the functional circle is given that is somewhat different from mine.
7. Consider Kull's example with protein synthesis (Kull 1998). In protein synthesis, genetic information is translated from mRNA to the newly synthesised protein molecule. Ribosomes (included in polyribosomes), tRNA, and enzymes participate in the process. Therefore, it is not quite correct to identify the ribosome as the carrier of the translator text in protein synthesis. The correct identification is very difficult. However, we can say that the translator text is the subject of this translation, and the translation process is a copy of it.
8. 'Instead of many special world scenes, in which the life of many individual humans occurs, the mechanists admit only one world scene common to everybody'. — 'Statt der vielen Spezialweltbühnen, in denen sich das Leben der einzelnen Menschen abspielt, erkennen die Mechanisten nur eine, allen gemeinsame, Weltbühne an' (Uexküll 1980: 306).
9. 'wir ein Tier in unserer Umwelt beobachten, die seine Umgebung ist, mit der Absicht, seine Umwelt kennenzulernen'.
10. 'Die Umwelten sind, obgleich sie ihre Existenz hinausverlegten Merkzeichen und Schematen verdanken, durchaus reale und materielle Größen — genauso wie es unsere eigene auf gleiche Weise entstandene Umwelt ist'.
11. 'Beziehungen zwischen dem Materiellen und dem Immateriellen, zwischen Objekt und Subjekt, zwischen Merkmal und Merkzeichen zu entdecken'.
12. This is how the words 'subject' and 'object' are used in Uexküll's text. In what follows I extend the object to the animal's body. The reason is that the object's qualities, in fact, are internal qualities of the complex involving the animal's body and the object in Uexküll's sense.
13. The object may or may not be an organism. 'Between living beings there exists a plan-likeness that manifests itself everywhere and can go so far that when two organisms meet then before our eyes a new organism including the two partners and having an integral anatomy and physiology seems to arise'. — 'Es existiert zwischen den Lebewesen eine überall zutage tretende Planmäßigkeit, die so weit gehen kann, daß bei Zusammentreffen zweier Organismen vor unseren Augen ein neuer, beide Partner umfassender Organismus zu entstehen scheint, der eine einheitliche Anatomie und Physiologie besitzt' (Uexküll 1980: 339). 'For there is no even small difference in the plan-like involvement by the functional circles between organic and anorganic objects'. — 'Es besteht nämlich nicht der geringste Unterschied in der planmäßigen Erfassung durch die Funktionskreise zwischen den organischen und den anorganischen Objekten' (Uexküll 1980: 339–340).
14. 'Like the living cells constitute the elementary building-stones of all living beings which composed according to certain construction plans give rise to the subject capable of constructing an Umwelt, the Umwelten constitute the building-stones of the next higher order which in accordance with suprasubjective construction plans build the edifice of living nature'. — 'Wie die Zellen die elementaren Bausteine aller Lebewesen bilden, die nach bestimmten Bauplänen zusammengefaßt das Subjekt hervorbringen, das die Fähigkeit in sich trägt, eine Umwelt zu erbauen, so bilden die Umwelten die nächst höheren Bausteine, die, übersubjektiven Bauplänen gehorchend, das Gebäude der lebenden Natur errichten' (Uexküll 1980: 341). Describing the construction plans of living nature as 'suprasubjective' he means that they are supraindividual, associated with no individual organism. Uexküll seems to avoid attributing them to a subject since the 'creator has lost his credit' ('der Schöpfer in Mißkredit kam') (Uexküll 1980: 378).

15. 'Merkzeichen und Impulse sind die Träger der Lebensmelodie des Tieres'.
16. According to the contemporary use which has it that a preceding event in a causal chain is a cause of a succeeding event, it would be more natural to describe the original text as the cause of the product text. However, I prefer a more Aristotelian concept of causality.
17. 'Wenn wir den räumlich nicht faßbaren Beziehungsmittelpunkt eines Gegenstandes als seinen *Sinn* bezeichnen, so dürfen wir sagen: Der Plan verhilft durch Ordnung aller materiellen Mittel dem Sinn zur Leistung'.
18. 'Ahnenspekulation'.
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Understanding life: Trans-semiotic analogies

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Abstract. This paper sketches a network of analogies reaching from linguo-semiotics (including theory of reference in analytical philosophy of language) to biosemiotics. It results in the following proportion: attributive use of referring expressions : referential use of referring expressions : 'generative' use of referring expressions = signifying : referring : 'poetic pointing' = 'functional' semiosis : 'adaptational' semiosis : semiosis in the narrow sense.

Can the essence of life — or, at least, our concept of life — be understood in a semiotic framework? An obvious difficulty for such an enterprise seems to be the problematic character of the extension of the semiotic concepts outside of the realm of the human. Any talk of life in semiotic terms is often regarded as merely metaphorical²: semiosis or signs in a proper sense presuppose consciousness, that is, human agents.

This paper aims at suggesting that the plainly metaphorical character of the attribution of semiosis to life could be avoided by means of a network of analogies extending from within the human realm to life in general. First, a fragment of a theory of referring will be sketched, providing a distinction between uses of referring expres-

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² However, the metaphorical character of some conception need not imply its inferiority. For a discussion of the constitutive role of models, analogies and metaphors in science see Emmeche, Hoffmeyer (1991).

sions. Then, an analogy will be suggested, extending the form of this distinction to a distinction of reference from some similar linguosemiotic relations. And finally, the analogy will be extended to yield a general semiotic distinction between types of semiosis involving both anthro- and biosemiotics.

Referring

In analytical philosophy of language, referring (also called denoting³) is usually construed as a relation⁴ between a linguistic expression (the referring expression) and an existing⁵ object referred to (called the reference of the referring expression). Of course, referring expressions have to be provided by a certain language.⁶ Further, it should be noted that in the relation of the referring expression and its reference, the first member may be construed either as a type or as a token. The referring expression can be regarded to be a type when its reference is determined plainly by its linguistic form. E.g., whenever the referring expression '2+2' is used in the language of arithmetic, its reference is 4. In general, however, the reference of a referring expression depends on the context of its use. Every token (i.e., occurrence) of a referring expression is involved in a certain act of referring along with a certain use of the expression. Think about the variety of (deictic and anaphorical) referring uses of the expression 'this' and the huge amount of the possible references of its tokens.

³ These terms sometimes are experienced to have different nuances of meaning, see footnote 8, below.

⁴ The nature of this relation is described as "standing for" or "picking out".

⁵ The existence of an object is not clearly defined. One can speak of present physical existence (as of the Pope), present mental existence (as of my present thought that semiotics lacks enough system), past or future physical (or mental) existence (as of my grandparents or grandchildren), or abstract existence (as of numbers according to Platonist philosophy of mathematics, or meanings (senses) and concepts according to Frege (1892a, 1982b)). Fictional objects (like unicorns or Shakespeare's Hamlet) usually are regarded as non-existent, but one also may speak of their fictional existence. The author of this paper holds that in an adequate theory of referring, referring expressions refer to objects in some model.

