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## Semiospherical understanding: Textuality

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**Abstract.** The semiospherical approach to semiotics and especially to semiotics of culture entails the need of juxtaposing several terminological fields. Among the most important, the fields of textuality, chronotopicality, and multimodality or multimediality should be listed. *Textuality* in this paper denotes a general principle with the help of which it is possible to observe and to interpret different aspects of the workings of culture. Textuality combines in itself text as a well-defined artefact and textualization as an abstraction (presentation or definition as text). In culture, we can pose in principle the same questions both to a concrete and to an abstract text, although an abstract text is only an operational means for defining, with the help of textualization, a certain phenomenon in the interests of a holistic and systemic analysis. The practice of textualization in turn helps us to understand the necessity of distinguishing between articulation emerging from the textual material itself and articulation ensuing from textuality or textualization — the former provides for comparability between texts made from the same material, the latter makes comparable all textualized phenomena irrespective of their material. Textuality is a possibility that culture offers to its analyser, and at the same time it is an ontological property of culture and an epistemological principle for investigating culture.

The relevance of semiotics is increasing both in science and in culture. On the one hand, semiotics offers methodological support to the sciences the development of which has been bound up with interdisciplinary dialogue with other sciences and which are in need of methodological innovation in order to locate their shifted borders. On the other hand, culture and nature as the environment of human life have also changed, and this, in turn, requires a new understanding of how to comprehend and explain this changed environment or, in other

words, how to define epistemologically the object of inquiry. Thus, the disciplinary structure of sciences has changed, interdisciplinarity has given rise to new types of scientific dialogue in the form of multi-, cross- or transdisciplinarity, but at the same time also objects of sciences have changed. Especially in the humanities and in the social sciences, due to the (technological) development of media environment and due to the creolization and hybridisation of languages of culture, objects of research have changed so rapidly that semiotics has become both a methodological as well as an applicational resource for securing sustainable development of these sciences. Traditional science and traditional culture have arrived at a stage where fragmented understanding of culture, society and nature has reached a crisis of holism. Restoration of holistic approach presupposes that the methodological principles of applicational analysis of culture, of the sciences that investigate culture, and the principles of cultural auto-communication and identity education are fruitfully combined into a unified whole. Compared to other sciences, semiotics has great advantages in creating such symbiosis.

One of the founders of the Tartu-Moscow School of Semiotics, Vyatcheslav Vs. Ivanov, has concluded his study "The outlines of the prehistory and history of semiotics" with an epilogue where he emphasizes both the scientific as well as the social value of semiotics and defines the main task of semiotics: "The task of semiotics is to describe the semiosphere without which the noosphere is inconceivable. Semiotics has to help us in orienting in history. The joint effort of all those who have been active in this science or the whole cycle of sciences must contribute to the ultimate future establishment of semiotics" (Ivanov 1998: 792).

The semiospherical approach to semiotics and especially to semiotics of culture entails the need of juxtaposing several terminological fields. Among the most important, the fields of textuality, chronotopicality, and multimodality or multimediality should be listed.

The field of *textuality* is related to the development of semiotics of culture, especially in view of the works of J. Lotman; the field of *chronotopicality* originated in the works of Mikhail Bakhtin, and the field of *multimodality* (*multimediality*) is connected at its roots with the works of Roman Jakobson. It is the interweaving of these three terminological and conceptual fields that has brought about both methodological and metalinguistic interference, as a result of which we now have to speak about creolization and hybridization of

metalinguage. But the same processes take place also inside these fields and therefore it would be expedient to investigate the three fields first of all individually. The present paper is devoted to the first one of these, the field of textuality.

## Textuality

*Textuality* in this paper denotes a general principle with the help of which it is possible to observe and to interpret different aspects of the workings of culture. The concept of textuality is meant to bridge two poles between which the main problems of describing and explaining cultures are located. One pole is marked by the opposition *statics – dynamics*, the other by the opposition *part – whole*. These two pairs of concepts are in fact closely related and their separation into two poles is necessary only for observing temporal dynamics. Through the concept of textuality, also the productivity of cultural-semiotic way of reasoning and the ability of semiotics of culture to function as a foundation science for other disciplines studying culture will become apparent.

The concept of textuality merges several questions that are methodologically relevant for all the disciplines investigating culture. First of all, there is the question of models that are used to describe culture. There does not exist a general science of culture as a separate discipline, and therefore a general study of culture must take into account the different notions that different disciplines have of this universal research object, and to look for correlations between different models of culture.

Models of culture are methodologically designed and meta-linguistically formulated by the disciplines that have created them, and therefore it is vital that a general treatment of culture identifies the autonomy and blending of description languages and takes into account the metalinguistic translation process. Besides the characteristics of the description language, deriving from the specificity of a particular cultural model, also the existence of prestige languages in culture and the tendency of several research areas to translate themselves into the prestige language should be taken into account. Therefore, in some cases there is no direct correspondence between the object described, the describing discipline and the description language used. This brings us to the issue of relations that a meta-

language has with the object described and with other metalanguages or a prestige language.

Between culture as a complex research object and culture as a functioning system, or, methodologically speaking, between description languages (metalanguages) of culture and (object language(s) of) the process of culture there is a linguistically heterogeneous sphere of culture's self-description. In the self-description of culture, meta- and object levels are not usually easily discernible, as self-description is a dynamic autocommunicative process that is difficult to observe due to its mutability. An answer to the question of the observability of culture's self-description can be sought, through the concept of textuality, foremost from the aspect of the relations between communication and metacommunication.

Another issue that arises in connection with a dynamic research object is the definition of research- or articulation units. Textuality combines in itself text as a well-defined artefact and textualization as an abstraction (presentation or definition as text). In culture, we can pose in principle the same questions both to a concrete and to an abstract text, although an abstract text is only an operational means for defining, with the help of textualization, a certain phenomenon in the interests of a holistic and systemic analysis. The practice of textualization in turn helps us to understand the necessity of distinguishing between articulation emerging from the textual material itself and articulation ensuing from textuality or textualization — the former provides for comparability between texts made from the same material, the latter makes comparable all textualized phenomena irrespective of their material.

The question of textuality is also a question of understanding the ontology of text. Both the ontology of text and the stance toward it have gradually altered in relation to many changes in culture. First, there can be observed a decrease in logocentrism and increase in the role of visual and audiovisual perception, and consequently it has to be acknowledged that there has been a shift in the hierarchy of perception channels in culture. An early and intensive visual experience leaves its mark also on traditional spheres of culture, and therefore, with each successive generation, there is reason to speak about changed attitudes with respect to literature, theatre, cinema or art, and, accordingly, also about changes in the relationships between those areas in culture. Secondly, processes of culture are so intensive and so diffuse that perceptual processes have become complementary:

the consumption of metatexts can precede the consumption of the texts themselves, or, in other words, the boundary between the properties of being primary or secondary is not always visible nor important. Another important feature is the perception of a single event in communities of different types — in intertextual, interdiscursive or intermedial spaces. This, in turn, brings about transformation in whole-part relationships: the diffuse existence of a whole causes the autonomy of parts, and on the principle of *pars pro toto*, the whole may be represented by very different parts, while the relationship of parts with the whole can be implicit, discernible only to an expert. Hence, also the expert's mission in culture has changed, since the observing of a diffused whole and the uniting of diffused parts into a whole are becoming an important activity securing the coherence of culture, observing, diagnosing and making prognoses for the functioning of culture as a whole. The emergence of new processes in culture has created a double identity for texts: on the one hand, every text is a result of individual creation, while on the other hand, a text exists in culture as a diffuse mental whole and subsists in this form in the collective cultural memory. A mental text is an abstract whole the structure of which depends on the amount and types of textual transformations (including transformations of text's parts) in a given culture or, more narrowly, in a given cultural situation. Following from the principle of textuality, investigation of a text means juxtaposing both individual and cultural ontologies, juxtaposing both in time and in space.

### **Synchrony and diachrony as statics and dynamics**

Polemics with F. de Saussure has influenced the development of ideas of several disciplinary trends, including Russian formalism, Prague Linguistic Circle and Danish glossematics. F. de Saussure's *Cours de linguistique générale* contrasts synchrony and diachrony, denying at the same time the possibility of panchronic analysis of concrete linguistic facts. The reason for this lies in the divergent nature of facts belonging to the diachronic order and to the synchronic order. It is characteristic that F. de Saussure deliberately avoids the term "historical linguistics" and he prefers, when contrasting the two linguistics, to use the term "evolutionary linguistics" to denote the branch investigating the succession of linguistic states, and the term "static

linguistics" to denote the branch investigating the linguistic states themselves. In order to secure greater clarity in this contrast, F. de Saussure started calling anything related to statics, "synchrony", and anything related to evolution, "diachrony" (Saussure 1977: 114).

One of the leading figures of Russian Formalism, in many ways yet undiscovered J. Tynianov, wrote in his 1924 paper "Literary fact": "Literary fact is heterogeneous, and in this sense literature is an incessantly evolving order" (Tynianov 1977: 270). A few years later in the paper "On literary evolution" (1927) he specifies that the study of literary history needs to address also the living contemporary literature. As Tynianov claims, historical studies of literature were until then occupied either with the genesis of literary phenomena or with the evolution of literary order (Tynianov 1977: 271). The question of literary order or system is for Tynianov inseparable from the question of function:

A literary system is first of all a *system of the functions of the literary order which are in continual interrelationship with other orders*. Systems change in their composition, but the differentiation of human activities remains. The evolution of literature, as of other cultural system, does not coincide either in tempo or in character with the systems with which it is interrelated. This is owing to the specificity of the material with which it is concerned. The evolution of the structural function occurs rapidly; the evolution of the literary function occurs over epochs; and the evolution of the functions of a whole literary system in relation to neighbouring systems occurs over centuries. (Tynianov 1977: 277)

In Tynianov's system, we can observe the relatedness of literary order to other orders — with the order of everyday life, the order of culture, social order. Everyday life is correlated with literary order in its verbal aspect, and thus, literature has a *verbal function* in relation to everyday life. An author's attitude towards the elements of his text expresses *structural function*, and the same text as a literary work has *literary function* in its relations to the literary order. The return influence of literature on everyday life, again, expresses *social function*. The study of literary evolution presupposes the investigation of connections first of all between the closest neighbouring orders or systems, and the logical path leads from the structural to the literary function, from the literary to the verbal function. This follows from the position that "evolution is the change in interrelationships between the elements of a system — between functions and formal elements" (Tynianov 1977:

281; see also Torop 1995–1996). Hence, evolution is understood as the alternation of systems (at times, alternation is slow and continuous; at times, abrupt) where formal elements do not disappear but gain new functions. It is necessary to understand that a system is not a reciprocal influence of all the elements: some elements have greater import (dominant) and deform others, and it is through the dominant that a work gains its literary importance (Tynianov 1977: 277). The interpretation of the structural function coincides to a large extent with the interpretation of the dominant, since the relations between the elements of a work can be described in at least two ways. Every element of a work can be juxtaposed with other similar elements in other works-systems, even in other orders — this is called “syn-function” by Tynianov. At the same time, each element is related to other elements of its own system, which is called “auto-function” by Tynianov (1977: 272). Thus, each element has at least two functional parameters.

Better known in the modern reception of Tynianov’s works is the opposition *genesis* and *tradition*, originally presented in his earlier article “Tyutchev and Heine” (1922). Genesis of a literary phenomenon belongs to the sphere of accidental transferences from a language into another language, from a literature into another literature, while tradition refers to regularities taking place within one particular national literature (Tynianov 1977: 29). Thus, also genesis and tradition constitute two parameters of one phenomenon, and these two parameters need to be juxtaposed in order to get a maximally multifaceted picture of reality. The distinction between genesis and tradition makes it possible, in the case of one and the same text, to speak about *text of genesis* and *text of tradition*. Text of genesis is an implicit system reflecting the subjectivity and the fortuitous nature of the creative process, a system that a researcher can reconstruct as unique. Text of tradition, on the other hand, expresses explicit belonging to a movement, style, grouping or genre, as well as causal or typological relations with predecessors or successors. A text exhibiting explicit characteristics of classicism or romanticism is certainly a text of tradition, but at the same time it does not lose its uniqueness, which remains present in the implicit authorial poetics and in which text of genesis can be discerned. Whether it is text of tradition, text of genesis or their symbiosis — what is searched for in a literary text depends on the epoch and on the reader.

The movement of Russian Formalism toward Prague Linguistic Circle is marked by a programmatic article "Problems of investigating literature and language" (1928), written jointly by J. Tynianov and R. Jakobson. This short research program reveals already a direct polemic with F. de Saussure. The authors object to the opposition of synchrony and diachrony on the grounds that in reality these two cannot be studied in isolation:

History of a system is in turn a system. Pure synchronism now proves to be an illusion: every synchronic system has its past and its future as inseparable structural elements of the system [...]. The opposition between synchrony and diachrony was an opposition between the concept of system and the concept of evolution; thus it loses its importance in principle as soon as we recognize that every system necessarily exists as an evolution, whereas, on the other hand, evolution is inescapably of a systemic nature. (Tynianov 1977: 282)

Therefore, what is of foremost importance in this approach is the understanding that synchrony incorporates different time periods, that each cross-segment of synchrony may be related to most different epochs:

The concept of a synchronic literary system does not coincide with the naively envisaged concept of a chronological epoch, since the former embraces not only works of art which are close to each other in time but also works which are drawn into the orbit of the system from foreign literatures or previous epochs. An indifferent cataloguing of coexisting phenomena is not sufficient; what is important is their hierarchical significance for the given epoch. (Tynianov 1977: 283)

On the other hand, it is emphasized that the identification of immanent regularities of literary history should be inseparably connected with the identification of the ways in which literary order and other historical orders (systems) relate to each other. Relatedness as a system of systems has its own structural laws that need to be identified. The authors caution us against isolated study: "It would be methodologically fatal to consider the correlation of systems without taking into account the immanent laws of each system" (Tynianov 1977: 283). In the program of J. Tynianov and R. Jakobson, it is possible to foresee the modern juxtaposition of *text of history* and *text of culture* as parameters of a single text.

In linguistics, the same trend is continued during the 1930–1940s by the Danish glossematician L. Hjelmslev. He starts out with an

observation that humanities have neglected their most important task — to establish the investigation of social phenomena as a science. The description of social phenomena must choose between two possibilities.

The first possibility is poetic description; the second possibility lies in the combination of poetic and scientific treatment as two coordinate forms of description. The choice between the two possibilities should proceed from an answer to the question whether a process has an underlying system:

*A priori* it would seem to be a generally valid thesis that for every *process* [including historical processes] there is a corresponding *system*, by which the process can be analysed and described by means of a limited number of premisses. It must be assumed that any process can be analysed into a limited number of elements recurring in various combinations. Then, on the basis of this analysis, it should be possible to order these elements into classes according to their possibilities of combination. (Hjelmslev 1963: 9)

In L. Hjelmslev's view, it should be feasible to calculate the number of all possible combinations, and this would yield a much more objective description: "A history so established should rise above the level of mere primitive description to that of a systematic, exact, and generalizing science, in the theory of which all events (possible combinations of elements) are foreseen" (Hjelmslev 1963: 9). L. Hjelmslev juxtaposes process as a relational (both-and function) hierarchy and system as a correlational (either-or function) hierarchy, associating these terms also with text and language, respectively. What is noteworthy here is not the association of this opposition with the treatment of paradigmatics and syntagmatics (especially in the works of R. Jakobson), but L. Hjelmslev's aim to create separate metalanguages for investigating system and process. Thus, a process would be investigated in one metalanguage and the system underlying this process would be investigated in another metalanguage, although the two metalanguages would be correlated with each other. This is exactly the issue that is encountered by researchers who attempt to analyse, e.g., a literary work as simultaneously a historical phenomenon and as a contemporary with a particular epoch. In such case, metalinguistic bilingualism would help to avoid mixed language. To extend this logic further, L. Hjelmslev's innovative insight could be marked with the terminological pair *text of system* and *text of process*, where text as system and text as process would manifest only as

special cases of this opposition. Although to a different degree, the dimension of history would be present in both descriptions, similarly to the case of J. Tynianov's concepts of genesis and tradition.

Closer to the present time, among the manifestations of the same trend of thinking the New Historicist approach should be mentioned first, in whose vocabulary "historical context" has been substituted with "cultural system" and where relations between text and culture are seen as inherently intertextual, with intertextuality taking place between two types of text, text of literature and text of culture (see White 1989: 294). Any literary event is therefore a diachronic text of the autonomous history of literature and a synchronic text of the cultural system (White 1989: 301).

An example of the further development of the same line of thinking is provided by A. Assmann's concept of cultural text. As a subsystem of culture, literature itself is also a cultural text; however, one and the same text has different properties as a literary text and as a cultural text. From the aspect of the relationship of identity, a literary text is a means of individual communication, while for a cultural text, a reader is foremost a representative of a group or a community. From the viewpoint of reception, between a receiver and a literary text there is an aesthetic distance, while in the case of a cultural text, there is an insistence on truth. From the aspect of innovation and canonicity, literary text strives toward innovation, while cultural text is associated with canonization. From the aspect of resistance to time, the background system for literary text is formed of history, of different readings done by different generations, while for cultural text, the background system is average tradition (Assmann 1995). Of course, the relations of cultural text and literary text are more complicated than that. Texts with prestige such as the Classics or the Bible function above all as cultural texts. On the other hand, cultural text can bring about the emergence of literary text, as can be witnessed in the case of salon literature or album verse.

The study of a text in culture is inseparable from the search for parameters in order to characterize the different functions of the text. Every text has its own history and at the same time it exists in general history; every text is contemporary and historical at the same time. Every text is a framed whole and as such, unchangeable. At the same time, each text is a part of culture (of cultural situation and of cultural history) and as such, ambiguous, multifunctional and changing. *text of culture* and *text of literature* (or text of any other form of art) can be

different forms of existence of the same text, they can be contained in each other as a part is contained in a whole, they can be autonomous wholes, temporal or atemporal, concrete or abstract, static or dynamic; however, with all these oppositions the boundary between the two sides will remain vague and ambivalent. Pure diachrony and synchrony or pure statics and dynamics are but idealized concepts. Therefore, in this context it would often be more accurate to speak not about texts, but about textuality, about complicated relations in time and space for the description of which it is convenient to use the operational term "text". Becoming a text and being as text have to do in the analysis of cultural phenomena both with ontology and epistemology and help to understand culture as a hierarchy of (textual) identities.

### **Textuality, metatextuality, and intertextuality**

In parallel and in relation to the linguistically oriented developments there emerged similar issues also in the anthropological disciplines. At the end of the 1950s, C. Lévi-Strauss wrote in his book *Structural Anthropology* (1958) about the necessity to describe rules of marriage and kinship systems as a kind of language, serving as a means of communication between individuals and groups of individuals. In the year 1973 C. Geertz voices his objection to isolated descriptions that stem from ethnographic fieldwork. His book *The Interpretation of Cultures* provides an example of textualization of description of culture. Here, interpretative anthropology forms a parallel to semiotics of culture. C. Geertz's concept of thick description refers to the ability of a researcher to explicate or reconstruct the whole on the basis of very heterogeneous, commingled or ambivalent data. In such approach, a foreign culture becomes an acted document that can be interpreted in communication. This document is comparable to a foreign and incoherent manuscript where graphic signs are replaced by examples of behaviour (Geertz 1993: 10). Such text of behaviour is one example of how a complex research object can be textualized.

Textuality as a methodological principle has a significant role also in the development of the Tartu–Moscow School of Semiotics. One of the most renowned members of the school, A. Pyatigorski, has post factum observed that this tradition started out with an undelimited research object. While in the first works at the beginning of the 1960s

the object of semiotics was “anything”, then after the publication of J. Lotman’s first semiotic book *Lectures on Structural Poetics* (1964) the object became specified as literature:

In Lotman’s “Lectures”, a huge role was played by the introduction of the term “text” as a fundamental concept of semiotics and at the same time, as a *neutral* concept with respect to its object, literature. It was precisely the concept of “text” which made it possible for Juri Mikhailovich to pass from literature over to culture as a *universal* object of semiotics. (Pyatigorskij 1996: 54–55)

“Theses on the Semiotic Study of Cultures” (1973), the programmatic work of the Tartu-Moscow School, defines semiotics of culture as a science investigating the functional correlation of different sign systems, which proceeds from the position that “none of the sign systems possesses a mechanism which would enable it to function culturally in isolation” (Theses 1998: 33). Text has been defined in “Theses” as a bridging link between a general semiotic and a concrete empirical investigation:

The text has integral meaning and integral function (if we distinguish between the position of the investigator of culture and the position of its carrier, then from the point of view of the former the text appears as the carrier of integral function, while from the position of the latter it is the carrier of integral meaning). In this sense it may be regarded as the primary element (basic unit) of culture. The relationship of the text with the whole of culture and with its system of codes is shown by the fact that on different levels the same message may appear as a text, part of a text, or an entire set of texts. (Theses 1998: 38)

In the tradition of the Tartu-Moscow School, the concept of text is, above all, dynamic: text can be an integral sign or a sequence of signs; it can be a part or a whole. On the other hand, a text can be a linguistically concrete *text of language* or a culturally concrete *text of culture*:

In defining culture as a certain secondary language, we introduce the concept of a “culture text”, a text in this secondary language. So long as some natural language is a part of the language of culture, there arises the question of the relationship between the text in the natural language and the verbal text of culture. (Theses 1998: 43)

As three subtypes of this relationship there are mentioned cases where (1) a text in a natural language is not a text of a given culture (e.g., oral texts in a writing-oriented culture); (2) a text in a secondary

language, i.e. a text of culture is at the same time also a text of language, i.e. a text in a natural language (e.g., a poem that is expressed simultaneously in a secondary, poetic language and in a primary language, for instance, in the poet's mother tongue); (3) a verbal text of culture is not a text in a natural language (e.g., a Latin prayer for Slavs).

From the modern perspective, "Theses on the Semiotic Study of Cultures" written in 1973 touched upon an important aspect — virtuality: "The place of the text in the textual space is defined as the sum total of potential texts" (Theses 1998: 45). Where J. Derrida would call this sum total "discourse", J. Lotman has used the term "homeostasis". In his book *Universe of the Mind* (1990), expanding upon the ideas of F. de Saussure, he has claimed that "synchrony is homeostatic while diachrony is made up of a series of external and accidental infringements of it, in reacting against which synchrony re-establishes its integrity" (Lotman 1990: 6).

On the background of cultural homeostasis, the advance toward semiosphere appears as natural. Let us recall once again the already-quoted thought of V. Ivanov: "The task of semiotics is to describe the semiosphere without which the noosphere is inconceivable" (Ivanov 1998: 792). As noosphere is the future living environment of the humankind, created in mutual agreement and on rational principles, it follows from this definition that semiotics must assist mankind in understanding both history and future. Hence, in addition to the relationship with the present, semiosphere has also its dimensions of history and future. What is more important, however, is that semiosphere establishes the dynamics between the part and the whole:

Since all the levels of the semiosphere — ranging from a human individual or an individual text to global semiotic unities — are all like semiospheres inserted into each other, then each and one of them is both a participant in the dialogue (a part of the semiosphere) as well as the space of the dialogue (an entire semiosphere). (Lotman 1999: 33)

This whole-part relationship is joined, in turn, by the dynamics between the subjective and the objective: "The structural parallelism between semiotic characteristics of a text and of a personality enables us to define any text on any level as a semiotic personality, and to regard any personality on any sociocultural level as a text" (Lotman 1999: 66).

The semiospherical perspective in the analysis of culture implies the establishment of textuality as an operational principle in which texts in the ordinary sense and phenomena described as texts in the interests of better comprehension exist together on equal terms. The question of their differentiation and comparability is a question of delimitation — in other words, a question of the boundaries of textuality. From the aspect of scientific accuracy, the only requirement that will stand is the traditional demand of cultural semiotics — that the position of the observer or the analyser must remain visible. This provides for the necessary degree of precision in the case where the units of analysis cannot be formalized and are not unequivocally clear-cut. Textualization should not be regarded as arbitrary delimitation but as identification of different levels in the holistic dimension in culture. The universality of and necessity for this method stems from the need to preserve the interrelations between different parts of a whole and the need to see that the whole itself exists also both as a part and as a division into parts. Each particular act of communication can be analysed as such, but it can also always be shown that the relations between a prototext and its metatext are not exhausted with the creation of the typology of metatexts. Usually, the prototext itself is also in some respect already a metatext — it is difficult to envision the existence of pure original texts in culture.

Textuality of culture is accompanied by the possibility to conduct analysis on many levels. A text can be investigated as autonomous and focused at by exploring its inner workings. At the same time, it can be investigated as participating in metacommunication and here, now regarded as a prototext, the text is seen as accompanied by a number of metatexts of different kinds (see also Torop 1999: 27–41). The bulk of textual transformations ranging from translations to annotations can, on the one hand, be described from the aspect of relations between the prototext and the metatext, but on the other hand each metatext belongs to its own discourse and can be analysed as a part of this. By investigating metatexts as a textual whole it is possible to analyse the ways in which a particular prototext exists in culture. This kind of investigation makes it also possible to reconstruct a missing prototext. History of theatre provides a good example of the need for metatexts in order to describe a missing prototext. It is possible to reconstruct old untaped theatre performances, but also hypothetical primal forms of different types of fairy tales (as invariants of the later variants) etc. In addition, the investigation of the relations between a

prototext and metatexts makes it possible to talk about the capacity of a particular text to communicate with culture, with its audience, about the possible world of the ways the text can be interpreted and understood.

Related to this, but functioning in a completely different manner, is another unity — the intertextual association of texts, where each particular text gains its meaning through relations with other texts, that is, as a part of a whole. Such association can also be interdiscursive or intermedial. Unlike metatextuality, intertextual association is more difficult to delimit and its holistic dimension may not be as concrete.

Both the metatextual and the intertextual associations are subtypes of textuality and indicate that science needs to find possibilities first to define and then to give as multifaceted explanation as possible of the functioning of a complex cultural mechanism. A science investigating culture must constantly recreate its research object, must define and re-define its borders since in culture as a living organism there constantly emerge new relations and new systems. Culture changes, culture's textuality is constant. Textuality is a possibility that culture offers to its analyser, and at the same time it is an ontological property of culture and an epistemological principle for investigating culture.

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### Семиосферическое понимание: текстуальность

Семиосферический подход к семиотике (культуры) приводит к необходимости сопоставления нескольких терминологических полей. В число самых важных входят поля текстуальности, хронотопичности и мультимодальности или -медийности. Поле текстуальности связано с развитием семиотики культуры исходя прежде всего из работ Ю. Лотмана, поле хронотопичности восходит к работам М. Бахтина и у истоков мультимодальности или -медийности лежат труды Р. Якобсона. Именно в результате переплетения этих трёх терминологических и концептуальных полей можно говорить как о методологической, так и о метаязыковой интерференции, результатом которой является креолизация и гибридизация метаязыка. Но те же процессы происходят внутри указанных полей и поэтому целесообразно рассмотреть эти поля отдельно. Данная статья посвящена первому из них, полю текстуальности.

Текстуальность обозначает в данной статье некоторый общий принцип при помощи которого можно наблюдать и осмыслять разные аспекты действия культуры. Понятие текстуальности призвано соединять два полюса, между которыми располагаются основные проблемы описания и толкования культур. Один полюс обозначается бинарностью *статика–динамика*, второй бинарностью *часть–целое*.

В текстуальности объединяются текст как обрамлённый артефакт и текстуализация как абстракция (изображение или обрамление текстом). В культуре могут быть конкретному и абстрактному текстам заданы те же вопросы, хотя абстрактный текст является лишь операциональным приёмом текстуализации явлений в целях системного и целостного анализа. Практика текстуализации способствует пониманию необходимости различения членения на основе материала текста и членения на основе текстуальности (текстуализа-

ции) — первое обеспечивает сравнимость текстов, созданных из одного материала, второе обеспечивает сравнимость всех текстуализированных явлений вне зависимости от их материала.

Текстуальность — это возможность, предлагаемая аналитику культурой, будучи одновременно онтологическим признаком культуры и эпистемологическим принципом её исследования.

### **Semiosfääriline mõistmine: tekstuaalsus**

Semiootika ja eriti kultuurisemiootika *semiosfääriline* käsitlemine toob kaasa mitme terminivälja kõrvutamise vajaduse. Olulisemate seas tuleks nimetada tekstuaalsuse, kronotoobilisuse ja multimodaalsuse ehk multimeedialisuse välja. *Tekstuaalne* väli on seotud kultuurisemiootika arenguga eriti Juri Lotmani töid silmas pidades, *kronotoobiline* väli on saanud alguse Mihhail Bahtini töödest ja *multimodaalsuse* (*multimeedialisuse*) läte juures on Roman Jakobsoni uurimused. Just nende kolme terminoloogilise ja kontseptuaalse välja põimumisel on tekkinud nii metodoloogiline kui metakeeleline interferents, mille tulemusena me oleme sunnitud rääkima metakeele kreoliseerumisest ja hübriidiseerumisest. Kuid samad protsessid toimuvad ka nende väljade sees ja seetõttu on otsustav ka neid välju kõigepealt eraldi vaadelda. Käesolev artikkel on pühendatud neist esimesele, tekstuaalsuse väljale.

*Tekstuaalsus* tähistab käesolevas artiklis üldisemat printsiipi, mille abil on võimalik jälgida ja mõtestada kultuuri toimimise erinevaid aspekte. Tekstuaalsuse mõiste on mõeldud ühendama kaht poolust, mille vahel kultuuride kirjeldamise ja seletamise põhiprobleemid paiknevad. Üht poolust tähistab binaarsus *staatika – dünaamika*, teist poolust binaarsus *osa – tervik*.

Tekstuaalsus ühendab endas teksti kui kindlapiirilise artefakti ja tekstualiseerimise kui abstraksiooni (tekstina kujutamise või piiritlemise). Kultuuris võime konkreetsele tekstile ja abstraktsele tekstile esitada põhimõtteliselt samu küsimusi, kuigi abstraktne tekst on vaid operatsioonaalne võte piiritleda tekstualiseerimise abil mõnd nähtust holistliku ja süsteemse analüüsi huvides. Tekstualiseerimise praktika omakorda aitab mõista vajadust eristada tekstimaterjalist tulenevat liigendust ja tekstuaalsusest või tekstualiseerimisest tulenevat liigendust — esimene tagab võrreldavuse samast materjalist loodud tekstide vahel, teine teeb võrreldavaks kõik tekstualiseeritud nähtused nende materjalist sõltumata.

Tekstuaalsus on võimalus, mida kultuur analüütikule pakub, olles samaaegselt kultuuri ontoloogiline tunnus ja kultuuri uurimise epistemoloogiline printsiip.

# **Metaphorical “networks” and verbal communication: A semiotic perspective of human discourse**

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**Abstract.** This paper presents the notion that verbal discourse is structured, in form and contents, by metaphorical reasoning. It discusses the concept of “metaphorical network” as a framework for relating the parts of a speech act to each other, since such an act seems to cohere into a meaningful text on the basis of “domains” that deliver common concepts. The basic finding of several research projects on this concept suggest that source domains allow speakers to derive sense from a verbal interaction because they interconnect the topic of discussion to culturally-meaningful images and ideas. This suggests, in turn, that language is intertwined with nonverbal systems of meaning, reflecting them in the contents of verbal messages. Overall, the concept of metaphorical networks implies that human cognition is highly associative in structure.

## **Introduction**

Verbal communication unfolds so automatically that we hardly ever take notice of the complex conceptual system that makes it possible for us to engage in it so effortlessly. In the late 1940s, the relation between that system and the grammatical system that allows us to transmit information “linearly” in actual speech situations came to constitute a central preoccupation of language and communication scientists. It was the American engineer Claude Shannon (1948) who argued in that era that information of any kind could be described in terms of binary choices between equally probable alternatives. From Shannon’s work — and that of mathematician Norbert Wiener (1949),

who pioneered the field of cybernetics and the development of computer science — there emerged a widespread notion in the language and communication sciences in the 1950s, which is still prevalent today, that verbal communication was subject to the same rule-governed stochastic processes that characterize mechanical and animal signaling systems. By the 1960s, this led to the development of theories of language, which continue, to this day, to portray language as a grammatical “object” based on universal stochastic principles. But by the 1980s, and certainly by the 1990s, it became obvious that such an approach to language hardly told the whole story of how grammar delivers concepts in even the most simple speech acts (Emmeche 2000; Kull 2000; Brier 2000). Isolated from speech, grammatical systems can indeed be described in mathematical terms, as these theories have aptly shown. But this tells us nothing about the ways in which the architecture of grammar delivers the complex *meanings* of sentences. Despite substantial and noteworthy research on the nature of grammatical rules and syntactic systems since the publication of Noam Chomsky’s *Syntactic Structures* in 1957, current grammatical theories and models seem incapable of adequately explaining the conceptual richness of even the simplest of sentences. This is, no doubt, the reason why Chomsky continues to separate grammatical phenomena from meaning considerations (Chomsky 2000).

Starting in the 1970s, there emerged several interesting attempts to make grammatical theories more sensitive to the conceptual complexity inherent in speech acts (e.g., Hymes 1971; Halliday 1975; 1985). This led to much significant work in the 1980s and 1990s examining the relation between conceptual and grammatical structure from a non-stochastic viewpoint (e.g., Fauconnier 1985; 1997; Langacker 1987; 1990; Croft 1991; Ruwet 1991; Deane 1992; Taylor 1995; Fauconnier, Sweetser 1996; Nuyts, Pederson 1997; Allwood, Gärdenfors 1998; Dirven, Verspoor 1998). The proposal put forward here is in line with such research. Indeed, my objective is to suggest that the categories making up sentence structure in discourse situations are, in effect, “reflexes” of largely unconscious “conceptual networks”, whose various “circuits” are converted into specific types of words and phrases in the delivery of speech. The point of departure for such research can be traced to 1977, when Pollio, Barlow, Fine, and Pollio published their extensive investigation of common discourse texts, finding them to be structured primarily by metapho-

rical concepts. They discovered that speakers of English, for instance, uttered on average 3,000 novel metaphors and 7,000 idioms per week. Their pivotal study was followed by Lakoff and Johnson's momentous 1980 study, *Metaphors We Live By*, which has since provided a powerful framework for relating the meaning of specific grammatical devices to particular conceptual structures (see, for instance, Kövecses 1986; 1988; 1990; Lakoff 1987; Johnson 1987; Sweetser 1990; Indurkha 1992; Danesi 1993; Gibbs 1994; Goatley 1997; Lakoff, Johnson 1999). To put it in strictly semiotic terms, this line of inquiry has finally started to show how *signifieds*, the units of meaning and reference, can be linked etiologically to their *signifiers*, the physical forms that deliver these units.

Although semioticians have, by and large, been openly critical of the Chomskyan view of language (Sebeok, Danesi 2000), they have not normally become involved in research designed to provide a viable alternative based on the relation between signifieds and signifiers in language structure. The purpose of the present paper is to offer such an alternative, derived primarily from experimental and pedagogical work with second language learners — individuals who, more than anyone else, are faced with the complex task of learning how the signifiers of the new language overlap with native language signifieds and how they deliver conceptually new and/or subtly different signifieds (Danesi 2000). The claim to be made here is that verbal discourse involves a "reflexive loop" between the grammatical and the conceptual domains.

### Semiotic network theory

Called *langue* by Saussure (1916) and *linguistic competence* by Chomsky (1957), knowledge of language as a rule-governed system has been traditionally assumed to be independent of how it is applied to real-life communicative situations, which Saussure called *parole*. In the early 1970s, the linguist Dell Hymes (1972) challenged this view, proposing that knowledge of language structure was interconnected with knowledge of how to use it appropriately in specific social settings. He called this type of knowledge *communicative competence*. In actual fact, the study of communicative competence was implicit in the work of various structuralist linguists and communication theorists before Hymes (e.g., Firth 1957; Jakobson 1960; Austin 1962; Dance

1967; Searle 1969; Andersch *et al.* 1969; Barnlund 1970). It has become a major focus for both sociolinguistics and communication theory ever since (e.g., Myers, Myers 1985; Cherwitz, Hikins 1986; Tannen 1989; Fairclough 1995; van Dijk 1997). At the core of this approach to discourse is the idea of *transaction* — the view that verbal structures in discourse are “negotiated” between the interlocutors and that acts of negotiation influence cumulatively the actual grammar and vocabulary of a language. Such research has shown rather convincingly that communication variables are primary factors in modifying grammar and vocabulary, thus largely rebutting the view that grammatical systems are based on “universal properties” and thus are impervious to the influence of communication. As Colin Cherry aptly put it in his monumental study of communication, the use of language among humans “is essentially a social affair” (Cherry 1957: 9). But, with few exceptions (e.g., Kress 1985; Ellis, McClintock 1990; Garza-Cuarón 1991; Copley 1996; Agha 1997; Kramsch 1998), lacking from communicative competence theory is the fundamental semiotic view of language as a representational device interconnected with the other (nonverbal) representational systems of a culture (Verschueren 1995; Yabuuchi 1996; Edwards 1997; Danesi, Perron 1999; Jaworski, Coupland 2000). This view emphasizes that language is not an autonomous code, separate from the other codes humans employ to represent and communicate information, ideas, emotions, etc. The central notion of what I have elsewhere called *semiotic network theory* (Danesi 2000) is that there exist three main types of conceptual networks that link language with nonverbal codes — *denotative*, *connotative*, and *metaphorical*. These are reflected in the forms that specific signifiers in each of the codes of a culture assume. In short, the same signifieds surface in the form of different verbal and nonverbal signifiers because these are interconnected to each other by the same complex cognitive circuitry that characterizes the conceptual network systems present in a culture.

Network theory has been developed primarily from several research projects carried out at both the University of Toronto and the University of Lugano during the academic years 1997–1998. Over 500 students were instructed to draw up network analyses of over 200 common concepts, ranging from colors to emotions in English and Italian. Their analyses were then matched against the conceptual structures inherent in common written texts, such as newspaper and magazine articles published in Toronto and Lugano. The findings

suggest rather strongly that verbal communication is shaped by a complex web of denotative, connotative, and metaphorical circuits that are concealed in every word, phrase, and sentence (Danesi 2000).

In Saussurean semiotics, the term *concept* designates the conventional meaning we get from a sign (Saussure 1916). As it turns out, however, it is not a straightforward matter to explicate what a concept is by *using other words* to do so. Consider, for example, what happens when we look up the definition of a word such as *cat* in a dictionary. Typically, the latter defines a *cat* as "a carnivorous mammal (*Felis catus*) domesticated since early times as a catcher of rats and mice and as a pet and existing in several distinctive breeds and varieties". The problem with this definition is that it uses *mammal* to define *cat*. What is a *mammal*? The dictionary defines *mammal* as "any of various warm-blooded vertebrate *animals* of the class *Mammalia*". What is an *animal*? The dictionary goes on to define an *animal* as "a living *organism* other than a plant or a bacterium". What is an *organism*? An *organism*, the dictionary stipulates, is "an individual animal or plant having diverse organs and parts that function together as a whole to maintain *life* and its activities". But, then, what is *life*? *Life*, it specifies, is "the property that distinguishes living *organisms*". At that point it is apparent that the dictionary has gone into a conceptual loop — it has employed an already-used concept, *organism*, to define *life*.

Looping is caused by the fact that dictionaries employ words, which of course encode other concepts, to define an entry. As it turns out, the dictionary approach just described is the only possible one — for the reason that all human systems of knowledge have a looping associative structure, including mathematics, as the brilliant mathematician Kurt Gödel demonstrated in 1931. This suggests that the meaning of something can only be inferred by relating it to the meaning of something else to which it is, or can be, associated. There simply is no such thing as an "absolute concept." So, the meaning of *cat* is something that can only be extrapolated from the *circuitry* of conceptual associations that it evokes. This circuitry can be called a *network*. In addition to the concepts of *mammal*, *animal*, *organism*, and *life*, used by the dictionary, one can add others such as *whiskers* and *tail* to the circuitry of the *cat* network. In sum, the meaning of a concept such as *cat* crystallizes from an intricate interplay of related conceptual associations that it evokes.

There are several things about networks and network theory that must be made clear from the very outset. First, the term *theory* is not used in its strictly scientific sense, but rather in its original etymological sense of "a view." Network theory is not a "theory of concepts" in the psychological sense. It simply provides a descriptive apparatus for literally *showing* what dictionary makers have known for centuries — namely that the meaning of something is impossible to pin down without reference to other meanings. The position of *nodes* (concepts), the configuration of circuits (the associations among concepts), and the "distances" between nodes and circuits in a network reflect no necessary pattern or intrinsic structure. There is no limit (maximum or minimum) to the number and types of nodes and circuits that can be used to characterize a concept. It depends on a host of factors, not the least of which is the knowledge of the network-maker. In the network for *cat*, secondary circuits generated by *mammal*, for example, could be extended to contain *carnivorous*, *rodent-eater*, etc.; the *life* node could be extended to generate a secondary circuit of its own containing nodes such as *animate*, *breath*, *existence*, etc. in no particular order; other nodes such as *feline*, *carnivorous*, *Siamese*, *tabby*, etc. could be inserted to give a more detailed "picture" of the conceptual structure of *cat*; and so on. Finally, network design will vary according to case and necessity. The network described above would put *cat* at its *focal* point because that is the concept under consideration by the dictionary. However, if *animal* were to be needed as the focal concept, then *cat* would be represented differently as a nonfocal node connected to it in a circuit that would also include *dog* and *horse*, among other associated nodes. In effect, there is no way to predict the configuration of a network in advance. It all depends on the analyst, on the purpose of the analysis, on the type of concept, and on other such factors that are variable and/or unpredictable.