⁶ The linguistic resources underlying a referring expression vary. Typically, referring expressions are nominal phrases ('my home'), proper names ('Italy') or pronouns ('this').

A class of referring expressions is constituted by what Russell (1905) introduced as “definite descriptions”.⁷ A definite description is meant to determine its reference by specifying a condition met by precisely one object, which is the reference. E.g., the expression ‘the present President of France’ refers to the unique object being at present (September 7, 2001) the President of France — a person called Jacques Chirac. Donnellan (1966) distinguishes between the “attributive use” and the “referential use” of definite descriptions. In the attributive use, the reference is strictly determined by its fitting the description, i.e., meeting the specifying condition. In the referential use, the definite description merely has to identify the reference, independently of its meeting the description or otherwise. Donnellan uses an example which goes as follows. At a party I introduce a person to my friend, saying “That man drinking martini is married to Jane” and pointing to a drinking man sitting in the corner. Now, in all probability, I succeed in referring to the right person even if he, in fact, is drinking water. So, a definite description is used to refer to its reference in a non-attributive way, the referential way. In another example by Donnellan, Mr Smith has been brutally murdered. “Smith’s murderer must be insane, “a woman who knew him comments. Whoever murdered Smith is insane because Smith was a very kind man. Here the definite description ‘Smith’s murderer’ is used attributively. Later on, Jones is on trial, charged with Smith’s murder. His behaviour in the court is very queer, and people say: “Smith’s murderer must be insane.” Whoever the real murderer may be, here the expression ‘Smith’s murderer’ refers to Jones; this definite description is used referentially.

Attributive use and referential use are not restricted to definite descriptions. They also can be distinguished in the case of proper names. Kripke (1980: footnote 3 of the main text) gives the following example. Two men are watching a remote man whom they hold to be Jones. “What is Jones doing?” “He is raking leaves.” But in fact the distant man is Smith, and the name ‘Jones’ here refers to Smith. The name ‘Jones’ here is used referentially.⁸

⁷ Russell himself denied that definite descriptions really were involved in the relations of referring (“denoting”).

⁸ Kripke opts for reserving the term ‘referring’ to the ‘attributive’ use of names (in this example Jones, in this use, refers to Jones, and in general, ‘x’’s reference is *x*) and wonders if he should use the term ‘denoting’ instead.

How general can we make the distinction between the attributive use and the referential use of referring expressions? Are there any limits in terms of the appropriate type of expressions, or again, in terms of what causes the possible apparent inadequacy of the referring expression in the case of the referential use?

The proposal of an answer to be given in this section proceeds from the assumption that the relation of referring relates a referring expression to an object in a model⁹ in the user of the expression or in the audience, and not to a “real” object.¹⁰ Then, for the definite descriptions the following distinctive criterion is suggested: in the case of a model switch (transition from one model (source model) to another (target model)¹¹), in the attributive use, the reference of the expression in the target model is the object fitting the description¹² in the target model; in the referential use, the reference of the expression in the target model is the same as in the source model.¹³ A model switch can occur both as a change in actual beliefs and as a consideration of a possibility held to be counterfactual and a switch from one possibility to another.

Reconsider the example about Smith’s murderer. The standard interpretation of the attributive use (in principle shared by Donnellan

⁹ By a model, a stock of potential objects along with a system of potential beliefs about them is meant. The objects and beliefs in a model are potential in the sense that the objects need not be meant to be real and actual, and the “beliefs” need not be believed but they could be believed or “as if” (fictitiously) believed. The ways objects may be constituted in models is precisely the subject matter of the classification of the uses of referring expressions.

¹⁰ An independent argument for this assumption is that such a relation lacks the “mystical” character of a relation between a referring expression and its “real” reference. Besides, this assumption renders the theory of referring less complicated and more natural, and unties it from metaphysical problems.

¹¹ The typical instances of model switch are change in beliefs (some actual belief(s) become(s) disbelief(s) and/or vice versa) and consideration of possible worlds (construed as modifications of the actual world by counterfactual conditions as in Kripke (1980)) held to be non-actual (transition from the actual world to another possible world; both worlds are represented as models).

¹² Target models without a unique object fitting the description are excluded in the attributive use.

¹³ Target models in which this object does not exist are excluded in the referential use.

(1966)¹⁴) presumes that the expression ‘Smith’s murderer’ refers to Smith’s actual murderer in the actual world and to Smith’s murderer in any possible world in which someone else (a definite person) murdered Smith. According to my own interpretation, in the case of the attributive use, “Smith’s murderer” refers to Smith’s murderer in any model in which a definite person murdered Smith. And in the case of the referential use, “Smith’s murderer” refers to a certain person who, in some model, murdered Smith. In Donnellan’s example, the model switch in the case of the attributive use must be based on the woman’s presumption (probably as a belief) that a definite person murdered Smith (otherwise she probably would not have said “Smith’s murderer” not mentioning that Smith could not have been murdered or that there could be more than one person participating in the murder). This presumption need not specify who the murderer is, and leaves room for different models based on mutually incoherent versions. Switching between those models shifts the reference of “Smith’s murderer” according to the model’s version. And in the case of the referential use, the model switch is based on the belief that Smith’s murderer is Jones. Should this belief be replaced with an alternative belief, a model switch would occur, not affecting the reference.

The concepts of attributive use and referential use could be generalized, rendering them independent of the linguistic form of the referring expression and reasons of model switches: independently of the linguistic form of the referring expression, it is used attributively if after a model switch its reference is meant to be the object fitting the description in the target model and it is used referentially if after a model switch its reference is meant to be the object fitting the description in the source model. The generality of this formulation is limited by the requirement that the referring expression imply a definite description, or in other words, specify a condition uniquely determining its reference.

Reconsider Kripke’s example. When two men speak about Jones raking leaves they have a model in which the man they are watching is Jones. In the case of a model switch to a model in which the man watched is Smith, in the target model “Jones” does not pick out the

¹⁴ Admittedly, Donnellan (1966) attributes the attributive use of definite descriptions to Russell (1905), thus involving Russell’s denying of definite descriptions as referring expressions.

man they are watching because he is not Jones. “Jones” is used referentially because after the model switch it cannot be used to refer to the person meant. Further, “Jones” implies a specifying condition because otherwise there would be no criterion for telling that the man watched is not Jones.¹⁵ Here we have another formulation of a general definition of the attributive use and the referential use of referring expressions: a referring expression implying a definite description is used attributively if it can be used to refer to the reference meant after any model switch with a target model in which there is precisely one object fitting the description, and is used referentially if there is a model switch with a target model in which this expression cannot be used to refer to the reference meant.