The primary node concepts — *mammal*, *animal*, *life*, and *organism* — are superordinate ones; *cat* is a basic concept; and *whiskers* and *tail* are subordinate concepts. In prototype theory (e.g., Rosch 1973), superordinate concepts are those that have a highly general referential function. Basic concepts have a typological function. They allow for reference to types of things. Finally, subordinate concepts have a detailing function. Although it is beyond the purpose of the present discussion, it would be interesting to investigate the relation of nodes and circuits (primary, secondary, etc.) to these functions and

determine if a pattern emerges. That is something that will have to be left for future work on semiotic network analysis. Clearly, the configuration of a network will vary according to the function of its focal node — i.e. a network that has a superordinate focal node (e.g., *mammal*) will display a different pattern of circuitry than will one that has a basic concept at its focal center.

### Types of networks

Denotative, connotative, and metaphorical concepts are not to be considered separate phenomena, but rather, interconnected to each other through various kinds of circuitry and network linkages. *Denotation* is the initial meaning captured by a concept. The denotative meaning of the word *blue* in English, for instance, encodes the image of a hue on the color spectrum with a wavelength of approximately 450 to 490 nanometers. The specific image that comes to mind will be different from individual to individual. But all images will fall within the above wavelength, if one is a native speaker of English. The denotative concept of "blueness" is forged cognitively from the experience of observing the hues found in natural phenomena such as the sky and the sea, by observing other hues in things, and so on.

The denotative network for this focal node will thus contain circuits made up of nonfocal nodes such as *color*, *shade*, *hue*, *gradation*, *sky*, and *sea*, among others. Since *blue* is a type of color, it is really part of a conceptual, or network, domain that has *color* as its focal point. However, in specific network analyses, it is not necessary to show the relevant network domain — in which *blue* would, in effect, be configured as a primary node connected to *color*. A *network domain* can be defined as the associative configuration generated by superordinate categories — *color*, *animals*, etc. Within such domains, basic and subordinate concepts can be subdivided, for the purpose of a specific analysis, into smaller networks of their own. That applies to the network designed for *blue* as a type of color interconnected to *yellow*, *green*, etc. within the same circuit.

Denotative networks allow speakers of a language to talk and think about concrete things in specific ways. But such networks are rather limited when it comes to serving the need of describing abstractions, emotions, morals, etc. For this reason they are extended considerably

through further associative thinking. Consider the use of *cat* and *blue* in sentences such as the following ones:

- (1) He's a real cool *cat*.
- (2) Today I've got the *blues*.
- (3) She let the *cat* out of the bag.
- (4) That hit me right out of the *blue*.

These encode *connotative* and *metaphorical* meanings, which are "added" or "extended" meanings of the two concepts. The use of *cat* in (1) to mean "attractive," "engaging," etc. comes out of the network domain associated with *jazz music*; and the use of *blues* in (2) to mean "sad," "gloomy," etc. comes out of the network domain associated with *blues music*. In effect, these have been linked to the original networks of *cat* and *blue* through the channel of specific cultural traditions. They are nodes that interconnect *cat* and *blue* to the network domains of *jazz* and *blues* music.

The meaning of "something secret" associated with *cat* in example (3) above and the meaning of "unexpectedness" associated with *blue* in (4) have resulted from linking *cat* with the *secrecy* network domain and *blue* with the *sky* domain. Sentence (3) is, in effect, a specific instantiation of the conceptual metaphor [animals reflect human life and activities], which underlies common expressions such as:

- (5) It's a *dog's* life.
- (6) Your life is a *cat's* cradle.
- (7) I heard it from the *horse's* mouth.

Sentence (4) is an instantiation of the conceptual metaphor [Nature is a portent of destiny] — which literary critics classify as a stylistic technique under the rubric of *pathetic fallacy*. This concept underlies such common expressions as:

- (8) I heard it from an *angry wind*.
- (9) *Cruel clouds* are gathering over your life.

The networks that are generated by metaphorical signifieds extend the meanings of signs within networks considerably. Comprehensive network analyses of *cat* and *blue* would have to show how all meanings — denotative, connotative, metaphorical — are inter-

connected to each other through complex circuitry. It is the ability to navigate through the overarching circuitry of such networks, choosing appropriate denotative, connotative, or metaphorical nodes according to communicative need, and integrating them cohesively into appropriate individually-fashioned circuitry to match the need, that constitutes what may be called *conceptual competence* in a language, as opposed to abstract *linguistic competence*.

The connotative extensional process is, needless to say, highly *associative*. But it is not one based on *association-by-sense*, as it is in the formation of denotative concepts. Rather, it is based on *association-by-inference*. To grasp what this means, consider the word *tail*, which the dictionary defines as "the flexible appendage found at the rear end of an animal's body". This is the denotative meaning of *tail* in utterances such as the following:

- (10) My cat's *tail* is over one foot long.
- (11) Are there any species of dogs without *tails*?
- (12) That horse's *tail* is rather short, isn't it?

In a denotative network *tail*, as a focal node, would be connected to a circuit that contains *appendage* and *rear-end* nodes. These provide basic information about what a *tail* is — an extremity — and where it is found on an animal — on its rear end. Now, these nodes are what guide the extension of *tail* to encompass meanings such as following:

- (13) The *tail* of that shirt is not bleached.
- (14) Do you want heads or *tails* for this coin toss?
- (15) The *tail* section of that airplane is making a funny noise.

Such extensions are hardly random or disconnected to the original circuit. Shirts, coins, and airplanes are conceptualized in English-speaking cultures as having appendages and rear ends. In network terms, a *shirt*, a *coin*, and an *airplane* are concepts that belong to separate networks of their own. However, through associative inference these are interlinked to the *tail* network. The process of network linking can be called *grafting*. Grafting is the process that underlies connotation and metaphorization.

As another practical example, consider the following metaphorical statement: "The professor is a *snake*." Clearly, it is not the denotative meaning of the vehicle, *snake*, that is transferred to the topic,

*professor*, but rather its connotative meanings, namely the culture-specific characteristics perceived in snakes — “slyness,” “danger,” “slipperiness,” etc. It is this circuit of connotations linked to *snake* that are grafted onto the *professor* circuit. The grafting of the connotative nodes associated with the source network domain circuit (*snake*) onto the focal target domain node (*professor*) is what creates the meaning (or ground) of the metaphor. The concept of grafting suggests that this statement is hardly an isolated example of metaphorical fancy; rather, it implies that it is one of an infinitude of similar expressions that cluster around the idea that [human personality] is understandable in terms of [animal features]:

- (16) John is a *pig*.
- (17) That woman is a *tiger*.
- (18) My friend is a *gorilla*.
- (19) She *roars* when she gets angry.

Each is a specific instantiation of that very idea — namely [human personality is understandable in terms of animal features], or simply [people are animals]. This is dubbed a *conceptual metaphor* by Lakoff and Johnson (1980) and, more recently, a *metaform* by Sebeok and Danesi (2000). Note again that the grafting of meanings in the metaphorization process is not based on linking denotative circuits, but connotative ones. Thus, it is not the reptilian physical qualities of snakes, or the feline qualities of tigers, that are grafted onto [people], but rather the kinds of behavioral characteristics that snakes and tigers are thought to have in human terms. This is what creates the meaningful circuitry in metaphorization. It is not a simple transferal process, but one based on *association-by-inference*, as it has been called above. Using electric current as an analogy, it can be said that such circuits run on “alternating conceptual current,” so to speak.

Given the controversy surrounding the term *association* in psychology and linguistics, it is necessary to clarify, albeit briefly, what is meant by it in the framework of network theory. In psychology, *associationism* is the theory that the mind comes to know concepts by combining simple, irreducible elements through mental connection. As is well known, interest in associationism was kindled in antiquity by Aristotle, who recognized four strategies by which associations are forged: through *similarity* (e.g. an orange and a lemon), through *difference* (e.g. hot and cold), through *contiguity* in time (e.g. sunrise

and a rooster's crow), and through *contiguity* in space (e.g. a cup and saucer). British empiricist philosophers John Locke and David Hume saw sensory perception as the underlying factor in such processes. In the nineteenth century, the Aristotelian view was examined empirically, leading eventually to the foundation of an associationist school of psychology, guided by the principles enunciated by James Mill in his *Analysis of the Phenomena of the Human Mind* (1829). In addition to Aristotle's original four strategies, that school found that such factors as *intensity*, *inseparability*, and *repetition* added to the strength of an association: e.g. *arms* are associated with *bodies* because they are inseparable from them; *rainbows* are associated with *rain* because of repeated observations of the two as co-occurring phenomena; etc.

The one who developed associationism experimentally was Edward Thorndike, who extended the work initiated by the Russian psychologist Ivan Pavlov in 1904. Pavlov provided an empirical basis for investigating how associations through repetition are made. When he presented a meat stimulus to a hungry dog, for instance, the animal would salivate spontaneously, as expected. This was termed the dog's "unconditioned response." After Pavlov rang a bell while presenting the meat stimulus a number of times, he found that the dog would eventually salivate only to the ringing bell, without the meat stimulus. Clearly, Pavlov suggested, the ringing by itself, which would not have triggered the salivation initially, had brought about a "conditioned response" in the dog. By *association* the dog had learned something new. Every major behavioral psychologist has utilized the Pavlovian notion of associationism in one way or other. Although behaviorists believe all thought processes can be accounted for through associations of stimuli and responses, other psychologists strongly reject such an approach as inadequate to explain creative thought and verbal behavior.

The meaning of *association* as used in the network theory framework is not the Pavlovian one. In line with twentieth century Gestalt psychology, it is used to stress that abstract concepts beget their meanings only in relation to other concepts. Gestalt psychologists believed that pattern, or form, was the most important part of experience. The whole pattern in a conceptual network, for instance, gives meaning to each individual element (node, circuit, etc.) within it. In other words, the whole is more important than the sum of its parts. As discussed above, network patterns can be forged by sense, i.e. by

observing physical features of referents, or by inference, i.e. by applying the sense associations to referents that are perceived as possessing the same features.

### Reflexivization

Associative conceptual structure is converted into linear surface grammatical structure through a process that can be called *reflexivization*. Consider, for example, an underlying circuit containing *snake* as a metaphorical concept that is to be used in a specific speech act. In the surface language that is chosen to deliver it, it can show up as a verb (20), if it is the snake's movements that are grafted onto the target, or as an adjective (21), if it is a serpentine quality that is grafted conceptually onto the target:

(20) The professor *snaked* his way around the issue.

(21) The professor has a *snaky* way of doing things.

The difference between the two surface forms — *snaked* and *snaky* — can be traced to underlying circuits that extend the *snake* concept in specific ways. The reflexivization of (20) shows that the grafted concept included a *movement* node. In (22) the relevant circuit grafted onto the target concept included, instead, a *quality* node.

The notion of reflexivization is not a theory of grammar. It is a heuristic technique for showing how words, phrases, and sentences appear to *reflect* conceptual structure, i.e. to encode it in specific ways. Needless to say, surface linear structure reflects not only concepts, but is also sensitive to communicative functions, situational variables, stylistic needs, etc. There are an infinitude of ways in which the reflexivization of concepts can unfold. The choices made by the speaker, the context of the speech act, the grammatical and lexical knowledge of the speaker, etc. are the factors that constrain surface structure outcomes. It is not the purpose of reflexivization analysis to consider these factors. The main objective of such analysis is showing how grammar, vocabulary, and concepts are interconnected in a systemic way.

Differences in surface linear structure are typically due to underlying conceptual dichotomies. In Italian, for instance, the difference between the denotative and connotative meaning of an adjectival

concept is sometimes reflected in the surface by a difference in position with respect to the noun. Thus, in (22) and (23), the different surface position of the adjective is a reflex of the different networks to which the meanings belong:

(22) Lui è un uomo *povero* ("He's an indigent man").

(23) Lui è un *povero* uomo ("He's a forlorn man").

In (22) it is the denotative meaning of *povero* that is reflected in the surface by a post-positioning of the adjective with respect to the noun (the normal position for qualitative adjectives). In (23) the connotative meaning of *povero* is indicated by means of its pre-positioning, alerting the interlocutor in an anticipatory fashion as to the type of concept that is intended.

As another example of how conceptual dichotomies are reflexivized, consider the use of the English prepositions *since* and *for* in sentences such as the following:

(24) I have been living here *since* 1980.

(25) I have known Lucy *since* November.

(26) I have not been able to sleep *since* Monday.

(27) I have been living here *for* twenty years.

(28) I have known Lucy *for* nine months.

(29) I have not been able to sleep *for* seven days.

An analysis of the complements that follow *since* or *for* reveals that those that follow the former are [points in time], i.e. they are complements that reflect a conception of time as a [point] on a [timeline] which shows specific years, months, etc.: *1980, November, Monday*, etc. Complements that follow *for*, on the other hand, reflect a conception of time as a [quantity]: *twenty years, nine months, seven days*, etc. These two network domains — [time is a point] and [time is a quantity] — have an underlying metaphorical circuitry structure, reflecting our propensity to imagine an abstract notion such as "time" in terms of something concrete. These can now be seen to have a specific effect at the level of syntax by motivating a grammatical dichotomy — complements introduced by *since* are reflexes of the conceptual domain [time is a point]; those introduced by *for* are reflexes of the conceptual domain [time is a quantity]. This is, in fact, the kind of *rule of grammar* that reveals how concepts are encoded

linearly — it relates, in effect, how two specific domains of conceptualization have worked their way into the grammar. In a word, this rule stipulates how a grammatical dichotomy *reflects* a conceptual dichotomy.

Take, as one final example, the selection of certain verbs in particular types of sentences in Italian. The verb *fare* “to make” is used to convey a weather situation — *fa caldo* (literally) “it makes hot,” *fa freddo* (literally) “it makes cold.” The physical states of [hotness] and [coldness] are conveyed instead by the verb *essere* “to be” when referring to objects — *è caldo* “it is hot,” *è freddo* “it is cold”— and by *avere* “to have” when referring to people — *ha caldo* “he/she is hot,” *ha freddo* “he/she is cold.” The use of one verb or the other—*fare*, *essere*, or *avere* — is motivated by an underlying metaphorical conceptualization of bodies and the environment as [containers]. So, the [containment context] in which the quality of [hotness] or [coldness] is located determines the verbal category to be employed. If it is in the environment, it is “made” by Nature (*fa caldo/freddo*); if it is in a human being, then the body “has” it (*ha caldo/freddo*); and if it is in an object, then the object “is” its container (*è caldo/freddo*).

To summarize, it is obvious that conceptual domains leave their reflexes in the grammars of specific languages. Knowledge of such differentiated reflexive properties is what guides conceptually-appropriate communication among interlocutors. *Grammar* in this framework is definable, therefore, as a system that reflexivizes conceptual circuitry in specific ways.

It must be emphasized again that the notion of reflexivization is not a theory of grammar. It is proposed simply to show that in the same way that a painting is much more than an assemblage of lines, shapes, colors, and melodies a combination of notes and harmonies, so too a sentence in language is much more than an assemblage of words and phrases built from some abstract rule system in the brain. We use the surface grammatical and lexical codes at our disposal to model the world of concepts in ways that parallel how musicians use melodic elements and painters visual ones to model it.

## Discourse

Network analyses of conversations show, above all else, that discourse is structured largely by connotative inter-network linkages. A truly interesting feature of discourse that this type analysis also reveals can be called *connotative chaining*. This occurs when a specific connotative node generates derivative associations in the immediate span of the discourse. To put it figuratively, it tends to "infect" the whole conversation. For instance, once a word such as *drop* is used connotatively by a speaker in a certain situation, then it may spawn a chain of associated concepts such as *pick up*, *let go*, etc. Here is an example of a conversation excerpt that I recorded at the University of Toronto, during which a speaker (a university student) used the word *drop* as just described: "Yeah, I *dropped* that course yesterday... No, I won't *pick it up* next year... The main reason for *letting it go* was the prof. He was awful... Believe me, I haven't *lost* anything..."

In this sample of discourse, the connotative meaning of *drop* initiated a circuit on its own that included *pick up*, *let go*, and *lose* in close proximity to each other. In effect, the image of "falling" is distributed in the circuit, surfacing in various lexical forms. The nodes are linked again through a process of *association-by-inference* — *picking up* something means that it was *dropped*; *losing* something elicits the image of *dropping* it; and, of course, *letting* something *go* will cause it to *drop*. The construction of the circuit is a subjective act, based on grafting nodes from network domains. This is what makes discourse unpredictable in actual form, but understandable, and even predictable, conceptually.

Once connotative circuits have been introduced into discourse they tend to guide the flow of conversation through chaining. In the above circuit, for instance, the *pick up* node led a little later in the conversation to the use of *take*, which, in turn, generated its own circuitry with two nodes — *carry* and *heavy*: "I really can't *take* any more subjects... I'm already *carrying* the maximum... I've got quite a *heavy* load..."

There are various kinds of connotative chains that characterize discourse flow. Some of these contain nodes based on narrative traditions; these are concepts referring to themes, plot-lines, characters, and settings that surface in narratives. Calling someone a *Casanova* or a *Don Juan*, rather than *lady-killer*, evokes an array of socially-significant connotations that these characters embody. Referring to a

place as *Eden* or *Hell* elicits connotations that have a basis in mythic and religious narrative. The circuits that have been grafted from these stories also surface constantly in common discourse events. Climatologists, for example, refer to the warming of the ocean surface off the western coast of South America that occurs every 4 to 12 years when upwelling of cold, nutrient-rich water does not occur as a person, *El Niño*, "the little one" in Spanish. This mythic personification of a climatological condition makes it much more understandable in human terms. Although people do not think of *El Niño* as a mythic figure, they nonetheless find it convenient to blame "him" for certain weather repercussions as if it were one. This is how original myths worked cognitively — the difference being that the personified conditions of the past were actually believed to be real gods or mythical beings. The discourse that surrounds *El Niño* is virtually always interpretable in mythic terms. For instance, I recorded a weather commentary on American television recently that contained a circuit generated by mythic personification: "This year *El Niño* is having a great time of it. *He* has *wreaked havoc upon* anyone or anything in *his* path. *He* has *come down* very strenuously upon us."

In effect, connotative and metaphorical circuitry in discourse is densely distributed through networks present in the entire system of culture. Take, as an example, the *up-down* metaphorical concept that entails the connotative feature [verticality]. In verbal discourse this feature is a node that is reflexivized commonly in expressions such as the following:

- (30) I'm feeling *up*.
- (31) They're feeling *down*
- (32) I'm working my way *up* the ladder of success
- (33) His enthusiasm has gone *down* considerably.

This same concept manifests itself in the religious domain, where goodness, spirituality, and heaven are portrayed as *up*, and evil, damnation, and hell as *down* in sermons, theological narratives, religious visual representations, the design of churches, etc. In public building design, too, it can be discerned in the fact that the taller office buildings in a modern city are the ones that indicate which institutions (and individuals) hold social and economic power. In musical composition, higher tones are typically employed to convey a sensation of happiness, lower ones of sadness. During speech, the

raising of the hand designates notions of amelioration, betterment, growth, etc., whereas the lowering of the hand designates the opposite notions. In bodily representation and perception, this concept shows up in the common viewpoint that *taller is more attractive/shorter is less attractive*. In mathematical and scientific representational practices its reflexivization can be seen, for instance, in the ways in which graphs are designed — lines that are oriented in an upward direction indicate a growth or an increase of some kind, while those that are slanted in a downward direction indicate a decline or decrease.

The foregoing analysis of interconnected networks is intended to show how highly complementary abstractions are to each other and how they are utilized to generate representational practices and systems. The [people are animals] network discussed above is the source of such symbolic activities as the use of animals in totemic codes, in heraldic traditions, in the creation of fictional characters for use in story-telling to children (*Bugs Bunny, Foghorn Leghorn, Daffy Duck*, etc.), in the naming of sports teams (*Chicago Bears, St. Louis Cardinals, Miami Dolphins*, etc.), and in the creation of surnames, to mention but a few.

This type of analysis also explains why discourse texts produced by computers and foreign-language learners alike (at the beginning of their study of a new language) will manifest a high degree of accuracy in sentence-formation, but they will invariably lack the conceptual appropriateness that characterizes the corresponding discourse texts of native speakers. To put it another way, students and machines "speak" artificially with the formal grammatical structures of the language as they have been taught them or programmed to do respectively, but they are unable to "think" in terms of the conceptual system that underlies the structures: i.e. students typically make-up target language sentences as artificial "carriers" of their own native language concepts through the rules they have been taught; computers generate them in response to the rules programmed into them. When these coincide with the ways in which concepts are relayed by native speakers *naturally*, then the student and machine texts coincide serendipitously with culturally-appropriate discourse texts; when they do not, they manifest an asymmetry between sentence form and conceptual content.

## Concluding remarks

The notions of semiotic networks and of reflexivization raise some specific questions for future research. The guiding question is: What are the verbal cues that reveal conceptual domains? In this paper, for instance, the structures *since* and *for* were related to the conceptual domain as reflexes of differentiated metaphorical networks: [time is a point] and [time is a quantity]. The work on cognitive grammar by Langacker (1987; 1990), as mentioned, is leading the way in showing us how analyses of this type might be envisioned. Another question is to determine to what extent and in what ways conceptual networks relate to, or are embedded in, world knowledge. Is world knowledge built up from such circuitry? And if so, how is this incorporable into an extensive analysis of language? Some possibilities have been explored in the past (e.g., Pike 1967), and I believe that this kind of exploration is the wave of the future in semiotics, linguistics, and communication science. As Levin (1988: 10) has aptly remarked, however, one must proceed cautiously in this area of inquiry, simply because the many modes of knowing defy the possibility of envisioning a single theory — e.g., innate knowledge, personal knowledge, tacit knowledge, spiritual knowledge, declarative and procedural knowledge, knowing that and knowing how, certitude (as well as certainty), and so on. The more appropriate goal for linguistics and semiotics should be, therefore, to determine to what extent and in what specific ways language reflects knowledge structures.

The bulk of the work on grammatical systems in linguistics and verbal communication generally has traditionally excluded the relation between concepts and grammatical categories. The present study has aimed to show, however, that sentence form is shaped by conceptual factors much more than traditional grammatical analysis would allow. The effect of conceptual structure on categorization in grammar has been taken up somewhat in the linguistic literature, but it has never really penetrated the mindset of language scientists until recently. The philosopher Herder, for instance, saw an intimate connection between language and what he called "ethnic character." Subsequently, Wilhelm von Humboldt gave Herder's hypothesis a more testable formulation when he portrayed the structure of a particular language as interdependent with the thought and behavior of the people using it for communication. Needless to say, von Humboldt's perspective went contrary to the views of the Port-Royale grammarians who saw

language as the product of the universal logical laws of the human mind. It was shortly after von Humboldt's alluring pronouncements that the study of "language and mind" was given its first scientific research impetus. In the twentieth century, work on language and thought was pursued by both those espousing a Humboldtian perspective — Sapir (1921), Whorf (1956), and others — and those advocating a universalist Port Royale perspective — especially Chomsky. As mentioned, the goal of Humboldtians, such as Sapir and Whorf, has never been truly envisioned by mainstream linguistics until very recently. The North American version of linguistic science took its characteristic shape and methodological orientation from Leonard Bloomfield's 1933 textbook entitled simply *Language*. In the same way that Euclid's *Elements* bestowed systematicity and unity upon the study and practice of geometry in antiquity through its coherent synthesis of geometrical concepts and techniques, so too did *Language* provide the fledgling science of linguistics in the 1930s with an organized repertory of notions and procedures for carrying out detailed investigations and analytical characterizations of specific languages. This is the main reason why, in my view, Bloomfield's *Language*, and not the work bearing the same title and published more than a decade earlier by Edward Sapir (1921), came to be accepted by the majority of linguists as the point of reference for conducting empirical research and for developing models of language design.

While Bloomfield's work constituted the first true "textbook" in the history of linguistic science, Sapir's book was the first real attempt to provide a framework for studying the relation of language to cognition and culture. And whereas for most of the twentieth century linguists diligently pursued the investigation of language systems *per se*, along the lines laid down first by Bloomfield and later by Chomsky, they have recently started to move more and more toward the adoption of Sapir's original paradigm.

The question that Sapir sought to answer throughout his life is probably as old as civilization itself: How is thought related to language? He was intrigued, in other words, by the possibility that human ideas, concepts, feelings and characteristic social behaviors might be mirrored by the verbal categories that specific cultures employ to codify them. Sapir suspected that the most direct route to the mind was through language. Due to his tragically early death, Sapir was never able to design and carry out a research program aimed at examining his idea rigorously and systematically. As is well known,

it fell on the shoulders of Sapir's brilliant student Benjamin Lee Whorf (1956) to elaborate substantively upon his mentor's views and to give them a more empirically-testable articulation. Whorf posited, in essence, that the categories of one's particular language are much more than simple mediators of thought. He saw them as being the "shapers" of the very thought patterns they embody: "The world is presented in a kaleidoscopic flux of impressions which has to be organized by our minds — and this means largely by the linguistic systems in our minds" (Whorf 1956: 153). But Whorf's experimental program for studying the language-thought nexus could not have been devised without his teacher's profound insights. Sapir saw language as being much more than a communication system. He considered it to be a kind of cognitive filter through which humans come to perceive and understand the world around them.

Semiotic network theory is an attempt to make good on Sapir's agenda for linguistic science. It is just one way that can be envisaged for relating formally how thought and language are interdependent. Grammatical properties cannot be studied in isolation. To rewrite natural grammars with reflexive rules would imply research on the domains of meaning that are implicit in sentences first and, then, to connect the grammatical categories to these in direct ways. Some of the ways have been discussed tentatively in this paper. There is no doubt that future work in semiotics and linguistics will show how to encompass all the traditional morphological and syntactic categories within a semiotic framework of meaning. Within this framework, everything from verb tenses to adverb usage will be linked to the interconnected experiences of the world that are manifested in the use of a language by native speakers in cultural contexts. This was the research challenge put forward by Sapir; and the time has come to take up his challenge seriously.

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### **Метафорическая «сеть» и вербальная коммуникация: семиотическая перспектива человеческого дискурса**

В статье утверждается, что языковой дискурс структурирован (на уровне формы и содержания) на метафорической основе. Понятие "метафорическая сеть" используется в качестве соотносительной рамки разных частей речевого акта, так как речевые акты соединяются в осмысленный текст на основе "общностей", которые передают общие понятия. Разные исследования, занимающиеся этим концептом, выявляют факт, что именно эти общности в качестве источников позволяют говорящему в ходе вербальной интеракции вывести значение, соединяя дискутируемую тему культурно значимыми образами и идеями. Из этого, в свою очередь, следует, что

язык тесно переплетается с невербальными системами значения, отражая их в содержании языковых сообщений. Таким образом, понятие метафорическая сеть приводит нас к мысли, что структура человеческой когнитивной деятельности во многом ассоциативна.

### **Metafoorilised “võrgustikud” ja verbaalne kommunikatsioon: inimdiskursuse semiootiline perspektiiv**

Artiklis väidetakse, et keeleline diskursus on struktureeritud (nii vormi kui sisu tasandil) metafoorilisel põhimõttel. Mõistet “metafooriline võrgustik” käsitletakse kui kõneakti osade suhestumisraamistikku, kui võrd kõneaktid ühenduvad tähenduslikuks tekstiks “valdkondade” alusel, mis edastavad ühiseid mõisteid. Erinevad seda kontsepti käsitlevad uurimused toovad esile, et just allikvaldkonnad võimaldavad rääkijail tuletada tähendus verbaalses interaktsioonis, ühendades käsitletava teema kultuuriliselt tähenduslike kujundite ja ideedega. Sellest omakorda järeldub, et keel on tihedalt läbi põimunud mitteverbaalsete tähendussüsteemidega, peegeldades neid keeleliste teadete sisus. Seega, metafooriliste võrgustike mõistest tuleneb, et inимтунnetus on suurel määral assotsiatiivse struktuuriga.

## Функция характеристики в настоящем времени

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**Abstract.** *Michel Paladian. Function of characterization in present tense.*

This article is devoted to a field in cognitive and semantic analysis where stylistics and grammar meet: it concerns the function of characterisation in the Present tense. In general, linguistic works, which are devoted to the Present tense, take into account only the *time* and the *aspect*. However, from a point of cognitive view, the values of the Present are not limited to the Verb; they also relate to the values of the Adjective. We must thus take into consideration not only the Time conceptualisation (time features), but also the Space conceptualisation (space features). We know, since Davidson, how the event, which the Verb represents, can be broken up into phases; it is to the one of these phases that the function of actualisation is attached. Actualisation is parallel to the function of characterisation specific to the Adjective. As such this phase seizes, retains and assimilates entities and processes of the world in their instantaneous appearance. This cognitive operation can also be analyzed on another level: on the level of visual work.

Мозг человека — чувствительнейший детектор времени. Глагольные времена в связи с этим можно считать следующими друг за другом пространственными *закреплениями*, произведенными мышлением. *Время и пространство* образуют некий континуум, выступая вместе на разных участках зарегистрированного события в разных пропорциях. Этот процесс проходит сначала в настоящем времени, которое служит моделью систематизации пространственно-временных отношений. Настоящее есть первич-

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<sup>1</sup> Michel Paladian passed away in February 2, 2004, in Paris. He was born in 6.7.1943 in Lyon (France).

ная система, концептуальная схема (*conceptual frame*), пункт встречи *говорящего со временем*. Оно проявляется в сознании, как компактная реальность, однако, под этим впечатлением целостности скрывается вся инфраструктура глагольной системы.

Переходя в *пространство, время* одновременно принимает на себя и три этапа его концептуализации: *виртуальность, характеристика, детерминация*.

В этой статье мы сжато рассмотрим механизмы *характеристики* через настоящее и выявляем его стилистические возможности в литературе и живописи.

## 1. О структуре настоящего времени

Если говорить конкретно, настоящее время кодирует лишь один временной охват ( $w2$ ): указанные временные референции (I, II) и референция момента речи (*поле Я*) совпадают. Границы процесса (событие в целом —  $W1$ ) остаются вне поля наблюдения. *Говорящее лицо* держит в памяти *открывающую границу* процесса, а *закрывающая* — ожидается. Таким образом, настоящее время содержит в своей структуре частицу *опускающегося* объективного времени —  $T$  (см. об этом Паладян 2001), то есть реализованное локализованное время (прошедшее) и частицу *поднимающегося* субъективного еще нереализованного времени (будущее) (Рис. 1).



Рис. 1. Формирование настоящего.  $T$  — объективное время;  $W1$  — большое окно;  $w2$  — маленькое окно;  $X$  — настоящее 1;  $Y$  — настоящее 2;  $A1$ – $A2$  — границы процесса;  $I$ – $II$  — временные референции.

**Я** не может утвердиться по отношению к уходящему объективному времени. В связи с тем, что объективное время постоянно обновляется, **Я** также вынуждено обновлять свое настоящее, создавая относительное (субъективное) время; иначе говоря, сколько моментов речи, столько и Настоящих. Границы процесса (событие в целом — W1) остаются вне поля наблюдения. Рассмотрим теперь Настоящее, так сказать, изнутри.

Настоящее представляет собой сложный механизм. Процесс есть совокупность движений, *микрпроцессов*, как говорит Д. Давидсон (Davidson 1967). Когда **Я**, как говорящее лицо, находится в зафиксированной точке, его настоящее регистрирует частицу процесса в *дилатации*. Оно унифицирует микромоменты. Настоящее время совмещает два микромомента: *процесс* (process) и *состояние* (state).

Не все глаголы, однако, регистрируют настоящее время одинаково. Это зависит от того, к какому типу относится глагол — *телическому*, или *ателическому*. Каждый *телический* процесс состоит из серии превращений, которые идут от *инпута* к *аутпуту* (например: *Съесть яблоко*).

*Инпут* → превращение 1 + превращение 2 + превращение n → *Аутпут*

Настоящее время в *телических* процессах фиксирует промежуточные превращения и держит их в напряжении; процесс подвержен *дилатации*. Время *захвачено* в пространстве. Подобной напряженности нет в *ателических* процессах (например, *спать*), в которых отсутствуют превращения: *инпут* и *аутпут* одинаковы. Если *ателические* процессы можно разделить на отдельные части и потом их вновь собрать (Swart 1997), то с *телическими* это невозможно. Вот почему лексическое значение *ателических* глаголов содержит больше пространственности (– динамика), чем у *телических* (+ динамика).

В обоих случаях, ясно одно: вход *времени* в *пространство* приближает глагол к прилагательному и через него к существительному. Благодаря этому становится возможным уловить временную динамику и описать ее. Я имею ввиду описание временной динамики, а не связь Глагола с Существительным на лексикосемантическом уровне, которая уже изучена. Ж. Муанье (1980) писал:



падеже с [um] + вспомогательный глагол в настоящем времени с [em], [es], [e] / [enk], [ek], [en]. Эти партиципы объявляют начало окончательной локализации (и параллельно квантификации), осуществляемой далее через *дополнение* или *обстоятельство*. Разница между определительной функцией глагола и той же функцией прилагательного состоит в том, что глагол через диатезис связан со всеми аргументами; в то время, как прилагательное связано лишь с одним. В предложении *Я люблю эту книгу* характеризующая черта глагола касается *Я* прямо, и *книги* косвенно.

Отметим однако, что степень характеристики глагола варьируется в зависимости от его типа — телического или ателического. Второй тип содержит большую степень характеристики, нежели первый. Предложение *Самвел пьет вино* почти не характеризует *Агенса (accomplissement)*, в то время, как *Самвел пьет, (activité)* можно уже понять как: *Самвел — пьяница*.

*Время*, обычно, вносит перспективу в пространство, деля его на участки. Перспектива дает возможность сравнивать интервалы телических глаголов и тем характеризовать актаны в разных состояниях и в полной конфигурации.

Процесс характеристики можно описать как улавливание характеризующих черт Существительного, благодаря которому происходит концептуальный переход, например, от *livre* в *un livre*. Характеризация и актуализация (*глагол* — см. Рис. 2) — параллельные семантико-грамматические процессы. Подобный промежуток улавливания черт существует и между виртуальным (∅ степень лица; ∅ степень времени; ∅ степень модальности, выраженные инфинитивом) и актуализированным глаголами. С семантикой глагола происходит то же, что и с семантикой существительного. *Я читающий* со своей семантикой, близкой к прилагательному, маркирует промежуточное пространство между виртуальным (*type*) и детерминированным (*token*). Здесь, как и у Существительного, есть три этапа актуализации: первый — еще виртуальный этап; второй — характеризация, третий — детерминация. Впрочем, второй этап Существительного (характеризация) можно считать своего рода когнитивной предикацией. Именно здесь прилагательное встречается, с одной стороны, с существительным, а с другой — с глаголом. Об этом свидетельствует переходность прилагательного, например: *жаждущий чего-то; чувствительный к чему-то* и т. п. Первое прилагательное содер-

жит в своем семантизме агентивность, которая свойственна глаголам волеизъявления. А второе построено как глагол движения.

### 3. Стилистический анализ: Бодлер, *Гармония вечера*

В стихотворении *Гармония вечера* (Harmonie du soir) Шарль Бодлер (Baudelaire 1991) прибегает к настоящему времени и повторяет его с целью охарактеризовать *убегающее* время. Протополи (система аргументов) функционируют как *локусы* этой характеристики. Поэт стремится *тематизировать движение*, не аннулируя его. Стихотворение начинается с *катафатической* попытки локализации времени: локуторное пространство получает свои ориентиры в *Я + Здесь + Сейчас*. Эта попытка осуществляется посредством повелительного Настоящего — Презентатива *voici* (вот). Напомним, что наречие *voici* происходит от *vois ci!* (смотри на это). Бодлер описывает не пришедший, а приходящий вечер. Цель поэта задержать возникающие ощущения при первом же их появлении. Эти нюансы, к сожалению, не учитывают русские переводы. Так, например, А. Владимиров переводит *voici venir* — “уж вечер”, а М. Касаткин вместо настоящих (партиципа и времени) *vibrant* и *s'évapore* использует прошедшее совершенное “возжег” (Baudelaire 1991; Бодлер 1970; 1998).

Voici venir les temps où vibrant sur sa tige  
Chaque fleur s'évapore ainsi qu'un encensoir ;  
Les sons et les parfums tournent dans l'air du soir;  
Valse mélancolique et langoureux vertige!

Chaque fleur s'évapore ainsi qu'un encensoir:  
Le violon frémit comme un cœur qu'on afflige;  
Valse mélancolique et langoureux vertige!  
Le ciel est triste et beau comme un grand reposoir .

Le violon frémit comme un cœur qu'on afflige;  
Un cœur tendre, qui hait le néant vaste et noir.  
Le ciel est triste et beau comme un grand reposoir  
Le soleil s'est noyé dans son sang qui se fige.

Un cœur tendre, qui hait le néant vaste et noir,  
Du passé lumineux recueille tout vestige,  
Le soleil s'est noyé dans son sang qui se fige ...  
Ton souvenir en moi luit comme un ostenoir!

Вот час, когда в полях, струя благоуханья, Кадилаицы цветов возжег незримый клир; За звуком аромат уносится в эфир Печально-плавный вальс, истомное порханье!	Уж вечер . Все цветущие растения , Как дым кадил, роняют аромат; За звуком звук по воздуху летят; Печальный вальс и томное круженье!
Кадилаицы цветов возжег незримый клир; Трепещет скрипки вздох, как сердце в миг страданья; Печально-плавный вальс, истомное порханье! Прекрасен, как алтарь, закатных туч порфир;	Как дым кадил, роняют аромат; И стонет скрипка, как душа в мученье; Печальный вальс и томное круженье! И небеса, как алтари, горят.
Трепещет скрипки вздох, как сердце в миг страданья; Ужасна сердцу смерть — пустынный черный мир Прекрасен, как алтарь, закатных туч порфир; Диск солнца потонул за обагреной гранью...	И стонет скрипка, как душа в мученье, Испившая сует смертельный яд; И небеса, как алтари, горят Светило дня зардело на мгновенье.
Ужасна сердцу смерть — пустынный черный мир! Минувшее зажгло свои воспоминанья! Диск солнца потонул за обагреной гранью... Ты в памяти моей блистаешь, как потир!	Земных сует испив смертельный яд, Минувшего душа собирает звенья Светило дня зардело на мгновенье. И, как потир, мечты о ней блестят ... (перевод А. Владимиров)

(перевод М. Касаткина)

Бодлер связывает презентатив *voici* с глаголом движения *venir* + подлежащее, представляющее собой нематериальную вещь (*temps*) во множественном числе; персонификация времени входит в программу локализации *убегающего* времени в настоящем моменте. Лексически глагол *venir* подразумевает исходное состояние, но он описывает *аутнум* — кульминацию процесса (в растяжении). Глагол *venir* не спряжен и употребляется в качестве *пантонима*. Этот термин, который внес в употребление Ф. Хамон (Hamon 1983), подразумевает слово, открывающее и резюмирующее текст. Например, писатель сначала употребляет пантоним “дом” и уже после этого приводит всю парадигму этого понятия, как то: *двери, окна, стены, крыша* и т.д. Далее текст может вновь вернуться к пантониму “дом” для того, чтобы передать парадигму цельно в одном слове, то есть, резюмировать, что все описанное и есть дом. У Бодлера после пантонима “*voici venir*” идет целая серия *настоящих*, которые составляют парадигму “*venir*”. Эти Настоящие (сюда входят как телические, так и ателические глаголы) призваны выделить *открывающую границу* процесса (телические глаголы) и одновременно его *статичность* (ателические глаголы) как можно четче в попытке

растяжения временной динамики. Парадокс заключается именно в этом; он феноменологического порядка. Задержание ощущения предполагает дать ему сначала развиться; переселить в пространство, не впустив, тем самым, ничего нового; дать возникающему событию лишь обозначиться. Семантические *протороли*, как *индексы* без конечной конфигурации, находятся почти на уровне стимулуса. Иначе говоря, поэт оперирует глаголом так, словно он существительное. Впрочем, Бодлер чаще отдает предпочтение процессу в виде резюме (*summary scanning* как сказал бы Лангакер — Langacker 1987: 144): *Печально-плавный вальс, истомное порханье!*

Любое высказывание возможно и самобытно только тогда, когда оно обладает пространственной определенностью, иначе говоря тогда, когда оно выводится из неопределенности. В тот момент, когда Бодлер начинает свое описание, частица времени — хронотезиса  $\omega$  (*совершенное время* по Гийому) уже реализована. Поэтому поэту необходимо задержать ее как можно ближе к хронотезису  $\alpha$  (*несовершенное время* по Гийому).

Вещи сосуществуют в пространстве в связи с тем, что они представлены одному и тому же воспринимающему субъекту и охвачены единой временной волной. Однако, единство и особенность каждой волны возможны только благодаря ее спрессованности с предшествующей и последующей, а также благодаря тому, что та же пульсация, которая продвигает волну, задерживает предшествующую и пробует задержать последующую. (Merleau-Ponty 1945: 318)

Как мы уже отмечали, говорящее лицо не желает разрывать *момент речи от события*.

Un cœur tendre, qui hait le néant vaste et noir,  
Du passé lumineux recueille tout vestige...  
*Нежное сердце, ненавидящее обширное и черное небытие,  
Собирает все обломки сияющего прошлого...*

Вот почему можно провести параллель между становлением фонетического знака и настоящим. Если фонетический знак считать *местом*, вернее, *дорогой* (о концепте *дорога* см. Jackendoff 1983; 1993), на которой встречаются *концепт* и *мир*, то настоящее можно считать той *дорогой* (*path*), где встречаются *объективное* и *субъективное* время — момент *деиксиса* и

*аподеиксиса*. Именно здесь должны встречаться собирательная энергия субъекта и собирательный телос процесса.

Для маркировки этой программы Бодлер использует форму *пантума* (которую не использует Владимиров — Бодлер 1998). Эта малайзийская форма воспринимается поэтом как примитивный язык, имеющий онтологическую связь с деиксисом. Она обеспечивает иллюзию задержанного, или растянутого мгновения. Каждое настоящее повторяется как эхо:

*s'évapore → s'évapore / frémit → frémit / fige → fige*

Программа задержания открыто дается в последнем стихе:

Тон souvenir en moi luit comme un ostenoir!  
(Память о тебе светится во мне как потир)

Но, согласно переводу М. Касаткина (Бодлер 1970):

Ты в памяти моей блистаешь как потир!

Как видим, устранение метонимии (*ton souvenir*) в русском переводе (у Касаткина) снимает программу задержания. А устранение притяжательного прилагательного и деиксиса (*Тон*) у Владимира превращает актуализованное Настоящее в Обобщающее Настоящее.

Программа задержания завершается единственным в тексте прошедшим совершенным *s'est noyé*, которое служит закрывающей границей задержания (последняя картина: смерть солнца).

#### 4. Настоящее и визуальный знак

Техника *дilatации*, которая пытается воспроизвести мгновенное ощущение, иногда встречается и в живописи, к ней, в частности, прибегает импрессионизм.

Если до импрессионизма художники (Ян Вермер например: см. илл.2), передавали *после* персонажа (хронотезис  $\omega$  / – динамика), то импрессионистов (Ренуар) стало интересовать *до* или *полупосле* персонажа (хронотезис  $\alpha$  / + динамика). Можно сказать, что импрессионисты создают в живописи нечто, подоб-

ное *перформативному настоящему*, — свет у них сам себя представляет, мы наблюдаем его *результат* и *процесс* одновременно. В этом смысле можно оспорить известное представление о натуралистической основе импрессионизма, как внутренне противоречивое, поскольку импрессионистический метод по своей сути аналитичен: импрессионист *деконструирует* пространство, реформирует его с целью ввести *время*; он производит *время* посредством *пространства*.

*Дрожание* контуров в картинах импрессионистов (мы приводим в качестве примера произведение О. Ренуара, Рис. 3) призвано закрепить черты *стимулуса* (черты настоящего в его процессуальном напряжении). Свет, слегка перемещенный, или растворенный, приобретает емкость и, как эксцесс, предвосхищается в своем движении. Превращение *света* в *пространство* выявляет его секрет — тот миг, когда он достигает объект, касается его (не вселяясь, ибо *время*, как таковое, существует только будучи нереализованным) и взрывается. Техника *дрожания* вносит временную динамику в статичный (“прошлое вещи”) по своей природе живописный образ.



Рис. 3. Ренуар и Вермер.

Однако, чаще искушение передать *прошлое* света бывает сильнее: изображение пространства привлекательнее тем, что оно способно передавать *смысл*. Художник-классицист лишает свет динамики с целью зафиксировать *настоящее*, он передает *вечное* через *пространство*. Каждая картина является по сути *остановкой* во времени (приостановка динамики). Вот почему для современного зрителя классическое искусство воспринимается как статичное (“музейное”). Парадоксально, что мы всегда склонны жаловаться на быстротечность времени (она приближает нас к смерти), тогда как именно *поток времени* есть гарант жизни.

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**Karakterisatsiooni funktsioon olevikus**

Artiklis vaadeldakse kognitiivset valdkonda, kus kohtuvad stilistika ja grammatika: selleks on karakterisatsiooni funktsioon *olevikus*. Tavaliselt arvestatakse *oleviku* puhul vaid *aega* ja *aspekti*. Kuid kognitiivsest vaatepunktist on *olevik* seotud mitte ainult tegusõna, vaid ka omadussõnaga; seda iseloomustab mitte ainult *aeg*, vaid ka *ruumilisus* (space features). Just seetõttu võib sel juhul öelda, et tegusõna stilistika kohtub omadussõna stilistikaga. Tuuakse välja olevikus kasutatavate karakterisatsiooni-mehhanismide stilistilised võimalused nii kirjanduse kui maalikunsti näitel.

## Semiotic foundations of the study of pictures

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**Abstract.** Are pictures signs? That pictures are signs is evident in the case of pictures that “represent”, but is not “representation” a synonym of “sign”, and if so, can non-representational paintings be considered signs? Some semioticians have declared that such pictures cannot be signs because they have no *referent*, and in phenomenology the opinion prevails that they are not signs because they are phenomena *sui generis*. The present approach follows C. S. Peirce’s semiotics: representational *and* non-representational pictures and even mental pictures are signs. How and why pictures *without* a referent can nevertheless be defined as signs is examined on the basis of examples of monochrome paintings and historical maps that show non-existing or imaginary territories. The focus of attention is on their semiotic object and, in the case of non-representational paintings, on their interpretation as *genuine icons*, not in the sense of signs that represent most accurately, but in the sense of signs that represent nothing but themselves, i.e., self-referential signs.

### Premises

To discuss the semiotic foundations of the study of pictures presupposes that pictures are signs. After all, semiotics is the study of signs, and if the study of signs can contribute anything fundamental to the study of pictures, the premise must be valid that pictures are signs.

The validity of this premise has been doubted.<sup>1</sup> Pictures are not always signs, and even when they are, their sign function is often

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<sup>1</sup> Especially by Wiesing (1998; 2001) and Böhme (1999). Böhme (1999: 10) finds it necessary to “overcome the hypertrophy of semiotics” by means of a phenomenology of the picture which would assign an only marginal rôle to the semiotic approach in the study of pictures. His anti-semiotic line of argument

secondary, has been the argument of a recent theory of the picture founded in phenomenology,<sup>2</sup> which goes on to claim that it has become more than evident that pictures can no longer be considered as signs since paintings have become non-representational. Abstract pictures do not represent anything, but rather 'show' or 'exhibit' only themselves (Böhme 1999: 28).

In contrast to such arguments, I would like to develop the thesis that *all* pictures, including the abstract ones, are signs. My aim is to show that the arguments against a general semiotics of pictures suffer from the lack of an adequate model of the sign and have been developed without due consideration of the results and tendencies of current research in the semiotics of pictures,<sup>3</sup> ignoring research in the semiotics of painting, which has not been restricted to the study of signs and meanings in representational paintings, but has done much research in non-representational painting.

Exemplary studies in this context are the semiotic analyses of pictures which the Group  $\mu$  has published in their *Treatise of the visual sign* (Edeline *et al.* 1992) or the semiotic studies in painting by the Greimas School, for which Thürlemann's (1990) book on a painting by Paul Klee can serve as an example, but we cannot go into further details since the following discussion will be based on a different semiotic theory, i.e., Charles Sanders Peirce's general theory of the sign.

### **The crisis of representation as a crisis of the sign?**

The view that pictures are no longer signs is closely related to the debate of those who have deplored the "crisis of representation".<sup>4</sup> Evidence of this crisis has been seen in modern art, which confronts

cumulates with these words: "The theory of the picture has to do away with semiotics in order to become itself". See also footnote 10.

<sup>2</sup> Based on phenomenological assumptions, Wiesing (2001: 193) argues that there are only two semiotic ways of using pictures: pictures as signs of objects and pictures as signs of perspectives of seeing, including pictorial styles. Typical examples of types of picture that are not signs, according to Wiesing, are the classical collage and even the digital image (see footnote 5).

<sup>3</sup> For a survey of the state of the art, see Nöth (2000) and Santaella, Nöth (1998).

<sup>4</sup> Cf. Nöth (2003a).

us with pictures that seem to have lost their referents. A preliminary climax of this development has been discerned in the digital world of virtual reality, and theoreticians of the picture have not failed to declare that digital images are the prototypes of pictures which represent nothing and can hence not be signs.<sup>5</sup>

However, if representing something without a visible referent in a "real" world is a symptom of a crisis of representation, this crisis is certainly as old as the world of pictures in general. Indeed, pictures that represent something invisible in "real" space and time are as old as the history of pictures. If it is true that Leonardo's painting of *Mona Lisa* does actually not represent any historical person of Leonardo's time,<sup>6</sup> this only means that *Mona Lisa* is no faithful depiction like a photograph may be. However, it cannot be concluded that a painting that does not depict a "real" object is no sign. The assumption that only those pictures are signs which depict, like a photograph, an object or a living being suffers from the reductionistic view that every sign must have a material object as its referent.<sup>7</sup> Consider the logical consequence of such a theory for the semiotics of language.<sup>8</sup> Words could only count as language signs, if they depict objects such as "apple", "house", or "fish". Words such as "love", "unicorn", or "good" that depict no "real" objects could not count as language signs since they depict no real objects.<sup>9</sup> It is not plausible why the picture of a unicorn should be no sign, while the word that represents what the picture shows is a sign.

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<sup>5</sup> Wiesing (2001: 197), e.g., argues: "The picture of a chessboard on a computer monitor is not a sign of an absent chessboard, but the presence of an imaginary chessboard." Furthermore: "The computer picture does not refer, but it creates an artificial presence by making the visibility of the picture its purpose."

<sup>6</sup> Böhme (1999: 46) gives this example to support his thesis that pictures without a "referent" are not signs and to surprise his readers with his insight that Leonardo da Vinci's painting is hence no sign.

<sup>7</sup> According to Boehm (1994: 327), the mistake of reducing pictures to depictions ("Abbilder") has been characteristic of the "conventional" approach to pictures in general: "The conventional concept of picture [...] is based on the idea of *depiction*. It is the idea that pictures *mirror a presupposed* reality (in whatever stylistic distortion). What we know and what we are acquainted with meets us once more under exonerating visual circumstances. At any rate, the nature of depiction consists in a doubling."

<sup>8</sup> See more in detail Nöth (2002b).

<sup>9</sup> Böhme (1999: 46) ignores this parallel when he argues that words are signs in general, whereas pictures, in contrast to words are not signs but evince a "particular mode of being".

It is true that the sign model reduced to the dyad of “sign and object” — with which some uninformed theoreticians of the picture operate still today<sup>10</sup> — can be found early in the history of semiotics. *Nomen significat rem*, “the word signifies the thing” was a definition to be found with Roman grammarians, and until Albert the Great, we find the view that the scholastic definition of the sign, *aliquid stat pro aliquo* ‘something stands for something [else]’ was interpreted as a relationship between a sign and an object. However, as early as in the writings of the scholastic semiotician William of Ockham the sign no longer stands for a “thing”. There, the new and more modern definition states that the sign “evokes something in a cognition”: *Signum est ille, quod aliquid facit in cognitionem venire* (Nöth 2000: 137).

Both views of the sign, the one that focuses on the referential aspect of the sign referring to an object and the one that focuses on the mental aspect the sign evoking a cognition have later in the history of semiotics become integrated in models of the sign that distinguish three components of the sign, the sign itself or *sign vehicle*, the *object*

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<sup>10</sup> Such as Böhme (1999: 27, 43), who, in continuation of the caricature of the alleged hypertrophy of semiotics quoted in footnote 1, goes on to distort the semiotic approach to pictures as follows: “The simplest reply to the question concerning the essence of the picture is: a picture is a sign. However, what is more trivial than the statement that a picture depicts something that is not the object, but refers to it. A picture makes something present that is not there itself. It refers to something else and has its essence in such reference.” After his discussion of Leonardo’s *Mona Lisa* as an example of a picture without a referent and hence of a picture that is not a sign (see footnote 6), the author comes to the following conclusion clearly based on a sign model reduced to the sign-referent dyad (Böhme 1999: 45): “What is then a picture? The fact that a picture can be a picture without having a referent obliges us to assume a being of pictures that is independent of the being of the things.”

Whereas Boehm restricts his critique of the interpretation of pictures as depictions to those who have an inadequate concept of picture, Wiesing extends this critique to a critique of the concept of sign in general. However, his own view of the sign as a depiction of an object is clearly inadequate and it is inappropriate to substantiate his thesis that pictures are not signs. Wiesing (1998: 98) argues: “From a phenomenological point of view one can say: pictures are the things whose visibility becomes autonomous. Pictures show something which they are not themselves — in contrast to an imitation which imitates and also wants to be that which it imitates. However, something on which you can see something other than what is present is not necessarily a sign of this other thing.” — Even from an everyday understanding of the German word *Zeichen* (‘sign’) used in this line of argument, it is hard to see why something that shows (German: *zeigt*) something which it is not itself should not be a sign (*Zeichen*).

of reference relating the sign to the world of things, and the *meaning* which relates the sign to the mental or cognitive world of ideas.

According to this triadic model, a picture, for example a photo of Sir Winston Churchill, is a sign vehicle, its object of reference is the politician who died on January 24, 1965 in London, and its meaning is the sum total of our cultural and historical knowledge about the life of this politician.

Although the model of the semiotic triangle had advantages in relation to previous dyadic models, it suffered from a number of weaknesses. For example, the triangle was often not really taken for a genuinely triadic model of the sign. Instead, the reduction of the triad to two dyads used to be taken for possible or even necessary. For example, the picture of an apple or a fish, according to this view, are signs with both an object of reference *and* a cultural meaning. A picture of a unicorn, by contrast, is a sign with a meaning, but without a referent, while proper names are signs with a referent, but without a meaning.

Such reductions of the semiotic triad to two independent dyads are not possible in the framework of Peirce's semiotics, as will be seen below. Every sign, and hence every picture, both has meaning and refers to an object. However, this theory of the genuinely triadic nature of the sign does not mean that the object of a unicorn, according to Peirce, is a really existent being with some similarity to the picture that depicts it. Rather, the object of the picture of the unicorn and the object of the sign in general is defined in a way that differs greatly from the realist tradition, which claims that only things can be objects.

## **Pictures as signs**

In order to define pictures as genuinely triadic signs according to Peirce and thus to come closer to a solution of the nature of their objects, a short account of Peirce's sign model is necessary. One of the many definitions of the sign which Peirce gives is:

A sign, or *representamen*, is something which stands to somebody for something in some respect or capacity. It addresses somebody, that is, creates in the mind of that person an equivalent sign, or perhaps a more developed sign. That sign which it creates I call the *interpretant* of the first sign. The

sign stands for something, its *object*. It stands for that object, not in all respects, but in reference to a sort of idea. (Peirce, CP 2.228)

In our context, the sign, that which “stands to somebody for something in some respect”, is the picture. To be a sign, it is not necessary that the picture be on paper or canvas. A sign, according to Peirce, can also be a mere thought, an idea. Hence, a mental image can also be a sign. What is important is that the sign as a picture on paper or as a mental image be “a first”, something that comes *first* to a mind that then relates it to an object as its “second” and an interpretant as its “third”.

The *object* for which the picture stands “not in all respects” can be a concrete object, such as an apple or a fish. However, it can also be a mere idea or something purely imaginary to which the sign refers, since the object, according to Peirce, is not necessarily some “real” object. Peirce says nothing about the ‘reality’ of this object at all and describes it as something “perceptible, or only imaginable or even unimaginable in one sense” (CP 2.230). He even goes so far as to speculate that “perhaps the Object is altogether fictive” (CP 8.314). Hence, not only really existent, but also merely imaginary beings, such as unicorns, can be objects of the sign.

The *interpretant* of a pictorial sign are the ideas, thoughts, conclusions, impressions or actions the picture evokes. It is important to point out that the distinction between the object and the interpretant is not the distinction between a material and a mental correlate of a sign. All three correlates of the pictorial sign can be of a mental kind and thus a mental image, as we have seen. The difference between a mental picture that is a sign, one that is an object and one that is the interpretant of a sign has to do with the temporal sequence of these three mental images in the sign process. When the mental image is the object of a sign, it precedes the sign as something that evokes it. When it is an interpretant, the mental image is the effect that the sign has created in a mind. When it is a sign, it is a mental image which comes to a mind in a sequence of thoughts in which it refers back to other ideas and leads to a new interpretant. While the pictorial object relates to a *past*, which precedes and causes it, and the sign itself refers to the *present*, in which it is perceived, its interpretant unfolds in the *future*, in which it creates its semiotic effects.

Both existent things and non-existent, merely fictional or imaginary ideas can thus be the objects of a picture. The object of a picture

is not necessarily something existing in space and time, it can be anything that has determined the sign to represent what it does, a legend, a vision, another picture, or some real experience, whether the painter was aware of these determinants or not.

In order to investigate *all* pictures as signs according to these premises, two kinds of pictures will be examined in the following that have often been given as examples of pictures without referential objects, namely imaginary pictures of things that do not exist and pictures that seem to represent nothing at all.

### Imaginary pictures and their objects

My example of pictures that represent nothing in our visual universe is from historical cartography.<sup>11</sup> Medieval and early modern maps abound with representations of imaginary territories which were mapped without empirical evidence because of false, erroneous, legendary, or mythical reports.

A striking example is the representation of non-existent islands, such as the islands St. Brendan and Brazil, which were traditionally shown west of Ireland. Reports about the existence of these islands come from Early Celtic legends. Waldseemüller's map of the *British Isles* of 1522 shows one of these two imaginary islands (Moreland, Bannister 1983: 53–54).

Another kind of cartographic representation of nonexistent territories are “unknown” or “not yet known” territories. For example, Ortelius's world map of 1587 shows a northern continent designated as *terra incognita* and represents a huge southern continent as a “not yet known” continent (Moreland, Bannister 1983: Plate 2).

Notice that from the point of view of logic, such cartographic representations constitute a semiotic paradox, for, if the territory is unknown, how can it be mapped at all? On the other hand, *terra incognita* can also refer to an existent country about which knowledge is only insufficiently available, and Ortelius's representation of the huge southern continent called *Terra Australis* seems indeed to be a representation of the continent today better known under the name *Antarctica*. However, Ortelius's affirmation that this continent is *not*

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<sup>11</sup> Cf. more in detail Nöth (2004).

yet known must be taken literally. In his time, there was no empirical evidence whatsoever of the existence of the Antarctic continent, which was only discovered in 1820. The early cartographers' conviction of the existence of this continent was founded in mere geographical speculations published by Pomponius of Mela in the first century AD (Moreland, Bannister 1983: 58).

Nobody can deny that maps which represent accurately existent territories are complex signs. However, the idea that maps of non-existent, imaginary, or merely speculative territories are signs must seem unacceptable to those who maintain that imaginary pictures are no signs. Nevertheless, in contrast to the naïve realist view of the referent of a picture, the object of the sign, according to Peirce, does not exclude imaginary or even false territories. Imaginary territories of maps have their object both in the world of geographical facts and in human minds.

The object is rooted in the empirical world insofar as every imagination is somehow also influenced by experience. For example, the shape of the imaginary island Brazil on Waldseemüller's map is not only rooted in imagination, but also in the cartographers' knowledge of what "real" islands look like and how it is mapped. In this sense, even a map of a non-existent territory is affected by geographical facts, which constitute part of their object. After all, these territories are at least geographically possible, as the example of *Terra Australis* on Ortelius's map shows, which was imaginary in 1587, but became real in 1820. Notice that the geographer's negation of the knowledge of a territory, which is expressed by the adjective *incognita*, presupposes at least the possibility that this place exists. In this way, the world of geographical facts is also influential in the drawing of a map of an unknown territory, but at this point the empirical object merges with the mental object of the imaginary map.

The mental aspect of the object of an imaginary map consists in the cultural, mythical, or legendary knowledge which preceded and thus caused the drawing of this map. In the case of our imaginary island Brazil, this aspect of the object of the cartographic sign has changed and even disappeared with time since the cultural knowledge that motivated the earlier early cartographers is no longer valid today.

## Non-representational pictures and their objects

Let us now consider non-representational pictures as signs and investigate in how far they can be said to stand for an object. The answer is complex, and only a rough outline can be given here.<sup>12</sup> It has to do with Peirce's theory of the genuine icon and the category of firstness.

A genuine icon is not a sign characterized by similarity to its object but by its undistinguishability from it. (Similarity between sign and object is the characteristic of what Peirce defines as a *hypoicon*.) The genuinely iconic sign constitutes a kind of degree zero of semioticity since it is reduced to the category of firstness, "the mode of being of that which is such as it is, positively and without reference to anything else" (CP 8.328). Such an icon is a sign merely by virtue of qualities of its own, and since it is not yet distinguished from its object, it does not *refer* to or "stand for" it at all (CP 2.92, 2.276). Peirce says that the genuine icon "does not draw any distinction between itself and its object" since it is a sign by virtue of its own particular qualities (CP 5.74, 4.447). He calls such an icon, which is a sign merely of its own qualities, a rhematic *qualisign*. As a sign undistinguishable from its object in this way it is a self-referential sign.

Genuine icons are not a class of objects, they are phenomena that create a particular way of seeing without relating the object of attention to something else. Peirce describes how in the contemplation of a representational painting the picture may lose its referential nature and become transformed from a sign with reference to a genuine icon without:

Icons are so completely substituted for their objects as hardly to be distinguished from them. [...] So in contemplating a painting, there is a moment when we lose the consciousness that it is not the thing, the distinction of the real and the copy disappears, and it is for the moment a pure dream — not any particular existence, and yet not general. (Peirce, CP 3.362)

Once a picture is thus contemplated in total disregard of its referent, it is no longer a *hypoicon*, but a genuine or pure icon. The process comes close to what the tradition of aesthetics has defined as the autonomous or self-referential function of art. The painting that loses

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<sup>12</sup> For more details see Nöth, Santaella (2000), Santaella (2001: 206–226), and Nöth (2002a; 2003b).

its power to refer to anything but to itself opens the eyes of the beholder for the seeing of colours and forms as such, and in fact, elsewhere, Peirce identifies pure icons with pure forms, when he states that "Icons can represent nothing but Forms and Feelings" and that "no pure Icons represent anything but Forms; no pure forms are represented by anything but icons" (CP 4.531).

The shift from a hypoiconic seeing of pictures to seeing pictures as pure icons is evidently what has happened in the historical revolution of modern art, where abstract and otherwise non-representational pictures have become liberated from the bonds of their referential objects to function as autonomous compositions of colour and form in which the difference between sign and object has been obliterated and meanings have become mere possibilities.

Prototypes of pictures that have become iconic qualisigns are monochrome paintings and minimal art. These are probably the works of art which have negated most radically the referential object of the pictorial sign. Any reference to the world of material things, living beings, and symbols is programmatically eliminated. The pictures are reduced to pure forms and colours that refer to nothing but to themselves.

A monochrome picture, such as the yellow composition by the minimalist John McCracken of 1967 (Fig. 1) either "means" nothing or it has an unlimited referential potential, since it may be taken to refer to all yellow and rectangular things in the world. Since such a picture is referentially both empty and completely open, it is best to abandon the illusion of reference and to focus on its pure form, and in fact, this is what the minimalists propose.

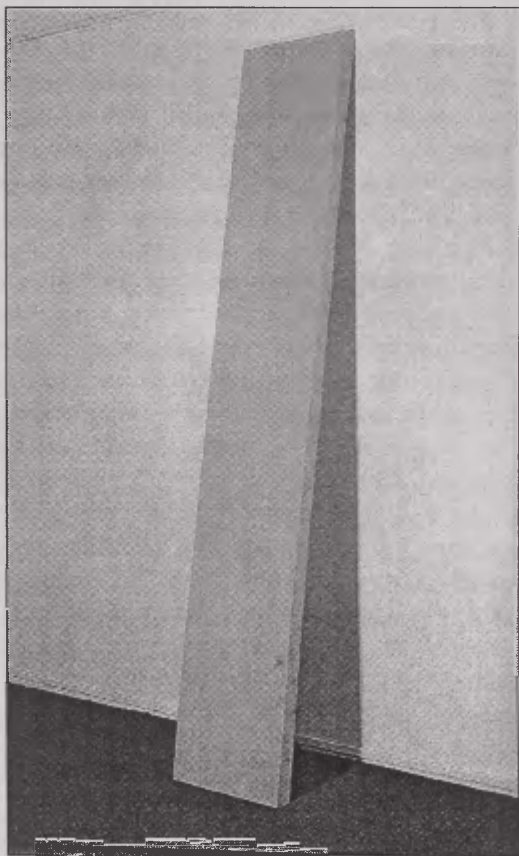
Besides monochrome paintings, a very different kind of picture belongs to the iconic qualisigns, pictures that evince complete chaos without any recognizable principle of composition. Such pictures with lines, forms, and colours never seen before are free from any stylistic principle of visual coding and exhibit nothing but their own qualities. What such pictures have in common with monochrome pictures is that nothing is similar to them, and precisely because of this, they can be similar to everything.

Once more the question arises whether and how such pictures can be signs or whether it is a semiotic contradiction to consider pictures without referents in the traditional sense as signs.<sup>13</sup> In the framework

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<sup>13</sup> See also Edeline *et al.* (1992: 114).

of Peirce's semiotics, such a contradiction does not arise, since it takes into account the possibility of self-reference in signs.<sup>14</sup> As we have seen, a sign can be its own object (CP 2.274). According to these premises, non-representational paintings are self-referential signs whose objects is in their own structure, colours, light reflections, and shadings, which constitute a system of chromatic and formal references existing between the pictorial elements only.



**Figure 1.** John McCracken (1967), *There's no reason not to*. (The colour of the panel is yellow.)

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<sup>14</sup> Cf. Schönrich (1990: 113).

However, non-representational pictures are not only signs insofar as they are self-referential. There are other respects in which they are signs. First of all, they are signs insofar as they belong to the genre of painting. In this respect, they want to convey, so to speak, the message: "I am a work of art (and not some other rectangular surface that happens to be yellow)." Furthermore, such paintings inevitably refer to previous and current styles or trends of art, even if they are opposed to all of them. Finally, if nothing seems to be meaningful, at least the title of an abstract picture certainly conveys meaning to the painting.

John McCracken's monochrome work in yellow, for example, has the title *There's No Reason Not To*. The declaration of this title is open to many interpretations, since the verb of the predicate is omitted. Nevertheless, the negation expressed by *no reason* suggests a distancing from previous compositional principles in the minimalist tradition. Unlike other works in this tradition, as for example Barnett Newman's *Eve* (in red) of 1950, McCracken's yellow composition is not a canvas, but a hybrid of panel painting and sculpture. Instead of hanging on the wall, it leans against it as if to visualize and to supplement the incomplete title and to convey the full message: "There is no reason not to *lean against, instead of hanging on the wall*". This conceptual and visual reference to the codes of traditional canvas painting, to which it is in opposition, indicates the object of McCracken's hybrid sculpture, the knowledge of previous paintings that we need to have in order to understand the present work of art.

Peirce's category of the iconic sign, of which we have so far applied the subcategory of the iconic qualisign, comprises two further variants of the iconic sign which are relevant to the semiotic study of non-representational art, the iconic sinsign and the iconic legisign. While an iconic sinsign is predominantly a singular and unique sign, the iconic legisign is determined by a law or, as we would say today, by a code.

Both categories of iconicity are characteristic of two further trends in non-representational art.<sup>15</sup> The prototype of pictures which are predominantly iconic sinsigns is probably Action painting. Jackson Pollock's Action paintings evince singularity and individuality insofar

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<sup>15</sup> Insofar as it is an original and refers to its painter as an individual, every single painting, whether representational or non-representational, evinces singularity. Insofar, every original painting is a sinsign.

as they show indexical traces of the painter's presence in the picture. His expressive pictorial gestures visualize the movements of his hand, his paint brush, and they show the traces of his paint pots in the process of painting.

The traces of singularity of a work of art are not only restricted to the expressive gestures of the painter's hand, but they can also consist in an invisible demonstrative gesture of choice and presentation. Such gestures characterize the singularity of the *objet trouvé* of the Dada artists. Marcel Duchamp's *Fountain* is an example. It is an object selected from an everyday context and placed into the radically new context of an art gallery. There it loses its reference to its ordinary use value and becomes a self-referential genuinely iconic sign instead. It is self-referential insofar as it denies its reference to its original use value. After all, to understand it in terms of its use value would mean to misunderstand its aesthetic value. The dramatic gesture of Marcel Duchamp's choice at a particular moment in the history of art, which was the main cause of its aesthetic value, makes it predominantly<sup>16</sup> an iconic sinsign, which lets the beholder feel the artist's presence without whose signature the found object would be mere rubbish.

The third class of iconic signs of relevance to the analysis of non-representational pictures is the iconic legisign. Instead of its mere quality or striking singularity, this category of sign is characterized by a law that determines its composition. In painting, such laws can be symmetry, balance, polarity, tension, contrast, opposition, invariance, geometrical form, or chromatic complementarity. Prototypically, such laws are apparent in the compositional principles of Constructivism and Suprematism — for example, in the paintings of Mondrian.

The structure of Piet Mondrian's paintings, for example, his *Composition in Red, Black, Blue, Yellow and Gray* (1920), obey the geometrical laws of the construction of rectangular forms, being radically reduced to coloured squares and rectangles divided by black lines. A square forms the visual centre around which the rectangles are

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<sup>16</sup> There are many other semiotic aspects of this complex works of art. Today, that the scandal which Duchamp's work once caused has become a mere historical reminiscence, this work of art has also acquired the status of a legisign, the class of signs associated with habit and convention, insofar as it belongs to the canon of the classics of art history. Furthermore, since the original is lost and only reconstructions of the original can be seen today, these reconstructions can no longer be called sinsigns, since they lack singularity and are mere replicas of the original sinsign.

displayed in quasi-symmetrical arrangements, and the colours are chosen to create a harmonious balance without being in perfect symmetry. Forms and colours are not determined by their mere quality or the artist's spontaneous intuition, but by a chromatic and geometrical morphology and syntax, whose validity is not only restricted to this particular picture. The picture is a sign related by visual laws to the colours and forms which constitute their object.

## Conclusion

Let us summarize. Pictures are signs, but to study them from a semiotic perspective requires an adequate sign model. Our discussion was based on Peirce's semiotics, and the focus was on imaginary maps and non-representational pictures, whose sign nature has been questioned. We have shown that the concepts of genuine iconicity and self-reference are necessary and useful tools in the study of non-representational pictures. The subdivision of genuine pictorial icons into qualisigns, sinsigns, and legisigns, which focuses on the nature of the pictorial sign as such, made it possible to distinguish three major trends in non-representational painting.

The third semiotic dimension of pictorial analysis, the study of the pictorial interpretants, had to remain largely excluded from this paper, not only because of lack of time, but also because there can be little doubt about the fact that pictures exert aesthetic, emotional, and rational effects on their beholders, whose result is, last, but not least, the interpretative discourse to which this paper has tried to be a modest contribution.

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### Семиотические основания к изучению изображений

Является ли картина знаком? Если картина “репрезентрует” нечто, очевидно, можно говорить, что картина есть знак. Но если “репрезентация” есть синоним “знака”, то можно ли считать значащей абстрактную живопись? Некоторые семиотики полагают, что такая живопись не может считаться знаковой, поскольку она не имеет референта. Эта точка зрения преобладает в феноменологии: такие изображения не есть знаки, это самостоятельные феномены. В своем подходе я следую семиотике Ч. С. Пирса: и фигуративные, и нефигуративные произведения, и даже ментальные картины суть знаки. Как и почему произведения с отсутствующим референтом могут быть определены в качестве знаков, прослеживается на материале монохромной живописи и исторических географических карт, представляющих несуществующие или воображаемые территории. Основное внимание уделяется выявлению семиотического объекта. Не-фигуративное изображение интерпретируется как *аутентичный икон*, не в том смысле, что оно представляет объект наиболее точно, но в том, что оно является знаком саморепрезентации, то есть автореферентным знаком.

### Kujutiste uurimise semiootilised alused

Kas pilt on märk? Kui pilt “representeerib” midagi, siis võib ilmselt öelda, et pilt on märk. Kuid kui “representatsioon” on “märgi” sünonüüm, kas siis võib tähenduslikuks lugeda ka abstraktset maalikunsti? Mõnede semiootikute arvates ei saa sellist maalikunsti lugeda märgiliseks, kuna ta ei oma referenti. Taoline seisukoht on valitsev fenomenoloogias: sellised kujutised ei ole märgid, vaid iseseisvad fenomenid. Käesolevas käsitluses järgin ma C. S. Peirce’i semiootikat, kelle järgi nii figuratiivsed kui mittefiguratiivsed teosed ja isegi mentaalsed pildid on oma olemuselt märgid. Kuidas ja miks puuduva referendiga pildid võivad olla määratletud märkidena, vaadeldakse monokroomse maalikunsti ja niisuguste ajalooliste geograafiliste kaartide baasil, millel kujutatakse olematuid või imaginaarseid territooriume. Põhitähelepanu pööratakse semiootilise objekti eristamisele. Mittefiguratiivset kujutist interpreteeritakse kui *autentset/olemuslikku ikooni*, ning mitte selles mõttes, et ta kujutab objekti kõige täpsemalt, vaid selles, et ta on eneserepresentatsiooni märgiks, so autoreferentseks märgiks.

## Об общих графических закономерностях восприятия живописи и балета: мнемоническая форма танца

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**Abstract.** *Maria Goltsman.* On some graphic regularities of perception in painting and dance: Mnemonic form of dance. The present article handles some problems of the mechanisms of visual perception in painting and classical ballet. It proceeds from the assumption that the interaction between those arts is based on the similarity of their formal languages. The main attention focuses on the questions of how and why does the classical ballet use the code of painting? The interaction between pictorial art and ballet occurs through the theatre, which is considered to be *a picture coming alive* in European tradition. This principle is taken here as a main method of analysis of ballet art and it is used in two ways. The first handles a problem of composition of a ballet as a theatrical performance. The second analyses the movement itself — the language of the choreography as such. The last part of the article contains the answer to the question — why does the ballet need such aspects of pictorial code as frontal composition of *a picture coming alive*, *memory photo*, multiplication of the similar images and repeating movements. Dance is dynamic, picture is stable. To represent a movement, the painting uses the rhythm and visual repeating of lines and contours. It helps to construct an illusion of motion and brings the temporal aspect into a static piece of art. Whereas different stops, poses and fixations in ballet help it to visualize the movement, to capture the space. This is one of the ways for ballet to leave its trace in space as much as in the memory of the spectators, to become fixed in space, to prevent the dispersion of dance in the thin air and to surmount in such a way the ephemera characteristic of it.

## 1. Язык живописи и язык балета — общее и различное

В культурном сознании живопись и танец<sup>1</sup> традиционно связаны, что проявляется как в изображении танца на плоскости, так и в живописном оформлении танцевальных представлений. Но помимо этих общеизвестных моментов, существует и более глубокий уровень взаимных влияний живописи и танца — уровень общих возможностей языков этих двух видов искусств, когда можно говорить о взаимном переводе в семиотическом смысле. На этом уровне можно выявить принципы языка танца в живописных текстах, где он отсутствует сюжетно, а также читать спектакль по законам живописной композиции, даже если он поставлен на голой сцене без ухищрений декораторов и костюмеров. Своеобразное “сотрудничество” этих двух видов искусства базируется на некоторой общности их художественных кодов, анализу которой и будет посвящена настоящая статья. Основной задачей мы видим выявление функций применения живописного языка в языке классического балета.

Танец и живопись в своем историческом развитии постоянно соприкасаются и формально влияют друг на друга. Изначально, уже по самой своей природе, изображение и танец предполагают визуальное восприятие — и картину, и балетный спектакль *смотрят*. Это два пространственно-временных вида искусства, моделирующих свою художественную реальность при помощи изобразительных средств. Как живописью, так и балетом используются цветовые пятна и линии, пластика человеческого тела, мимика, жесты, костюмы, декорации, прически, грим, освещение и расположение тел в пространстве — композиция.

Взгляд на балет через призму визуального образа проходит яркой нитью сквозь всю историю классического танца. В XV–XVI веках, когда танец только начинал теоретизироваться и складываться в академическую науку с особым, присущим ей хореографическим метаязыком, правилами и классификацией движений, стали появляться первые учебники и трактаты, фиксирующие нормы профессионального танца. Законы танца записывались, но так как одними словами доступно описать движение очень сложно, то наиболее адекватным пояснением к учебнику

<sup>1</sup> Здесь и далее речь идет о европейских традициях этих двух видов искусства.

являлись иллюстрации, изображавшие позы и движения. Из трактатов XV века примером может служить книга Гульельмо Эбрео “Трактат об искусстве танца” 1463г., из трактатов XVI века — “Танцовщик” Фабрицио Карозо 1581г. (Рис. 1), “Оркесография” Туано Арбо 1589г. Примером иллюстрированного учебника танца первой трети XX века может служить самый главный труд в теории классического танца — хрестоматия А. Я. Вагановой “Основы классического танца” 1934г., выдержавшая 4 издания, переведенная на многие языки и до сих пор считающаяся основой методики преподавания балета (Рис. 2). Изучение исторического танца непременно включает в себя знакомство с образами живописи и скульптуры различных эпох. На это обращает внимание основоположник методики преподавания историко-бытового танца Н. П. Ивановский (1948: 15–17) в предисловии к своей монографии о бальном танце XVI–XIX вв.



Рис. 1. В трактате Ф. Карозо перед началом словесного описания каждого танца предлагается гравюра, изображающая начальное положение танцовщиков относительно друг друга (Caroso 1581: 54).



Конечно, в силу того, что человеческая культура изначально строится на слове, вербальный элемент так или иначе все-таки присутствует как в живописи, так и в балете — он, согласно Ю. М. Лотману, появляется при первых же попытках самоописания этих структур (Лотман 2000: 334). Так, например, вербальны, названия работ и имена авторов, также каждое изображенное на полотне или на сцене событие может быть словесно интерпретировано, либо является интерпретацией уже существующего текста (произведение литературы; факт, описанный в исторических хрониках и т. д.). Не исключено и введение слова как такового в картину или балетный спектакль. В живописи примером может служить широко распространенная в эпоху Ренессанса иконографическая традиция “Благовещения”, где художники изображают фразы, которыми обмениваются Архангел Гавриил и Дева Мария.<sup>2</sup> В балете же слово присутствовало в эпоху формирования его как самостоятельного вида искусства. Во второй половине XVI – первой половине XVII веков балет был неотделим от поэтического слова и представлял собой пьесы с пением и диалогом, где танец не всегда имел преобладающее значение. Но главным выразительным средством как живописи, так и балета в его классической форме остается все-таки не слово, а образ.

Между живописью и балетом существует и важное отличие. Танец — это прежде всего динамика. Основа танца состоит в метаморфозах, постоянном перетекании, изменении и игре форм. В отличие от танца, изобразительное искусство не способно передавать физических перемещений и движений в пространстве, на живописном полотне могут присутствовать только неподвижные образы, которые закреплены на поверхности и по сути своей неизменны, то есть не могут производить реальные физические движения. Тем не менее, изобразительные искусства обладают свойством создавать иллюзию движения и даже иллюзию танца. Для передачи динамики на плоскости применяется, например, композиционный прием ритмического повтора линий и контуров, которые способны создавать зрительный эффект движения. Если

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<sup>2</sup> См., например, композиции “Благовещения” Симоне Мартини (1333г., Флоренция, Галерея Уффици), Яна Ван Эйка (1432г., Гентский алтарь, Гентский собор Св.Бавона), Фра Беато Анджелико (ок. 1434г., Кортонна, Музео Диочезано) и др. Подробнее о таком способе изображения “Благовещения” см., например, Майкапар (1998: 39–40).

живопись двухмерна, статична и закрепляет на плоскости недвижимые образы, то балет — искусство трехмерное, динамичное, изменчивое и крайне эфемерное. В живописи преобладает пространство, в балете — время. Поэтому, применение в живописи таких приемов, как ритмика линий, а также пластика тел, мимика лиц, привносит сюда временной аспект, и повышает динамику. Тогда как контрастные динамике действия общие статичные композиции и фиксированные отдельные позы в балете уподобляют его живописи и помогают ему закрепиться в пространстве.

## 2. Театр как объединяющее звено

Объединяющим звеном между живописью и балетом является театр. Сценический танец — это часть театрального представления, а театр в том виде, который он получил в Европе — это в некотором роде (согласно распространенной метафоре) ожившая картина,<sup>3</sup> имеющая даже реальную раму — так называемое “зеркало сцены” — проем в архитектурном портале, отделяющем театральную сцену от зрительного зала. Интерес к эффекту оживающей и вновь замирающей картины стоял у истоков зарождения классического балета и не угасал в течение всей истории этого вида искусства. Балет как система классического танца начал зарождаться во Флоренции эпохи кватроченто, но

подготавливался он издавна внутри различных зрелищ, как светских, так и церковных. Процесс уходил вглубь столетий, и начало его лишь условно может быть отнесено к XIV веку, откуда уже отчетливо прослеживается постепенное становление балета, кристаллизация которого завершилась к концу XVI века.<sup>4</sup>

Считается, что классический танец зарождался в городских и придворных театрализованных празднествах, во время которых, уже начиная с XIII века, одним из распространенных способов построения представления был упомянутый выше принцип

<sup>3</sup> Очень подробно функциональную параллель *картина-театр* рассматривает Ю. М. Лотман в своей статье о восприятии театральной сцены через живописный код в культуре начала XIX века (Лотман 1998: 636–645).