The attributive use and the referential use of referring expressions allow further interpretation: they correspond to different ways of identification of objects in models. The attributive use corresponds to a functional way of identification: the object meant is the object having such and such function (under the presumption of the uniqueness of such an object). We also can say that this is a conceptual way of identification because the reference is determined by its concept. Then the model simply declares an object by its definite description. The referential use corresponds to a way of identification such that the identity of the object referred to is independent of descriptions picking it out in one or another model, concepts we have of it, and functions we mean it to fulfil. What counts is the object itself: its identity is borne by itself, and not by our concept of it. So in the case of the attributive use, the reference as an object through models is tied to a concept, whereas in the case of the referential use, the reference as an object is free from any particular concept, though in any given model it can be picked out by some concept.

Can an object in a model be even more independent of and free from the referring expression? I am going to introduce such a use of referring expressions — the “generative” use. In the case of the generative use, an object in a model is introduced or “generated” or declared implying no definite description or specifying conception. Instead, the identity of the object is meant to be maintained without any identifying character or essential property, and it can be identified

¹⁵ Kripke (1980), in fact, deals with in proper names used referentially, but only regard to model switches due to transition from the actual world to possible worlds, not due to changes in beliefs.

only by a “name”¹⁶. The generative use of referring expression is quite frequent in mathematics where often objects are introduced in such a way: “let A be a set consisting of a and b ”. In a model, the elements a and b are created, and they are created as different though there is no other means of distinguishing them than their different names ‘ a ’ and ‘ b ’.¹⁷ We also may imagine a world containing several exactly similar physical objects with symmetrical relations to each other. Then the names identifying them are used generatively. Such names need not have the linguistic form of a constant or of a proper name: any expression, in principle, may be used creatively.

So we have built a base for analogies: the attributive use, the referential use and the generative use of referring expressions.

Signifying, referring and beyond

Let me take the next step: constructing an analogy within linguo-semiotics.

I proceed from the distinction between signifying and referring.¹⁸ In signifying, the role played by models in referring, is played by languages. A signifying expression signifies an item in a language. So the signifying/referring distinction reduces to the language/model distinction. I am going to describe this distinction in analogy with the distinction between the attributive use and the referential use of referring expressions.

Leaving aside the communicative aspect, a language belongs to a signifying subject just as a model belongs to a referring subject. A model contains objects meant to be independent of and free from the

¹⁶ Unlike the names in Kripke (1980), these names do not imply distinctive marks in the actual world (neither in some possible world), as a person’s precise date and place of birth.

¹⁷ What if we introduce a relation R such that aRb holds, whereas bRa does not hold? The relation R also is introduced generatively. What beyond its name distinguishes it from the relation Q such that bQa holds, whereas aQb does not hold (for unambiguity, let aRa , bRb , aQa and bQb hold)?

¹⁸ This distinction is not received. Sometimes what I call referring is referred to as signifying. My points of departure in fixing this distinction are Saussure’s (1916) use when he introduces the terms ‘signifier’ (*signifiant*) and ‘signified’ (*signifié*), the concept of referring in analytical philosophy of language, and my proposal to take the references to belong to models (above, previous section).

linguistic form of referring to them. However, they need some referring expression in order to be identified. A language contains items meant to be tied to the linguistic forms signifying them as the sides of a sheet of paper or a coin are tied together (the relation between the signifier and the signified as described in Saussure (1916)).

How is the analogy structured? In distinguishing between the attributive use and the referential use of referring expressions, we referred to the degree of the tiedness of the objects referred to the referring expressions. In distinguishing between the signifying relation and the referring relation, we compare the degree of the tiedness of the objects referred to their referring expressions and the degree of the items signified to their signifying expressions. So far, we have two degrees of tiedness. The first degree of tiedness is “like a sheet of paper”. It applies to the way signifiers are related to their signifieds with regard to their unconcern in extralinguistic reality, and to the way referring expressions used attributively are related to their references with regard to their unconcern in the identity of the references. The second degree of tiedness could be called “one-end looseness”¹⁹. It applies to the way referring expressions are related to their references with regard to their concern in extralinguistic reality accessible via models²⁰, and to the way referring expressions used referentially are related to their references with regard to their concern in the identity of their references accessible via definite descriptions.

So signifying and referring stand in the same “proportion”²¹ as the attributive use and the referential use of referring expressions. To complete the analogy, it remains to find a linguosemiotic relation similar to signifying and referring and analogous to the generative use of referring expressions. The third degree of tiedness, characteristic of the generative use of referring expressions, could be called “floating looseness”²².

¹⁹ In the referential use, the identity of an object is tied only to its definite description in one model.

²⁰ Concerning referring, extralinguistic reality is linguistically describable, that is, representable by models. Models are limited in that they are meant to consist of really or fictionally existing objects.

²¹ If the relation between *A* and *B* is analogous to the relation between *C* and *D* then we could say that *A* and *B* stand in the same proportion as *C* and *D*, or, $A:B=C:D$.

²² In the case of the generative use of referring expressions, the identity of an object referred to is not earthed by any definite description in any model.

The reference is generated along with the referring expression referring to it, that is, its name. Analogously, in the case of the third degree of tiedness between linguistic expressions and their content, using language is a creative activity with regard to reality. The linguistic expressions ‘poetically point’ to the reality being created, a reality not captured in models. The successive loosening of the tie could be illustrated by telling that, typically, signifying centres around words, referring centres around sentences, and poetic pointing centres around texts. Further specification of the relation of poetic pointing transcends the limits of this article. However, following the leading idea of this article, new concepts can be introduced by means of analogy, placing them into blanks in proportions. So, poetic pointing could be introduced as the missing member x in the proportion:

attributive use : referential use : generative use = signifying : referring : x .

Life

Now we are approaching the central concern of this article: how can life be understood in a semiotic framework? Let me start from the conclusion: two types of biosemiosis are related to anthroposemiosis as the first, the second and the third members of our proportion.

How is floating looseness characteristic of the human realm? All anthroposemiotic means, including languages and models, belong to humans in a peculiar way. They depend on being maintained by humans, having no independent existence. They are untied from the humans’ physical existence. I call the types of semiosis corresponding to one-sided looseness and to “like a sheet of paper”, adaptational semiosis and functional semiosis. The life of the subject of adaptational semiosis (the adaptational subject) is constituted by its efforts to survive. It adapts itself to its environment by changing its properties. Its properties constitute a “natural model” (in contrast of the model proper, not reducible to properties, as described above in the context of referring). The life of the subject of functional semiosis is constituted by functional circles (Uexküll 1973, 1980, 1982, 1992).²³

²³ For my interpretation of the functional circle see Luure (2001).

It has no properties it can change, and so all meanings belong to its life as its reverse side.

The functions fulfilled by semiotic, non-bodily “expressions” belong to properties in the case of the adaptational subject and to parts (a reverse side is a part) in the case of the functional subject. Functioning and adaptation are aspects of life, also belonging to humans. Therefore, in a broader sense, these biosemiotic functions also belong to anthroposemiotics, the proportion “functioning : adaptation : expression” being part of the anthroposemiotic network of analogies.