<sup>4</sup> Подробнее см. Красовская (1979: 25–28).

оживающей и вновь застывающей в начальной позе “живой картины”. Так, например, при праздновании дня Св. Иоанна, покровителя Флоренции, по городу проходили пышные процессии, во время которых из групп людей создавались фигуры — артистически составленные композиции на основе известных библейских сюжетов. Эти композиции размещались на колесницах, проезжавших по улицам на главную площадь, и по прибытии статичные картины оживали и разворачивались в действенную игровую сценку: сюжет излагала пантомима под пение (Красовская 1979: 17). В Италии XV—начала XVI веков танец присутствовал как в уличных праздниках, так и в дворцовых пиршествах, в организацию и оформление которых вовлекались такие художники, как Леонардо да Винчи, Андреа Мантенья, Сандро Боттичелли, Рафаэль. Они участвовали как в создании декора — живописного фона для праздников, написанного темперой на холстах, расставленных вдоль пути следования влиятельных особ во время их торжественных выездов и в покоях герцогских дворцов, так и непосредственно в режиссуре и внешнем оформлении (костюмы, декорации, сценические эффекты) живых картин. В результате такого тесного взаимодействия, по словам М. Соколова, в этот период получила распространение *картинизация* театра, тогда как в живописи происходил обратный процесс — театрализации и режиссуры (Соколов 1999: 319). Здесь можно заметить интересный парадокс: художники создают работы, отражающие окружающую их действительность, (как известно, эпоха Ренессанса провозгласила принцип искусства как зеркала природы), тогда как сама эта действительность протекает на фоне театральных декораций, созданных этими же художниками. В результате, имеет место двойная кодировка — художник воспроизводит языком живописи действительность, построенную по законам театра.

В конце XVI века в Европе появились традиционные для сегодняшнего зрителя публичные театральные здания, предназначенные для просмотра представления на специально устроенной т.н. сцене-“коробке” — замкнутой с трех сторон площадке. Пространство такой сцены сделало балет искусством чисто фронтальным, чем еще больше сблизило его с живописью. Из расчета на взгляд с одной стороны, вся композиция балетного спектакля выстраивается по направлению к рампе. Это и делается главным отличием сценического танца от бального. На балах посетители

являлись одновременно и зрителями и танцовщиками. Танцующие могли быть окружены зрителями со всех сторон и находились они в том же самом пространстве, что и зрители — на полу бальной или пиршественной залы. Появление традиционной в сегодняшнем понимании театральной сцены внесло четкое пространственное разграничение зрителя и актера (в данном случае — танцовщика). Театральное представление стало происходить в отграниченном пространстве, устроенном из расчета на взгляд со стороны — как картина, отделенная от реальности рамой упомянутого выше зеркала сцены и заключенная в горизонт живописно оформленных кулис и задника.

Далее, по ходу истории балетного театра, эффект ожившей живописи можно обнаружить как в общих композициях спектаклей, так и в лексических элементах самого хореографического языка. В первом случае мы имеем дело с целым историческим рядом конкретных примеров непосредственного уподобления балетного спектакля живописной композиции. Картина здесь используется в качестве статического инварианта к динамической развертке движений в танце. Второй случай более сложен, он требует пристального внимания к самому языку балетного искусства. Здесь следует обратить внимание на специфику балетного движения — это пример того, что, при помощи доступных ему хореографических средств, танец способен рисовать в пространстве и создавать своего рода живую живопись.

### 3. Балетный спектакль как оживающая картина

Этот подход пропагандировал в своих рассуждениях балетмейстер и теоретик танца XVIII века Ж. Ж. Новерр. В своих “Письмах о танце” он пишет о том, что балет представляет собой картину или, вернее, последовательный ряд оживших картин, связанных в одно целое определенным действием и непрерывно сменяющих одна другую (НOVERP 1965: 50, 79). Эти идеи оказали большое влияние на последующую историю балетного театра. Параллель *картина-балет* прошла сквозь всю историю вплоть до XX века. Примерами начала XX века могут служить живые картины, сочиненные М. Петипа в 1903 году для благотворительного спектакля в пользу Отдела защиты детей от жестокого обращения (“Пир у Нерона”, “Уголок заброшенного парка” и “Фрина”). Также важно

отметить знаменитый балет М. Петипа “Спящая красавица” (1890г.), зрелищную суть которого, по словам В. Гаевского, составляет картинность: “медленное передвижение из пролога в первый акт, затем во второй, затем панорама и, наконец, прибытие в третий акт напоминает движение по залам музея. И это особый музей — музей парадных портретов” (Гаевский 2000: 13). А в центре сюжетной композиции “Спящей красавицы” лежит все тот же популярный мотив оживления застывшей картины — королевство, погруженное злой феей Карабосс в летаргический сон, оживает спустя сто лет. Хорошим наглядным примером к первому случаю служит также балет-пантомима М. Фокина “Павильон Армиды” (1907г.), описание которого сохранилось в “Воспоминаниях” балетмейстера:

Балет начинался с грандиозной группы. Чаровница Армида сидела в своем саду, окруженная пышной свитой и массой рабов. Всю группу я прикрыл тюлями, стараясь создать иллюзию гобелена, в котором при отдельных ярких синих и малиновых пятнах все же доминируют обычно мутные серовато-желтые тона. Затем я увеличивал свет за тюлями. Они делались невидимыми и раздвигались. Краски оживали. Оживали и персонажи, “вытканые” на гобелене. Разворачивались группы, танцы. (Фокин 1962: 180)

В целом, можно отметить, что прием ожившей и вновь замирающей картины применяется чаще всего в качестве эффектных начал, кульминаций и концовок частей балета. Он плотно вошел в его композицию и даже получил неформальный термин для своего обозначения — “фотография на память”. Исполнители замирают в определенной позе, заданной балетмейстером и остаются неподвижными какое-то время. Если имеет место конец спектакля или одного из актов, то танцовщики держат позу до тех пор, пока не закроется занавес или не погаснет свет. Все позы и расположение танцовщиков на сцене четко определены балетмейстером из расчета на взгляд из зрительного зала — композиция фронтальна и разворачивается по направлению к зрителю. Этот прием дает балету дополнительный способ маркирования начала и конца, выступая в качестве временной рамы, делающей законченными следующие друг за другом во времени части спектакля.

#### 4. Изобразительность хореографии

Изобразительность присутствует в самой хореографии, в движениях и позах. Это одна из основных особенностей классического танца, которая требует от танцовщиков умения чисто выполнять заданные балетмейстером движения, фиксировать в танце четкие позы и владеть всей лексикой строгого балетного языка. Танец — это постоянное движение. В танце, по точной метафоре Ф. Гарсиа Лорки, происходит борьба тела с незримым туманом, в котором оно тонет и поэтому должно мгновенно и непрерывно высвечивать свои контуры (Гарсиа Лорка 1971: 82). Это означает, что динамика в танце тесно взаимодействует со статикой. Классический танец строится по принципу разложения быстрого движения на фазы. Танцу необходимы мгновенные остановки, промежуточные фиксации и четко сделанные движения для того, чтобы он “смотрелся”, чтобы он смог изобразить. Танец живет только в движении, а стоит ему остановиться, замереть на месте, окончательно застыть в какой-нибудь позе, и он сразу же начинает напоминать живопись. Он, как живопись, начинает не совершать, но *изображать* движение. Можно сказать, что танец есть динамический переход от одного изображения движения к другому.

Движение в танце — это не просто перемещение в пространстве, но значимое передвижение, оно — носитель информации. Каждый шаг здесь должен быть семантически оправдан. Уже в эпоху кватроченто сценический танец основывался на демонстрации движения как такового и в этом сближался с живописью и графикой. Он строился на принципах фиксации статических положений, был малоподвижен и состоял главным образом из смены изящных поз, поклонов, реверансов. Как и живопись, сценический танец стремился не просто произвести движение, но изобразить его. Изображение движения подразумевает искусственность, неестественность — так, как ходят на сцене, не ходят в жизни и т.д. Эта неестественность послужила для отстранения факта движения самого по себе от факта изображения движения. Профессиональный танец стал *рисовать* движениями. М. Соколов считает, что в культуре Возрождения рисунку, основой которого является линия, как живому прочерку воображения, отводилось суверенное место, и, вместе с ним, самому принципу неоконченности, частным случаем которого

рисунок и можно считать. Понятие *disegno* использовалось во всех сферах деятельности — от эстетики до политики и несло в себе функцию *вырисовывания*, обнажения краешка идеи, как бы выглядывающей из материи (Соколов 1999: 59–61).

С течением времени, в результате своего исторического развития балет стал представлять собой строго урегулированное движение, в котором четко разработана система позиций ног, рук, корпуса, головы, совместно с ограниченным числом групп движений. Эта система обуславливает единое для всех танцовщиков правильное исполнение каждого движения (РБЭ 1997: 537–539). Даже самое простое движение — спокойный шаг, например, в балете совершается по правилам. И чем выше сложность движения, чем оно быстрее и стремительнее, тем больше правил действует при его исполнении. Теоретик и историк классического танца первой половины XX века Л. Д. Блок писала о том, что те движения, которые присущи танцевальным проявлениям чело- века, входят в систему классического танца не в их эмпирически данной форме, но в абстрагированном до формулы виде. Как пример, она приводит прыжок, который в отличие от беспорядочного прыгания в танцах первобытных народов, в балете схематизируется, исчерпываются все его возможности, и каждый из его видов разрабатывается до геометрически отчетливой схемы. При исполнении движения в балете, его форма зависит от того, как линии тела соотносятся друг с другом в момент совершения движения — положения головы, рук, спины, ног дают так называемую *линию танца* (Блок 1987: 25–26). Линия танца очерчивает своими контурами балетное движение, она создает графический рисунок танца. Это означает, что танцовщику необходимо уметь ощущать свое тело в пространстве, он должен суметь продемонстрировать то или иное движение, поймать и воплотить в своей пластике линию и фактуру той или иной позы так, чтобы она успела зафиксироваться в пространстве. Чем чище и графичнее может это сделать танцовщик, тем выше его мастерство. Отсюда закономерность сравнения Ж. Ж. Новерра, согласно которому балетмейстер — это тот же художник, только он рисует не кистью, а телами танцовщиков: “Сцена, если можно так выразиться, — это холст, на котором запечатлевает свои мысли балетмейстер” (НOVERP 1965: 50).

## 5. Балетный спектакль как событие

Искусство балета, насчитывающее несколько веков истории, не говоря уже о танце вообще (народный, религиозный, бытовой и т.д.), имеет только единичные примеры надолго сохранившихся, да и то с большими изменениями, произведений.<sup>5</sup> И если в XXI веке можно пойти в музей и увидеть там произведения искусства, созданные даже задолго до нашей эры, то в репертуаре современного балетного театра трудно найти (если допустить, что это вообще возможно), постановку XV или XVI веков, да еще и идентичную старинному оригиналу. Забытые и ушедшие из репертуара балетные спектакли восстанавливать необычайно сложно.

Одной из причин краткой жизни балетных представлений является отсутствие универсальной системы их фиксации. Для того, чтобы сохранить свои произведения, многие балетмейстеры более поздних эпох (А. Сен-Леон, В. И. Степанов, М. Петипа, М. Фокин и др.) стремились изобрести системы записи движений. Но, во-первых, к моменту создания этой системы прошло уже почти пять веков развития балетного искусства, а, во-вторых, эта система настолько индивидуальна у разных балетмейстеров, что расшифровать ее зачастую под силу только самому тому, кто ее создал.<sup>6</sup> В XX веке появились средства видеозаписи, что во многом изменило и улучшило ситуацию. Многие балетмейстеры активно используют средства кино- и видеотехники, создают видео-копии своих постановок, вводят видеоряд и видеоинсталляции в балетные и танцевальные спектакли. Можно говорить и о том, что возник новый жанр искусства — фильм-балет. Но то, что в течение предыдущих исторических эпох (с сер. XV в. и до начала XX в.) не закрепилось в традиции классического танца, навсегда исчезло из балетного театра. И, кроме того, разумеется, фильм-балет не идентичен спектаклю по целому ряду параметров.

Каждое балетное представление существует как событие, оно происходит для зрителей только здесь и сейчас, то есть обладает единством места и времени воспроизведения. Оно не закрепляется в пространстве, и при повторе не совпадает само с собой. В статичном искусстве живописи следы, оставленные кистью художника, сохраняются неизменными на годы, в балете

<sup>5</sup> Подробнее, например, в Слонимский (1968: 119–127).

<sup>6</sup> Подробнее о несовершенстве системы записи танца см. Лопухов 1972.

образы рождаются и умирают по ходу действия. За счет динамичного характера балет дает возможность показать больше живописных образов, но все они растворяются по окончании представления. Тем не менее, балет не был бы искусством, если бы вовсе не оставался в памяти. “Средний” зритель не может удержать весь спектакль в памяти целиком, но, безусловно, запоминаются какие-то отрывки, моменты, позы, движения. Кажется, что то, насколько полно зафиксировано в памяти балет, зависит именно от законов, общих для визуального восприятия живописи и балета. Итак, каковы формальные средства и инструменты фиксации танца в памяти?

## **6. Мнемонические приемы балета**

Набор этих мнемонических приемов свидетельствует об архаичности исходной мнемонической задачи танца. Только, если реконструкции архаического ритуального танца скорее говорят о том, что при помощи ритмических движений закрепляется в культурной памяти сообщества некое правило, закон, регулирующий его бытие в мире, то в случае с классическим балетом эта мнемоническая функция направлена в первую очередь на сам танец.

### **6.1. Визуальные повторы**

В первую очередь здесь следует указать на постоянное повторение пространственных элементов на разных уровнях, в том числе и на визуальном. Так, например, весь репетиционный процесс, как правило, строится на регулярном повторении заданного хореографом лексического материала. Реальная жизнь спектакля длится до тех пор, пока он держится в репертуаре и, как уже было сказано выше, восстановить забытый спектакль в оригинальном виде очень сложно. Для того, чтобы связать между собой следующие друг за другом во времени части, в балете (как, впрочем, и в танце вообще) в качестве композиционного приема широко используется повтор движений, компенсирующий однонаправленность исполнения (Арнхейм 1994: 85). Здесь балет в первую очередь следует за музыкой, с которой он тесно связан и которая во многом влияет на характер сцен и отдельных движений. Как

правило, классическая танцевальная музыка характеризуется четким ритмом и определенным темпом, в основе ее лежат ритмические фигуры, которые могут повторяться в неизменном или варьированном виде. По такому же принципу иногда строятся и танцевальные композиции, когда одинаковая или похожая комбинация движений повторяется в ходе представления.

Существует еще один широко распространенный в балете прием, построенный на принципе повтора и имеющий сильное влияние на восприятие. Речь идет о повторении визуальных образов — когда на сцене присутствует масса одинаково выглядящих исполнителей — кордебалет. Наиболее известными из кордебалетных сцен являются именно те, что строятся на принципе множественного ритмического повторения одной и той же фигуры в пространстве — танцы Вилис в “Жизели” (1841 г.), акт Теней из “Баядерки” (1877 г.), лебединые сцены из “Лебединого озера” (1877 г. — Москва, 1895 г. — Санкт-Петербург). Так, например, в балете “Лебединое озеро”<sup>7</sup> в танцах лебедей второго акта задействовано 33 танцовщицы — кордебалет, корифейки и солистка — которые по внешнему облику не отличаются друг от друга (Рис. 3). Их единообразие достигнуто путем подобия костюмов, причесок, грима, а также за счет хореографии. Танцовщицы кордебалета располагаются в определенном, очень четком рисунке, на одинаковом расстоянии друг от друга и синхронно исполняют поставленные движения. Этим задается четкий визуальный ритм композиции танцевальной сцены. Корифеек и солистку отличает от кордебалета только расположение на сцене и повышенная сложность хореографии, корифейки находятся ближе к зрителю, солистка же, как правило, на самом первом плане и в центре. Но общий стиль, ритм, характер движений солистки совпадает с кордебалетом и корифейками, и за этот счет создается впечатление, что образ главной героини как бы отражается одновременно во множестве зеркал. Общеизвестное культурное свойство зеркала удерживать душу и жизненную силу отражающихся в нем людей, когда отражение и отражаемое имеют между собой магическую связь (Бидерманн 1996: 95), нашло применение в балете, где кордебалет, как правило, вы-

<sup>7</sup> В данном случае речь идет о версии К. Сергеева (1990 г., Мариинский театр), которая опирается на оригинальную хореографию М. Петипа и Л. Иванова.

ступает выразителем душевного состояния главного действующего лица — группа лебедей как зеркало души Одетты. За счет множественного повтора, мультиплицированности визуального образа в пространстве, происходит многократное усиление эмоционального состояния, оказывающее мощное воздействие на зрителя. Этот же прием мультиплицированности главного персонажа присутствует в знаменитом акте теней в “Баядерке” (Рис. 3), когда на сцену одна за другой выходят 32 одинаково выглядящих и совершающих одно и то же движение танцовщиц. Здесь, по словам В. Гаевского, происходит

постепенное и сверхчеловечески мерное нарастание количественных впечатлений — сам выход “теней”, наводняющий арабесками пустую сцену. Затем нарастание напряжения в долгих [...] паузах-позах, выдерживаемых тридцатью двумя танцовщицами в унисон, и деликатное, без судорог и суеты, снятие этого напряжения последовательными эволюциями четырех рядов кордебалета. А в целом — медленное и неотвратимое, как судьба, но математически точно измеренное нарастание темы: от шага на плие до бега из глубины к авансцене. [...] сцена “теней” — сон Солора [богатый кшатрия, возлюбленный Никии — М. К.], которого преследует, множась, словно в невидимых зеркалах, видение смерти Никии-баядерки. (Гаевский 2000: 80)



Рис. 3. Акт Теней из постановки балета “Баядерка” 1970-х годов. Воспроизведено в: Гаевский 2000: илл. 41–44.

## 6.2. Фиксация фаз движения

Другим важнейшим мнемоническим приемом в балете следует считать фиксацию фаз движения, о чем уже упоминалось выше. Сформировавшаяся упорядоченная система классического балета говорит на своем конкретном языке. Каждое движение в функциональности своего эталонного воспроизведения здесь идентично слову естественного языка. И как неясен слушателю смысл слов того, кто говорит нечетко, размазано, без выражения и интонации, так и образ танцующего, выполняющего заданные па неумело, неуверенно, не доводя их до конца и не разделяя их четкими переходами, не замечается зрителем и не остается в его памяти. Следует отметить, что танцовщик должен уметь вырисовывать идею через танец. Любое движение в балете раскладывается на фазы — дискретные единицы, составляющие общий континуум балетного спектакля. И здесь его можно сравнить с более поздним явлением культуры — кинематографом: “воспроизводя зримый и подвижный образ жизни, кинематограф расчленяет его на отрезки” (Лотман 1998: 307). Иллюзия движения персонажа в кино создается за счет проекции на экран покадровых изображений последовательных фаз его движения. Кино дает возможность проследить развитие движения в каждый отдельно взятый момент времени. Балет изображал движение, производя его на сцене по такому же принципу еще задолго до появления кино. Он еще не мог быть зафиксирован на видеопленке, но стремился фиксировать себя в пространстве. И этим методом расчленения движения балет как бы предугадал рождение кино. А появление кино в свою очередь повлияло на переосмысление балетом своих принципов так же, как и многими другими видами искусства.

Конец XIX начало XX веков — время становления киноискусства. Начало XX века — зарождение авангардистских течений, одной из характерных черт которых является размывание границ между видами и жанрами, тесное взаимодействие и взаимопроникновение различных видов искусств. Анализируя основные принципы авангарда, Я. Мукаржовский отмечает, что “искусства развивались не параллельно друг другу, а перекрещивались, взаимопроникали, в определенные моменты просто подменяли друг друга” (Мукаржовский 1994: 573–574). В связи с темой изображения последовательных стадий движения, особое внимание хотелось бы обратить на основные принципы футурист-

тического искусства (зародилось в 1909г. в Италии), где неразрывно слились движение, кино и изображение. Опыты футуризма тесно связаны с попытками изображения движения. Известно, что вдохновленные первыми шагами кинематографа, футуристы пытались передать в своих работах одновременность различных моментов движения, а также искажение формы объектов, вызванное самим процессом движения. В результате, зрителю предлагаются визуальные образы, содержащие множество линий, изображающих части тела на различных стадиях движения.<sup>8</sup> Для передачи динамики, футуристы прорисовывают те следы, которые оставляет тело в процессе движения. Динамика оказывается наглядно составленной из отдельных статичных состояний. Таким образом, опыты кино и изобразительного искусства начала XX века — это ни что иное, как результат их тесного взаимодействия, проявившегося и в балете.

Примером этому может служить одноактный балет “Послеполуденный отдых фавна” В. Нижинского (1912г.), где балетмейстером применены одновременно приемы живописи, скульптуры и киноискусства по изображению движения. Начало балета оформлено как огромная картина (за счет декораций и костюмов Л. Бакста), на которой в глубине уже присутствует фавн, но он настолько сливается со всем ярким и буйным ландшафтом декораций, что становится заметным только тогда, когда он начинает двигаться. Затем появляются нимфы, хореографический рисунок которых копирует движения античных барельефов, изображающих взявшихся за руки танцовщиц. Стилистика всей пластики Фавна — смена неподвижных поз, фиксирующих фазы движения. Каждое движение и каждый жест фиксируются танцовщиком, при помощи пауз акцентируя внимание на прерывности, искусственности движения. Таким образом, если в живописи прием разложения движения на фазы применялся футуристами с целью повышения динамики образа, то в балете — наоборот, для фиксации движения в пространстве.

Свойственное балету стремление овладеть пространством путем оставления следов движения прочитывается и в специфике одного из видов балетного костюма. Речь идет о женской тю-

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<sup>8</sup> М. Дюшан “Обнаженная, спускающаяся с лестницы” №1 и №2, 1911-1912гг., Дж. Балла “Динамика собаки на поводке” 1912г. (Рис. 5), Дж. Северини “Голубая танцовщица” 1912г., К. Карра “Красный всадник” 1913г. и мн.др.

нике — платье с длинной пышной многослойной юбкой из легкого тонкого материала, применяемое чаще всего в романтических балетах. Длинные тюники помогают балету создать эффект движения, разложенного на фазы — их складки образуют линии, расходящиеся к краю юбки как лучи и вторящие линиям ног (Рис. 4). В момент совершения какого-либо движения, тюника взлетает выше, чем идет нога, и после завершения движения опускается позже. В результате, она оказывается следом только что совершенного движения, она прорисовывает в пространстве фазы движения ног за счет складок, образуемых юбкой. При высоком прыжке, тюника повторяет не только линии ног, но и линии рук. Она создает тот же эффект, что и многорукие и многоногие фигуры на картинах футуристов. Она показывает, прорисовывает, фиксирует фазы движения. Повторяя траекторию ноги с небольшим опозданием, тюника оставляет в пространстве видимый след только что совершенного движения.



Рис. 4. Пример женского балетного костюма романтической эпохи — тюника. На фото — солисты из балета “Шопениана” М. Фокина. Фотография любезно предоставлена театром “Ванемуйне”, Тарту, Эстония (фотограф Р. Урбель).

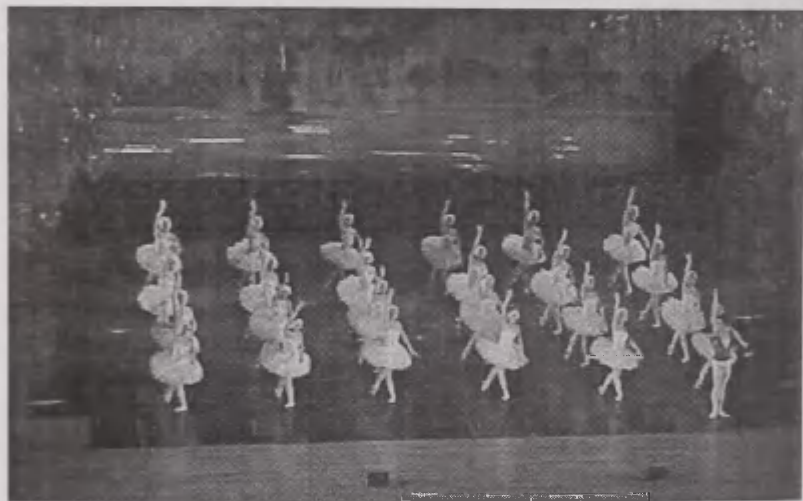
### 6.3. Универсальные графические схемы

Третьим условием долгой жизни балета в культуре можно считать введение в текстуру спектакля таких художественных элементов, которые играют роль ярких визуальных акцентов и воздействуют на зрительское восприятие по принципу мнемонических фигур. И здесь балет обращается к живописи: в построении динамического события используются законы, действующие в искусстве статичном, относительно неизменном, закреплённом на холсте. Это, в первую очередь, применение таких композиционных приемов, в основе которых лежат двухмерные (линия, круг, квадрат, овал, крест, треугольник) и трехмерные (конус, пирамида) геометрические фигуры. Эти геометрические фигуры являются основой так называемого *рисунка танца* — того рисунка, который получается, если проследить все те линии, по которым идет передвижение танцовщиков на полу и в воздухе, то есть, в горизонтальном и в вертикальном направлениях. В связи с тематикой статьи, важно отметить, что эти геометрические фигуры появляются и исчезают по ходу действия представления в силу динамического характера этого вида искусства.



Рис. 5. Балла Дж. Динамика собаки на поводке. 1912г. Художественная галерея Олбрайт-Нокса, Буффало. Фото любезно предоставлено официальным интернет-сайтом Albright-Knox Art Gallery.

Можно выделить два основных варианта геометрического моделирования в балете: в индивидуальном танце и в массовых сценах. В первом случае имеется в виду то, что в каждом движении, в каждой классической позе присутствует четкая геометрия. При исполнении балетных па, все тело танцовщика обрисовывает в пространстве круги, полукружия, квадраты, кресты и треугольники. Но особенно широко различные геометрические фигуры применяются в построении массовых сцен и танцах кордебалета. Так, например, балетный кордебалет представляет собой, как уже упоминалось выше, строго урегулированную массу одинаковых танцовщиков и танцовщиц, передвигающихся по сцене четкими линиями, рядами, колоннами, танцующих в кругу, квадрате, прямоугольнике, по овалу, крестом, звездой и составляющие трехмерные группы, в основе которых — пирамида или конус (Рис. 6).



**Рис. 6.** Пример построения композиции кордебалетной сцены на основе прямоугольника. “Лебединое озеро” Красноярского Государственного Театра Оперы и Балета. Фотография любезно предоставлена официальным интернет-сайтом Красноярского Государственного Театра Оперы и Балета:

<http://www.opera.krasnoyarsk.ru/swanlake.php3>

Как известно, геометрические фигуры лежат в основе самых распространенных символов культуры и являются графическими образами, выражающими архетипические понятия коллективного бессознательного: “Константы вращения земли (движение солнца по небосклону), движения небесных светил, временных природных циклов оказывают непосредственное влияние на то, как человек моделирует мир в своем сознании” (Лотман 2000: 257).<sup>9</sup> Каждую из групп танца, построенную на основе одной из таких универсальных графических форм, можно определить как своеобразный прижизненный памятник — пространственную отметку, призванную запомнить то, что еще происходит, но скоро должно исчезнуть. В культурной традиции памятник “всегда является фиксированным, то есть мнемоническим, каналом соотнесения единичного, случайного события с универсальным (божественным, космическим, природным, историческим) миропорядком” (Григорьева 2000: 70). При помощи приема соединения уникального события с некоей универсальной схемой, балет получает возможность выйти за отведенные ему временные границы, то, что происходит здесь и сейчас — явление временное, приобретает черты явления универсального и закрепляется в памяти зрителя неким мнемоническим блоком, своеобразным монументом, созданным средствами балета. Круг, треугольник, крест, пирамида, конус, входящие в состав того или иного *живого памятника*, являются фигурами, репрезентирующими абстрактное понятие времени (это выражается в самой форме часов — соединенные вершинами пирамиды песочных часов или круглый циферблат со стрелками). Применение этих элементов дает балетному искусству возможность овеществить время в пространстве, создать его пространственный знак. Путем сочетания законов статичного искусства живописи с динамичной изобразительностью, балету удастся на какой-то момент победить время и подчинить его своим целям. Балет как бы сам становится видимым временем.

Помимо того, что в культуре время репрезентируется в геометрических фигурах, основополагающим свойством архетипического понятия времени является взаимообратимость его дробности и непрерывности. Время в метафорике культурного созна-

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<sup>9</sup> Подробнее о значении квадрата, круга и креста в культуре см., например, МНМ (1997).

ния складывается из неисчислимых одинаковых мельчайших частиц — песчинок, минут, капель и т.д. Эти маленькие частицы представляют собой течение времени, выраженное через пространство (Григорьева 2000: 97). В балете в качестве таких частиц выступают именно танцовщики кордебалета — они работают как хорошо налаженный часовой механизм, симметрично располагаясь на сцене и синхронно совершая одинаковые движения. Как правило, главной качественной характеристикой хорошего кордебалета является умение выполнять движение по принципу “*все как один*”. По ходу действия, танцовщики кордебалета то собираются в группы, создавая *живые монументы*, то рассыпаются по сцене.

Например, в случае, когда танец кордебалета строится по кругу, он репрезентирует поступательное движение времени внутри цикла — танцовщики как минуты или секунды проходят по окружности, перемещаясь в четком ритме. Известно, что сакрализация жизненного пути, замыкающегося в круг и смыкающего рождение и смерть, является одной из важнейших составляющих мифологического сознания:

В народной культуре (обрядности, верованиях, фольклоре) модель человеческой жизни накладывается на материю природы всего окружающего мира, сакрализуя и годовой круг времени (мифология календаря), и вегетативный цикл (“жития” культурных растений), и производственную деятельность человека (ткачество, гончарство и т.п.), преобразующую природу в культуру. (Толстые 1992: 130)

Круг, как наиболее удобная форма массового танца, был известен еще традиционному человеческому обществу, а с развитием абстрактного мышления, он стал наделяться астральными символическими значениями. Танец, исполняемый в кругу, считался оберегом от злых сил, гарантировал благополучный исход охоты, в земледельческих обрядовых танцах символизировал плодородие, в кругу совершались обряды исцеления и бракосочетания. (Еремина 1998: 21–22) Магическая функция кругового танца перешла и в классический балет. Один из примеров — сцена из второго акта “Жизели”, где вилисы преследуют Иллариона, лесничего, заколдовывают его, заставляя танцевать с ними, окружают, замыкая его в свой хоровод, и кружатся вокруг него, взявшись за руки. Лесничий изнемогает от непрерывного танца, теряет способность сопротивляться, и вилисы убивают его.

На примере одного из самых популярных концертных номеров классического балета — хореографической миниатюры М. Фокина “Умиравший лебедь” на музыку К. Сең-Санса (1907 г.), можно рассмотреть, каким образом в балете отразилась мифологическая функция креста. Общая схема движений балерины в “Умирающем лебеде” строится на лейтмотиве мелкого перебора ног (па сюиви) на пуантах и распростертых в стороны рук, имитирующих движения крыльев. Общий образ балерины (см., например, фотографию первой исполнительницы этого номера Анны Павловой — Рис. 7) может быть схематично соотнесен с крестом. Вертикальная линия образуется соединенными ногами, корпусом, шеей и головой, тогда как распростертые в стороны руки и пачка создают две параллельные горизонталы, пересекающие эту вертикаль. Крест в основе хореографического образа лебедя относит первую очередь к телу летящей птицы с раскрытыми крыльями и вытянутой шеей.<sup>10</sup> Крест — это мощный мифологический знак, главная идея которого состоит в разграничении внутреннего и внешнего пространства и подчеркивании идеи центра и основных направлений, ведущих от центра (изнутри вовне). При этом, основная мифологема, связанная с крестом, подчеркивает двоякую ориентированность идеи креста:

человек (или божество), висающий на кресте и раскинувший руки по сторонам креста [иногда эта схема дублируется птицей с распростертыми крыльями (ср., с одной стороны, соответствующий образ мирового древа, а с другой — голубя, в которого воплотился дух святой в христианской символике)], умирает, чтобы через крестные мучения и крестную смерть возродиться к новой (вечной) жизни. [...] Человек мифопоэтического сознания стоит перед крестом как перед перекрестком, развилкой пути, где налево — смерть, направо — жизнь, но он не знает, где право, где лево в той метрике мифологического пространства, которая задается образом креста. (МНМ II, 1997: 12–13)

Крест, перекресток, как выбор между жизнью и смертью присутствует и в мифологеме умирающего лебедя как существа, находящегося в момент исполнения номера между двумя мирами — миром живых и миром мертвых.

<sup>10</sup> Примечательно, что созвездие Лебедя представляет собой фигуру в виде креста из ярких звезд в северном Млечном Пути.



**Рис. 7.** Анна Павлова в хореографической миниатюре М. Фокина “Умиравший лебедь” (Фокин 1962: 389).

Кульминацией же многих балетных представлений (“Лебединое озеро”, “Дон Кихот”, “Корсар”, “Легенда о любви”) является исполнение прима-балериной тридцати двух фуэте в центре сцены. Согласно энциклопедическому описанию, это движение исполняется следующим образом: “во время поворота работающая нога, замахаясь за икру опорной, сгибается в колене, ее носок сзади переводится вперед, затем нога резко выпрямляется в сторону” (РБЭ 1997: 549), руки при этом разводятся в стороны и вновь собираются при каждом новом вращении.<sup>11</sup> Это виртуозное вращение на пальцах на одном месте стало уже самым узнаваемым в широкой публике знаком балета как такового. По всей видимости, успех этого приема заключается, в переводе мифологической метафоры в регулярно работающий механизм, по тому же принципу, как это происходит в механических часах, которые разительно воспроизводит фуэте. В этом движении, как и в традиционных часах, оказываются соединенными крест и круг — руки и ноги танцовщицы как стрелки бегут по циферблату описываемого при вращении круга. Круг при этом подчеркивается костюмом танцовщицы — классической балетной пачкой.

<sup>11</sup> Виртуальную реконструкцию этого движения см. [http:// www.troyettes.com/ DanceInfo.html](http://www.troyettes.com/DanceInfo.html).

Комбинация круга и креста означает собой, согласно Т. Бургкхарту, начало, конец и вечный центр (Бургкхарт 1999: 54–56). Тридцать два фуэте оказываются воронкой времени в балетном спектакле. Вращающийся в быстром темпе в центре сцены крест, превращается в круг и концентрирует все внимание зрителей на себе за счет многократного повторения движения, визуализирующего время.

Ритмическое повторение одного и того же движения в быстром темпе — это трюк, но этот трюк имеет сильное эмоциональное воздействие на подсознание зрителя. Здесь имеет место тот же эффект, что и в случае с выходом теней в “Баядерке”. Только если в первом случае одно и то же движение исполняется тридцатью двумя танцовщицами, то здесь одной танцовщице исполняется одно и то же движение тридцать два раза. И в первом, и во втором случае имеет место нанизывание одинаковых движений с целью усиления воздействия. Происходит внедрение самодовлеющего механического ритма в визуальную ткань балетного представления, который, персонифицируясь в определенном образе (или образах), воспринимается как автономно-активный элемент или механизм, “заведенный” некоей запредельной силой. Сила влияния такого приема велика. При этом он способен воздействовать на два разных уровня человеческого восприятия. В случае, когда одно и то же движение выполняется кордебалетом, воздействие происходит на уровне коллективного сознания аудитории. В случае же с сольным танцем происходит частное, тонкое, индивидуальное воздействие на каждого отдельного зрителя. Кордебалетные танцы, таким образом, выступают как объединяющая структура, а сольные — воздействуют на личностном уровне восприятия каждого отдельно взятого зрителя.

В заключение следует сказать, что балету необходимы приемы, заимствованные из живописи для того, чтобы закрепиться в пространстве и преодолеть присущую ему эфемерность. Балет использует визуальные повторы, фиксации фаз движения, абстрактно-геометрические формулы и схемы в своем урегулированном движении в качестве мнемонических фигур. Уподобляясь живописи и графике, он стремится сохранить память о совершенном движении. В живописи — визуальный образ — это след оставленный рукой, двигавшейся в процессе создания изображения. Живопись — это застывшее движение. В балете следы от движения не могут быть закреплены надолго, но, тем не

мене, он стремится сохранить память о каждом совершенном шаге, станцованном номере, сыгранном акте и целом спектакле как визуальном событии. При помощи тех изобразительных приемов, которые выделены в данной статье как общие для визуального восприятия живописи и балета, классический танец преодолевает законы времени, овладевает пространством и фиксируется в культурной памяти.

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### **Maalikunsti ja balleti visuaalse tajumise üldistest graafilistest seaduspärasustest: tantsu mnemooniline vorm**

Artiklis käsitletakse maalikunsti ja klassikalise balleti visuaalse tajumise mõningaid aspekte. Teema tuleneb sellest, et nende kahe kunsti põimumine toimub formaalse keele tasandil. Vaadeldakse klassikalise balleti ja maalikunsti koodide sarnasust, pöörates tähelepanu kõigepealt sellele, kuidas ja millise eesmärgiga klassikaline ballett kasutab maalikunsti koodi. Balletti ja maalikunsti ühendab teater, mis on Euroopa traditsioonis kujunenud nagu *elav pilt* (või *elav maal*). Näidatakse, kuidas nn. *elava maali* printsiipi kasutatakse balletikunstis erinevatel tasanditel — nii etenduse kompositsioonis, kui ka koreograafia keeles. Kui maalikunstis on kujundid staatilised ja fikseeritud, siis ballett on efemeerne, ta eksisteerib ruumis ainult kindlas ajaraamis ja kaob siis, kui etendus lõppeb. Artikli viimane osa on pühendatud küsimusele: miks balletikunst vajab selliseid visuaalseid võtteid nagu pidev kordamine erinevatel tasanditel, liikumise faaside fikseerimine ja mnemooniliste figuuride kasutamine. Kui tants on kõigepealt dünaamika, pidev liikumine ja muutumine, siis maalikunst on staatiline, muutumatu, tasapinnal kinnitatud kujund. Tants domineerib aeg, maalikunstis aga ruum. Ballett kasutab maalikunsti printsiipe selleks, et kinnistuda ruumis ja ületada oma efemeersust ehk temporaalsust. Ballett kasutab oma kõrgelt struktureeritud keeles ka abstraktseid-geomeetrilisi vorme, et jäädvustuda vaataja ning kultuuri mälus.

## Notes towards a semiotics of parasitism

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**Abstract.** The metaphor of parasites or parasitism has dominated literary critical discourse since the 1970s, prominent examples being Michel Serres in France and J. Hillis Miller in America. In their writings the relationship between text and paratext, literature and criticism, is often likened to that between host and parasite, and can be therefore deconstructed. Their writings, along with those by Derrida, Barthes, and Thom, seem to be suggesting the possibility of a semiotics of parasitism. Unfortunately, none of these writers has drawn enough on the biological foundation of parasitism. Curiously, even in biology, parasitism is already a metaphor through which the signified of an ecological phenomenon involving two organisms is expressed by the signifier of “[eating] food at another’s [side] table”. This paper will make some preliminary remarks on semiotics of parasitism, based on the notions of Umwelt (Jakob von Uexküll) and structural coupling (Maturana and Varela). It will look into the phenomenon of co-evolutionary process in community ecology. With reference to empirical history, the project will briefly survey the literary and medical praxis of the 17th century England where large number of creative writings referred to the phenomenon of parasitism, which was deeply embedded in religious practice (e.g., the Eucharist) and political life (e.g., the courtier ecology in monarchy) of the times. Finally, it will touch upon the possible ‘parasitic’ relationship between language and biology.

### 1. *Parasite*: The word and the matter

Despite its Greek etymology of *παρά* + *σιτος*, meaning “beside + grain [food]” or by extension “one who eats at the table of another”, the word *parasite* appears rather late in the European languages. It first appeared in the 16th century, traceable to Rabelais [1535] in French, and was recorded a few times in Shakespeare’s plays. In his

*Timon of Athens* [1607] Shakespeare has the hero inveigh his 'Mouth-Friends' as 'most [...] detested Parasites'.

Live loathed and long,  
 Most smiling, smooth, detested parasites,  
 Courteous destroyers, affable wolves, meek bears,  
 You fools of fortune, trencher-friends, time's flies,  
 Cap and knee slaves, vapours, and minute-jacks!  
 Of man and beast the infinite malady  
 Crust you quite o'er!

(Shakespeare, *Timon of Athens* [1607] III, vi, 53–59)

The same year 1607 saw Ben Jonson's explicit reference to a character as parasite. In his *Volpone* the hero addresses his servant: "Hold thee, Mosca, / Take of my hand; thou strik'st on truth, in all: / And they are envious, terme thee Parasite" (I, i, 1–3), thus suggesting the current folk wisdom that the fly was a parasite. The popular use of the word was not, however, enough to give rise to the scientific knowledge devoted to the study of these strange creatures. Notwithstanding the invention of the microscope in the 17th century, the discipline of parasitology appeared much later, dating probably in the mid 19th century with the pioneering work of the Belgian biologist Pierre-Joseph van Beneden (1809–1894), who unraveled the life history of tapeworms and other groups.

## 2. From worm to flea: Parasites in 17th-century texts

However, the belated register of the word *parasite* in French and English and the medical science dealing with it by no means suggests that the biological concept and its various implications had to wait until the linguistic coinage and medical institutionalization. A much older word, probably of Scandinavian origin, and extremely popular in Renaissance texts is *worm*. It is a favourite word of Shakespeare's although it is used in several senses, some of which not necessarily related to parasitism. Where shall we start except to pay homage to our host? So we start with Hamlet, the Prince of Denmark. Having just slain Polonius, by accident per chance, Hamlet is confronted with his uncle Claudius.

- CLAUDIUS Now, Hamlet, where's Polonius?
- HAMLET At supper.
- CLAUDIUS At supper! where?
- HAMLET Not where he eats, but where he is eaten: *a certain convocation of politic worms are e'en at him. Your vocation is your only emperor for diet: we fat all creatures else to fat us, and we fat ourselves for maggots: your fat king and your lean beggar is but variable service, two dishes, but to one table: that's the end.*
- CLAUDIUS Alas, alas!
- HAMLET *A man may fish with the worm that hath eat of a king, and eat of the fish that hath fed of that worm.*
- CLAUDIUS What dost you mean by this?
- HAMLET Nothing but to show you how a king may go a progress through the guts of a beggar.
- (Shakespeare, *Hamlet* [1603] IV, iii, 24–30; my emphasis)

This is not the occasion to interpret once more the well-known passage. What interests me is the life cycle and food chain which Hamlet evokes. The cycle involves three groups, (1) human (e.g., beggar and king), (2) fish, (3) worm, all of which enter into a predator versus prey chain relationship. Now this only parallels the life cycle of a parasite because of the ambiguity of the word “worm” in Shakespeare. Among other things, the word had the following senses in Shakespeare's time: (1) the earthworm or *Lumbricus terrestris*, (2) the maggot, and (3) the parasite, and the first two were often confused, hence the popular notion that earthworms feed on corpses, which incidentally is true.

If the worm is the earthworm, then there is implicit parasitism involving the host of *Lumbricus terrestris* and the yet unidentified parasite of *Metastrongylus elongatus*, which serves in turn as the intermediate host of pig flu virus strain that was to claim twenty million lives in the early 20th century. An immediate parallel is the recent outbreak of the epidemic SARS in East Asia caused by a new form of coronavirus. Thus the life cycle described by Hamlet can be expanded to include microscopic and ultramicroscopic bacteria and viruses not foreseeable to the prince despite his poetic vision. To account more adequately for this expanded life cycle, the melancholy Danish crown prince would have had to seek inspiration from the as yet non-existent parasitology, bacteriology (1880s), and virology (1930s), all of which deal respectively with the phenomenon of organismic associations. Needless to say, even this expanded version

cannot hope to exhaust everything because of the imprecise nomenclature of fish and worm, and the possibility that many taxa of worms and fish are involved, granted there are more than 1,800 species of terrestrial worms known to us, and thousands of microorganisms they live on. However, lest we be carried away, let us pause here and go back to the strange worm, which was unfortunately confused with the maggot.

We are aware the ill-defined worm, when mistaken for the maggot, is in fact the larva of *Diptera*, such as the true fly. About half the fly species have larvae known as maggots. Most of them feed on decaying organic matter, including the dead bodies of kings and beggars, but again there are wide differences in the food preferences of different flies. Eight "waves" of maggots have been distinguished; each wave attacks dead animals in a strict sequence as decay progresses from the newly dead corpse through rigor and putrefaction to mummification. What do maggots suggest then? Why, they suggest the life cycle of *Diptera*, in particular, *Cyclorrhapha*, which breed in dead animals, so as to complicate the process outlined by Hamlet.

We are yet to meet with parasites textualised. As I said in the beginning, the Renaissance texts are not short of them, especially given its monarch-dependent courtier culture. Even a definition from a parasitology textbook would introduce the parasite as a "person who received free meals from a rich patron, in return for amusing, impudent, and flattering conversation; in other words, a sycophant" (Brooks, McLennan, 1993: 2). The best example of this kind of mutualism is perhaps Ben Jonson's *Mosca*, meaning *fly*, in his *Volpone*. But to the extent that a parasite feeds on and eventually kills his host, one thinks of Bosola in John Webster's *Duchess of Malfi* (performed 1613, published 1623) who gives a vivid ecological picture of parasitism.

BOSOLA: He and his brother are like plum trees, that grow crooked over standing pools, they are rich, and o'erladen with fruit, but none but crows, pies, and caterpillars feed on them. Could I be one of their flatt'ring panders, I would hang on their ears like a *horse-leech*, till I were full, and then drop off.

(Webster, *Duchess of Malfi* [1623] I, i, 38)

This text gives a better picture of the interaction between living systems on the one hand, and that between living systems and their environments on the other. The living systems include (1) plum trees,

(2) crows, magpies, and caterpillars, (3) horse-leech, (4) human "flatt'ring panders" (i.e., servants to the Duke); and the environments that provide location for the construction of their *Umwelten* are (1) standing pools, (2) fruit, (3) [horse] ears, (4) Dukedom (or the Duke on whom his panders live on). The main function of the environments, as Jakob von Uexküll would say, is providing food-circle. It is interesting to note living systems and environments are reciprocal in 3 and 4, i.e., the environments are living systems in themselves. Much as the horse-leech lives on [the blood from] horse ears, sycophants live on [the provisions from] the Duke. That is where parasitism occurs both in nature and in culture. The only reservation one may have is a relatively minor one: i.e., whether the horse-leech (*Haemopsis sanguisuga* of phylum *Annelida*) is a parasite, a blood predator, or even just a predator of smaller invertebrate animals, though the playwright obviously takes it to be, or mistakes it for, a parasite.<sup>1</sup>

Such courtier-parasites abound in Shakespeare and other Elizabethan and Jacobean writers. Even in *Hamlet* we have a host of them: Polonius, Osiric, Rosencranz and Guildenstern. From Jacobean *theatrum parasitum*, we move to poetry. None other is better known than John Donne's (1572–1631) "The Flea," published posthumously in 1633.

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<sup>1</sup> According to one interpretation (uk.rec.gardening web-ring), none of the three kinds of leech found in the U. K. today is harmful to humans. Webster's knowledge of horse-leech may have been mediated by the Biblical allusion in Proverbs, which is an isolated instance. But obviously the phrase *horse-leech* had a referent in Webster's times, and therefore had a historical basis; otherwise, the translator would not have rendered 'alukah into *horse-leech*. The leech referred to in the Book of Proverbs 30: 15, 'alukah may not have been found in England, but its behaviour must have caught Webster's attention. Or more likely, there was a species of leech in Jacobean England, with which the Biblical worm was identified. The following description from Easton's Bible dictionary is helpful to our understanding of the passage: "There are various species in the marshes and pools of Palestine. That here referred to, the *Hoemopsis*, is remarkable for the coarseness of its bite, and is therefore not used for medical purposes. They are spoken of in the East with feelings of aversion and horror, because of their propensity to fasten on the tongue and nostrils of horses when they come to drink out of the pools. The medicinal leech (*Hirudo medicinalis*), besides other species of leeches, is common in the waters of Syria." We are not sure if parasitic leeches were existent in Webster's England, but the medicinal leech had been widely used since the 17th century. The book I consulted in the Museum of Natural History in London is Johnson (1816).

MARK but this flea, and mark in this,  
 How little that which thou deniest me is;  
*It suck'd me first, and now sucks thee,*  
*And in this flea our two bloods mingled be.*  
 Thou know'st that this cannot be said  
 A sin, nor shame, nor loss of maidenhead ;  
 Yet this enjoys before it woo,  
*And pamper'd swells with one blood made of two;*  
 And this, alas! is more than we would do.

O stay, three lives in one flea spare,  
*Where we almost, yea, more than married are.*  
*This flea is you and I, and this*  
*Our marriage bed, and marriage temple is.*  
 Though parents grudge, and you, we're met,  
 And cloister'd in these living walls of jet.  
 Though use make you apt to kill me,  
 Let not to that self-murder added be,  
 And sacrilege, three sins in killing three.

Cruel and sudden, hast thou since  
 Purpled thy nail in blood of innocence?  
 Wherein could this flea guilty be,  
 Except in that drop which it suck'd from thee?  
 Yet thou triumph'st, and say'st that thou  
 Find'st not thyself nor me the weaker now.  
 'Tis true; then learn how false fears be;  
 Just so much honour, when thou yield'st to me,  
 Will waste, as this flea's death took life from thee.  
 (John Donne, "The Flea" [1633]; my emphasis)

The poet describes the relationship between flea and human, in this case, the first-person addresser and the second-person addressee as lovers: "It suck'd me first, and now sucks thee, / And in this flea our two bloods mingled be". The result of the flea bite is "pamper'd swells with one blood made of two". Despite its accuracy in observation, this kind of poetic extravagance may sound strange to an ear unused to lyricism, but it would have made sense to a modern day parasitologist.

First of all, he may have questioned the systematic issue of the flea as a real ectoparasite or a blood predator. Then he would be attracted to the interaction between parasite and host, e.g., how the one feeds on the other, using the other to construct its Umwelt primarily as food rather than as habitat, how as a result, the host becomes "weaker", as

described later in line 24. This would lead him to account for the biochemical metabolism of the two parties involved. Finally, we know that the flea preys on more than one host, indeed jumps from one species to another, say, from cats to humans,<sup>2</sup> and that the flea may enter into competition with other parasitic phyla, orders, and species. Such facts would shift the biologist's or, more precisely, epidemiologist's, attention from individual organism to species and to population, in both parasite and host, thus pointing to the socio-medical context of parasitism (in relation to such human diseases as plague and typhus) in the 17th-century England.<sup>3</sup> Further inquiries would return us to the same issue of life cycle and development of the flea, from egg to larva, from larva to pupa, and from pupa to adult, the latter finally finding a host in Donne's speaker and then in his lover, and, not purely out of coincidence, reaching maturity together with the human sexual consummation to which the poet devoutly aspires (lines 27–29).

What do the texts of *Hamlet* and "The Flea" reveal? A matter-of-fact position may observe that neither Shakespeare nor Donne was

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<sup>2</sup> Again, this is paralleled by the life-cycle of the SARS coronavirus. On Saturday, 24th May, 2003, the Associated Press released a news in London: "Researchers from the University of Hong Kong examined 25 animals belonging to eight species in a live animal market in southern China that supplies restaurants in Guangdong province, where the SARS outbreak is believed to have started. Six of the animals tested were masked palm civets, which look like long-nosed cats but are related to the mongoose. All the civets, which came from several different owners and appeared healthy, tested positive for a SARS-like virus, said Dr. Klaus Stohr, WHO's chief SARS virologist. One raccoon dog — a member of the dog family native to eastern Asia — was tested and found to have the virus in its feces."

Another recent finding is the virus strains that cause AIDS. The AP reported on 14th June 2003: "After analyzing the DNA make-up of the simian immunodeficiency virus (SIV) in African monkeys they [a group of scientists in America and France] found the red-capped mangabeys and spot-nosed guenons carried the strains"; and then "the virus was passed onto chimpanzees when they ate infected monkey meat," and finally passed on to humans probably before 1930s.

<sup>3</sup> I have consulted the following information in the Museum of London: *Regulations on Public Health* (1623), *Book of Regulations* (1588), *Mortality Broad-sheet* (London: John Winder, 1604?). The last one has this record: "Nov. 1602 – Nov. 1603. The plague struck severely in 1603, nearly 37,000 deaths were attributed to it that year, out of 42,700 deaths recorded." The record clearly suggests that the sick world of Denmark in Shakespeare's *Hamlet* has an immediate topic reference.

aware of the compound microscopes constructed by the Dutch sometime between 1590 and 1608, not to mention the more refined form developed by Robert Hooke (1635–1703) in England long after the poets' death.<sup>4</sup> A traditional but now naïve view would insist on the distinction between literary discourse and biological discourse, a distinction that endows the poet with a license to let fly of his imagination. From this fictitious distinction one may develop accordingly a literary semiotics and a biological semiotics, as if the latter could be immuned from the contamination of language. This, of course, is to miss the encroachment of rhetoric on biology and the fact that even parasitology as a positive science is encoded in language in the first place. See, for instance, the trendy title of a 1993 book on parasitism: *Parascript: Parasites and the Language of Evolution*, where the authors call attention to the many "myths, metaphors, and misconceptions" (Brooks, McLennan 1993: ix) about parasites and their evolution, but believe, as did their predecessor Harold W. Manter, that the parasites themselves are capable of forming a meaningful language called *parascript* [*Sic.*] that tells of their lives (Brooks, McLennan 1993: 21).

### 3. The parasite metaphor in 20th-century critical discourse

The now banal-sounding witticism in "parascript" takes us to mid 20th-century writings. The word is etymologically dubious, but would not make a strange bedfellow with "paracriticism", coined by the American literary critic Ihab Hassan (1975), "paratext" proposed by the French narratologist Gérard Genette (1997), and other similar paradox-laden wordplays that have inflicted literary criticism over the past half-century. As early as 1955, J. L. Austin, founder of speech-act philosophy, already described some extreme cases of performative use of language, such as on the stage (e.g., *Hamlet*) or in a poem (e.g., "The Flea"), as "*parasitic* upon its [language's] normal use" (Austin 1975: 22). And it was Jacques Derrida who, in his persistent critique on the presence and transparency of speech communi-

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<sup>4</sup> Two microscopes I saw in the Museum of Science in London were developed by Anthony van Leeuwenhoek (1632–1723), [Museum of Science London, Inventory No. A500644. Leeuwenhoek Microscope. Dutch, c. 1673] and Johan van Musschenbroek (1660–1707) [Musschenbroek Microscope, Dutch, 1686. Museum of Science London, Inventory No. A137247].

cation, launches a deconstruction (i.e., reversal and displacement) of the host/parasite relationship in language use, including speech and writing (1977 [Fr. 1971]).

We note Derrida's use of parasitism, like Austin before him, is a metaphor borrowed from biology, but neither of them questioned the force and limit of the metaphor. More often than not, once when the critic has received the message or the tenor, s/he tends to ignore the vehicle in which the tenor is carried. Derrida's comment on Austin has actually levelled a metacommentary on second-order observation: What kind of metaphorical structure is retained in the expression of parasitism when it is used not as a metaphor, but as a constative statement, as Austin would say, about "real" parasites and their hosts? Needless to say, we cannot pause and feel gratified with the simplistic assumption that the phonetic signifier of /pær<sup>ə</sup>saɪtɪz(ə)m/, pointing to the semantic signified of [parasitism], amounts to the vehicle/tenor relationship of metaphor. By so doing, either we get into a circular argument or we end up in semiotic *regressus ad infinitum*. Having said this, it is interesting to rethink the semantic felicity of the coinage *parascript* where the parasitologist finds shelter in another metaphor borrowed from language, i.e., from grammatology, to encode parasitism. The brainstorms to be raised by the encounter of advocates of *parasitism* and *parascript* are yet to be measured.

With this metaphor we shall mention two critics who have made the metaphor of parasitism famous and popular. I refer to J. Hillis Miller, a bona fide deconstructor at Yale in the late 1970s ("The Critic as Host" 1979 [1977]) to 1980s, and Michel Serres, the science historian turned literary critic at Sorbonne (*Le Parasite* 1980).<sup>5</sup> Miller's article was first published in *Critical Inquiry* as a rejoinder to the prolonged debate on cultural pluralism and interpretation, which involved major literary critics on both left and right wings, including M. H. Abrams, Wayne C. Booth, and others.

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<sup>5</sup> Michel Serres may not have read Miller's essay because his book-length study of parasitism, to date the only one of its kind, was published immediately afterwards as a sequel to his multi-volumed *Hermes*. Serres's definition of parasite is rather liberal. In addition to biology (and literature, mainly 17th-century French), his parasitism as a *grand récit* or master-code incorporates the insight of thermodynamics, cybernetics, and linguistics. Interestingly, in French (as well as English) there is the linguistic phenomenon of phonological parasitism, e.g., a sound inserted in the middle of a word. It is therefore regarded as a noise with which Serres takes much pleasure in playing.

The debate concerns the authority of textual interpretation. A traditionalist like Abrams believes that there is an obvious and univocal reading of a work, and other readings, such as deconstructive, are but "parasitical". In a strategy resembling Derrida's critique of Austin cited above, Miller launches an attack by dismantling the fictitious opposition of host and parasite. He resorts to etymology and dress rehearses the Derridian dissemination of lexical signs, in particular, the *para-* family, and *host* and *guest*, to deconstruct the differentiation of host and parasite. One of the conclusions is neither the obvious and univocal reading nor the deconstructive reading can claim the status of host because both are parasitic on the poem which, in turn, is parasitic on an infinite number of other poems and texts before it. Throughout the essay, Miller engages some binary oppositions commonly held to be true, such as host/alien, inside/outside, and he plays on the logic of the Greek prefix *para* which gives rise to each word its double:

Each word in itself becomes divided by the strange logic of the 'para,' membrane which divides inside from outside and yet joins them in a hymeneal bond, or which allows an osmotic mixing, making the stranger friend, the distant near, the *Unheimlich Heimlich*, the homely homey, without, for all its closeness and similarity, ceasing to be strange, distant, and dissimilar. (Miller 1979: 221)

The linguistic logic certainly applies to many words and the notions they articulate, such as *text/paratext*, *criticism/paracriticism*, etc. One of the dangers of this kind of lexical extravagance is that it will carry us away. For example, among the words given by Miller, the *para-* in *parachute*, *parasol* and *parapluie* is from the Italian root, meaning "ward off," rather than the Greek root in *paragon* and *paradox* and *parasite* (Miller 1979: 219–220). Another danger is the irreversibility of the generative-disseminative rule. For instance, one can certainly retrieve *text* from *paratext*, but one cannot do the same from *parasitos* to *sitos*. Why? Because the word *text* generates *paratext* not only through the mechanism of syllabic and morphemic combination, but also through semantic reduplication, thanks to the mysterious self-reflexive prefix *para*. That's why we have *paralinguistics* and *parapsychology*, both in name and in matter, but not *paraparasitology*. Of course we could, but the condition is that we solve the problem of lexical semantics. The Greek word *σιτος* is not loaned by English or French and as such does not have a life of its own. As a morpheme, it

is brought to life, so to speak, in English by another Greek morpheme *παρα*. If there were no morphemes (or semes) *para* and *sitos*, there would be no *parasitos*. One could argue that if there were no *text*, there would be no *paratext*, but the lexical rules are completely different because *text* can serve both as morpheme and as word.

What about the biological *parasite*? How successful is it as a metaphor? What kind of economy is involved in this "curious system of thought, or of language, or of social organization?" (Miller 1979: 220). As far as literature is concerned, Miller believes the relationship of parasitism is triangular rather than binary. That is, the poem plays host and both the rightist and leftist readings are parasitic on the host poem.

Both readings, the 'univocal' one and the 'deconstructive' one, are fellow guests 'beside the grain,' host and guest, host and host, host and parasite, parasite and parasite. The relation is a triangle, not a polar opposition. There is always a third to whom the two are related, something before them or between them, which they divide, consume, or exchange, across which they meet. (Miller 1979: 224)

This is very well said indeed. And it goes perfectly well with the relation between fellow-parasitic interpreters. But then the relation cannot be a triangular one because insofar as they are co-parasites, their relationship to the host is still dyadic rather than triadic. It's not Peircean because of the lack of a Thirdness. The host cannot be a Third, as Miller suggests, but may be a First, which the parasite as Second invades. The host and the parasite have to interact on the same existential or ecological or, more precisely, semiotic level to ensure their interaction, i.e., the host and/or parasite as reciprocal sign (representamen) and object. What about the Third? The Third is probably a conceptual category on a higher level, whether the name is mutualism, commensalisms, symbiosis, parasitism, or even Umwelt, which serves to define the host/parasite relationship.

With a stroke of genius, Miller gives an example of virus and that is where he is nearest to the life science. We have refrained from using biology because of the dubious status of the cell-less virus.

One of the most frightening versions of the parasite as invading host is the virus. In this case, the parasite is an alien who has not simply the ability to invade a domestic enclosure, consume the food of the family, and kill the host, but the strange capacity, in doing all that, to turn the host into multitudinous proliferating replications of itself. The virus is at the easy border between life

and death. It challenges that opposition, since, for example, it does not 'eat,' but only reproduces. It is as much a crystal or a component in a crystal as it is an organism. The genetic pattern of the virus is so coded that it can enter a host cell and violently reprogram all the genetic material in that cell, turning the cell into a little factory for manufacturing copies of itself, so destroying it. (Miller 1979: 222)

The invasion of virus that breaks into the membrane of cell, not to eat, but to copy and reproduce has rich biosemiotic implications which needs further development.

Unfortunately, instead of tilling this fertile ground, Miller, in the final part of his essay, which is an analysis of Shelley's *Triumph of Life*, focuses on plant parasitism and thus loses the impetus. At any rate, botanical parasitism always looks less ugly than animal parasitism, especially endoparasitism. To be fair to Miller, and to render justice to his service, the American critic has rightly dismantled the opposition traditionally accorded to parasite and host, and demonstrated that their relationship can be displaced, and has identified, instead, the two parties' reciprocal obligations in food-giving and food-receiving (Miller 1979: 225). But this is to miss an important element in parasitic relationship. Miller is in fact discussing biological mutualism or symbiosis rather than parasitism because the latter involves the host's disease and death, putting an end to semiosis. The irony is that Miller's recourse to the metaphor of parasitism is useful for the deconstruction of cultural binarism, but not useful for biological parasitism, which is a matter of life and death.

#### **4. Two semiotic themes: Life cycle and host/parasite interaction**

It is to the late Jakob von Uexküll that we owe a debt of gratitude for the genesis of meaning in animal life. Although Uexküll did not dwell on the phenomenon of parasitism, the comprehensive scope of his ecology anticipated many subsequent developments. There are random references to parasitism in his English translations. In *Theoretical Biology* (1926), the author discusses the food-circle and enemy-circle of living organisms, and observes how the malaria parasite takes altogether unlike hosts as food-circle. "This minute unicellular animal has the power not only to adapt itself to the totally different tissue-juices of the mosquito and of man, but is able to find its way about in

the anatomy of these two very unlike hosts" (Uexküll 1926: 165). On another occasion, he mentions the parasites' function of inner-adjustment: "In parasites we find prehensile feet which are exactly inter-adjusted with the tissues of the hosts furnishing them with a medium" (Uexküll 1926: 162). This, in parasitology, is called anchorage, one function of biomechanics that helps the parasite to construct its habitat in the host's body. Put in semiotic terms, this biophysical indexical sign points to a higher order of symbolic sign, i.e., the structural interface of the parasite/host Umwelt.

The interaction of the animal and its environment, specifically, the interaction of its world of sense and its world of action, is defined by a number of function-circles. The chain composed by indicator, receptor, and effector on the one hand, and the surrounding world (world as sensed plus world of action) and inner world on the other, suggests a self-contained Umwelt. For all its pretension to autopoiesis, the Umwelt of an animal is not a closure and is constantly engaged by stimuli and actions from without. Such actions can be incited from different sources and can assume different forms, predation being an obvious one. As Uexküll says, "If this [function] circle is interrupted at any point whatsoever, the existence of the animal is imperilled" (Uexküll 1926: 127).

Other than predation, parasitism offers an extremely fascinating case because it is in here that we see the overlapping and interface of two Umwelten, that of the parasite and that of the host. From a casual observer's point of view, the parasite and the host, so long as they reside together, can be said to share one world from which is constructed two interlocked Umwelten. The host provides the parasite with food and habitat at the expense of its own life, and the parasite constructs the food and habitat sectors of its function-circle, temporarily or permanently, in another's body. In reaction to this invasion of the parasite, the host tries to protect itself by mounting various defense mechanisms, such as immunity, mediated either by antibodies or by cells, meanwhile the parasite tries hard to evade the host's immunity, so as to get the upper hand of its victim. An example of this exchange is the phenomenon of molecular mimicry, which shows the parasite's ability to produce surface antigens that are similar to those of its host (Damian 1964, quoted in Ahmadjian, Paracer, 1986: 148). It can be said that a measure of a parasite's success is its ability to evade the response from the host, which is aimed at the parasite's elimination.

Thus the ecology of parasitism is based on and represented by a unique situation of *double Umwelt*, a Derridian *différance*, so to speak, made possible by the temporality of colonization during the parasite's life cycle, as well as the interfacial space in which occurs the structural coupling of two living systems. How could the semiotician resist the temptation to decode (as he encodes) this marvellous phenomenon? Maturana and Varela would term the phenomenon "mutual ontogenic structural coupling" when these two living systems interact recursively, the host becoming a medium for the parasite's realization of its autopoiesis, while the parasite laying constraints on, indeed threatening, the host's chances of autopoiesis. Although the notion of autopoiesis seems incompatible with parasitism, structural coupling can be useful in representing, as a Peircian symbolic sign, the life process of a parasite, be it viral, bacterial, protozoan, platyhelminth, nematodian, or arthropodan.

We are told that an animal's life is an autopoietic cycle, so is its *Umwelt*. That cycle becomes all the more complex when the animal is a parasite because on the one hand its life cycle consists of disrupted parasitic, meta-parasitic, and free-living stages, and on the other, it gets involved with the life cycle of another life, or several other lives, which also tries to maintain its autopoiesis. Maturana and Varela (1987: 88) discuss what may happen to two autopoietic cellular unities in symbiosis. Structural coupling through recurrent interactions may drift in two directions. One direction moves towards the inclusion of boundaries; the other towards metacellularity where participating cells can preserve their individual limits but a new coherence is formed. Through structural coupling, the ontogenic process of life gives way to the phylogenic coevolutionary process of both living systems.

We should be aware that parascript, *Umwelt*, autopoiesis, structural coupling can be all regarded as Peircian interpretants in linguistic constructs to "represent" natural phenomena which some assume to be transparent. But the truth is that these natural phenomena were already encoded in language when first made available and known to us. Naming and taxonomy are good examples of language's initial encoding of nature, an act which serves as the foundation for second-order scientific studies. The quotation from *Hamlet* in Section 1 above clearly shows the clash of naming systems. If so, these linguistic tertiary symbolic signs, such as *Umwelt* and structural coupling, are but instances of metalanguage whose job it is to model and articulate the object-language of life. Therefore, very little distinction can be

made between nature and culture, or for that matter, the nature and culture of parasitism.

Instead of pushing the arguments of Umwelt and structural coupling further to account for the parasite/host relationship, I would like to reinstate an old semiotic model of value exchange developed from A. J. Greimas's structural semantics (1983; 1987). For the parasite, the value consists of two elements, nutrition and habitat. If we retain Uexküll's preferred nominal for the living organism as subject rather than object (Uexküll 1926: 126), then the values it "desires", out of biological instinct, such as medium and food, serve as its object. This subject-seeking-object process then forms an elementary syntagmata in signification, comparable to Uexküll's interaction of world as sensed by a subject and its world of action. This subject-object relation is coupled with another sender-receiver relation, thus constituting the communicative-performative syntagm of living organisms.

The exchange of value may first seem to be unilateral in that the host serves only as sender (*expéditeur*) and the parasite receiver (*destinataire*); but one could expand the realm of value to include other information-contents or messages, such as immunity, then the communication becomes bilateral or reciprocal. In fact, the relationship of sender and receiver can be reversed, depending on the contents of information emitted from the sender, be it food-resource or survival threat. This act of communication takes place in the shared Umwelt of the two subjects, or in the interfacial space of two Umwelten, and is performed by two *actants* in a reciprocal operation. To paraphrase Greimas, the doing of Subject 1 (Receiver) constitutes the performance component, while the doing of Subject 2 (Sender) constitutes the "retribution or sanction" component, either positive or negative (Greimas, Courtés 1979: 110).

In the world shared by parasite and host, insofar as the host sends the message to the parasite like an invitation to the Eucharist, the receiver will unlikely turn down the offer. See what the 17th-century poet George Herbert (1593–1633) has to say about this spiritual parasitism.

Love bade me welcome, yet my soul drew back,  
 Guilty of dust and sin.  
 But quick-ey'd Love, observing me grow slack  
 From my first entrance in,  
 Drew nearer to me, sweetly questioning  
 If I lack'd anything.

"A guest," I answer'd, "worthy to be here";  
 Love said, "You shall be he."  
 "I, the unkind, the ungrateful? ah my dear,  
 I cannot look on thee."  
 Love took my hand and smiling did reply,  
 "Who made the eyes but I?"

"Truth, Lord, but I have marr'd them; let my shame  
 Go where it doth deserve."  
 "And know you not," says Love, "who bore the blame?"  
 "My dear, then I will serve."  
 "You must sit down," says Love, "and taste my meat."  
 So I did sit and eat.

(Herbert, "Love", III [1633])

Michel Serres unravels the myth behind the ritual of daily greetings in Greece: "Παρακαλώ" [By your grace!] "Ευχαριστώ!" [Thanks (for the Euchrist)!] (1982, 46) Once approaching or in the host body, the parasite sends a message, signaling invasion, then the host receives it and takes arms against it. This communicative-performative syntagmata not only accounts for the parasite/host interaction, but from a macroscopic perspective, with the departure and return motifs characteristic of journey narratives, defines the life cycle of a parasite. What emerges is a mysterious *Ur*-parasitic narrative (and narratology), manifesting itself under varied disguises in the *Umwelten* of parasites, in nature as well as in the cultural texts of *Hamlet*, *The Duchess of Malfi*, and "The Flea".<sup>6</sup>

<sup>6</sup> This paper was presented at the Third Gathering of Biosemiotics in Copenhagen, 11–14 July 2003.

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### К семиотике паразитизма

Метафора паразитов или паразитизма доминировала в литературно-критическом дискурсе начиная с 1970-х годов (наиболее известны Мишель Серр во Франции и Дж. Хиллис Миллер в Америке). В их работах соотношение между текстом и паратекстом, литературой и ее анализом, интерпретацией и критикой часто связывается с отношением между питающим организмом и паразитом, поэтому может быть деконструировано. Эти работы, наряду с трудами Деррида, Барта и Тома, наводят на мысль о возможности создания семиотики паразитизма. К сожалению, никто из этих авторов не углубляется в биологические основы паразитизма. Странно, что даже в биологии паразитизм трактуется как метафора, где означаемое экологического феномена, содержащего два организма, выражается означаемым "[поедание] пищи с чужого стола". В данной статье дается несколько предварительных замечаний по поводу семиотики паразитизма, основывающейся на понятии умвельта Якоба фон Юкскулла и понятии структурного сцепления Матураны и Варелы, а также подчеркивая феномен коэволюционного процесса в аспекте экологии сообществ. Что касается эмпирической истории, мы даем краткий обзор литературных и медицинских примеров из истории Англии 17

века, где большое число произведений упоминают паразитизм, что было глубоко укорено в религиозной практике (напр., евхаристия) и политической жизни (напр., отношение двора и монарха) этого времени. Наконец, намечаются возможности “паразитической” связи между языком и биологией.

### **Parasitismi semiootikast**

Parasiitide või parasitismi metafoor valitses kirjanduskriitilist diskursust alates 1970ndatest aastatest Tuntumad on Michel Serres Prantsusmaalt ja J. Hillis Miller Ameerikast, kelle töodes seostatakse teksti ja parateksti, kirjanduse ja selle analüüsi, interpretatsiooni ja kriitika vaheline suhe tihti suhtega toituva organismi ja parasiidi vahel, võimaldades seega seda suhet dekonstrueerida. Need tööd, koos Derrida, Barthes'i ja Thomi omadega viivad mõttele parasitismi semiootika loomise võimalikkusest. Kahjuks ei süvene ükski neist autoreist parasitismi bioloogilistesse alustesse. Samas on kummaline, et isegi bioloogias tõlgendatakse parasitismi sageli kui metafoori, kus kaheorganismilise ökoloogilise fenomeni tähistatavat väljendatakse tähistaja “söök võõralt laualt” abil. Artiklis visandatakse parasitismi semiootika lähtekohad, toetudes Jakob von Uexkülli maailma ning Maturana ja Varela struktuurse sidustuse mõistetele, samuti rõhutades koevolutsiioonilise protsessi fenomeni koosluste ökoloogia aspektis. Antakse kirjanduslike ja meditsiiniliste näidete lühiülevaade XVII saj. Inglismaa ajaloost, kus paljud kirjutised mainivad parasitismi tolleaegses religioosses praktikas (näit. armulaud) ja poliitikas (näit. suhe õukonna ja monarhi vahel). Võimalik on mõista ka keele ja biologia omavahelist suhet kui “parasiitlust”.

## On the semantics of rhythm: Formal differences between the characters of *Oresteia* in tragedy

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**Abstract.** The paper analyses the formal features of the characters of *Oresteia* in Greek tragedy. The protagonists and the minor characters are compared, for which the rhythmical liveliness and variability of the personages' utterances, the length and number of utterances, and the number of dialogue verses in the metrical repertoire of the corresponding personage are taken into account. The analysis revealed that the data of Sophocles and Euripides are more close to each other both in the respect of general "liveliness" and the "liveliness" of characters' utterances. Certain differences in the metrics and rhythmic of the main and minor characters' verses become most obvious when we compare Electra's part with minor characters (e. g., in Electra's part there is always the biggest proportion of lyrical parts, more unstandard settlements, more verses with splits than any other character). The index of liveliness of Electra's part is almost the same in all the authors. Although the same tendencies in Orestes are more schematical, the metrics and rhythmic of his utterances are rather similar to those of Electra. Thus, in respect of the proportion of lyrical verses, he always comes second after Electra; he also has quite many split verses. The parts of minor characters are usually made up entirely of iambic trimeters, the rhythmical variety of their speeches is higher than average, but there are no splits in their parts (except for Aegisthus). However, there are characters whose parts have unstandard rhythm, e.g., the pedagogue in Sophocles or Chrysothemis, who is a contrast to Electra by her nature as well as her rhythmic. The contrast with other minor characters is even bigger. Clytaemnestra's part is both rhythmically and metrically intermediate: in Aeschylus her utterances consist entirely of iambic trimeters, but in Sophocles and Euripides she pronounces also a couple of lyrical verses. There are also some splits in her verses which usually do not occur in minor persons.

### Introductory notes

Literary theory has to share its object with other disciplines, above all, with literary criticism. Literary criticism considers the most diverse matters connected with literature to belong into its area of competence. In this sense, literary theory is always in worse position as compared to criticism — its field is more restricted and its statements are more reserved in all respects, sometimes they even seem to be redundant. If a scholar of literature attains results which have been earlier stated by a criticist, then the question arises: why did he even start this research? But if the results disagree with earlier declarations, then it is often explained in this manner that literary theory is engaged in castles in the air and not in reality. The difference lies not in more pithy and interesting statements, but in verifiability. The sophisticated statements of a criticist are the result of his intuition, taste, education, etc; in any case, they are individual and idiosyncratic, while the study of literature depends on materials, procedures, being therefore verifiable and independent of personal factors.

Boriss Jarcho was one of the most radical formalists, who fought for the verifiability of the literary analysis. For him every statement had to be proved in the way they are proved in every other empirical discipline and, thus, the best and the most transparent procedure was the statistical analysis of data. While many other Russian formalists were most of all interested in obtaining the most novel and interesting information, then for Jarcho the greatest challenge was to prove the wide-spread opinions and thus to transfer them from the sphere of opinions to the sphere of knowledge.

The study of the semantical and rhythmical structure of personages in drama was started by Boris Jarcho in his genre analysis that concentrated on the research of formal differences between tragedy and comedy. It is generally known that *comedy differs from tragedy* by its liveliness, abundance of action and commonness of thoughts, but also by distinct emotions of characters. Jarcho developed a method for determining reliable criteria to measure the above-named parameters. Thus, the basis for measuring liveliness in drama is the relationship between the number of utterances and the total amount of verses in a play, according to which the so-called index of liveliness is calculated; the density of action can be measured by the occurrences of personages acting in their own interests, but also by the frequency of physical action; the feelings of characters can be analysed on the

basis of vocabulary and motives of action; the thoughts of characters become evident, e.g., from the content of maxims<sup>1</sup>. The material for Jarcho's research were Pierre Corneille's (1606–1684) tragedies and comedies. It turned out that the index of liveliness in Corneille's tragedies is remarkably lower than in his comedies (0.15 and 0.276, respectively). As for the extent of action, then tragedy shows considerably less action than comedy, since higher personages often entrust their deeds to other persons. There are differences also in characters' emotions: the vocabulary associated with fear, sorrow, hate and courage prevails in tragedy, while in comedy feelings of love, joy and happiness are more frequent. The content of maxims is rather different as well — in tragedy social thematics, time, elevated feelings prevail,<sup>2</sup> while in comedy we find more maxims about joy, lying, wealth, poverty, literature and arts (cf. also Gasparov 1969: 510; Lill 1988: 57–60). Such results are not novel and surprising at all, but they can be easily verified.

While the main purpose of Jarcho's research was to define the differences between genres through characters, then Marina Tarlinskaja, who partly proceeded from Jarcho, concentrated explicitly on character analysis, in particular, on rhythmic differences between Shakespeare's characters (Tarlinskaja 1987: 135–176). Tarlinskaja used two different strategies in segmenting the dramatic texts: (1) form-oriented segmentation or the analysis of utterances of different length; (2) character-oriented segmentation, where the parts of different characters were studied. Form analysis consisted of two parts: (a) character exchanges inside a line or the so-called split verses; (b) comparison of utterances of different length. Character analysis concentrated on (a) the differentiation of characters through rhythm; (b) the evolution of characters. Tarlinskaja (1987: 345) concludes that Shakespeare uses specific rhythmical variations of

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<sup>1</sup> Here it is important to conceive the limits of statistical method. Statistical method does not concentrate on single cases, but observes a case in a system within a prepostulated framework. Let us imagine, e.g., a situation where one character utters a maxim and another one repeats it ironically — the same maxim has here absolutely different meaning (the same can also be imagined in the lexical level, etc. Therefore, statistics is not a universal instrument to solve every problem, but qualifies only for certain aspects. As for the studies of semantics, it has an important role in increasing the verifiability and reducing the part of intuition.

<sup>2</sup> For emotions in Greek tragedy see, e.g., Stanford 1983; Taplin 1983.

iambic pentameter for different characters, whereby typologically similar characters display also similar rhythmical tendencies, being opposed to other characters, e.g., heroes to villains, the sophisticated to the impulsive, rulers to commoners, women to men, etc — it is typical that the iambic pentameters of the first numbers of the listed pairs are stricter, while those of the second members are looser. The regularities in the evolution of characters were manifested as well: as the character changed in the progression of drama, its rhythmical structure also changed, e.g., Othello, who at the beginning of the drama is a noble and harmonious person, deeply in love with Desdemona, and whose part is characterized by symmetrical and quite strict verses, becomes by the end of the drama jealous, chaotic, disharmonious and his verses become loose and asymmetrical as well. Accordingly, in Shakespeare more stringent and regular verse is associated with nobility, goodness, wisdom, peace and harmony, while looser forms are associated with lower features of character: villainy, stupidity, impulsiveness, inner discord and madness.

The present study examines the characters of three ancient tragedies based on the plot of *Oresteia*: the *Libation Bearers* of Aeschylus and *Electra* of Sophocles and Euripides. The versions of *Oresteia* with some modifications can be found already in the early literary tradition: among others already in Homer, but later also in Stesichorus and Pindar. The legend itself can be briefly summarized as follows: after returning from Troy, Agamemnon has been murdered by his wife Clytaemnestra and her lover Aegisthus, who then take possession of the throne in Argos. Orestes, Clytaemnestra's and Agamemnon's son, lives in exile under the trusteeship of Strophius. When he becomes adult, he secretly returns to Argos to avenge his father. There he meets his sister Electra, who helps him to execute his plan.

The plot of the tragedies is the same, but the three authors treat it rather differently: the same plot expresses different ideas and attitudes (e.g., the attitude towards oracle, matricide, etc), the same characters have utterly different natures and motives of action (cf. also Tucker 1901: xi–xii; Winnington-Ingram 1980: 217ff; Goldhill 1992: 93–96; Lill 1994: 232–234).

The purpose of the present study is to compare the formal features of characters, above all, their rhythmical structures, with main attention paid to the characters who are common to all three analysed tragedies, i.e. Electra, Orestes, Clytaemnestra and, of course, the chorus which, although slightly different in each tragedy, has schema-

tically still the same function. Methodically, this analysis proceeds from the studies of Boris Jarcho and Marina Tarlinskaja: following the example of Jarcho, the indices of liveliness are calculated for each respective tragedy. In addition to that, also the indices of liveliness of the central characters are calculated in the present work. Following the example of Tarlinskaja, both the general form analysis and the character analysis are carried out.