Concluding comments

After suggesting this network of analogies I would like to sketch its further connections.

The nodes of the proportions here have the metaphorical names “like a sheet of paper”, “one-ended looseness” and “floating looseness”. Perhaps no straightforward unambiguous formulation can be given to them, and perhaps their logical foundations coincides with that of Peirce’s (1998) categories of Firstness, Secondness and Thirdness. They stand in proportion with Type One, Type Two and Type Three in Luure (2001) where the number of nodes is extended to six.

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К понимаю жизни: транссемиотические аналогии

В статье начертана сеть аналогий, простирающаяся от лингвосемиотики (включая теорию референции в аналитической философии языка) до биосемиотики. Получается следующая пропорция: атрибутивное употребление референтных выражений : референциальное употребление референтных выражений : “генеративное” употребление референтных выражений = означение (сигнификация) : референция : “поэтическое указывание” = “функциональный семиозис” : “адаптационный семиозис” : семиозис в узком смысле.

Elu mõistmise poole: transsemiootilised analoogiad

Artikkel visandab analoogiate võrgustiku, mis ulatub lingvosemiootikast (sealhulgas osutusteooriast analüütilises keelefilosoofias) biosemiootikasse. Tulemuseks on järgmine proportsioon: osutavate väljendite atributiivne kasutus : osutavate väljendite referentsiaalne kasutus : osutavate väljendite “generatiivne” kasutus = tähistamine (signifitseerimine) : osutamine : “poetiline viitamine” = “funktsionaalne semioos” : “adaptatsiooniline semioos” : semioos kitsas mõttes.

What I Am and What I Am Like: Nature and Goal in Living Things

Let me start from a paradox in biology. The result of the adaptation process is adaptedness,¹ also called “fitness” in evolutionary biology. But the adaptation process presupposes lack of adaptedness. Where there is adaptedness, there is no need of adaptation; and where there is adaptation, adaptedness is not present.

A classical approach in biosemiotics is the one represented by Jakob von Uexküll (1973, 1980, 1982), which proceeds from the fact of adaptedness and ignores the fact of adaptation. I call the Uexküllian method a *nature-oriented* approach.

In contrast, evolutionary biology tends to proceed from the fact of adaptation (process) and to ignore the fact of adaptedness (state). I will call this the *goal-oriented* approach, and will sketch a biosemiotic framework to explicate it.

In the Uexküllian approach, nature (including living biological nature) is an harmonious whole, a symphony of contrapuntally related Umwelten. Nature behaves according to its essence, and the nature of nature amounts to the totality of nature, its overall plan. There is no hidden nature behind Umwelten, with their functional circles. The experience of reality by a subject in an Umwelt can be described like this: “My Umwelt is unfolding in me at every moment of my life. My Umwelt is all there is, and my life has no beginning and no end.” There is no death and no struggle.

From the goal-oriented perspective, a living thing has no nature; its goal is mere survival. In the adaptation process, the living thing is continually dying: it is continuously confronting its own death and trying to escape it. Therefore, its life is just the preparation for its goal: an adapted life. Because the latter comes when the struggle to survive ends, it is a life that is never attained.²

From the nature-oriented view, the identity of a living thing is defined by its essence: “I am what I am.” By contrast, in the goal-oriented approach, the identity of a living thing is defined by its goal, that is, by its behaviour while attempting to survive: “I am what I am like.” Below I outline a semiotic framework for both

approaches – the nature-oriented and the goal-oriented – which are described in terms of *functional semiosis* and *adaptational semiosis*, respectively

1. Functional semioses in functional circles

My semiotic interpretation of Uexküll's functional circles are based mainly on the following quotation:

The whole life of animals occurs in the form of actions by the animal, as the subject, upon its meaning-carrier, as the object. As I have shown, it is possible to reduce all actions by animals to a very simple schema which I called the functional circle [...]. From the object's certain qualities, which I describe as perceptual cue-carriers, stimuli depart which are received by the sensory organs (also called receptors) of the subject. In the receptors the stimuli are transformed into nervous excitations running toward the *perceptual organ*. As we know from [observing] ourselves, in the perceptual organ, sensations start ringing which we, in a very general way, will call *perceptual signs*. The perceptual signs are projected outward by the subject and are transformed into either optic, or acoustic, or tactile qualities of the object, according to the sensory circle they belong to. These qualities constitute the *perceptual cues* of the subject.

If the perceptual organ is differentiated enough to form associations of perceptual signs (*perceptual schemata*), then it also can attribute a form that correlates the perceptual schema with the object; that is to say, the *operational organ* is influenced by the *perceptual organ*. In the operational organ certain *impulse series* are elicited which give rise to excitation rhythms in the nerves. When these rhythms reach the muscles of the effectors' executive organs, the muscles are prompted to produce fixed-movement series, which manifest themselves as an accomplishment by the animal. In a way as yet unknown, these processes as an accomplishment are stamped onto the perceptual cue, which only in this way obtains its real meaning.

The accomplishment aimed at by the movement-series always consists in an *operational cue* being attributed to the object. The qualities of the object that are associated with the operational cue are called *operational cue-carriers*. Located between the operational cue-carriers and the perceptual cue-carriers of the object is the objective connecting structure, which is meaningful to the subject only insofar as it connects the qualities carrying operational cues with those carrying perceptual cues. This connection assures that each action comes to its natural end, which always consists in the perceptual cue being "*extinguished by the operational cue*. This closes the functional circle" (Uexküll 1980: 371–372).³

The following statement can serve as a general semiotic key for understanding Uexküll's conception of life: *in a semiosis, the interpretant is a whole, con-*

*sisting of the sign and the object as its parts.*⁴ This corresponds to Uexküll's view of the script-like functioning of the parts that make up an harmonious world.

In the functional circle, one finds three types of semiosis. I describe these by starting from the context in which Uexküll himself uses the word "sign" (*Zeichen*). We see from the above quotation that sensations involved in the functional circle are called perceptual signs (*Merkzeichen*). Uexküll also speaks of impulse-to-operation signs (*Wirkzeichen*), which are related to operational cues in the same way as perceptual signs are to perceptual cues (T. von Uexküll 1986). An animal's inner world is constituted by its perceptual and impulse-to-operation signs; its outer world is constituted by its perceptual and operational cues. The animal's inner world and outer world together comprise what Uexküll calls its *Umwelt*. The signs and the cues are in a one-to-one correspondence. Each sign and its corresponding cue constitute a whole, with its parts corresponding to something like the two sides of a sheet of paper or a coin.⁵ It seems natural to suggest that in each pair the sign be the sign and the cue be the object in a semiosis. And, according to our general suggestion, the interpretant in this semiosis is the whole, consisting of the sign and the cue. This sign-cue complex has two sides in an obverse-reverse relation, one belonging to the animal's inner world and the other belonging to its outer world. Thus, the parts are heterogeneous and do not overlap. The whole is put together in a quasi-spatial way: the parts are synchronous and are joined together in an, as it were, subjective space. To use Uexküll's musical metaphor, the parts stand in a harmonic relation: they are related as point to counterpoint. The signs in question can be conceived as participating in part-whole relations, both as tokens and as types (as related to object types and interpretant types).

This sign-object relation can be extended to the relations between perceptual schemata and perceptual forms (constituted by perceptual cues) and between patterns of impulse-to-operation signs along with patterns of operational cues. In each case in its turn, the interpretant is constituted by the sign and the object as its parts.

The second type of semiosis in functional circles arises from functional "melodies" that begin on the perceptual side and end on the operational side of the functional circle. To revisit Uexküll, the operational processes as a "tone" of accomplishment are stamped onto the perceptual cue; only in this way does the latter achieve its true meaning. A perceptual cue – or in the general case, a perceptual form – elicits an operational cue or pattern of operational cues. The character of such elicitation is described by the expressions "tone" and "meaning". According to Uexküll, something has meaning for an animal (including a human) only insofar as it can be involved somehow the animal's functioning. For instance, a chair may have meaning for me as a seat, in which case it must

possess a “sitting tone”, to use Uexküll’s language; or the chair may have meaning for me as something to stand on in order to get a book from an upper shelf, in which case, the chair would have something like a “climbing” tone.⁶ And so on. This tone is, as it were, the beginning of a “melody” that is to be completed by some operation. To paraphrase Uexküll, the initial sequence of such a melody obtains its real meaning only by its complementary, final sequence.

How should we conceive this sort of semiosis? Uexküll identifies the signs in it as perceptual cues. He is not so explicit in his description of objects, but seems to understand them as operational cues. At this point, in this second type of semiosis we should take both signs and objects to be cues, that is, objects in semioses of the first type. Still, it is more convenient – and perhaps more adequate – to take them to be interpretants in semioses of the first type. This move involves the signs, objects and interpretants of the first type of semioses as parts of signs, objects and interpretants of semioses of the second type. On this view, the interpretant is a functional “melody” for two, contrapuntally related voices – the sign-voice and the cue-voice. The “melody” has an initial sequence (perceptual melody) and complementary, terminative sequence (operational melody) as its temporal parts.

Now we come to the third and final type of semiosis involved in functional circles. This type of semiosis features an animal subject, an *I*, whose identity is maintained throughout functional circles. Uexküll speaks also of the “I-tone”, which indicates the sign character of the *I*. The object of this sign is constituted by all functional circles in which the subject’s life consists. I am a sign whose object is my entire life. I and my life, in turn, constitute a whole which is my interpretant. To extend Uexküll’s terminology, this whole could be described as my *life plan*. The parts in question are related as a subject and its functioning; the latter is in turn constituted by different functional circles as the parts of a life. As with the first type of semiosis, here the sign and the object as parts of the interpretant are synchronous and heterogeneous, their relation being quasi-spatial. To use our musical metaphor, I perform melodies from my repertoire throughout my life, accompanying them with my I-tone.

According to Uexküll, the harmonious co-functioning of parts derives from a “plan”, which is nothing other than the whole constituted by the sign and the object – the interpretant. Thus in functional semiosis “interpretant” is another word for “plan”. The semiotic description of functional circles is completed by the subordination of my entire life to my life-plan. For Uexküll, this is not all. A single animal’s life engages contrapuntally with the lives of all other animals, and ultimately, with the functioning of the whole world as subordinated to one world-plan. I add: since according to Uexküll this plan is due to God, the ultimate plan should involve both God and the world. Thus far we have dealt with three

types of semiosis on three levels of functional semiosis. Let me call the levels the *recognition level*, the *reaction level*, and the *realization level*. According to Uexküll, signs have tones for something whence they obtain their “real meaning” (see his quotation above). On the recognition level “sensations start ringing”. So we have a certain “tone” involved in perceptual signs as well. This tone may be described as a *recognition tone*: the sign elicits the recognition of a cue. This recognition, according to Uexküll, consists in placing a certain cue into the animal’s subjective outer world, by a sign being projected outward and by attributing a cue to an object. The same holds for the impulse-to-operation signs. By the recognizing cues, the perceptual and impulse-to-operation signs obtain their real meaning. As described above, on the reaction level the sign – i.e., the perceptual cue or form, or the corresponding plan – has a tone of some accomplishment and elicits some operation. On the realization level, the sign has an I-tone and elicits the whole of the animal’s life.

It turns out that on the recognition level the signs are icons, because the sensuous qualities of objects resemble sensations. On the reaction level the signs are indices, since perceptual melodies and operational melodies belong to functional melodies. And on the realization level the signs are symbols, because the life of an animal depends on a repertoire of habitual melodies in realizing its life-plan.⁷

What we said about the sign and the object being obverse and reverse sides on the recognition level seems to extend to functional semiosis in general. There is no choice of object, given the sign. The sign is, in a way, transparent as to the object. What is more, this relation of opposing sides extends itself to the interpretant, which simply sums up the sign and the object. We could say that the sign and the interpretant are “flip-sides” of the same coin; the same holds for the sign and object + interpretant; and so on in all combinations. Sign, object, and interpretant form a kind of triadic, obverse-reverse relation. If we imagine the sign and the object as the front and back sides of a sheet of paper, then the entire sheet of paper is the interpretant. The opposing sides are held together by the unifying whole. Nevertheless, the sign and the interpretant determine the object, just as the sign and the object determine the interpretant. Therefore the sign, the object, and the interpretant have equal abilities in determining each other, and this situation relativizes the privileged position of the interpretant as the whole.

To end this section, let us note a characteristic of functional semiosis: different tokens of semiosis do *not* involve coinciding tokens as their signs or objects.

2. *Adaptational semioses in adaptational circles*

I will suggest a semiotic framework for adaptation in analogy with functional

semiosis. First, a general key should be found that determines how the interpretant is related to sign and object in an adaptational semiosis. We must have substitutes for the part-whole relation and for the reverse-sides relation in functional semioses. My suggestion is that, in adaptational semioses, sign and object are not reverse sides, but opposites held together not by a whole but by a mediating boundary (the whole is a different kind of boundary). Opposites are different, mutually exclusive properties of a thing (states of a substance); they are capable of being substituted for each other by a transition process. The counterpart of the part-whole relation in adaptational semiosis is the property-thing relation. Signs and objects are properties of interpretants. A property can be shared by several things. The properties of a thing are themselves things. The interpretant is a mediating boundary – a thing with the sign and the object on its different sides.