## 1. The general analysis

### 1.1. The relationship between the number of utterances and the total amount of verses in tragedy

The index of liveliness in *Libation Bearers* of Aeschylus is 0.19, in *Electra* of Sophocles is 0.28 and *Electra* of Euripides 0.26. It appears that Sophocles and Euripides are in this respect closer to each other, while their difference from Aeschylus is almost as considerable as the difference between tragedies and comedies in Corneille's case. The Table 1 shows the indices of liveliness in different characters.

**Table 1.** The indices of liveliness in characters of *Oresteia*.

Author	Aeschylus	Sophocles	Euripides
Electra	0.26	0.25	0.29
Orestes	0.18	0.47	0.45
Clytaemnestra	0.38	0.21	0.21
Chorus	0.14	0.28	0.13

In the case of Aeschylus it is notable that the roles of minor characters are more "lively". Thus, e.g. Clytaemnestra has a small, but at the same time an intense role. It is not so in the case of Sophocles and Euripides — rhythmically, the most lively part is that of Orestes, who is the second character in importance. The other characters of Sophocles and Euripides have also quite similar rates of liveliness. As the characters are actually quite different, then this aspect has no particular importance in the semantics of rhythm.

The average length of utterances is in Aeschylus 5.3, in Sophocles 3.6 and in Euripides 3.8; also according to these data Sophocles and Euripides resemble each other more. The most common length of utterances in all the three authors is 1 line: in Aeschylus 50.7%, Sophocles 44.9%, Euripides 66.3%.

The minimum length of utterances in Aeschylus is 1 line, the maximum 66 lines. In Sophocles these data are respectively 0.25 (an utterance in a verse with a triple split) and 84, in Euripides 0.5 (an utterance in a verse with one split) and 85.

The overwhelming majority of utterances in all the authors is formed by the short, i.e. 1–5 lines long utterances: 77.8% in Aeschylus, in Sophocles (0.25–5 lines) 88.5% and in Euripides (0.5–5 lines) 87%. The proportion of medium utterances (i.e. 6–20 lines) is 15.8% in Aeschylus, in Sophocles 7.4% and in Euripides 9.3%. The long utterances occur as follows: in Aeschylus (21–66 lines) 6.4%, in Sophocles (21–84 lines) 4.2%, in Euripides (21–85 lines) 3.4%.

The division of dialogue and lyrical parts is the following: 58% of the total amount of verses in Aeschylus are dialogue verses (the metre of which is iambic trimeter) and 42% lyrical verses. Sophocles has 75.5% dialogue verses and 24.5% lyrical verses, Euripides has 70.9% dialogue verses and 29.1% lyrical verses. Aeschylus has more lyrical parts as compared to other poets, since the part of chorus is considerably bigger than in Sophocles or Euripides (which, of course, is not related to the metrics of the given tragedy, but to the general tendencies in the development of tragedy<sup>3</sup>).

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<sup>3</sup> For the problems of dating see, e.g., Winnington-Ingram 1980: 231.

## 1.2. The proportion of split verses

Aeschylus has no split verses, Euripides has some, in Sophocles we find them many. Table 2 illustrates the occurrence of such lines which have one split.

**Table 2.** Lines with one split.

Author	Electra	Orestes	Clytaemnestra	Aegisthus	Chorus
Euripides	4	4	0	—	0
Sophocles	26	20	4	4	4

In other words, Euripides has only four verses of such kind, all split between Electra and Orestes. Thereby, three of them stand in succession in the recognition scene of the second act (Eur. *El.* 579–581):

(ΗΛ.) ... ἔχω σ' ἀέλπτως

ΟΡ. κάξ ἐμοῦ γ' ἔχει χρόνω.

ΗΛ. οὐδέποτε δόξασ'.

ΟΡ. οὐδ' ἐγὼ γὰρ ἤλπισα.

ΗΛ. ἐκεῖνος εἶ σύ;

ΟΡ. σύμμαχός γέ σοι μόνος ...

Sophocles has 29 verses split between two characters, 17 of them between Orestes and Electra, 4 between Electra and chorus, 4 between Electra and Clytaemnestra and 4 between Orestes and Aegisthus. While in Euripides' *Electra* all the split lines occur in dialogue verses, Sophocles uses this device four times also in lyrical parts (between Electra and the chorus). In Sophocles split verses are characteristic above all to the main characters, of the marginal personages Aegisthus is the only one who has splits; there are no such lines in the parts of Chrysothemis and the pedagogue.

In Sophocles there occurs also a verse with a double split: Soph. *El.* 1502

ΟΡ. πόλλ' ἀντιφωνεῖς. ἢ δ' ὁδος βραδύνεται.

ἀλλ' ἔρωφ'. ΑΙ. ὑφηγοῦ. ΟΡ. σοὶ βαδιστέον πάρος.

and even with the triple split: Soph. *El.* 845:

ΗΛ. φεῦ. ΧΟ. φεῦ δῆτ'· ὀλοᾶ γὰρ ΗΛ. δάμαρ ἦν. ΧΟ. ναί.

There are also two cases of an utterance consisting of the second half of a verse and the first half of the following verse (these are utterances of Orestes and Clytaemnestra), e.g., Soph. *El.* 1410–1411:

ΗΛ. ἰδοῦ μάλ' αὖ θροεῖ τις. ΚΛ. ὦ τέκνον τέκνον,  
οἴκτιρε τὴν τεκοῦσαν. ΗΛ. ἀλλ' οὐκ ἐκ σέθεν ...

Speaking of the split verses in *Elektra* of Sophocles, it is important to notice that they all occur in the second half of the tragedy (starting from v. 831), contributing thus to the rising tension of the drama. The average length of utterances becomes shorter (before v. 831 it is 6.3, after that 2.3) and, therefore, the index of liveliness in the second half of the tragedy is considerably higher (before v. 831 it is 0.16, i.e. comparable to the data of *Libation Bearers* of Aeschylus, but after that even 0.43).

### 1.3. Metrical positions of splits

Euripides has only a few character exchanges inside verses and the metrical position of them is rather standard: in three cases out of four they occur in the position of penthemimeral caesura (i.e. the main caesura of iambic trimeter), while *Elektra's* utterance comprises positions<sup>4</sup> A<sub>1</sub>–A<sub>3</sub> and that of Orestes B<sub>3</sub>–B<sub>6</sub>. The fourth case of split is found after the second A position, where again first comes *Elektra's* utterance (A<sub>1</sub>–A<sub>2</sub>), which is then followed by Orestes' utterance (B<sub>2</sub>–B<sub>6</sub>). This is to say that character exchanges occur in positions where syntagmatic word-ends are statistically more frequent.

The division of verses with one split in Sophocles is displayed in Table 3. We see that most splits fall on the main caesuras (penthemimeral and hepthemimeral caesuras, i.e. the caesuras in the third and the fourth foot); there is only one case where it takes places on the verse foot boundary (after the utterance by Orestes).

<sup>4</sup> 'A' stands for a weak and 'B' for a strong position in a verse foot; indices show the number of a feet.

**Table 3.** Verse parts resulting from one split.

	A <sub>1</sub> -A <sub>3</sub>	A <sub>1</sub> -A <sub>4</sub>	B <sub>1</sub> -B <sub>6</sub>	B <sub>4</sub> -B <sub>6</sub>	B <sub>2</sub> -B <sub>6</sub>	A <sub>1</sub> -B <sub>1</sub>	L
Electra	7	4	6	3	1		4
Orestes	5	1	11	3		1	
Aegisthus	4						
Clytaemnestra	2	1		1			
Chorus							4

## 2. Character analysis

### 2.1. Electra

Electra's character is quite different in every analysed author. In Aischylos she is a weak and unsteady personage, who feels passionate hatred against her mother and who is ruled by her emotions rather than her reason (cf. also Cockburn 2002). Electra in Aeschylus has 169 verses altogether, 15.7% of the whole tragedy. Electra's utterances form 21.7% of the utterances in the whole tragedy (she has 44 utterances), and in this respect she is the third after Orestes and the chorus. The majority of her utterances are short (81.8%), medium utterances compose 13.6% and long utterances 4.5%. The greater part of utterances are one line long (65.9%), the longest utterance consists of 29 lines.

**Table 4.** The metrical structure of the characters in *Libation Bearers* of Aeschylus (per cent).

	Dialogue verses	Lyrical verses	Total amount
Electra	74.6	25.4	100.0
Pylades	100.0	0.0	100.0
Orestes	87.9	12.1	100.0
Servant A	100.0	0.0	100.0
Clytaemnestra	100.0	0.0	100.0
Servant B	100.0	0.0	100.0
Chorus	18.6	81.4	100.0
Nurse	100.0	0.0	100.0
Aegisthus	93.3	6.7	100.0

Table 4 illustrates the metrical structure of the characters in *Libation Bearers*<sup>5</sup>.

It appears that Electra has a higher proportion of lyrical verses than the other characters (except, of course, the chorus). The length of the role is not decisive here, since Orestes, whose role is somewhat longer than that of Electra, has a significantly lower proportion of lyrical verses (in fact, the number of lyrical verses in their roles is almost equal: Electra has 43 of these, Orestes 41, but the amount of dialogue verses in Orestes' role is bigger).

Tables 5 and 6 show the occurrences of resolved verses (i.e. verses where a long syllable is replaced with two short ones) in different roles.

**Table 5.** Resolutions in *Libation Bearers* of Aeschylus.

	1 resolution	2 resolutions	Total amount of resolutions	Total amount of verses
Orestes	17	0	17	338
Electra	10	1	11	169
Chorus	1	0	1	446
Servant A	1	0	1	1
Clytaemnestra	4	0	4	48
Nurse	2	0	2	39
Servant B	1	0	1	11

**Table 6.** Resolutions in *Libation Bearers* of Aeschylus (per cent).

	1 resolution	2 resolutions	Total amount of resolutions	Total amount of verses
Orestes	5.0	0.0	5.0	100.0
Electra	5.9	0.6	6.5	100.0
Chorus	0.2	0.0	0.2	100.0
Servant A	100.0	0.0	100.0	100.0
Clytaemnestra	8.3	0.0	8.3	100.0
Nurse	5.1	0.0	5.1	100.0
Servant B	9.1	0.0	9.1	100.0

<sup>5</sup> There is no special analysis of the metrical structure of lyrical parts in the present work, for this, see, e.g., Jebb 1924: lxxii–xcii; Denniston 1998: 213–225; West 1990: 492–498.

It appears that in comparison with the other characters Electra has quite a lot of resolutions (Orestes has numerically more of them, but his part is also more than twice as long than that of Electra). Electra is the only character who has a verse with the double resolution. The analysis of the positions of resolutions revealed that almost all the resolutions in Electra's part occur in positions B<sub>1</sub> (6) and B<sub>3</sub> (5), there is only one resolution in B<sub>4</sub>.

Electra of Sophocles is the central character of the tragedy; she is a strong, heroic and noble (εὐγενής) woman, whose role in the drama is recurrent, but at the same time rather complicated (cf. also Winthrop 2002; Hazel 1999: 4; Winnington-Ingram 1980). Electra's part in Sophocles consists of 643 verses, i.e. 44.4% of the total amount of verses. She has 166 utterances (40.8%), which is twice as much as the number of utterances by Orestes who is the second character in importance. Short utterances form 87.3% (0,25–5) of her part, medium utterances 7.8% and long utterances 4.8%. There are fewer one line long utterances than in Aeschylus (47%), but the longest utterance has as much as 69 lines. From the aspect of semantics such metrical repertoire adds special nuances to Electra's role, emphasizing her passion and intensity.

Table 7 illustrates the metrical structure of the characters in *Electra* of Sophocles.

**Table 7.** The metrical structure of the characters in *Electra* of Sophocles (per cent).

	Dialogue verses	Lyrical verses	Total amount
Electra	72.4	27.6	100.0
Pedagogue	100.0	0.0	100.0
Orestes	87.9	12.1	100.0
Chrysothemis	100.0	0.0	100.0
Clytaemnestra	95.7	4.3	100.0
Aegisthus	100.0	0.0	100.0
Chorus	19.9	80.1	100.0

Sophocles' Electra has also more lyrical verses than any other character (numerically, she exceeds even the part of chorus). Orestes shows almost the same data as in Aeschylus, but we should also

remember, that Electra's role is the biggest in terms of both the total amount of verses as well as utterances. The occurrences of resolved verses are presented in Tables 8–9.

**Table 8.** Resolutions in *Electra* of Sophocles.

	1 resolution	2 resolutions	Total amount of resolutions	Total amount of verses
Orestes	9	0	9	160.6
Electra	14	1	15	641
Chorus	2	1	3	191
Pedagogue	14	0	14	149
Clytaemnestra	6	0	6	114
Chrysothemis	1	0	1	156
Aegisthus	3	0	3	33.3

**Table 9.** Resolutions in *Electra* of Sophocles (per cent).

	1 resolution	2 resolutions	Total amount of resolutions	Total amount of verses
Orestes	5.6	0.0	5.6	100.0
Electra	2.2	0.2	2.3	100.0
Chorus	1.0	0.5	1.6	100.0
Pedagogue	9.4	0.0	9.4	100.0
Clytaemnestra	5.3	0.0	5.3	100.0
Chrysothemis	0.6	0.0	0.6	100.0
Aegisthus	9.0	0.0	9.0	100.0

Considering both the facts that the occurrences of resolutions in Sophocles are somewhat more frequent and that Electra's part in Sophocles is almost four times as long as that in Aeschylus, we can say that in comparison with the latter, the verses of Electra in Sophocles are less varying and stricter (the proportion of resolved verses of Electra is 6.5% in Aeschylus' play and 2.3% in Sophocles' play). It should be noticed that Sophocles also allows a double resolution to occur namely in Electra's part, which is still quite a rare

occasion (besides Electra, such device is used only in the part of chorus). Sophocles, too, resolves in Electra's part mostly the position B<sub>3</sub> (8), positions A<sub>1</sub>, B<sub>1</sub>, B<sub>2</sub> and B<sub>4</sub> have two resolutions.

Euripides' Electra, on the contrary to the noble and tragic heroine of Sophocles, is more commonplace, ordinary, human (Tucker 1901: lvi); some researchers have even seen her as a neurotic, disturbed woman, embittered by her own sufferings as well as by the hatred against her mother, there have been also implications to her sexual frustration resulting from the unconsummated marriage (cf., e.g., Hazel 1999; Winnington-Ingram 1980: 231). Electra of Euripides utters 467 verses (i.e. 34.6% of the whole tragedy), which are divided into 136 utterances (38.4%) — she has more utterances than any other personage in the tragedy (she is followed by Orestes with 103 utterances). Most of the utterances are short (0.5–5) — 88.2%, medium utterances form 8.8%, long ones 2.9%. The majority of utterances in the part of Electra in Euripides consists of one-line long utterances (70.6%), the longest speech comprises 56 lines.

Table 10 shows the metrical structure of characters in *Electra* of Euripides.

**Table 10.** The metrical structure of characters in *Electra* of Euripides (per cent).

	Dialogue verses	Lyrical verses	Total amount
Electra	76.7	23.3	100.0
Peasant	100.0	0.0	100.0
Orestes	81.8	18.2	100.0
Old man	100.0	0.0	100.0
Clytaemnestra	97.3	2.7	100.0
Castor	62.8	37.2	100.0
Chorus	8.4	91.6	100.0
Messenger	100.0	0.0	100.0

While in the dramas by the other two authors the biggest proportion of lyrical verses belongs to Electra, in Euripides such verses are most characteristic of Castor, one of the *dioscuri*, of whose part almost 40% is lyrical. Nevertheless, Electra of Euripides is rather similar to the heroine of Aeschylus and Sophocles: she differs from them only

slightly (we should not forget, however, that conceptually the roles of Electra in the three studied tragedies are rather different, thus, here as well, the relation to semantics is weak). In Euripides also Electra is followed by Orestes, although he has less dialogue verses than Orestes in Aeschylus or Sophocles.

Data of the resolved verses in *Electra* of Euripides are presented in the Tables 11–12.

**Table 11.** Resolutions in *Electra* of Euripides.

	1 resolution	2 resolutions	3 resolutions	Total amount of resolutions	Total amount of verses
Orestes	25	1	0	26	225
Electra	63	6	1	70	467
Chorus	3	0	0	3	227
Peasant	21	1	0	22	90
Clytaemnestra	14	1	0	15	75
Old man	17	1	0	18	88
Messenger	15	4	0	19	91
Castor	12	1	0	13	86

**Table 12.** Resolutions in *Electra* of Euripides (per cent).

	1 resolution	2 resolutions	3 resolutions	Total amount of resolutions	Total amount of verses
Orestes	11.1	0.4	0.0	11.6	100.0
Electra	13.5	1.3	0.2	15.0	100.0
Chorus	1.3	0.0	0.0	1.3	100.0
Peasant	23.3	1.1	0.0	24.4	100.0
Clytaemnestra	18.7	1.3	0.0	20.0	100.0
Old man	19.3	1.1	0.0	20.5	100.0
Messenger	16.5	4.4	0.0	20.9	100.0
Castor	14.0	1.2	0.0	15.1	100.0

In comparison with the other authors the rhythmical structure of Euripides' tragedy is quite dissimilar (cf. also West 1982: 85). Probably

the most conspicuous is the frequency of resolutions and the admittance of three resolutions per verse line (in this tragedy only once, in Electra's part). The proportion of resolved verses in the part of Electra is several times bigger than that in Aeschylus' drama: 15%.

Like in the earlier authors, Electra of Euripides resolves mainly in the position B<sub>3</sub> (41), there are also quite many resolutions in A<sub>1</sub> (14 times) and B<sub>2</sub> (10 times), in addition to that there are resolutions also in positions B<sub>4</sub> (7), B<sub>1</sub> (5) and A<sub>3</sub> (1).

## 2.2. Orestes

Orestes of Aeschylus is strong, resolved, an equal adversary to Clytaemnestra (Cockburn 2002). His choice is not simple, but he understands that leaving his father unavenged is worse than killing his mother (Jebb 1924: xxx). Nevertheless, he has a moment of inner struggles (v. 898), yet he dismisses them with the help of Pylades, who reminds him of Apollo's oracle. Orestes' part consists of 340 verses, which is 31.6% of the whole tragedy. As for the amount of utterances, Orestes holds the second place after the chorus: he has 62 speeches (30.5% of the total amount of utterances). Most of his utterances are short (74.2%), there are 17.7% medium utterances and 8.1% long ones. The proportion of one-line utterances is smaller than that of Electra (45.2%), the longest utterance is 37 lines.

As it has already been said, with respect to the proportion of lyrical verses, Orestes of Aeschylus comes second after Electra (cf. also Table 4). There are also relatively many resolved verses in his part (5%, cf. also Table 5). Most of the resolutions occur in positions B<sub>3</sub> (6) and A<sub>1</sub> (5), then B<sub>1</sub> (3), B<sub>4</sub> (2) and B<sub>2</sub> (1).

Orestes as portrayed by Sophocles is, in a way, a contradictory personage. On the one hand he is a determined and unhesitating character, but on the other hand he has been interpreted as a naïve, childish person, who is motivated not by the sense of justice, but by Apollo's orders and who accomplishes a certain maturity only at the end of the drama (cf., e.g., Winthrop 2002). Orestes' vengeance is the re-establishment of justice which evokes no moral hesitations (cf. also Goldhill 1992: 94). In comparison with Orestes of Aeschylus his part is much smaller: 160.6 verses, i.e. 11.1% of the tragedy, are divided into 76 utterances (18.8%), which make him the second character after Electra. The absolute majority of Orestes' utterances are short (0.3–5):

97.4%, there are very few medium and long utterances (i.e., both comprise just 1.3% of his part). There, too, the most preferred length is one line (47.4%), the longest part consists of 54 verses.

The proportion of resolved verses in Orestes of Sophocles is slightly bigger than that of Aeschylus: 5.6%, mainly, these occur in the position B<sub>3</sub> (5), also in B<sub>2</sub> (2), A<sub>1</sub> (1) and B<sub>1</sub> (1).

Euripides takes from his Orestes the heroic aureola: Orestes is a weak man, who arouses sympathy in spectators, being only an instrument in god's hands, not acting upon his own free will. Electra's part in the revenge is bigger (Jebb 1924: lii). Orestes of Euripides has 103 utterances (29.1%), all in all 225 verses, i.e. 16.7% of the whole tragedy. The occurrence of the short utterances is 93.2%, that of the medium utterances is 4.9% and long utterances 1.9%. 75.7% of utterances are one-line long, the longest utterance is composed of 34 lines.

Considering a relatively high proportion of resolutions in Euripides, their occurrence in the part of Orestes is rather low: 11.6%. The substantial part of them is found in the position B<sub>3</sub> (13), then in B<sub>1</sub> (4), A<sub>1</sub> and B<sub>2</sub> (3 in both), B<sub>4</sub> (2), A<sub>2</sub> and B<sub>5</sub> (1 in both).

### 2.3. Clytaemnestra

In the case of Clytaemnestra of Aeschylus we must take into consideration that her personage was created already in the first part of the trilogy (*Agamemnon*). Aeschylus portrays Clytaemnestra as a complicated and controversial character who, in a way, is the anti-ideal of motherhood and femininity (cf., e.g., Winnington-Ingram 1983: 84 or Winnington-Ingram: 102), yet, at the same time, a good mother who avenged her daughter's murder (Cockburn 2002). Her part is rather short: 48 verses (4.5%), which are divided into 18 utterances (8.9%). Therefore, Clytaemnestra comes in this respect fourth after Electra, Orestes and the chorus. There are no long utterances in her part; 83.3% are short utterances and 16.7% medium utterances. 72.2% of her part consists of one-line utterances, the longest utterance has 12 lines.

Seemingly, the rhythmic of Clytaemnestra's part is the most variable in the drama: resolved verses make up as much as 8.3% of her part. However, her role is short and the actual amount of resolutions is not big: there are three resolutions in the position B<sub>3</sub> and one

in B<sub>4</sub>. Metrically, it is significant that Clytaemnestra's part consists 100% of iambic trimeters.

Clytaemnestra as treated by Sophocles is, on the one hand, a cruel, ruthless, arrogant and overbearing woman, but she has a softer side as well: receiving a false message of Orestes' death, she feels genuine maternal grief (Jebb 1924: xlv, Winnington-Ingram 1980: 232), she also tries to justify her crime by saying that it was motivated by a wish to avenge her daughter. Clytaemnestra's role in Sophocles consists of 114 verses (7.9%). The total percentage of her utterances is 5.9%, of which 87.5% are short, 4.2% of medium length and 8.3% long. Only the pedagogue and Aegisthus have less utterances than Clytaemnestra. Surprisingly, the most preferred type of utterance in Clytaemnestra's part is a two-lined utterance. The longest speech has 36 lines.

While the part of Clytaemnestra in Aeschylus consists only of dialogue verses, then in Sophocles Clytaemnestra utters also lyrical verses (4.3%). As for the rhythemics, it is interesting to note that most of the variations occur in the position A<sub>4</sub> (3), which is a rather unusual place for resolving. There are two resolutions in the position B<sub>3</sub> and one in B<sub>1</sub>.

Similarly to other characters in Euripides' *Electra*, also his Clytaemnestra is more human and lifelike than the one portrayed by Sophocles or Aeschylus. Aegisthus is more responsible for the crime, Clytaemnestra is weaker and less consistent (Tucker 1901: lxi), but therefore less repulsive than that of Sophocles (Denniston 1998: xxx). As in the other authors, the role of Clytaemnestra in Euripides is quite short: 75 verses, i.e. 5.6%, and composed of 16 utterances (4.5%; only the messenger, Castor and the peasant have less than that). 75% of them are short utterances, 18.8% medium and 4.2% long ones. The most frequent are the one-line long utterances (68.8%), the longest one consists of 40 lines.

Although the substantial part of Clytaemnestra's role is in iambic trimeters, she also has two lyrical verses. Considering the average rate of resolutions in Euripides, the variability in her part is quite high (20%), there are seven resolutions in B<sub>3</sub>, four in A<sub>1</sub>, two in B<sub>2</sub> and A<sub>4</sub> and one in A<sub>3</sub>.

## 2.4. The chorus

The chorus of Aeschylus is made up of fifteen Trojan captives. Their attitude is quite clear: they favour Electra, being her counsellors and supporters. The chorus also emphasises the will of gods and the inevitable reestablishment of justice (Jebb 1924: xxxi). The chorus has the biggest part in the tragedy: 447 verses, i.e. 41.6%, it also has the biggest number of utterances: 63 (31%). Furthermore, the longest utterance of this tragedy belongs to the chorus. However, the most preferred are the short utterances (76.2%), of which 36.5% are one-line verses, 17.5% of medium length and 6.3% long.

The chorus of Sophocles consists of fifteen free women of Mycenae. They are also sympathetic to Electra, but the background of such attitude is different: the chorus is characterized by patriotism and hostility against usurpers. The restoration of the continuity of power is in the interests of the chorus and therefore they support Agamemnon's son (Jebb 1924: xxxi). The part of the chorus consists of 191 verses, i.e. 13.2%. As for the number of utterances, then here the chorus is the third (53 speeches; although Crysothemis has the equal amount of utterances, the total number of verses in her part is smaller), 83% of the utterances are short, 13.2% of medium length and 3.8% long. The one-line utterances are the most frequent (28.3%), the longest utterance consists of 36 lines.

Euripides forms his chorus of the friendly Argive countrywomen. The part of chorus is somewhat longer than that of *Electra* by Sophocles, but still almost two times shorter as compared with the tragedy of Aeschylus: 227 verses, i.e. 16.8%. At the same time the number of utterances is the smallest in all the analysed tragedies: 30 utterances (8.5%). 66.7% of the utterances are short, 26.7% medium and 6.7% long.

It is obvious that in all the studied tragedies the substantial part of the chorus consists of lyrical verses. Still the chorus sometimes intervenes in the dialogue parts: the data of Aeschylus and Sophocles are here almost the same — a little less than 20% of the verses, but in Euripides considerably less — 8.4%. Naturally, the chorus has the fewest amount of resolutions: only once in Aeschylus (B<sub>3</sub>), four times in Sophocles (B<sub>1</sub>, B<sub>2</sub>, B<sub>3</sub> and B<sub>5</sub>) and three times in Euripides (two of them in B<sub>3</sub> and one in B<sub>2</sub>).

## 2.5. Minor characters

Less important characters in Aeschylus are the following:

- (a) Pylades, Orestes' friend, who has one three-lined utterance (0.3% of all the verses);
- (b) a servant, who opens the door to Orestes and Pylades and thereby pronounces one utterance, comprising one line (0.1%);
- (c) a servant of Aegisthus, who has two utterances (one- and ten-lined; 1%);
- (d) Aegisthus, who also has a very short role (1.4%; i.e. it consists of only 15 verses and three utterances, of which one is only a gasp of distress — v. 868: ἔ ἔ, ὄτοτοτοῖ);
- (e) the nurse, whose role in the tragedy is to deliver a message to Aegisthus. The nurse has seven utterances and 39 verses altogether (3.6% of the whole tragedy). The most frequent are one-line utterances (71.4%), the longest utterance in her part has 32 lines.

As for the metrics, it is noteworthy that, as a rule, the minor characters speak in iambic trimeters, the only exception being Aegisthus, in whose part we also find a lyrical verse (the above-mentioned gasp of sorrow). Resolutions occur only in the parts of both servants (they both have one resolution in the position B<sub>3</sub>) and the nurse (twice in B<sub>3</sub>).

Sophocles has only three minor characters:

- (a) the pedagogue, whose role is relatively short, yet, at the same time includes the longest utterance of the given tragedy, consisting of 84 lines. The pedagogue of Sophocles has 149 verses (10.3%), i.e. 18 utterances altogether (4.4%), of which the most preferred are one-line utterances (44.4%);
- (b) Electra's lovely, but weaker sister Chrysothemis provides contrast with the heroic nature of the protagonist (Jebb 1924: xlii; Winnington-Ingram 1980: 239). Her part is not small at all: she speaks all in all 53 mainly one-line (67.9%) utterances, i.e. 156 verses (10.8%). The longest utterance of Chrysothemis has 28 lines;
- (c) the part of Aegisthus is in Sophocles also very small (33.3 verses, i.e. 2.3% of the whole tragedy). Aegisthus has 17 utterances (4.2%), of which 29.4% are one-line long. He has no long speeches, the longest ones in his part are two six-line utterances.

As in Aeschylus, the minor characters of Sophocles speak mainly in iambic trimeters. Rhythmically, the most important part is that of the pedagogue, who has the biggest proportion of resolved verses (9.4%) and unusual locations of resolutions (six times in A<sub>1</sub>, three times in B<sub>1</sub> and A<sub>4</sub> and only two times in B<sub>3</sub>) — he is the only character whose most preferable location of variations is the first foot. Chrysothemis and Aegisthus have both one resolution (considering the latter's short part in the tragedy, it is not surprising, however, in the case of Chrysothemis one would expect more).

Euripides has four minor characters:

- (a) the husband of Electra, who is called simply the peasant (ἀντιπρόγος) and whose monologue of 53 lines opens the tragedy. All in all, he utters 90 verses (6.7%) or 11 utterances (3.1%), of which the one-line utterances are the most frequent (36.4%);
- (b) a former servant of Agamemnon, who is called the old man in the drama — his part is quite lively: 88 verses (6.5%), which make up as much as 45 speeches (12.7%). Thus, the old man has a rather big proportion of one-line utterances (82.2%), the longest one has 16 lines;
- (c) Castor<sup>6</sup>, who appears *ex machina* and whose tacit companion is his twin-brother Polyx, has altogether 86 verses (6.4%) or 9 utterances (2.5%), the most common type of which has two lines (33.3%) and the longest consists of 54 lines;
- (d) the messenger, who is a servant of Orestes and who brings the message of the death of Aegisthus, utters 91 verses (6.7%) in only four speeches (1.1%), of which two are one-line, one four-line and one 85-line long (being also the longest utterance in this tragedy).

The minor characters also in Euripides utter generally dialogue verses; the rate of resolutions in their parts is rather high as well, thus, e.g., in the peasant's case it is as much as 24.4%, in the other characters except Castor it also exceeds 20% (there are only 15% of them in Castor's part and in this respect he is equal to the protagonist; this could also be the argument for excluding Castor's part from the original version; in addition to that, it is not in correspondence with the general metrical data of the tragedy, cf. Table 8). Minor personages prefer to resolve the first foot (the only exception here is

<sup>6</sup> T. G. Tucker is convinced that the part of dioscuroi does not belong to the original version, but is a later supplement (cf. also Tucker 1901: xxxii).

the messenger; in the case of the main characters the primary location of resolution is the third foot).

## Conclusion

Although the material of the present research is not sufficient for the more general conclusions concerning the rhythm of characters, comprising, e.g. their gender, social status, positive or negative traits of character, some regularities were found after all. Thus, certain differences can be observed in the metrics and rhythmicity of the main and minor characters.

These tendencies become most obvious when we compare Electra with minor characters. Namely, Electra of all the analysed tragedies has several features in common. First, she has always the biggest proportion of lyrical parts (in Euripides she is exceeded by Castor, but he is most probably a later supplement). As for the rhythmicity, Electra has more unstandard settlements, e.g., she is the only character in Aeschylus and Sophocles who has verses with a double resolution, while in Euripides, whose Electra is the most resolved character whatsoever (if not to consider Castor), even a triple resolution can be found. Here it is also important to notice the indexical relationship between the rhythm and semantics: the more commonplace and less typical of tragedy the character is, the closer is its rhythmicity to that of comedy. Electra has also more verses with splits than any other character. The index of liveliness of Electra is almost the same in all the authors (despite that, proportionally, it is one of the highest in Aeschylus, but quite average in Sophocles and Euripides).

Although the same tendencies in Orestes are more schematical, his metrics and rhythmicity are rather similar to those of Electra. Thus, in respect of the proportion of lyrical verses, he always comes second after Electra; he also has quite many split verses.

At the same time, the parts of minor characters are usually made up entirely of iambic trimeters. The rhythmic variety of minor personages is higher than average, but there are no splits in their parts (except for Aegisthus). However, there are characters with unstandard rhythm, e.g., the pedagogue in Sophocles or Chrysothemis, who is a contrast to Electra by her nature as well as her rhythmicity: the proportion of resolutions is almost four times smaller than that of Electra. The contrast with other minor characters is even bigger.

Clytaemnestra is both rhythmically and metrically an intermediate character: in Aeschylus her part consists entirely of iambic trimeters, but in Sophocles and Euripides she pronounces a couple of lyrical verses as well. There are also some splits in her verses which usually do not occur in minor persons.

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### **О семантике ритма: формальные особенности в речах персонажей Орестей**

Целью работы является анализ формальных особенностей речей персонажей *Орестей* у Эсхила, Софокла и Еврипида. Сравниваются речи главных действующих лиц с репликами второстепенных персонажей; учитывается динамика и вариативность ритма, количество реплик, их длина, а также удельный вес речевого стиха в метрическом репертуаре персонажа.

Выяснилось, что показатели по Эсхилу и Софоклу оказываются близкими как с точки зрения общей динамики ритма («живость» ритма по Б. И. Ярхо; этим термином пользуются также М. Л. Гаспаров и М. Тарлинская), так и по динамике ритма у отдельных персонажей. Существенные различия обнаруживаются в речах главных и второстепенных действующих лиц. Особое место во всех трех трагедиях занимают монологи и реплики Электры, причем это касается как их метрических, так и ритмических параметров. Так, во всех трех трагедиях Электра чаще других персонажей использует лирические метры; что касается ритмики, то реплики Электры характеризуются нестандартными формами: так в целом в ямбическом триметре избегаются стихи, содержащие более одной резолюции (двусложная реализация односложной позиции), в то время как в речах Электры у Эсхила и Софокла встречаются стихи с двумя резолюциями, а у Еврипида — с тремя. Начала и концы реплик Электры часто не совпадают с границами стиха. Речи Ореста демонстрируют те же тенденции, однако в менее выраженной форме. Реплики второстепенных персонажей не содержат лирических форм, их ритмика лишена индивидуальных особенностей, хотя в целом характеризуется более высокой по сравнению с основными персонажами вариативностью. Начала и концы реплик совпадают с границами стиха.

### Rütmisemantikast: formaalsed erinevused karakterite vahel tragöödia *Oresteia* erinevates versioonides

Töö eesmärgiks on analüüsida *Oresteia* karakterite formaalseid omadusi Aischylose, Sophoklese ja Euripidese käsitluses. Võrreldakse pea- ja kõrvaltegelasi, milleks võetakse arvesse tegelaste kõnede rütmilist elavust ja variatiivsust, repliikide arvu ja pikkust, samuti kõnelemisvärsside osakaalu vastava tegelaskuju meetrilises repertuaaris.

Analüüsist selgus, et Sophoklese ja Euripidese näitajad on üksteisele tunduvalt lähedasemad nii üldise "elavuse" poolest kui ka karakterite kõnede "elavuse" poolest. Kindlad erinevused ilmsid pea- ja kõrvaltegelaste repliikide meetrikas ja rütmikas. Kõige selgemini tulevad need tendentsid välja Elektra ja ebaolulisemate tegelaste võrdlemisel. Nimelt on kõigis kolmes tragöödias Elektral mitmeid ühiseid jooni. Nii on temal alati kõige enam lüürilisi osi. Mis puudutab rütmikat, siis on Elektra värssides suhteliselt rohkem ebastandardseid lahendusi, nt on ta ainus tegelane Aischyloسل ja Sophokleسل, kelle jambilistes trimeetrites tuleb ette kahekordset resolutsiooni, samas kui Euripidesel, kelle Elektra on üldse kõige enam resolveerunud tegelane (kui Kastorit mitte arvestada), võib tema osast leida koguni kolmekordse resolutsiooniga värssi. Samuti on Elektra tekstis kõikidest tegelastest kõige enam jagunenisi. Elektra "elavus" on kõikidel autoritel peaaegu võrdne (kuigi proportsionaalselt on see Aischyloسل üks kõrgemaid, Sophokleسل ja Euripidesel keskmine).

Orestesel on samad tendentsid küll skemaatilisemad, kuid siiski on tema osade meetrika ja rütmika suhteliselt sarnane Elektra omale. Nii on ta lüüriliste värsside osakaalult alati teisel kohal Elektra järel, samuti on tal küllaltki palju jagunenud värssse.

Samal ajal koosnevad kõrvaltegelaste osad reeglina täielikult jambilistest trimeetritest. Vähemtähtsate tegelaskujude repliikide rütmiline variatiivsus on keskmisest kõrgem, kuid jagunenisi nende osades üldiselt ei leidu (erandiks on Aigisthos). Samas eristub teiste seast ebastandardse rütmiga tegelasi, nt Sophoklese Chrysothemis, kes kontrasteerub Elektra-ga nii loomuomaduste poolest kui ka oma rütmikalt: tema tekstis on resolutsioonide osakaal ligi neli korda väiksem kui Elektral. Kontrast teiste kõrvaltegelastega on veelgi suurem.

Klytaimnestra roll on rütmiliselt ja meetriliselt vahepealne: Aischyloسل koosneb tema osa küll sajabrotsendilisel dialoogivärssidest, kuid Sophokleسل ja Euripidesel toob ta kuuldavale ka üksikuid lüürilisi värssse. Samuti on tema osas ka mõned värssiridade jagunenised, mida kõrvaltegelastel üldiselt ei esine.

## The problem of language and reality in Russian modernism: The conception of *mirotvorchestvo* in A. Remizov's *Rossiya v pis'menah*

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**Abstract.** Alexej Remizov is usually regarded by literary critics as a Symbolist rather than a Futurist writer. However, I would posit that Remizov similarly to the Futurists viewed language as "logos," *bozhestvennii glagol*. According to the mystical interpretation of the famous words "At the beginning there was Word and the Word was with God and the Word was God", when God was creating the world he named the objects, and these abstract names became a force for the appearance of an object in physical reality. In the light of these words, The Medieval mystical and magical philosophers claimed that one could restore the divine language of Creation, possess the ability to create objects anew, and thereby become Creator himself. One can argue that a major goal of Remizov was similar to that of his Medieval predecessors: to reveal the mystical power of language in order to create, not to describe reality. The paper analyzes three chapters from Alexej Remizov's *Rossiya v pis'menah*, a book which can be read as a manifesto of Remizov's attitude toward language and reality, and discuss possible sources that might have influenced Remizov in his attitude towards language.

Alexej Remizov is usually regarded by literary critics as a symbolist. Although critics sometimes compare Remizov's work to Futurist writings, especially to Hlebnikov, at first glance there is not very much in common between the art of Remizov and that of the Futurists. Remizov's aim is to reveal the language of the Old Russian times; the works of Futurists are full of neologisms. Remizov is looking into the past, while Futurists are mostly interested in the future. However, upon careful analysis of Remizov's works, one can observe a strong similarity between the attitudes of both the Futurists and Remizov toward the role of language and reality in literature. It has been

already mentioned by H. Baran that both Remizov and Hlebnikov were interested in the study of myth (Slobin 1987: 190). Baran notes that both Remizov and Hlebnikov are trying to create new myths on the basis of old ones. He connects this tendency with the fact that these writers also try to create new words using old roots and to play in both *slovotvorchestvo* and *mifotvorchestvo* (Slobin 1987: 191). However, the interest in the creation of neo-mythology was not just a feature of Remizov or Hlebnikov's works. One can argue that this interest was among the most dominating in the artistic perception of the Silver Age in general, from symbolists to futurists.<sup>1</sup> I would argue that it is not quite "mytho-" but *mirotvorchestvo* that unites Remizov and the Futurists, that is to say, the similar attitude of Futurists and Remizov toward language as a tool for the creation of a new personal world through their own personal language. I would posit that Remizov as well as the Futurists viewed language as "logos", *bozhestvennyj glagol*, the mystical word of God, about which St. John talks in his Gospel. According to the mystical interpretation of the famous words "At the beginning there was Word and the Word was with God and the Word was God" when God was creating the world he named the objects, and these abstract names became a force for the appearance of an object in physical reality. This conception of *logos*, although existing from the third century, became extremely popular in the Middle Ages and early Renaissance. Medieval mystical philosophers, especially those connected with magic and alchemy, claimed that one could restore the divine language of Creation. If one were to succeed in doing so, he would possess the ability to create objects anew, thereby becoming a Creator himself.

One can argue that a major goal of Remizov as well of the Futurists was similar to that of their Medieval predecessors: to reveal the mystical power of language in order to create, not to describe reality. In my paper I will analyze three chapters from Alexej Remizov's *Rossiia v pis'menah*, a book which can be read as a manifesto of Remizov's attitude toward language and reality. I will also discuss possible sources that might have influenced Remizov in his attitude towards language, especially those that have their roots in the mystical linguistic doctrine of Kabbalah.

Kabbalah (originally the Hebrew word *tradition*) is an esoteric philosophy that developed among Jewish philosophers in Spain in the early Middle Ages. The central teaching of this philosophy is the idea

<sup>1</sup> See for example, Mints 1979.

that God manifests himself in the form of infinite Light, in Hebrew *zohar*. The principal idea of Kabbalah lies in the conception of Creation. The whole process of creation is shown as a process of ten impulses of the Divine Light, each one of which marks a new stage in the creation. These ten stages are called *spheroth*. Kabbalah claims that the Divine light manifests itself in the form of the divine Word, Logos.<sup>2</sup> This belief resulted in the concept of linguistic mysticism, and in the fact that by the beginning of the sixteenth century Kabbalah began to develop into two branches: the theoretical and the practical. While the aims of theoretical Kabbalah were purely moral and led by the wish to find the answers to questions about the nature of Humanity and the role of God in Nature, practical Kabbalah was interested mainly in the linguistic mystical doctrine of *zohar*. The Jewish practical Kabbalah later developed into a Christian one, which was a combination of original Kabbalah, Neo-platonic philosophy and Christian mysticism. It brought forth the Neo-Kabbalistic belief that all the secrets of divine and earthy beings can be decoded and revealed by the manipulations of various letters in the alphabet. Practical Kabbalists asserted that each letter in Language represented a physical or spiritual quality of either God or a Human, and claimed that if one took letters as a secret code of creation, by manipulating them one could find the original Divine Word for an object, and, with its help, create this object anew. The following passage from the book *Hayye ha Olam kha Baa* written by the famous Jewish Kabbalist philosopher Abraham Abulafia may serve as an example of the linguistic mystical approach to Kabbalah:

Let your garments be white. If it's night, let everything be illuminated by numerous lamps. Then start combining the letters individually or a few at a time. Move them around until passion ignites in your heart. When the flame of passion has been lit in your heart by moving the letters, you will understand things that you ordinarily wouldn't be able to see.<sup>3</sup> (Eco 1998: 214)

In their mystical attempts, Jewish Kabbalists preferred to use the interpretations of the ancient Hebrew texts rather than newer Jewish writings because of the belief that the Past is closer to the revelation of the divine secrets than the Present. In Christian Kabbalah the inter-

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<sup>2</sup> For a detailed study of Kabbalah see Sholem 1961. See also Idel 1988.

<sup>3</sup> All the translations presented above are mine, except for the translation of the quote from L. Tolstoj's *War and Peace*.

pretations of the ancient Jewish writings were replaced by the interpretations of early Christian Apocalyptic texts.<sup>4</sup>

Magicians and alchemists called Kabbalah “the secret knowledge,” which they alone possessed. However, this “secret knowledge” was widely propagated in a number of manuscripts, which later became very popular among the German mystics and Pietists and reached Russian intellectuals through Free-Masonic contacts in the mid-eighteenth century. It would be appropriate here to quote a passage from a book by German Ficktauld, *Kabbalah Mystica Naturae*, presented in the archive of the famous Russian eighteenth-century Mason Count Elagin. The following description of Kabbalah cited from the book explains how Elagin might have seen Kabbalistic philosophy:

Kabbalah is a natural philosophy which is devoted to the understanding of the soul, astral bodies, celestial spirits, elements, and, most of all, the divine light. Letters and syllables are the most significant part of Kabbalistic studies because letters are the home of spirits and every spirit originates from a specific letter.<sup>5</sup>

The age of Modernism was a time of strong revival of the interest in everything mystical and magical. The birth of French symbolism involved, using the words of Bernice Rosenthal (1997: 21) “a rediscovery and popularization of alchemy, magic and Kabbalah”. This revival owes much to the efforts of Eliphas Levi, a Catholic priest, who, using a Jewish pseudonym, both translated the most famous late Medieval and early modern books on occultism, such as the works by Agrippa, Paracelsus and Boehme, and wrote his own books on magic and practical Kabbalah. The French interest was quickly carried to Russia where, as Rosenthal notes in the introduction to the book *The Occult in Russian and Soviet Culture*:

The occult was a remarkably integral part of pre-revolutionary Russian culture. Occult doctrines appealed to artists, writers, and political activists. Avant-garde poets and painters were intrigued by the idea of a fourth dimension. Philosophers and lay theologians explored the occult in their quest for new religious truths. (Rosenthal 1997: 21)

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<sup>4</sup> For a deeper analysis of the influence of Jewish mysticism on late Medieval and Renaissance magical practices see Faivre 1992. Also, an interesting view of the relations between Jewish Kabbalah and Christian Kabbalah is presented in Idel 1992.

<sup>5</sup> The quotation is from an unpublished manuscript source from the P. M. Kaznacheev archive, a private collection of B. Kerdimun.

It was the Modernists and especially the Symbolists who returned to the belief of the magic power of the Word, a creed that traces back to Kabbalist linguistic mysticism. In the mid-1880s, A. Rimbaud came up with the idea that sounds can express emotions just as words do, and that they can even have colors. The idea was followed eagerly in Russian Modernist literature, not only in symbolist poetry but in such “younger” movements as akmeism and futurism. For example, in his poem *Na Venere, akh, na Venere* Nikolaj Gumilev expresses the similar belief that sounds can express emotions:

На Венере, ах, на Венере,  
Нету слов обидных и властных,  
Говорят жители на Венере  
Языком из одних только гласных.  
(Gumilev 1987: 185)

The same idea can be seen in the Modernist literature up to the early twenties. In 1921, a symbolist Fedor Sologub, for example, shows his longing for “vowel language” in a following way:

Родился бы я на Мадагаскаре  
Говорил бы наречием где много “а”  
Слагал бы стихи о любовном пожаре  
О нагих красавицах на острове Самоа.  
(Schmid 1999: 645)

The symbolists’ and akmeists’ attempt to prove that not only words but also letters can bear emotional and even semantic power, was followed by the futurist writers. Futurists revived the linguistic theory of creation, declared that Art is not objective but creative and not only brought back the Kabbalist idea that the Divine language differs from the human one, but also argued that, using the words of A. Kruchenyh “художник волен выражаться своим собственным языком ибо творец индивидуален” (Shklovskij 1991: 179). In 1919, V. Shklovskij directly compares transrational language to an incantation, i.e. to a linguistic segment, which seems meaningless but actually bears an important secret meaning: a meaning, which is creative, and not descriptive.<sup>6</sup> The interest in the occult power of language went hand in hand with the interest in everything old and long-forgotten:

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<sup>6</sup> For the development of the similar practices in the Renaissance kabbalistic magic, see Yates (1964).

medieval legends, fairy tales and especially old books and manuscripts. As G. Meyrink observes: "Strange things of mysterious origin — parchments covered with secret signs, tattered manuscripts [...] they draw our attention like magnets by creating a mysterious connection with the yet undiscovered depths of the human soul" (Meyrink 1992: 19).

*Rossiya v pis'menah* by A. Remizov appeared at the peak of this interest. The book is composed as a chain of old documents and engravings, discovered and re-told by the author. In the book *Remizov's Fictions: 1900–1921*, G. Slobin finds that "in his utmost regard for the word in all its facets, including its magic and music, Remizov was close to the symbolist notion of language as a tool of creative cognition" (Slobin 1991: 30). In the article "Неизданная книга Мерлог", D'Amelia notes that "The very name of the book leads the reader to the idea about the recreation of the reality through the language in which lexical meaning is united with the image created by the disposition of letters and words on a page" (Slobin 1991: 148). However, neither D'Amelia nor other critics have noticed that in such an approach to old texts Remizov follows the ideas of the practical Kabbalistic theory and regards the language as a mystical and magical tool that helps to reveal the secrets of the long-forgotten Past. A good example of this role of language is the chapter called "The Trunk" ("Сундук").

The trunk of Remizov's story is clearly a bearer of something secret and long-forgotten. As the narrator says: "There was only one thing known about the trunk, that it bore the belongings of our great-great-grandfather Dmitri Filosofov — some old rags ('какая-то ветошь')" (Remizov 1982: 82). This trunk has outlived all its owners, the first of whom died in 1779. However, nothing of what was placed in the trunk, has survived decay. When the trunk is opened, one cannot find anything in it, except for old rotten garments. The only way to reveal the secret and to find out what was in the trunk is through language: the list of belongings that was left inside and is still in good condition. This is strange because paper is no more resistant to decay than other materials. It seems that the survival of the list bears a significant symbolic meaning: the only thing that has been left from the past is the text. This text, a simple list of belongings, is transformed into a magical document, which helps to re-construct something been dead for centuries. The idea of the list as a magical spell finds support again in the last lines of the story. "От сундука ничего не осталось, а записка у меня, и хранит ее волк-самоглот"

("Nothing is left from the trunk but the note guarded by a fairy wolf-*samoglor*") (Remizov 1982: 84). The wolf, although a toy-figure, is definitely a fairy-tale guard, which protects a magical treasure. This notion only stresses the fact that for the narrator the list, "zapiska" is clearly such a treasure.

"Reality is created by Art" (Kodryanskaya 1959: 197), Remizov writes in one of his notes. He declares that "the retelling is never a reproduction but an attempt to recreate a living being" (Kodryanskaya 1959: 196). In his attempt to re-create the past and to create the new "past in the present" suggested by *Sunduk*, letters for Remizov are of no less, if not of more importance than words. Much has been written about Remizov's interest in the graphical side of a letter. D'Amelia, for example, claims that for Remizov semantic meaning can be present in a letter just as in a whole word. She compares Remizov's view of the role of letters to Hlebnikov's and Kruchenych's manifesto "Letter as Such", saying that "Remizov deconstructs a page into separate parts like Hlebnikov in his manifesto on the deconstruction of language or Filonov in his art works" (Slobin 1986: 147). From this comparison it is only one step to Shklovskij's definition of transrational language, in which a letter revives its symbolic origin, and, in this way, everything that seems meaningless at the first glimpse becomes a bearer of creative mystical power.<sup>7</sup> However, D'Amelia does not take this step. She sees an origin for Remizov's attitude toward the "meaningful letters" in the Japanese or Chinese art of hieroglyphics. Yet the hieroglyphics themselves do not bear any mystical power. They are used to describe and not to create. For Remizov, on the other hand, a letter is always an entrance into a living life of language, an exit from three dimensions into four. It seems that in order to understand the role which letters play in Remizov's work, one should consider the major interest of his whole life: a passion for the glagolitic alphabet.

J. Obatnina finds that "The glagolitic alphabet became a passion for Remizov, who at the beginning stages of his studies filled an entire notebook with his glagolitic exercises. For Remizov, the glagolitic alphabet played the role of a sacred language" (Obatnina 1996: 183).

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<sup>7</sup> The same idea can be seen in *Remizov's Fictions: 1900-1921* by G. Slobin. Slobin compares Remizov to his contemporaries Belyj and Hlebnikov, and says that just like them Remizov "rediscovered the magic of sounds and words" in a process of literary creation akin to a shaman's "transcendence of the profane condition".

However, the glagolitic alphabet originally bore sacred and mystical elements. In the article "Славянская азбука" L. Savelieva explains that *glagolitsa* is a reflection of the spirit of Medieval linguistic mysticism on the Slavic ground, which maintains "a deep mystical union of letters being bounded to each other" (Savelieva 1994: 213). According to the symbolic interpretation of Savelieva, each letter in *glagolitsa* has a semantic meaning. When placed in order as a text and translated into Modern Russian, these letters look like a prayer or a poem with powerful philosophic implications. Moreover, besides the direct semantic meaning, each of these letters bears not only a symbolic semantic but also a numerical connotation. Of particular importance in the glagolitic alphabet is the letter *Az*. It differs considerably from the Greek *Alfa*, and looks more like a transformation of the Hebrew *alef*, a mystical letter suggesting the beginning of creation. In Medieval Hebrew, used by Christian as well as Jewish Kabbalists, the letter *alef* represented both *ani* (myself, i.e. everything) and *ein* (nothing), and was considered "the symbol of everything which is both below and above and which is the beginning of everything" (Sholem 1991: 37–39). In a description of the meaning of *A*, Savelieva strongly echoes the Hebrew symbolic explanation of *alef*, noting as follows:

A cosmogonic model of the letter 'Az' is a pattern connected with spatial orientation, where up and down are regarded as spiritual and material, respectively. 'Az' becomes a symbol of human ego and at the same time an allegory for the origins of human development. Thus, one understands the first and, undoubtedly, the most sacred letter of the glagolitic alphabet as a symbol of world building founded by the creator of the Russian tradition of the written word in the alphabetical text. (Savelieva 1994: 213)

Only through the understanding of "azbuka" as a sacred mystical text, can one understand the significance of *Azbuka* in *Rossiia v pis'menah*.

*Azbuka* concludes *Rossiia v pis'menah*. V. Hlebnikov argues in his "Letter as Such" that letters can have semantic meanings. Each letter means a different emotion or a different force. This makes language a living being, a symbol of life. The same attitude toward the role of letters in language can be seen in Remizov's *Azbuka*. While describing his work on the book, Remizov writes in a note that his aim is to represent Russia as a living being: "как живое существо" (Slobin 1986: 147). The last chapter of *Rossiia v pis'menah* becomes the terminating symbol of the whole text: of Russia as a living being, where the moral symbolic concept of this being is based on the

Russian language, in the *Azbuka*. Thus, the alphabet becomes the symbol of life. For Remizov, like for Cyril, the inventor of the glagolitic alphabet, the central letter of this "life" is "AZ," the letter of creation. "Аз есьм свет миру" (Az is the Light of the world), the narrator declares, and develops this statement by showing the creative power of this letter:

Сколько слез — тех когда стукнулся — отделился от вещи другой — нет, изволь из воздуха создать новую вещь. И этот "аз" тебе меняет лицо, глаза, взгляд. (Remizov 1982: 210)

In *Azbuka* Remizov plays with letters just as the followers of the grapho-semantic conception of Kabbalist writings did in their attempt to find a spell that would help to create a new object. He places together in three rows words with identical meanings, written in four different "azbukas" in German, and in Russian, as in order to discover whether or not the reality would differ if the form of the letter had been changed. He also places together in parallel rows letters from distinct languages that differ in their graphic form but are vocally similar, as if he tries to check whether the reality depends on the letter or on the sound. German and Russian interrupt each other not only in the *azbuka*, but also in the text of the novella itself, creating a mixture of languages. It seems that letters, sounds and even graphical devices become for Remizov more important than the semantic meaning of the words. In these letters and sounds he sees a union that creates "живое слово", a word which is not descriptive, but creative, a living being. As Remizov himself says: "Загадка языка, буквы прописные, строчные, сложи двоеписьменные, сложи троеписьменные, титла, ярк, кавыка, удивительная, вопросительная, вместительная" (Remizov 1982: 212).

Upon looking at the text of Remizov's *Azbuka* one can see it not as a literary, but more as a mathematical text, a formula.<sup>8</sup> As has been mentioned above, in both Christian and Jewish Kabbalah the semantic meaning of the letter also depends on the number it represents. Numerology is one of the major features of any linguistic mystical theory. That may be the central reason why numbers played such an

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\* The passage given above shows Remizov's interest not only towards letters but also towards the graphical signs, which were used in early Old Church Slavonic to show a grammatical category of the word or a correct pronunciation. The device can be paralleled to the system of graphical signs, *nekudot*, used in Hebrew and widely exploited by practical Kabbalists.

important role for the futurists, especially Hlebnikov.<sup>9</sup> In numbers the Futurists saw an active power, which could help them to reveal the secret of creating a new world. It seems that the corresponding numbers of the letters in three different alphabets are also important for Remizov, and that he is well aware of the numerological side of language. The chapter *Tsifry*, which is significant for an understanding of “Rossiya v pis'menah” as a whole, supports this idea.

*Tsifry* expresses Remizov's strong interest in numerology. “Прельстительная слагаемость цифр, тайность знаков, сколько страсти и какая волшебная притягательность” (Remizov 1982: 192). The chapter shows not only Remizov's interest in numerology, but also some practical knowledge. Remizov seems to know the Kabbalistic meanings of some of the numbers: 6 — earthy life, 7 — the kingdom of angels, 3 — heavenly knowledge, 666 — the number of mankind (*страшное число человеческое*) (Remizov 1982: 192).

Christian magical Kabbalistic numerology is based on the system 3–7–12, where seven means the number of angels sitting at the foot of the divine throne, three stands for the Trinity, and twelve symbolizes the unity of life both on heaven and earth. 3+7+12 equals 22, the total number of the faces of the Deity. Multiplied by the number three, the symbol of the Trinity, these numbers equal 66. This 66, which later started to be written 666 (probably to stress again the importance of the Trinity) is the number that symbolizes the Creation.<sup>10</sup> In Hebrew all letters already bear simultaneous numeral meanings. Other languages, and among them Russian, had to be deciphered so that each letter would receive a parallel, mystical, number. In Russian this work has been done through glagolitic, not through the Cyrillic

<sup>9</sup> See Nikolaj Bogomolov's “Об одном из источников диалога Хлебникова *Учитель и Ученик*” in Bogomolov 1999: 264–270. The interest towards numbers as a vivid part of language can be seen not only in Futurists but in the poetics of the Silver Age in general, for example in Gumilev's poem *Slovo*. Such an attitude again shows the intend of the writers of the time to follow the Renaissance pattern of the kabbalistic magic which regarded both numbers and letters (sounds) as two parts of one magical language. (See, for example, Reuchlin 1987, or Agrippa of Nettesheim, *De Occulta Philosophia*. See also Papus, *Quabala* as a later example of such a tradition.) However, Gumilev regards numbers as the subordinate part of the language, not as important as sounds are (*не решаясь обратиться к звуку/тростью на песке чертил число...*). Such view was quite common for the Silver Age poetics, and was changed only in futurist literature.

<sup>10</sup> For a more detailed analysis of the role of numerology in Kabbalah see Sholem 1941. For the Christian magical interpretation of Kabbalistic numerology see, for example, Mathers 1989. See also Idel 1992.

alphabet, so Remizov's interest in the mystical side of *glagolitsa* could have reinforced his interest in this subject as well as helped him in his knowledge of the numerical side of *azbuka*. Remizov's use of numerology in "Tsifry" also shows his knowledge of the role it has played in interpreting the Apocalyptic texts. He quotes the words from St. John's Apocalypse: "*и послал миру ангела кроткости*" (...and he sent an angel of kindness to the world...), noticing that "according to the church calendar, every letter has a corresponding number. The sum of the numbers corresponding to the letters in Apocalypse produces the year of the birth of the emperor (Alexander I)" (Remizov 1982: 194). One can also notice the similarity between Remizov's interest in predicting or explaining things with the help of the numerological side of a text and the similar interest of Hlebnikov, for whom the mystical power of numbers went hand in hand with the desire to predict the Future.

In light of everything presented above, one can argue that *Rossiya v pis'menah* shows that, in his ideas about language and reality, Remizov may indeed be more closely aligned with the Futurist literary philosophy than with that of the Symbolists. *Rossiya v pis'menah* is a book about the priority of language over reality. The major problem that Remizov's book deals with is the ability of a writer to re-create something lost long ago or even to create his own reality through language, using both the literary and the numerological sides of it. Given such a task, the role of a writer becomes akin to that of a magician or a wizard, and Remizov himself is fond of such a definition. In his notes he mentions that he sometimes feels that through his works he gains access to "a strange, secret life of fantastic and unreal". In a note dated 1921, he suggests that he himself might have magical power. He mentions a day when he wished, leaving a building in which he had been strongly offended, to burn this house down — and the next day the building was really burned to the ground. The literary parodies of the first decades of the century always stressed this interest of the writer in magic and even demonism. One of the critical articles pictured Remizov as a lonely old man who

lives in a half-dilapidated little house and only admits those on whom he has placed a terrible and mysterious spell. He writes in a small dark room in front of a soot-covered hearth [...] a black cat rubs up against his feet, and the silence is suddenly disturbed by the harsh cries of an old owl. When he writes he dips his pen in a white skull filled with blood. What a horrible sight! (Obatnina 1996: 189)

The question is whether Remizov could really be aware of the linguistic philosophy of practical Kabbalah, which would support the aforementioned observations. I believe that such a possibility may exist. The mystical trends that became popular in Russia during the first decade of the twentieth century resulted in the strong interest of Russian artistic intellectuals in Kabbalah, both Christian and Jewish. Theologians such as Pavel Florenskij and Sergei Bulgakov refer to Kabbalah when they look for the origins of the mystical concept of *Sophia*. The Jewish origin of *Sophia* is also presented in the works of Vladimir Solov'ev, whose concept of *Sophia* presents *Sophia-Wisdom* as Kabbalist *Hokhmah*, the second and the closest to God, *sphera*, which symbolizes the Divine Wisdom. J. Kornblatt in her article on Vladimir Solov'ev argues for the possibility that Solov'ev might have studied original Jewish Kabbalistic manuscripts in the library of British museum in London. She says in particular that

Kabbalah actually refers to a mystical practice that involves contemplation of the names of God found in Hebrew Scripture, often through numerical manipulations of the letters of the Hebrew alphabet... Its most development came in thirteenth century Spain, with the dissemination of the book of *Zohar*. *The Zohar*, which Solov'ev probably read in Latin translation, was written or perhaps partially compiled by Moses ben Shemtov de Leon, but it was attributed to a great sage of the talmudic period, Shimon Bar Iohai. (Rosenthal 1997: 79)

However, with its general interest in magic and the occult, modernism primarily paid attention not to moral spiritual Kabbalistic concepts, like that of *Sophia/Hokhmah*, but to practical, mostly Christian, Kabbalah.<sup>11</sup> By the end of the first decade of the century all of the major works of a French writer Papus, the central nineteenth-century popularizer of Christian Kabbalah, were introduced into Russian society. Remizov's profound interest in magic paralleled with his good knowledge of French, would most probably have led him to these works or to their interpretations in contemporary criticism, especially since they were very popular. In her article "Обезьянья великая и вольная палата: игра и ее парадигмы", J. Obatnina notes that Remizov often signed his letters and documents with the name of an imaginary king, Abrasacks. She argues that the origin of the figure of Abrasacks might be an article by I. Mansvetov, which Remizov

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<sup>11</sup> For the detailed study of the occultism and the Silver Age culture in Russia see Carlson (1993).

read between 1907–1917. The article analyzes the Gnostic numeral explanation for the name of the Deity. According to Obatnina,

It follows from this article that the Kabbalistic name of the gnostic deity Abrasaks, when converted into corresponding numbers, corresponds in turn to the gnostic pleroma, which contains 365 eons, a reflection of the number of days in a year. Therefore, the mystical name of the king Abrasaks can also correspond to the main idea of Remizov's book *Posolon*, which describes the calendar year. (Obatnina 1996: 196)

Another way in which Remizov might be acquainted with Kabbalistic linguistic theories, either original or Christian, is Free-Masonry. Remizov seemed to know Masonic symbolism quite well through his friends who were involved in Masonry, for example M. Tereschenko who held a high rank in the Masonic lodge "Великого Востока народов России". The ideology of this lodge was influenced by Papus's own lodge in Paris.<sup>12</sup> Some of Remizov's drawings express symbolism, that was strongly wide-spread in origin in Masonic or alchemic works, for example a snake that eats its own tail.<sup>13</sup> In his letters, for example one dated February 1923, he even mentions his interest in Kabbalah, although he refers to it as the knowledge of ancient Persian magicians later adopted by Masonic philosophers. Moreover, in the chapter *Tsifry* one finds an interesting similarity between the numerological interpretation of the text about the Emperor Alexander with that of the similar interpretation of a Masonic text found by Pierre in a well-known passage from Tolstoj's *War and Peace*. In particular, Tolstoj writes that:

One of his brother masons had revealed to Pierre the following prophecy relating to Napoleon, and taken from the Apocalypse of St. John.

In the Apocalypse, chapter thirteen, verse seventeen, it is written: "Here is wisdom...count the number of the beast, for it is the number of the man, and his number is six hundred three score and six..."

And in the fifth verse of the same chapter: "And there was given unto him a mouth speaking great things and blasphemies, and power was given to him to continue forty and two months."

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<sup>12</sup> For the influence on Papus' activities on Russian artistic milieu of the Silver Age and for the history of his Martinist Lodge in Russia see Serkov 1997.

<sup>13</sup> For the use of this emblem in alchemic symbolism see Rabinovich 1979.

If the French alphabet is treated like the Hebrew system of enumeration, by which the first letters represent the units, and the next the tens and so on, the letters have the following value:-

a b c d e f g...

1 2 3 4 5 6 7...

Turning out the words l'empereur Napoléon into ciphers on this system, it happens that the sum of these numbers equals 666, and Napoléon is thereby seen to be beast prophesied in the Apocalypse. This prophecy made a great impression on Pierre. He frequently asked himself what would put an end to the power of the beast, this is of Napoléon; and he tried by the same system of turning letters into figures, and reckoning them up to find an answer to this question. (Tolstoj 1995: 621)

V. Shklovskij even notes that a famous fraternity, “Великая Обезьянья Палата”, “was created by Remizov in the style of a Russian Free-Masonic Lodge” (Shklovskij 2000: 24). The *palata* was definitely a game, but a game which bore many symbolic features, and had much in common with a Masonic lodge. It was ruled by a council of seven Monkey Counts and governed by a King named Asyka. The entrance to the fraternity could be reached only with the knowledge of three passwords. Remizov used the glagolitic alphabet and a special signature to write and to sign documents connected with the fraternity. J. Obatnina believes that Remizov's fraternity was a parody of a Masonic union and that Masonic symbolism did not have a serious influence on Remizov's literary art. However, I would argue that most of the symbols created by Remizov in “Великая Обезьянья Палата”, may be explained only through the perspective of his literary works, and especially through *Rossiia v pis'menah*. The council of seven counts in *palata* may well have its origin in Masonic ranking, but also strongly echoes the seven angels at the divine throne from *Tsifyr*. In *Tsifyr* one can also find the explanation of three magical words that confirmed the membership to both the *palata* and a lodge, since the number *three* is the symbol of Trinity, i.e. of “небесное знание” (heavenly knowledge). In the light of this, the numeral and the linguistic symbols that Remizov uses in both his life and literature seem less like a parody and more like an attempt to form a new esoteric mystical theory on the basis of the old existing ones and to build his own magical school, a school which would help him to create a new reality as well as to recreate the past.

In his manifesto “Letter as such”, V. Hlebnikov claims that should writers submit to their native mystical language, a mystical union would occur between people and their land, since “number is a true

side of a letter, and the aim of a writer is to reveal that side" (Hlebnikov 1983: 119). One can argue that Remizov's book adheres very closely to Hlebnikov's idea. Lines of words in *Azbuka* and repetitions of numbers in *Tsifry*, which seem meaningless at first glance, are intended, just as does transrational language (*zaum*), to get to the original rhythmic power of language. *Azbuka*, *Tsifry* and *Sunduk* help the reader to feel the force of language through which it has its strength to create reality. Based on the example of these chapters, one can see how Remizov tries to replace the everyday words designed to describe reality with his own language, which is constructed of semantically meaningful letters, sounds and numbers, and which has the power to create. However, Remizov's aim is different from that of the Futurists.<sup>14</sup> Remizov does not try to change the world or the Future. In his search for a hidden mystical creative side of language, he, like Cyril, the creator of the glagolitic alphabet, is trying to reveal the divine morality, *пробудить в душе человеческое*. It seems to me that both *Rossiya v pis'menah* and *Obez'yan'ya palata* are but two sides of this attempt at linguistic symbolic enlightenment, the two sides that help understand one another. It is true that Remizov's use of glagolitic *tainopis'*, his Kabbalistic pictures, and his playing with the language in *Azbuka* are but the components of a game he played his entire life; yet through this game the writer raises serious questions about the moral role of language in human life. "A wanderer on the ways of a word", a strong believer, Remizov perceives language as mystical Logos, a living being in which letters, sounds and numbers are vivid components. For Remizov such a view of language goes hand in hand with his aim in writing *Rossiya v pis'menah*: to revive the dead Past, to create the New which is but a recreation of the Old, and to fill this New by the old light of God's morality.

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<sup>14</sup> The same opinion can be seen in G. Slobin's book *Remizov's Fictions: 1900–1921*. Slobin says that "although Remizov's approach to linguistic innovation brought him close to the Futurists, especially to Velemir Hlebnikov, [...] trans-language was not his goal" (Slobin 1991: 31).

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### **Проблема языка и реальности в русском модернизме: концепция миротворчества в “Россия в Письменах” Алексея Ремизова**

Статья рассматривает литературный проект Алексея Ремизова *Россия в Письменах* с точки зрения общего отношения Серебрянного века к лингвистической символике и семиотике языка как к “божественному глаголу”, то есть магическому орудию для создания окружающей реальности. Евангельскую концепцию “в начале было Слово” Ремизов представляет как магическую и мистическую концепцию власти языка над реальностью, и пытается в своем произведении доказать это предположение через восстановление реалий российского прошлого с помощью симбиоза букв и цифр, бессмысленных на первый взгляд, но обладающих, согласно Ремизову, скрытым магическим смыслом.

На мой взгляд, данная интерпретация концепции власти языка над реальностью близка доктрине так называемой магической Каббалы. Статья анализирует теорию магической Каббалы, рассматривает интерпретацию и практическое применение этой теории в поэтической идеологии Серебрянного века, и анализирует книгу Ремизова как пример использования этой теории в русской литературе начала двадцатого века.

### **Keele ja reaalsuse probleem vene modernismis: *mirotvorchestvo* mõiste Aleksei Remizovi raamatus “Rossija v pismenah”**

Vaadeldakse Aleksei Remizovi kirjanduslikku projekti *Rossija v pismenah* Hõbeajastu kontekstis, kus lingvistilisse sümboolikasse ja keelesemiootikasse suhtuti kui “jumalikku kõnese”, st vaadeldi seda teatud maagilise vahendina ümbritseva reaalsuse loomisel. Remizov mõtestab evangeeliumi “alguses oli Sõna” lahti kui keele reaalsuse üle valitsemise maagilise ja müstilise kontseptsiooni ning püüab oma teoses seda väidet tõestada, taastades vene mineviku reaaliaid esmapilgul mõttetute (kuid Remizovi järgi varjatud maagilist mõtet kandvate) tähtede ja arvude sümbioosi abil.

Autori arvates on taoline keele reaalsuse üle valitsemise kontseptsiooni tõlgendus lähedane nn maagilisele Kabbalale. Artiklis analüüsitakse maagilise Kabbala teooriat, selle teooria tõlgendust ja praktilist rakendust Hõbeajastu poeetilises ideoloogias. Remizovi teost vaadeldakse sel foonil kui antud teooria kasutamise näidet vene kahekümnenda sajandi alguse kirjanduses.

## On postmodernism, “the stairs of avant-garde”, and Brodsky

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**Abstract.** This article attempts to analyse Russian postmodernist poetics, proceeding from the concept of the “trans-semiotic stairs”, as presented by J. Faryno for describing the avant-garde. Examples from various texts are used to demonstrate how postmodernist texts contain divergent processes: the culturally specific and unique dissolves in tautology, meaningful entireties are dispersed into atomized empty particles. The significant teleological model of the avant-garde ceases to function here. A play by J. Brodsky, *Marble*, is examined on this background, as well as the position of the author that differs from the “postmodernist” context.<sup>1</sup>

### 1.

The question of what the universal qualities of poetry are, what distinguishes the poetic trends and epochs from each other, and wherein the individuality of a definite poet manifests itself is quite a complicated one. Hence the theorizing of “recurrences”, quests for historical analogies, composing of diverse typologies.

Thus the peculiarity of literary postmodernism is often questioned by means of the argument that “we’ve already seen it all” (for example, Umberto Eco thinks that each epoch has its own “post-modernism”), while mixing up the skepticism of the very postmodern culture towards innovation and the possibility of “newness” with

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<sup>1</sup> An earlier version of this paper, “A post-modern poet ‘on the stairs of avant-gard’”, has been read at the jubilee conference of Prof. Jerzy Faryno, “Literature as literature” (Bydgoszcz, Poland, 2001).

postmodernism as a historical-cultural phenomenon. As it happens, there is nothing new in such a disposition itself — for the realistic qualities of literature (especially that of antiquity) were discussed long before the emergence of realism, whereas the terms modernism and avant-garde, besides their historical-cultural meaning, were often applied to denote certain qualities of cultural artifacts or ideologies.

Various modes commonly used in theoretical and critical writing for describing the postmodernist paradigm on the background of modernism, involuntarily contribute to the formation of the idea about the independence of postmodernism (see, for example, Spears 1970; Eagleton 1983; Fokkema 1984; Spanos 1985; Hassan 1987). Postmodernism is often characterized through negation (cf. absence, refusal, death, deconstruction, uncertainty, indeterminacy), or else via oppositional pairs, as, for instance, in the well-known schema of Ihab Hassan, in which modernism and postmodernism are viewed as two systems, the qualities of the one being juxtaposed with those of the other: “plan, program — changeability”, “hierarchy — anarchy”, “distance — participation”, “synthesis — antithesis”, “semantics — rhetoric”, “presence — absence”, “signified — signifier”, “determinism — indeterminism”, “transcendence — immanence”, etc. (Hassan 1987: 91–92). It is not fortuitous, though, that the question of whether postmodernism is the last epoch of modernism (“the fatigued avant-garde”) or the beginning of a new one, a cultural cycle opposed to modernism, cannot be answered unequivocally. For the first time in the history of literature, we are faced with a phenomenon that is so elusive and indeterminable, defying all identification, paradoxically open and closed at the same time, focused on itself and destroying itself (Hutcheon 1989). The description of this phenomenon through comparison/juxtaposition of its constructive principles with the preceding tradition does not yield us necessary opportunities to delve into it. It is difficult to describe the structure of the object that demonstrates the destruction of the structure, especially without the necessary temporal distance. What facilitates our task, however, is an awareness of the simple truth that in any chaos, especially the one constructed by the creative imagination of a poet, there exists certain regularity. The destruction of a system presupposes a system of devices for that destruction.

In order to define postmodernism from the semiotic point of view, the terminological apparatus of deconstruction is most frequently applied, in which process the philosophical and poetic discourses

often merge, and the "localization" of deconstructive universal principles of text-reading takes place, wherein the latter become to be viewed as qualities of the particular type of texts. The standard definition of postmodernist discourse claims that it is the play of signifiers without the signified (here, as before, we detect a certain confusion in terms — the transcendental signified (Derrida, Deleuze) and the doubt in the strict ties between the signifier and the signified within the structure of the sign as an element in the sign system should be kept apart). If we wish to describe the respective literary practice from this point of view, we should not ignore the self-sufficient nature of the poetic expression.

2.

The present article endeavours to present one of the possible interpretations of the "working mechanism" of the texts of Russian postmodernism, using as an example the attempt of Jerzy Faryno to describe how the avant-garde text "works". The main attraction of Jerzy Faryno's approach for us lies in the fact that he does not engage in drawing up the catalogue of the characteristic features of Russian avant-garde. Instead, he views the text as an "event", i.e. as a process of contemplation.

As is generally known, Jerzy Faryno bases his work on the theoretical treatment of the function of language by Roman Jakobson and his model of communication. Besides, he also relies on the model of semiosis by Juri Lotman. We could consider Faryno's concept as the elaboration of the ideas of Lotman on the principles of reencoding as the principles of generating meaning in the poetic text. In his *Structure of the Poetic Text*, Juri Lotman writes the following:

[...] meaning occurs only in those cases when we have at least two different chains-structures. In ordinary terms, one of those could be defined as the plan of expression, and the other as the plan of content. In the process of reencoding between definite pairs of elements that are different in character, correspondences are formed, while one element in its system will be perceived as equivalent to the other one in its system. Such crossing of two chains of structures at a certain common twofold point will be termed as sign, while the second of the chains — the one with which the correspondence is formed —

will act as content, and the first one — as expression. Accordingly, the problem of content is always a problem of reencoding.<sup>2</sup> (Lotman 1970: 48)

The meaning might be generated either by the internal — i.e. syntagmatic (as in the case of literary romanticism) — or the external — i.e. paradigmatic reencoding (prevalent in realism). While developing the ideas of Jakobson on equivalence, Lotman writes:

[...] it is necessary we give up the common idea, according to which the world of denotations of the secondary system is identical with that of the primary ones. The secondary modelling system of the artistic type constructs *its own* system of denotations which is not a copy but a model of the world of denotations in the general linguistic sense.<sup>3</sup> (Lotman 1970: 63)

Studying the poetics of the avant-garde, Jerzy Faryno discovers certain characteristic regularities which, on the one hand, retain the connection with the classical semiosis, while at the same time contradicting it, in which he sees the peculiarity of the avant-garde.

In his article “Deciphering”, Faryno presents the thesis of the avant-garde text as a reversed act of communication which “instead of initiating a contact, presupposes its disruption and ends the communication” (Faryno 1989: 21), and in which the functions of the sender and the recipient of the message merge (the real sender is the world-generating instance itself). The content of the message is the entire communicative act: “[...] avant-garde, denying the poetic function, ascends the same stairs, but one step higher, turning into *metapoetry*, i.e. realizes the metapoetic function” (Faryno 1989: 47).

<sup>2</sup> “[...] значение возникает в тех случаях, когда мы имеем хотя бы две различные цепочки-структуры. В привычных терминах одну из них можно определить как план выражения, а другую — как план содержания. При перекодировке между определенными парами элементов, разными по своей природе, будут устанавливаться соответствия, причем один элемент в своей системе будет восприниматься как эквивалентный другому в его системе. Подобное пересечение двух цепочек структур в некоей общей двуединой точке мы будем называть знаком, причем вторая из цепочек — та, с которой устанавливается соответствие, — будет выступать как содержание, а первая — как выражение. Следовательно, проблема содержания есть всегда проблема перекодировки.”

<sup>3</sup> “[...] необходимо отказаться от традиционного представления, согласно которому мир денотатов вторичной системы тождествен миру денотатов первичной. Вторичная моделирующая система художественного типа конструирует *свою* систему денотатов, которая является не копией, а моделью мира денотатов в общезыковом значении.”

The very metaphor, "ascent on the stairs", becomes the wording by which Jerzy Faryno discloses the mechanism of reference in the avant-garde text. It is certainly a process: the simultaneous "esthetization — de-esthetization", as it is called in *The Trans-semiotic Stairs*; a movement from the conceptual world to the speech- and world-generating instance where the new language and new creativity dwell. A text like this is always "in a state of displacement". Faryno examines in great detail this displacement that disrupts the interior integrity of the sign (the liberation of the signifier from the signified, the disruption of the referential connection as such).

This imperfect sign, being in the state of transformation, is always identical with and different from itself at the same time. In the first case we have the signified without the signifier (meaning without sign), and in the second case — the signifier without the signified. The text, however, turns into a series of transformations.

Once we have a series of such conditions-transformations-metamorphoses, we are dealing not with semiotics, but with the semiotics of semiotics, or — to be more exact — the trans-semiotic paradigm of the object, concept or word, phoneme or sound where every single condition is detected as a sign of the same (of itself), but within the framework of another semiotics or another ontology, but its meaning is not confined to that, since it does not in fact belong to any of those, nor does it entirely realize in any of them. (Faryno 1992: 10–11)

The structure of such stairs can be most generally specified as a vertical construction with fixed intermediate horizontal stages, each step being its substructure. If we interpret this image in terms of "paradigmatic — syntagmatic", it is a chain of transitions from one "syntagmatic stage" to the next, a higher one, by means of paradigmatic "ascents". We could, respectively, translate these transformations into terms of rhetoric and grammar, rhetoric and stylistics (Lotman 1992). We could also infer that "on the stairs", in the transformations-metamorphoses (of which a text like this actually consists of), those two principles of organization penetrate into one another, which is exactly what renders the text its transitional nature at any moment. This is one of the paradoxes of the "trans-semiotic" stairs.

Both Lotman and Faryno proceed from the concept of the dual nature of the sign as formulated by Saussure. Despite certain differences of opinion, their general understanding of how the sign "ope-

rates" in the poetic text, in the virtual world, still remains pretty close (especially if we regard the latest works of Lotman). Jerzy Faryno's writings display a certain similarity to the so-called "pure rhetoric" or "infinite semiosis" of Peirce.

This way, the interpretation of the sign does not lead us to its meaning but, instead, to another, more advanced sign, the interpretation of which gives us in its own turn the third sign, etc.

The steps of the "stairs" of avant-garde refer by this to the universal semiotic description of the structure of the metaphor. See, for example, the remark of Faryno that the metaphor "is not created by the violation of semantics, as is generally believed, but by the violation of referentiality, and therefore by semiotic displacement" (Faryno 1989: 48).

Which is to say that this mechanism of generating meaning as described by the example of avant-garde, could well have a more universal character (cf. the idea of Derrida, so often repeated in postmodernist criticism, according to which it is impossible to strictly distinguish between the signified and the signifier, that the signified is never present in the sign, and that it is impossible to acquire a definite idea of the world through it).

In the light of the afore-said, one should not take the idea of the disruption of the referential connection either in the avant-garde text or in the poetic practice of postmodernism too literally. Firstly, the reference in a poetic text does not principally coincide with that of the so-called primary semiotic systems. The sign does not represent here the object as such, but an element of the "imaginary world", it does not refer to the world of reality (to the real world of ideas and texts). Instead, it refers to the world as it is embodied in the images of the conception of the author about the world, i.e. in principle, is not equal with itself.

### 3.

One of the possible ways of delineating the avant-garde and postmodernist strategy could well be the very elucidation of the character and results of the above-mentioned "rupture" of the referential connections. Thus, in the avant-garde poetics as described by Faryno, the disruption of the signifier-signified generates the gradation of the text and produces a series of changes in its ontological status, "a

permanent increase in the semiotic rank of the world". The text possesses a clearly teleological nature — it is always moving towards its next meaning. In accordance with the spirit of structuralism, here, too, the author needs a congenial reader.