In analogy with functional semiosis, adaptational semiosis occurs on three levels in adaptational circles. On the recognition level, the individual (a specimen, a population, a species) that is adapting itself “perceives” its own inadequacy in comparison with its goal. This occurs in a semiosis in which the object is the goal and the sign is a current model of the goal. This model is the individual’s actual state. It is a “natural” model precisely in the sense that it constitutes an actual property of the individual. “Through the glasses” of this model the goal is perceived as a lack, a deficiency in the individual as latter actually is. This lack is the interpretant in this semiosis. The lack is the mediating boundary between the model and the goal. It is a complex state involving the model and the goal as its properties. As a response to the lack, the individual advances a new model of the goal by transitioning into a new state that is supposed to be adequate to the goal. And “through the glasses” of this new model the goal is perceived as a fulfilment, an adequacy in the individual as the latter actually is. Again, this fulfilment is a mediating boundary between the model and a goal, a complex state involving both the model and the goal as its properties; in this new model, the interpretant is the sign, with the goal as its object. In a new adaptational circle, the same sign and the same object may have a lack as the interpretant.

On the *reaction level*, the sign is a lack and the object is a fulfilment. The interpretant is a thing (a substance) to which the lack and the fulfilment belong. It is the boundary between lack and fulfilment, a boundary advancing the new model. The reaction occurs not according to a built-in melody, as in a functional circle, but depends on the individual’s actual state of memory. In contrast with adaptational semiosis, memory here is not a schema but a changing property.

Finally, the *realization level* binds together the adaptational circles. I am the individual whose identity is to be saved through all the adaptational circles constituting my “dying” process. I and the model-advancing boundaries in different adaptational circles are properties of a boundary that mediates between me as

embodying the individual's identity and the model-advancing boundaries that embody the individual's different memory states. We could say that the individual is this boundary. It is the interpretant, I am the sign, and the model-advancing boundaries are the object. Adaptational semiosis occurs in the same form for single specimens, for populations, or for entire species. Specimens serve as models for – that is, are properties of – populations and species.

3. Connections

Functional semiosis and adaptational semiosis are the same as Type Three semiosis and Type Four semiosis (in Luure 2001: 318–319).

The relation between functional semiosis and adaptational semiosis must be the same as the relation between Peirce's universal categories⁸ of Feeling and Struggle (Peirce 1998:149–151) or Firstness and Secondness (Peirce 1998: 267).⁹ Future studies should investigate the possibilities and aspects of these connections between Peirce's work and my own.

Notes

1. "Adaptation" is an ambiguous word that can mean either the "adaptation process" or the state of "adaptedness". The latter expressions are used here because we are stressing the difference between the process and the result.
2. To put it metaphorically: as soon as I start to doubt that I am in Heaven (adaptedness), I fall into Hell (adaptation). Hell is the endless striving after Heaven; as soon as I stop striving, I find myself in Heaven.
3. The original German version can also be found in Luure (2001: 320, n. 5). My translation borrows the key terms from T. von Uexküll (1986).
4. I am not sure that my use of Peirce's terminology is adequate to his intentions, but I think it does not contradict the following characterization: "A Sign is a Cognizable that, on the one hand, is so determined (i.e., specialized, *bestimmt*) by something *other than itself*, called its Object [...], while, on the other hand, it so determines some actual or potential Mind, the determination whereof I term the Interpretant created by the Sign, that that Interpreting Mind is therein determined mediately by the Object" (Peirce 1998: 492). I do not commit myself to Peirce's overall philosophy nor to his semiotic framework. In Luure (2001) the very same interpretation is rendered in another semiotic framework.
5. This comparison, of course, refers to a certain analogy between the whole constituted by a sign and the corresponding cue, and a sign constituted by a signifier and its signified (Saussure 1972).
6. The things that possess tones belong to the animal's subjective outer world.
7. "[...] the most frequently useful division of signs is by trichotomy into firstly Likenesses, or, as I prefer to say, *Icons*, which serve to represent their objects only in so far as they resemble them in themselves, secondly, *Indices*, which represent their objects independently of any resemblance to them, only by virtue of real connections with

them, and thirdly *Symbols*, which represent their objects, independently alike of any resemblance or any real connection, because dispositions or factitious habits of their interpreters insure their being so understood" (Peirce 1998: 460–461).

8. "The universal categories [...] belong to every phenomenon, one being perhaps more prominent in one aspect of that phenomenon than another but all of them belonging to every phenomenon" (Peirce 1998: 148).
9. "*Firstness* is that which is as it is positively and regardless of anything else. *Secondness* is that which is as it is in a *second* something being as it is, regardless of any third. *Thirdness* is that whose being consists in its bringing about a *Secondness*." (I am grateful to Margus Mägi and Kalevi Kull for our fruitful discussions.)

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SUMMARY

In this work an attempt is made to take some steps towards an expected synthesis of semiotic theories and a universal sign theory combining different conceptions of signs (especially by Charles S. Peirce, Ferdinand de Saussure, and Jakob von Uexküll). Some techniques are sketched to construct such a system of semiotics.

The central place here belongs to the sextet — a six-item structure which, similarly to Peirce's logical-metaphysical triad and as an extension of it, is an atomic structure of classification. On it the "new structure of categories" mentioned in the title is based. The sextets should constitute a web in which at least one principle of weaving is the sextet structure itself. The semiotic classification which is based on the sextet could function as a general theory of semiotics, modifying general propositions according to the six options yielded by the sextet. In addition, a duality occurring in the structure of the sextet is emphasized that generalises the duality between sign system and text (or language and speech).

The structure of the sextet is demonstrated by means of some commented example the topics of which are the six strategies of finding a word inflexion form, the six degrees of mastering the sextet structure, the six ways of referring as the six types of the relation between the referring expression and the reference, and finally, the six types of meaning.

As nor different sextets nor their homologic items have any common denominators, the presentation of the sextet structure must proceed from examples. The inflexion form is found 1) as already formed, from memory or a text example, 2) in analogy to the inflexion form of a similar word, 3) from a paradigm type immediately recognisable in the word, 4) from a description of the grammar of the language, 5) due to the immediate mastering of the language itself, or 6) by creating the language herself. The mastering of the sextet structure can occur 1) on specific examples with no interconnection, 2) by transferring the structure of one example to the other by analogy, 3) by means of recognisable images and stereotypical procedures, 4) from a generalising classification of the objects of some realm of reality, 5) from logical universals (types of the relation between the opposites), or 6) freely, without need of theoretical consciousness. The referring is divided into the following cases: 1) the reference depends only from the circumstances of uttering the referring expression; 2) the token of the referring expression refers to what an earlier token of the same expression type referred to; 3) the referring expression refers to the unique object having a certain property, and in an alternative situation where some other object uniquely had the same property, the reference would be transferred to that object; 4) the referring expression refers to the unique object having a certain property, and in an alternative situation where some other object uniquely had the same property, the reference would remain the

same; 5) the objects referred to are distinguished between only by types of referring expressions; 6) the reference of the expression depends on some circumstances that differ from token to token and don't depend on the perceivable context of uttering.

The most general way of describing the sextet proceeds from the types of the relation between the opposites. Those types are revealed from the example of the types of meaning where the pair of the opposites are sign and meaning which are conceived independently from terminologies of different traditions. The only assumption is that the sign has a meaning. In the first type of meaning, the sign and the meaning just coincide. In the second type of meaning, the meaning of the sign is another sign. In the third type of meaning, the sign and the meaning constitute an inseparable unity like the reverse sides of a coin or a sheet of paper. In the fourth type of meaning, there is an excluding boundary between the sign and the meaning. In the fifth type of meaning, the sign and the meaning are related like the duck and the rabbit in the body of an imaginary living Jastrow's duck-rabbit. In the sixth type of meaning, the meaning is transcendent to the sign and is entirely embodied in the sign.

In the framework of this sextet, an attempt is made to characterise the places of biosemiotics and anthroposemiotics in a possible universal semiotic framework. The sphere specific to anthroposemiotics relates to Uexküll's semiotic model as the fifth item of a certain sextet to its third item. Therefore, to the "functional" semiosis deriving from Uexküll's conception, in biosemiotics should be added an "adaptational" semiosis. It corresponds to the aspects of living nature Uexküll ignores, and it relates to anthroposemiosis as the fourth item of a semiosis to its fifth item.

In the sextet structure, duality is manifested as the relation between the third and the fourth items, and more generally, between odd and even items. In a metaphysical description of duality, an extension of Aristotle's concepts of matter and form and a reinterpretation of its types of causes can be used. The activity of matter consists in choosing and actualising potential forms. The activity of form consists in forming a system of potential forms. Matter manifests itself as actual form and so it seems to be form, acting by the formal cause and the efficient cause. The formal cause chooses the actual form of matter, whereas the efficient form chooses the direction of matter's changing. The form manifest itself as a set of potential forms and appears as matter, acting by the material cause and the final cause. The material cause determines the possible forms of matter and the final cause determines the possible ways of matter's changing. In light of this distinction, Peirce's and Saussure's conceptions of sign are on different sides on duality: Peirce's conception proceeds from matter, Saussure's conception proceeds from form. In the terms of above, it can be said that Peirce's semiosis originates from matter's activity. The representamina and interpretants are forms chosen by matter. The whole process of semiosis is a realisation of matter's initial inclination.

Another technical possibility to compare Peirce's and Saussure's conceptions of signs is trying to find a structural correspondence between them. A counterpart of Peirce's interpretant is to be found in Saussure's conception. Saussure's conception of language sign yields a dual counterpart of Peirce's conception. Saussure's language sign is interpreted as the counterpart of Peirce's interpretant, the signified as the counterpart of the object and the signifier as the counterpart of the representamen. Calling matter's activity "making" and form's activity "forming", we can say that Peirce's interpretant is made by the representamen and the object, and Saussure's language sign as the interpretant forms the signifier and the signified as the object and the representamen. The latter relation could be called a timeless semiosis. Counterparts of Peirce's concepts can be followed in Uexküll's system as well.

The manifestation of this duality in its more general form is followed in a sextet of types of signs with a nomenclature borrowed from Thomas A. Sebeok's classification of signs.

The treatment of duality (for instance, between code and text, and meaning transmission and meaning generation) on Juri Lotman is followed and a distinction is made between two mutually dual types of understanding ("enology" and "empathy") is made. Enological understanding is locating texts in paradigms provided by sign systems; empathical understanding is common movement towards new texts which express the subjects better and better. The presumptions and expectations of those two ways of understanding are different in such a degree that communication between enology- and empathy-oriented subjects may turn out to be an insoluble problem. Investigating into and creating possibilities of such communication could be the central problem of semiotics. As the unity of semiotics is similarly impeded by dually different approaches, the work on that problem also advances movement towards a unity of semiotics.

SUMMARY IN ESTONIAN

Duaalsus ja sekstetid: uus kategooriate struktuur

Käesolevas töös püütakse astuda mõned sammud loodetava semiootikateooriate sünteesi poole ning erinevaid märgikontseptsioone (eelkõige Charles S. Peirce'i, Ferdinand de Saussure'i ja Jakob v. Uexküllli kontseptsioon) ühendava üleüldise märgiteooria loomiseks. Visandatakse mõned tehnikad säärase semiootikasüsteemi ülesehitamiseks.

Kesksel kohal on siin sekstett — kuuikstruktuur, mis sarnaselt Peirce'i loogilis-metafüüsilise triaadiga ning seda laiendades on klassifikatsioonide läbivaks algstruktuuriks, moodustades pealkirjas mainitud “uue kategooriate struktuuri”. Sekstetidest peaks kujunema võrk, milles vähemalt üks sekstettide kokkupõimimise printsiip on sekstetistruktuur ise. Sekstetil põhinev semiootiline klassifikatsioon saaks toimida semiootika üldteooriana, mis üldisi väiteid vastavalt sekstetiga avatud kuuetele võimalusele modifitseerib. Lisaks tõstetakse esile seksteti ülesehituses esinev duaalsus, mis üldistab märgisüsteemi ja teksti (või keele ja kõne) vahelist duaalsust.

Seksteti struktuuri demonstreeritakse kommenteeritud näidete varal, mille aineks on muutevormi leidmise kuus strateegiat, sekstetistruktuuri valdamise kuus astet, osutamise kuus viisi kui osutava väljendi ja osutuse vahelise suhte kuus tüüpi ning lõpuks kuus tähendusetüüpi.

Et eri sekstetid ega nende homoloogilised liikmed ei ole paigutatavad ühise nimetaja alla, siis peab sekstetistruktuuri esitus lähtuma näidetest. Muutevorm leitakse 1) juba moodustatuna mälust või tekstinäitest, 2) analoogia põhjal sarnase sõna muutevormiga, 3) sõnas vahetult äratuntava paradigmatüübi alusel, 4) keele grammatika kirjelduse põhjal, 5) tänu keele enda otsesele valdamisele või 6) keelt ise luues. Sekstetistruktuuri võidakse vallata 1) konkreetsetel omavahel seostamata näidetel, 2) analoogia põhjal ühe näite struktuuri teisele näitele üle kandes, 3) äratuntavate kujundite ning stereotüüpsete toimisviiside näol, 4) mingi reaalsuse valdkonna objektide üldistava klassifikatsiooni põhjal, 5) vastandite vahelise suhte tüüpidena kui loogiliste universaalidena või 6) vabalt, ilma teoreetilise teadvustuse vajaduseta. Osutamine jaguneb järgmisteks juhtumiteks: 1) osutus oleneb üksnes osutava väljendi lausumise asjaoludest; 2) osutava väljendi eksemplar osutab sellele, millele osutas sama väljenditüübi varasem eksemplar; 3) osutav väljend osutab ainsale objektile, millel on teatav omadus, kusjuures alternatiivse olukorra puhul, kui mõnel teisel objektil oleks ainsana see omadus, kanduks osutus üle tolele objektile; 4) osutav väljend osutab ainsale objektile, millel on teatav omadus, kusjuures alternatiivse olukorra puhul, kui mõnel teisel objektil oleks ainsana see omadus, jääks osutus samaks; 5) osutatavaid objekte eristavad ainult osutava väljendi tüübid;

6) väljendi osutus oleneb mõnest asjaolust, mis erineb väljendi eri eksemplaride puhul ega olene väljendi lausumise kontekstist.

Seksteti kõige üldisem kirjeldamisviis lähtub vastandite vahelise vahekorra tüüpidest. Need avanevad tähendusetüüpide näitel, kus vastandite paariks on märk ja tähendus, mida mõistetakse sõltumatult eri traditsioonide terminoloogiast lihtsalt nii, et märk on see, millel on tähendus. Esimesel tähendusetüübi puhul langevad märk ja tähendus lihtsalt kokku. Teise tähendusetüübi puhul märgi tähenduseks teine märk. Kolmanda tähendusetüübi puhul moodustavad märk ja tähendus lahutamatu ühtsuse nagu mündi või paberilehe kaks külge. Neljanda tähendusetüübi puhul on märgi ja tähenduse vahel välistav piir. Viienda tähendusetüübi puhul suhtuvad märk ja tähendus teineteisesse nagu part ja jänes kujuteldava elusa Jastrow' partjänese kehas. Kuuenda tähendusetüübi puhul on tähendus märgi suhtes transtsendentne ning on ühtlasi märgis täielikult kehastunud.

Sellise seksteti raamides püütakse iseloomustada bio- ja antroposemiootika paiknemist võimalikus üleüldises semiootilises raamistikus. Antroposemiootikale spetsiifiline valdkond suhtub Uexkülli semiootilisse mudelisse nagu teatud seksteti viies liige kolmandasse. Sellepärast tuleks Uexkülli kontseptsioonist tulenevale "funktsionaalsele" semioosile biosemiootikas lisada "adaptatsiooniline" semioos, mis vastab eluslooduse aspektidele, mida Uexküll ignoreerib, ning mis suhtub antroposemioosisse nagu seksteti neljas liige viiendasse.

Duaalsus avaldub seksteti struktuuris kolmanda ja neljanda liikme vahelise suhtena ning üldisemalt paaritu- ja paarisliikmete vahelise suhtena. Duaalsuse metafüüsiliseks kirjeldamiseks saab kasutada Aristoteelse mateeria ja vormi mõiste edasiarendust ning tema põhjuse liikide ümbertõlgendust. Selle kohaselt seisneb mateeria aktiivsus potentsiaalsete vormide väljavalimises ja aktualiseerimises, vormi aktiivsus aga potentsiaalsete vormide süsteemi loomises. Mateeria avaldub aktuaalse vormina ning näib seega vormina, toimides formaalse põhjuse ja toimivpõhjuse kaudu. Formaalne põhjus valib mateeria aktuaalse vormi, toimivpõhjuse aga mateeria muutumise suuna. Vorm avaldub potentsiaalsete vormide komplektina ning paistab mateeriana, toimides materiaalse põhjuse ja lõpp-põhjuse läbi. Materiaalne põhjus määrab mateeria võimalikud vormid ning lõpp-põhjuse määrab mateeria muutumise võimalikud viisid. Selle eristuse valguses jäävad Peirce'i ja Saussure'i märgikontseptsioon duaalsuse eri pooltele: Peirce'i kontseptsioon lähtub mateeriast, Saussure'i oma vormist. Nimelt võib ülalöeldu terminites öelda, et Peirce'i semioos pärineb mateeria aktiivsusest. Representaamenid ja interpretandid on mateeria poolt valitud vormid. Kogu semioosiprotsess on mateeria algse kalduvuse realiseerimine.

Teine tehniline võimalus Peirce'i ja Saussure'i märgikontseptsiooni kõrvutada on püüda leida struktuurne vastavus nende vahel. Selleks tuleb leida Peirce'i interpretandi vaste Saussure'i skeemis. Peirce'i representaamenit ja interpretanti võib võtta ühe substantsi seisunditena. Saussure'i keelemärgikontseptsioon pakub Peirce'i kontseptsioonile duaalse vaste. Nimelt tõlgendame Saussure'i keelemärki Peirce'i interpretandi vastena, tähistatavat objekti vastena

ning tähistajat representaameni vastena. Kui nimetada mateeria aktiivsust “tekitamiseks” ja vormi aktiivsust “loomiseks”, siis võib öelda, et Peirce’i interpretandi tekitavad representaamen ja objekt ning Saussure’i keelemärk kui interpretant loob tähistava ja tähistaja kui objekti ja representaameni. Seda viimast võib nimetada ajatuks semioosiks. Vasted Peirce’i mõistetele on leitud ka Uexkülli süsteemis.

Selle duaalsuse avaldumist üldisemal kujul jälgitakse märgitüüpide sekstetiskeemis, mille nomenklatuuri eeskujuks on Thomas A. Sebeoki märgiklassifikatsioon.

Samuti jälgitakse duaalsuse (näiteks koodi ja teksti ning tähenduse ülekande ja tähenduste genereerimise vahel) käsitlust Juri Lotmanil ning tehakse eristus kahe omavahel duaalse mõistmistüübi (“enloogia” ja “empaatia”) vahel. Enloogiline mõistmine on tekstide paigutamine märgisüsteemidega ettenähtud paradigmasse, empaatiline mõistmine on ühine liikumine uute tekstide poole, mis subjekte üha paremini väljendavad. Nende kahe mõistmisviisi eeldused ja ootused on nii erinevad, et enloogiale ja empaatialle orienteeritud subjekti omavaheline kommunikatsioon võib osutuda ületamatuks probleemiks. Sellise kommunikatsiooni võimaluste uurimine ja loomine võiks olla semiootika keskne probleem. Et ka semiootika ühtsust takistab duaalselt erinevate lähenemiste olemasolu, on töö selle probleemi kallal ühtlasi töö semiootika ühtsuse saavutamiseks.

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Translations of philosophical literature from German, English and Finnish into Estonian, including Ludwig Wittgenstein's *Philosophical Investigations* (2005) and *On Certainty* (2000) and Jürgen Habermas' *The Structural Transformation of the Public Sphere* (2001) and articles by Gilbert Ryle and Georg Henrik von Wright.

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Filosoofilise kirjanduse tõlked saksa, inglise ja soome keelest eesti keelde, sealhulgas Ludwig Wittgensteini *Filosoofilised uurimused* (Ilmamaa, 2005) ja *Tõsikindlusest* (Ilmamaa, 2000) ning Jürgen Habermasi *Avalikkuse struktuuri-muutus* (Kunst, 2001), samuti mitmed Gilbert Ryle'i ja Georg Henrik von Wright'i artiklid.