The postmodernist text is constituted as a world without centre and vertical, as expressed in the strategy of the destruction of traditional poetic and linguistic structures, the change of the position of the author in the text, who is alienated and ceases to control the text. A special type of subjectivity and biographical content is created here: on the one hand, the poet does not claim the role of the Creator or a medium, rarely allowing the reader to glance into the depths of his/her soul, ironically abstaining from assessments and preferences. On the other hand — in the poems (for example, the poems of Brodsky, Kibirov, Prigov, Krivulin, etc.) there are many details connected with the daily "non-poetical" life of the poet in his intimate space (e.g., the common motifs of the room, the corner) in the closed circle of relatives and friends. The poems are often written in the form of a message, they are dedicated to somebody, containing details known only to the "initiated", sharing the "common language" with the addressee, which makes them somewhat hermetic. This can be viewed as a kind of peculiar compensation of the poet for abstaining from the role of the creator of the world and life.

It is possible that postmodernist literature realizes and at the same time takes to the extreme the two types of linguistic aphasia as described by Jakobson — the violation of the relation of similarity and agrammaticism as two-sided processes not just in the language but also on a wider scale — in culture. It is intriguing in this connection that there exists difference of opinion as to the prevailing metaphorical or metonymical type of writing in postmodernism. When discussing the rhetoric nature of postmodernist culture, one has first and foremost in view its total metaphorization, the principle of metonymy is mentioned considerably less often, at least directly. However, it is included indirectly in such assessments as *fragmentation, absence of entirety, parity, coexistence of the systems of ideas and viewpoints*. For instance, the afore-mentioned comparative paradigm of Hassan, "modernism — postmodernism", includes among others also certain features that are specifically indicative of the metonymical nature of postmodernism and the metaphoric character of modernism, cf.: "modernism — metaphor, selection, paradigm / postmodernism — metonymy, syntagm, combination" (Hassan 1995: 91–92). It might

well be that the peculiarity of postmodernism still consists in the fact that among other binary oppositions the above-mentioned opposition ceases to function as well, and the two-fold transgressive relations between metaphor and metonymy will prevail, which creates the impression of total destructuralization and loss of sense of the world-text.

The intratextual movement is not gradational here — in the direction of “ever more text”, “ever more art”. It is rather a circular movement: the centripetal force endeavours to merge all difference of the world into a single point, to turn it into an alloy, in which everything coincides with analogies, fuses into tautology, while the centrifugal force disperses the language/culture into meaningless atomic particles. We witness the disintegration of culture without achievements — the combining of elements of the destroyed systems does not yield new languages, the piling of cultural codes on each other does not form a hierarchical structure. Often the text is built on the model of the growing energetic impulse, accompanied by ever intensifying desemiotization. In the extreme case, this leads to the silence of language, void.

For example, a number of works by Vladimir Sorokin are built upon the principle of acceleration, where not only the textual reality is destroyed in the end, but also the language as the means of creating this reality ceases to exist in its nature as a system of signs. Thus *Part Five of Norms* [Норма] ends with the destruction of articulated speech, leaving behind the cry “aaaaaaaaaaaaaaaaaaaaaaaaaaaaa”, which sounds on several pages; the ending of the novel *The Thirtieth Love of Marina* [Тридцатая любовь Марины] drowns — on more than twenty pages — as does the heroine herself, in the absurdity of the Soviet propaganda; but in *Novel* [Роман] — it is the death of the protagonist, genre and the Russian novel as “norms”. In the parallel manner, the phrase gets reduced — at first the singular subject actions remain — in *Novel* — verb and direct object, but then only the elementary syntactical construction: subject (=Novel) + verbal predicate in the perfect aspect. Everything ends with the phrase, “Novel has died”.

От *Махроть всяя Руси* [untranslatable word-play] by Prigov, in which the classical culture dissolves in erotic ecstasy:

Она поет, поет, хоры подхватывают, растут, разрастаются. ширятся, звук нарастает, нарастает, становится невыносимым, и каждая поющая точка сама прорастает поющим хором, который тут же вступает и сам

разрастается поющими точками. все все тонет. тонет и само в себя все захватывает, все дрожит, содрогается. исторгая звуки на пределе звенящие: Слава! Слава! Радость! Радость! — это ода радости. это Бетховен. тема и Бетховен, Бах. Чайковский. Баховен. Баховский. Бетбах. Бетовский, бетчайбах, чайбахвен. бетхачабахскиофьев. стравинхабехошостский. шостербухкетжов. шенбухсстрашопцарт. Шоцарт. Царт. Ский. Кий, Ий. Ой. Ай, Охаминадроза, Охали, Кали! О! О! О! О! (Prigov 1990: 97)

Or else his own *Obituaries* [Некрологи] or other genres, levelling the culturally different, the power of discourse, stereotype and cliché as demonstrated by Prigov. Or, for example, *The Yellow Arrow* [Желтая стрела] by Pelevin, in which the simultaneous presence of various codes essentially empties the text, or a sequence of incarnations in *The Life of Insects* [Жизнь насекомых], void as the theme and device in *Чапаяев* and *Void* [Чапаев и Пустота]. Or the application of mutually revoking verbal and figurative devices of expression by Ilya Kabakov, or his often used device of ending series with white empty sheets. Pause as a zone of freedom from language in the catalogues of Rubinshtein. This is the "empty action" in the performances of the group "Collective Actions" of the 1970s, where depiction was practically reduced to zero and merged with the background; but also their "empty field" in the actions based on the experience of expectation:

The real field can be brown, green, even, uneven, etc., but it is very obvious that at this moment its main peculiarity for the man that has previously experienced expectation and is still experiencing it, lies in its "emptiness". (Monastyrsky *et al.* 1998: 22)

In one of his discussions of the acts of "Collective Actions", Sergey Letov says the following:

Like the ball of threads: you start to unravel it, but there's not just one thread in it but many, and sooner or later all of them will break. But this is not the problem. It is not only here, but on the whole, new art tends towards what ends up in NOTHING. On the level of consciousness, man appears to be in contact with language, with this habitual world of his — well-ordered, etc. But on the level of the subconscious, what he gets under this appearance is regular NOTHING. (Monastyrsky *et al.* 1998: 322)

The poetics of the conceptualists of Moscow is based on the very demonstration of the empty "shell" of the linguistic sign: expressions that hitherto seemed meaningful are turned inside out, structures as

dead skeletons emerge, incapable of generating new living meanings. As Vladimir Sorokin writes about literature: "Literature as I see it — it's paper, covered with some kind of marks. Literature in general — it's a dead world. Any textual utterance or any poetic writing is in origin dead and false" (quoted in Roll 1996: 117).

It is often claimed in various writings that the principle of arrangement or collage governs postmodernist literature. Actually, this is contradictory to the very nature of postmodernism. Indeed, at first glance the "textual multiplicity" might outwardly resemble the avant-garde arrangement, but the process of boundaries losing their meaning does not allow us to consider it similar to the avant-garde effect. The boundaries of compositional fragments, quotations, and various communicative levels are desemiotized. The process of tautological aspect-changes gets thematized, whereby the ways of expression are changed, yet not the expressed. Repetitions that are tautological by nature — versions, variants, and copies do not themselves include any new information about a fact or object. Despite the seeming diversity of phenomena, the world is still invariant, and no variability of discourses or codes rids us of the feeling that it is "always the same". According to Brodsky, "the diversity of strivings is completely reduced by the tautological nature of the result". If we abstract from the world definite bodies and events, the habitual space of the poet changes into the Euclidean one, the landscape into a geographical map, speech into linguistic categories, separate opinions into formulae (v. also his numerous definitions and images of "multitude" and "common denominator"). The motif of the wrong or back side of a thing is quite common in Brodsky's poems — as a rule, depth or the reverse side do not contain a secret: the reverse side of the icon turns out to be just crude cardboard.

One of the favourite devices of Brodsky's poetics — enumeration — is perceived in this connection as an attempt of the poet to "rescue things" in their singularity. Although this attempt, too, is in vain, since the replacement of things by words in writing already means loss of uniqueness. Cf. the ending of the poem by Lev Losev, *Joseph Brodsky, or Ode to 1957* as a kind of catalogue of the more important words of Brodsky's poetic vocabulary:

Но главное — шумит словарь.  
словарь шумит на перекрестке.

*Душа крест человек чело  
век вещь пространство ничего  
сад воздух время море рыба  
чернила пыль пол потолок  
бумага мышшь мысль мотылек  
снег мрамор дерево спасибо.<sup>4</sup>*

(Losev 1996: 27)

The above-mentioned tendencies are intertwined in an interesting manner in Brodsky's play *Marble* [Мрамор]. The theme of tautology acquires a central role in it. Everything in the depicted world is in a state of repetition, fluctuation, everything is equal to everything, and at the same time nothing is equal to itself. The first stage direction in Act I describes the time and place of action in the Tower — the prison. It is

[...] идеальное помещение на двоих: нечто среднее между однокомнатной квартирой и кабиной космического корабля. Декор: более Палладио, чем Пиранезе. [...] Вид из окна должен передавать ощущение значительной высоты (скажем, проплывающие облака), поскольку тюрьма расположена в огромной стальной Башне, примерно в километр высотой. Окно — либо круглое, как иллюминатор, либо — с закругленными углами, как экран. В центре камеры — декорированная под дорическую колонна или опора: внешняя сторона ствола, внутри которого — лифт. Ствол этот проходит через всю Башню как некий стержень или ось. Он и в самом деле стержень: все появляющееся в течение пьесы на сцене, и все, с нее исчезающее, появляется или исчезает через находящееся в этом стволе отверстие, являющееся помещью ресторанный лифта и мусоропровода.<sup>5</sup> (Brodsky 1995, IV: 247)

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<sup>4</sup> But most important — dictionary shouts, / the dictionary shouts at crossroads. / soul cross man forehead / century thing space nothing / garden air time sea fish / ink dust floor ceiling / paper mouse idea moth / snow marble tree thank you.

<sup>5</sup> [...] an ideal room for two: something in between a one-room apartment and the cockpit of a space ship. Décor: more like Palladio than Piraneze. [...] The view from the window should create the impression of being very high (say, clouds float by), since the prison is in a huge steel Tower, about a kilometre high. The window — either round like a porthole, or — with rounded corners like a screen. In the centre of the cell — a column or pillar decorated in the Doric style: the outside of a tube in which there is a lift. This tube extends through the entire Tower like some wake or axis. It is a wake, indeed: all that appears on the stage

The description of the Tower offers simultaneously different clues for reading — from ancient myths to Freudian symbolism. However, we are interested in the form of the circle itself. The following concentric model emerges in the play: cosmos — empire, that embraces the entire earth — Rome as the centre of the Empire — in the centre of Rome, the Tower — in the centre of the Tower, a lift. There are two men in the cell — prisoners of the Empire, of their own body and way of thinking. There is also a cage with a canary in it, a kind of miniature prison, reduction to a formula. “Hieroglyph. Sign” (v. also the discussion of a wasp under a glass as a miniature version of a gladiator on an arena). When at the end of the play Tullius falls asleep, Publius feels himself like a point in the P-R-Square, drawn by dividers (elsewhere a square is mentioned, the sum of its angles equalling the circle). Thus the circle and square are mutually transferable, these elementary spatial forms correlate as symbols of eternity and time.

Tullius regards everything spatial as tautological, and as the same, — empires, North and South, East and West, streets of the town, rooms:

Нужник. Публий. от Персии только размером и отличается. Хуже того, человек сам и есть тупик. Потому что он сам — полметра в диаметре [...] Вещь в себе. Клетка в камере. Оазис ужаса в пустыне скуки. Как сказано у поэта.<sup>6</sup> (Brodsky 1995, IV: 278)

There is nothing but twins and doubles, so that passion, too, becomes meaningless (toposexuality, as if with oneself). Man's life is like the song, “The priest had a dog once...”. And the Tower represents fight with space, with its very ideas. For Tullius, it is “nothing”. There is nowhere to run from the Tower, except pure time. Tullius escapes to reading classics and sleep. His typical expressions are, “it's all the same”, “no difference”. He needs the other only for thinking his thoughts to the end. He perceives time as an abstraction that exists separately from the world, as a condition “in which” objects exist.

Publius cannot accept imprisonment, he needs *Lebensraum*. He considers important and remembers that which exists in his own

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during the play, and all that disappears from it, appears or disappears through an opening in the tube, which is a mixture of a dumb waiter and a rubbish chute.

<sup>6</sup> Publius, the lavatory differs from Persia only in its size. Worse still, man himself is a blind alley. Because he himself — his diameter is of half a metre [...] A thing in itself. A cage in a cell. An oasis in the desert of boredom. As the poet put it.

(emotional, physical) experience. The most terrible thing for him is to know the place of his death, and if he considers escape from the Tower, it is only from it as the place of the forthcoming death. Contrary to Tullius who is a Roman, Publius is a barbarian and a former soldier. He takes care of his body, he needs physical contact with the other in order not to start doubting his own existence. His memory is full of concrete events, time is spatial for him, where "before" and "after" exist. He quotes poets, most often the Scythian ones, from Eastern Europe, he mimics the canary. The theme of voice, live sound, and speech is also connected with him. Tullius calls his stylistics melodramatic. While Tullius needs the other in order to think his thoughts to the end, Publius is "too lazy" for that. In the dialogue of the two characters, he mostly asks questions and tells spicy stories that he has witnessed. It is Tullius that forms abstract conclusions, reducing everything to the common idea, "it's all the same" (cf., for example, their way of reasoning about the probability of life on Sirius and Canopus: Publius thinks that if there were life, "we'd hardly see them. Especially at night. One switches off lights and goes to bed at night", but by life he means — "It's when you put out the light — and then — woman". Tullius agrees with him that "Темнота таки действительно форма жизни. Так сказать, состояние света [...] а свет [...] — форма энергии, источник жизни"<sup>7</sup> (Brodsky 1995, IV: 271).

The characters of *Marble* discuss the idea of becoming one brain (not excluding the possibility of a computer brain), thus suggesting one of the possible interpretations of the play, according to which Publius represents thinking with the right hemisphere of the brain, and Tullius that with the left one. Considering the homonymous character of the word "hemisphere" (hemispheres of the brain and the Western and Eastern hemispheres on the geographical map), well practised in Brodsky's poems, this interpretation does not contradict the generally accepted point of view, according to which the author clashes the ancient, Roman, and the contemporary, barbarian (as Scythian, eastern) visions of the world. In either case, Publius is predominantly a man of experience, and Tullius — that of ideas. (In *The Twenty Sonnets to Mary Stuart* [Двадцать сонетов к Марии Стюарт], Brodsky writes: "What makes History? — Bodies. / Art? — Beheaded

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<sup>7</sup> Darkness is still a veritable form of life. Which is to say, a state of light [...] a light [...] — a form of energy, a source of life.

body" [Brodsky 1992, III: 341], in *Marble*, Tullius reads classics and keeps their busts in his cell — "the cut heads of mankind".)

The play contains a highly sophisticated play on signs in it. Assessments, substantiated by experiences and emotions (fear of death, desire) — but "an emotion is always a simple predicate" (Peirce 1992; Brodsky 1992, I: 44), — correlate with abstractions, "thoughts about thoughts". The play is constructed as a system of projections and mirror reflections: the characters are unable to distinguish between the boundaries of the real world and the one they themselves have transmitted by TV cameras, they feel uncertain about the boundaries of the external and the internal. As a peculiar kind of auto-communication, the play may be interpreted through the psychoanalytical concept of the mirror-effect, the mutual representation of signifiers in the spirit of Lacan, or be translated into the meta-language of "seriality" according to Deleuze. But the double structure of the work is further made more complex by a third constituent — "the word of the poet", which is beyond either of the characters, and which in its own turn correlates with the aesthetic reality of the play on the whole as "the word of Brodsky". The poetic word forms the background to the conversations of Tullius and Publius, forcing them to acknowledge the insubstantiality of their own talks. "The word of the poet" is narcissistic by its nature, though, symbolized in *Marble* by lines reminiscent of Akhmatova, which introduces yet one more mode of mirror-effect into the text:

И лебедь, как прежде, плывет сквозь века,  
любуюсь красой своего двойника.<sup>8</sup>  
(Brodsky 1995, IV: 272)

Publius repeats those lines after Tullius, but the poetic expression itself is unrepeatable, this alone can make the experience ("the monotony of art") valuable and escape tautology.

The meta-position of Brodsky towards the postmodernist type of writing is based on the very close connection of him with the poetic tradition, including the avant-garde, which by now has also become classic. In this connection, to return to the beginning of this article, we would like to quote the description of the stairs in the play, *Marble*:

<sup>8</sup> And the swan, as before, floats through the century, / admiring the beauty of its double.

А поэт там начинает, где предшественник кончил. Это как лестница; только начинаешь не с первой ступеньки, а с последней. А следующую сам себе сколачиваешь...<sup>9</sup> (Brodsky 1995, IV: 273).<sup>10</sup>

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<sup>9</sup> But the poet begins where the predecessor stopped. This is like stairs; except that you don't begin on the first step, but on the last. And you knock the next one up yourself...

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### О постмодернизме, “лестнице авангарда” и Бродском

Статья предлагает анализ поэтики русского постмодернизма, отправляясь от концепции “транссемиотической лестницы” Е. Фарыно как механизма работы авангардного текста. Автор пытается показать, что в постмодернистских текстах происходят двусторонние процессы опустошения смысла: или слияние культурно разного в тавтологии или разложение на атомарные обесмысленные частицы. Телеологическая модель лестницы перестает здесь работать. На этом фоне, на примере пьесы “Мрамор” рассматривается позиция Бродского как несовпадающая с “постмодернистским” контекстом.

### Postmodernismist, “avangardi trepist” ja Brodsky’st

Artiklis on tehtud katse analüüsida vene postmodernismi poetikat lähtuvalt J. Faryno poolt avangardi kirjeldamiseks pakutud “transsemiootilise trepi” kontseptsioonist. Tekstinäidetele toetudes kirjeldatakse, kuidas postmodernistlikes tekstides toimuvad erisuunalised protsessid: kultuuriliselt erinev ja unikaalne sulandub tautoloogias, tähendust omavad tervikud pihustuvad atomaarseteks tühjadeks ühikuteks. Avangardi tähendusloov teleoloogiline mudel lakkab siin töötamast. Lähemalt vaadeldakse, kuidas nimetatud tendentsid kajastuvad J. Brodsky näidendis “Marmor”. Brodsky positsiooni eristab vaadeldud “postmodernistlikust” kontekstist usk poeetilise sõna tunnetuslikesse võimalustesse (ühendades unikaalset ja korduvat väärtustab see tundeelamust ja päästab tautoloogias).

## The semiotic model of a historical process: *History* — between grammar and rhetoric

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**Abstract.** The paper is devoted to the problem of the linguistic grounds of the semiotic model of history, according to which history is described as a communication process circulating within a society. An analogy of principle between language and culture is the theoretical premise of that semiotic approach. Proceeding on this assumption semiotics (B. Uspensky's case for instance) regards historical process as the process of text outcome and reading, while at the same time control over communication is provided through the cultural code or in other words — through the *grammar of history*. But the description of history as just the functioning of a single and unified grammatical code doesn't make it possible to explain the appearance of new meanings or history par excellence. J. Lotman interpreted the rhetorical mechanism of text outcome as the working of two (at a minimum) interplaying semiotic systems. It is the principle of its working that he takes as a basis of his semiotic version of cultural diachrony. And at the very point semiotics finds itself in front of the choice: either to stop at the decomposition the rhetorical machine on separate cultural codes and at the description their separate grammars, or to conceptualize a historical event as *un-grammatism*, grammatical error. "wrong text". The analytical way leads to an extremely reduced theoretical construction; the synthetic way undermines status of the semiotic model of history as a positivistic scientific project.

The theoretical premise of the semiotic approach is the analogy in kind between text and the universal object of culture as well as the corresponding analogy between the functioning of language and cultural processes. This extrapolation of the structural isomorphism of static objects to their dynamic projections became possible owing to the dissemination of the principles of synchronic description to diachronic studies. This extrapolation has its own history and proceeds

from J. Tynyanov and R. Jakobson's declaration, "The history of a system is in its turn a system" (Tynyanov, Jakobson 1993: 149). However, when it is regarded as the conceptual base in the studies of historical changes, the concept of system also puts a restriction on the analytical perspective of semiotics. The study of history as a system produces concepts of historical regularity, norm or logic of history as its "optical" effect. This historical logic has to provide a selection of historical facts as well as to organize them into syntagmatic sequences. Inside this metalinguistic metaphor the laws of historical evolution find their analogy in linguistic code while historical process finds one in speech communication.

This paper is devoted to the problem of the linguistic grounds of semiotic model of history, according to which history is described as a communicative process unfolding in a society. When we say "linguistic grounds", we have in mind the dependence of the semiotic paradigm on some basic but at the same time competing metalinguistic strategies that stress different mechanisms of meaning production. These metalinguistic strategies are grammar and rhetoric. Grammar comes from a closed totality of relations among elementary language units and forms a set of rules about text production and text perception. Rhetoric is an open and fundamentally incomplete set of transforming abilities. While for grammar the phenomenon of language is the primary one and successful communication requires the unity and homogeneity of the linguistic code, rhetoric is primarily grounded in the text and the success of communication depends on the intensity of code translation from one language to another. Thus the grammar of the historical code and the rhetoric of the historical event constitute two possibilities or, in other words, two extreme cases of the semiotic description of history. I consider B. A. Uspensky and J. M. Lotman to be the cases exhausting the analytical resources of the semiotic approach to history (at least in the historical limits of the Moscow-Tartu Semiotic School). As a result, in the context of this report they are not names but cases, or using Derrida's phrase: "not author's names but problem's names". Moreover, Uspensky is taken as a neutral, invariant case of semiotic historiography while Lotman's case is regarded as a non-manifest drift to poststructuralism or to semiology in Barthes's sense of the term.

The most general version of semiotic model of history was suggested by B. A. Uspensky in his article "History and semiotics"

(1988);<sup>1</sup> previously the fundamental ideas of this work were expressed in the paper concerning the epoch of Peter the Great, “*Historia sub specie semioticae*” (1976).<sup>2</sup>

“A historical process in the semiotic perspective may be represented [...] as a communicative process, in which permanently received new information conditions one or another response from a social addressee” (Uspensky 1994c: 10). It is characteristic that although the status of the message receiver is strictly defined, Uspensky consciously avoids the sender’s specification, because this specification would lead him to include some exterior (extra-historical) power into the communicative model of historical process, a power resembling such concepts of classical metaphysics as transcendental subject or Absolute Spirit. As Uspensky puts it, “It doesn’t fundamentally matter who is the addresser [...]. It could be some individual, God, fate, and the like” (Uspensky 1994c: 10).

Thus Uspensky builds his model of historical process according to the analogy with speech activity; moreover “the point of departure is the notion of language (understood as a mechanism of text production)” (Uspensky 1994c: 11). The “language” or the code in this view is the prevalent system of the symbolic ideas pertaining to the particular society. The relation between historicity and sociality, which determines the actual development of the process, finds its parallel with Saussurian opposition between speech (*parole*) and language (*langue*), where the latter is axiologically marked, as is common for structuralism. According to the semiotic project, history arises from the selection and organization of information coming from outside. This selection is accomplished with the “language” whose agent is society. In that case, Uspensky’s statement that “the *text* of events is *read* by society” (Uspensky 1994c: 10) does not seem to quite follow from the movement of his own thoughts because, judging by his logic, one may say that the society not only *reads* the text of history but also *invests* an event with textual status. As Uspensky writes, “It is important how appropriate events are interpreted, with what meaning they are invested in the system of social consciousness” (Uspensky 1994c: 10). Since everything is determined by mechanisms of reading and not of utterance, it’s possible to conclude that, from this point of

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<sup>1</sup> Uspensky 1994c.

<sup>2</sup> Uspensky 1994b.

view, history is textual not by itself but it becomes textual under the regulating pressure of sociality.

However, in the framework of the model that depicts historicity as absolutely repressed by the language of social concepts, there is no possibility of constructing history because it is impossible to explain in a rational way the appearance of the new.

This is evident in the work by the same author (*"Historia sub specie semioticae"*, Uspensky 1994b), which is concerned with the most critical moment of Russian history (therefore with history par excellence), with the age of Peter's reforms. Uspensky suggests two interpretations, from the inner position of the contemporaries and from his own metaposition. In the first case, i.e. from the point of view of the medieval consciousness, the new is conceived as a number of excesses resisting any textualization. Peter marries Catherine the First who was his son's (Aleksey Petrovich's) god-daughter, i.e. he marries his grand-daughter. Since Peter headed the Church and took the title "pater patriae", his contemporaries conceived him as a patriarch. Placing Peter's portrait among icons, his associates worshipped it as an icon. Each of these reasons, and, moreover, their aggregate totality, made Peter's contemporaries interpret him as Antichrist, i.e. as a being that cannot be a text bearer for the religious consciousness (Uspensky 1994b: 51–56). Yet from the observer's position, history (innovation) turns out to be the mere travesty of the tradition (the old), a corrupted sociality, an anti-text or a minus-device. As Uspensky writes: "Peter's behavior, however paradoxical it might seem, for the most part did not cross the boundaries of traditional notions and norms: it remained inside those frames, only with a negative mark" (Uspensky 1994b: 56). Thus, from the semiotic point of view, history is either non-text (contemporary's position) or anti-text (scholar's metaposition) — an innovation is repressed either as a perversion (a negation of crystalline social structure accomplished with its own symbolic language) or as an inversion (the destruction of stable connections between the realm of the content and the realm of the expression, the destabilization of the symbolic structure of the tradition).

So, the semiotic model of history suggested by Uspensky represents its object as a communicative system that provides the diachronic identity of culture. This system works as a machine that perpetually converts the transcendent into the immanent — meanings that originate from the forces outside society such as God, fate, a "historical genius", and so on are filtered and interpreted by the

linguistic code of proper tradition. The addresser, then, constitutes a latent threat to the symbolic structure of society but this threat's semiotic danger is sublimated by the work of language — an innovation gets restructured in terms of tradition. And it seems to be quite evident that the system that attends to the needs of communication and has an appropriate vocabulary and rules of text-production and text-perception can be likened to natural language. Natural language (or canonical art as its structural variant) is taken by Uspensky as the analytical model for the conceptualization of history.

The modeling of history, by analogy with the system of natural language or the system of canonical art (so that Uspensky compares the perception of history to the perception of icon), implicitly but inevitably introduces the phenomenon of automatism to the structure of the object. As Lotman noticed in his article "Canonical art as an informational paradox": if the text in a natural language is produced with the complete automatization of the expressive plan, then texts belonging to canonical arts communicate quite automatic content (Lotman 1992b: 243–244). It might seem that automatization is the semantic context, on the background of which history appears as deautomatization, as a semantic drift — the historical event is a message that "makes strange" its own language. However, Uspensky's model canonizes not only the linguistic context of the message — not only its condition — but also its result. The mechanisms of reading, as I said above, provide the closed character of the communicative circuit controlling the relations between the code and the message. Uspensky interprets history as a space of absolute semantic superfluity wherein the code is the main content of the message: pushing away from the natural language model, the semiotic model of history comes close to the model of the authoritarian genre. A "foreign" element either is not read because of its non-systematic character or is read in terms of the "native" system, but either way it is incapable of actualizing the other system as a whole, having restructured the code of the previous tradition. Within the framework of this approach, an alteration of a social code may be apprehended only in the language of the Apocalypse, as an ecological catastrophe, a fire in a folk-museum. It is well demonstrated by Uspensky's analysis of Peter's reforms, in which the contemporaries' horror is reflected in the scholar's skepticism. The position of the "authentic semiologist" or, in other words, the position of an immediate witness of the reforms who is expecting the end of the world reveals the latent eschatology of the semiotic metaposition.

The description of history in linguistic terms also determines the description of its regularities in grammatical terms. The semiotics of history tends to create its grammar, i.e. a universal model that includes a final totality of rules providing, on the one hand, the possibility of adequate definition and, on the other hand, the predictability of its results. And the problem is more extensive than the particular case of Uspensky.

The primary analytical procedure of semiotics may be reproduced in the following simplified picture. In the beginning, it is necessary to single out the elementary units of the system (the vocabulary of the system) and then to determine the functional causation among them (the grammar of the system). To single out certain units is possible only due to their recurrence and to ascertain their functional meanings is possible only due to the integrity and stability of the whole system. These very demands make history the least accessible object for semiotics. Firstly, the condition of recurrence excludes from the semiotic model of history such events, texts, and meanings that fall out of a rhythmical chain of ritual. In the semiotic perspective, history starts working like a ritual — the maintenance of its grammatical order reproduces cultural stability while non-observance thereof brings it to collapse. Secondly, the condition of the completeness of the object alienates from history its general attribute — historicity, reducing history to past perfect. Eikhenbaum produced that very procedure when he wrote, “We’re not interested in the past as such [...] History gives us what modernity cannot give — the completeness of object [or, in other words, the whole — *I.K.*]” (Eikhenbaum 1927: 146). Both early and late structuralism associates history with the past but not with modernity since the past can be described as a finished and stable system.

Semiotic stress on historical grammar, on cultural self-identity, on mechanisms controlling the communicative process has also some latent ideological meaning for it axiologically marks the direction of history. Grammar not only describes language, it also executes some functions of codification. The grammar of language and its history are permanently in a state of competition in the struggle for domination in the linguistic field. Grammar strives towards the hampering of language dynamics, but at the same time the history of language perpetually puts into question grammar’s ability to describe its object. Talking about these processes in terms of Hegelian dialectics, one may say that grammar is the system’s ability to realize its own inevitable

regularities. Grammar arises as a reflective act that puts an end to all chaotic linguistic processes. The act of the system's self-reflection turns out to be the end of its history. The grammar of history based on its retrospective view illicitly presupposes historical finality. Apocalypse in that sense is the obligatory context in which the only grammatical description of history can be accomplished. So, the approach to history from a normative grammar point of view represses history, conceptualizes it as chaos, "noise residue", text distortion, hindrance in a communicative channel, and so on. History is seen as a "black box", which semiotics approaches with the hope that it is *Encyclopedia Britannica* but which turns out to be *Finnegan's Wake*.

Lotman's case may be seen as an alternative version of this semiotic model. If Uspensky excludes historicity from his historical model, Lotman problematizes the possibility of constructing such a general, grammatical model of history. He compares history to phenomena that can hardly be conceptualized. According to this position, one can only catch the essence of history in a metaphorical way by comparing it to poetical inspiration, to the abruptness of an explosion or to a madman's behavior (Lotman 1992e). However, the use of metaphors as concepts does not say anything about the weakness of the science or about its inability to create an abstract metalanguage — rather, it demonstrates an epistemological doubt in the adequateness of such a language to its object — history.

Discussing history, Lotman brings an accent from the past (i.e. the closed structure represented in a teleological narrative) to the moment of "modernity", to the point of bifurcation that is realized in the accidental choice of one of the potential variants. As Lotman (1992e: 28–29) puts it, "The present includes all possible future paths of development. [...] The selection is not determined by the laws of causality — in the moment of an explosion all such laws are switched off". The choice of the future is realized as an accident. So, history is not considered the tautological realization of tradition. Instead, it is considered as a space for the interplay and crossing of different linguistic codes, as the mechanism of their mutual translation. "The moment of an explosion makes the incompatible into the adequate, the untranslatable into the translatable" (Lotman 1992e: 40–41). It is the mechanism of translation as the main mechanism of history that transforms the grammatical analogy of history (that is, language into the rhetorical analogy of history) to text (and, moreover, a literary text).

The mechanism of translation conceptualizes a transfer or metaphor as the structural kernel of the historical process. A metaphor is a figure appearing on the border between two languages. "A trope is not a decoration belonging just to the realm of expression, [...] it is the mechanism that allows one to construct the content that cannot be constructed within one language" (Lotman 1992c: 174–175). Consequently, history is not merely a result of the realization of the grammatical code but it is, first of all, the result of translation from one language to another. While according to Uspensky's model an element of the alien structure is defined as external to the system and for that reason unreadable, Lotman's model sees in this element a productive problem of translation. The difficulty of this translation, its creative inexactness, are the very factors that provide a great increase of information while the grammatical mechanisms just reformulate some constant content.

History has a rhetorical structure that consists in bringing into the text the organizational principles that are perceived as alien in relation to the structural principles of the primary linguistic code. As Lotman noticed, "The rhetorical organization appears in the space of tension between 'organic' and 'alien' structure, and for that reason its elements can be doubly interpreted" (Lotman 1992c: 180). It is in the terms of this double rhetorical interpretation that it is possible to suggest another description of the historical comprehension of Peter's reforms. His contemporaries read the emperor's behavior using the transformational potential of mythological metaphor (combining paradigmatically the earthly and the celestial) but, for the emperor himself, the mechanisms of metonym (combining syntagmatically the original and the alien) or irony (in the cases when he confronted the tradition) were more relevant. The elements that for Peter were baroque "figures of speech," his contemporaries could read as apocalyptic "figures of thought". In any case, history arises as a result of hampered comprehension, as the realization of the trope and not of the tautology.

This shifting of the stress from the grammar of natural language to the rhetoric of a literary text leads to the rethinking of the communicative model. While in Uspensky's model history is broadcast in the communicative channel: "I – he", Lotman by contrast pays attention to the communication of "I – I" type (Lotman 1992d: 76–90). In the latter case one can interpret traumatic moments of history not through the phenomenon of miscommunication (when a

totalitarian discourse of an addresser runs into an addressee's resistance) but instead through the phenomenon of autocommunication. So, for example, the communication *Peter* → *the society* may be reformulated in terms of autocommunication where one message is restructured through different codes and the historicity itself is established not by victorious canonical reading but through the fluctuating multitude of interpretations actualizing the multitude of cultural codes. An autocommunicative process is at the same time the process of reshaping cultural identity. So while for Uspensky the basic conceptual metaphor is the principle of distribution, for Lotman it is the complementarity principle.

The grammar of history, which is responsible for cultural identity, and rhetoric, which provides cultural change, are two versions and at the same time two aspects of the semiotics of history. But at this very "point of bifurcation" semiotics finds itself confronted with the choice: either it can dwell on the decomposition of the rhetorical machine into separate cultural codes and the description of their separate grammars (as Uspensky does, making distinction between a diglossia and a bilingualism), or it can conceptualize a historical event as *agrammatism*, grammatical error, "wrong text" (without evaluative discrimination of attributes). The analytical way leads to an extremely reduced theoretical construction; the synthetic way undermines the semiotic model of history as the positivistic scientific project and leads to the involuntary admission of rhetorical isomorphism between the language of the object and the metalanguage that has pretensions to its adequate description.

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**Семиотическая модель исторического процесса:  
история — между грамматикой и риторикой**

Статья посвящена проблеме лингвистических оснований семиотической модели истории, согласно которой история описывается как циркулирующий внутри общества процесс коммуникации. Теоретической предпосылкой такого семиотического подхода является принципиальная аналогия между языком и культурой. Исходя из этого семиотика (например, в случае Б. А. Успенского) рассматривает исторический процесс как процесс производства и чтения текстов, причем контроль над коммуникацией осуществляется благодаря культурному коду или, иными словами, благодаря *грамматике* истории. Но описание истории исключительно как функционирования единственного и унифицированного грамматического кода не позволяет объяснить возникновение новых значений, то есть историю *par excellence*.

Ю. М. Лотман интерпретирует риторический механизм текстопорождения как работу двух (как минимум) взаимодействующих семиотических систем. Принцип работы такого механизма он и кладет в основу своей семиотической версии культурной диахронии. Но именно в этой точке семиотика сталкивается с необходимостью выбора: или остановиться на декомпозиции риторической машины на отдельные культурные коды и на описании их автономных грамматик, или концептуализировать историческое событие как *а-грамматизм*, грамматическую ошибку, “неправильный текст”. Аналитический путь ведет к исключительно редуцированной теоретической конструкции: синтетический путь подрывает статус семиотической модели истории как позитивистского научного проекта.

**Ajalooptsessi semiootiline mudel:  
ajalugu — grammatika ja retoorika vahel**

Artiklis käsitletakse ajaloo semiootilise mudeli lingvistilisi aluseid, millest lähtuvalt ajalugu kirjeldatakse kui ühiskonna sees ringlevat kommunikatsiooniprotsessi. Taolise semiootilise lähenemise teoreetiliseks eelduseks on põhimõtteline analoogia keele ja kultuuri vahel. Nii vaatleb semiootika (näiteks B. A. Uspenski) ajalugu kui tekstide tekitamise ja lugemise protsessi, kusjuures kontrolli kommunikatsiooni üle teostatakse tänu kultuurikoodile, või, teiste sõnadega, tänu ajaloo *grammatikale*. Kuid ajaloo kirjeldamine vaid ühe, unifitseeritud grammatilise koodi talitlemisena ei võimalda seletada uute tähenduste teket, st ajalugu *par excellence*.

J. Lotman tõlgendab tekstiloome retoorilist mehhanismi kui (minimaalselt) kahe semiootilise süsteemi vastastikust koostööd. Taolise mehhanismi tööprintsibi võtab ta ka oma kultuuridiakroonia semiootilise versiooni aluseks. Kuid just selles punktis pannakse semiootika valiku ette: kas piirduda retoorilise masina lahtivõtmisega eraldi kultuurikoodideks ja nende autonoomsete grammatikate kirjeldamisega, või kontseptualiseerida ajalooline sündmus kui *a-grammatism*, grammatiline viga, "mitteõige tekst". Analüütiline tee viib redutseeritud teoreetilise konstruktsioonini, sünteetiline õõnestab semiootilise ajaloomudeli kui positivistliku teadusprojekti staatust.

## When a Russian Formalist meets his individual history

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**Abstract.** The present paper is devoted to the relation between changing historical identity of Russian Formalists in the second half of the 1920s and their individual evolution — as writers, members of society, figures of culture. Formalists with their aggressive inclination to modernity are opposed here to structuralists, the bearers of a conservative, traditional ideology (relating to the idea of Revolution). It could be explained by the specific “romantic” identity of Russian Formalists whose purpose was to appropriate cultural values renamed and renewed by their revolutionary theory. As a revolutionary ideology, formalism was imported from the West. But the Stalinist “Renaissance” made the idea of Revolution both in mind and society senseless at the end of the 1920s. That is why Russian Formalism lost its mainstream positions and began to work out a new, adapted form of intellectual resistance (private life, domestic literature) in the next decade.

**Rhetorical temptation.** Of course, the given title is vulnerable to criticism. First of all, it traditionally discriminates against women in Russian literary theory, because the very usage of the grammatical masculine is repressive and ignorant of the names of Lydia Ginzburg or Olga Freidenberg. But at the same time we have to admit that Russian Formalism as a kind of avant-garde theory hardened by revolution had a masculine consciousness par excellence. We cannot find any feminine traits in either early machine-oriented or in late organism-inspired formalism<sup>1</sup>. And we have not been surprised by the

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<sup>1</sup> Being oriented towards a scientific utopia, the Russian Formalist School functioned as a surrogate of literary practice. From the diachronical standpoint the development of Russian Formalism as a trend of knowledge passed through three stages of subject understanding — *machine, system, organism*. These basic

fact that the formalists treated an obviously feminine notion of "history" as gentlemen. It means history as oppressed and glorified, as a most indispensable, but also most uncomfortable and uncertain theoretical notion. The early formalism rejects history, the latest returns and takes its oath. Remembering the polemic article of Nikolay Chernyshevsky "Russian *man* on rendez-vous"<sup>2</sup> devoted to the weakness of Russian noble intelligentsia, one can signify my theoretical issue as "Le formaliste Russe au rendez-vous avec l'histoire", also devoted to formalist weakness "on the trial" (in specified historical terms of Arnold Toynbee<sup>3</sup>).

**Toward the subject.** The present notes do not claim to comprehend the topic, which could be conventionally called as "Russian Formalism and its relation to History". Here I emphasize a single aspect of this field and to specify the issue of scholarship as a form of intellectual management, a powerful practice oriented to explanation of things. Of course, Formalists were the first in Russian scholarship who demonstrated a possibility to analyze literature in a strong and consistent way; their methods remain very influential and productive for the 20th century philology. But they also constructed a kind of community that had its own ideology, policy, and, last but not least, history. Their way in literature and scholarship is a fascinating subject itself. Using the term "scholarship" I deliberately separate it from "science" although formalists just aspired to turn literary theory and history into a scientific discipline. But both "science" and "scholarship" have been shaping a specific type of secular mentality inherent in the Enlightenment (in terms of Theodor Adorno and Max Horkheimer) in which Person, or active subject, assimilates cognition as alienation (in Marxist terms, *Verfremdung*). Science and scholarship are ways of organizing and managing social space, especially if

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metaphors while working as theoretical mediums are described and interpreted in Steiner 1984.

<sup>2</sup> Emphasis is mine — J. L.

<sup>3</sup> Trial of history blames European civilization for inability to comprehend its *widest historical horizon*. The European intellect is quietly satisfied with *narrow historical vision*, which could be compared with horse's sight between its blinkers (Toynbee 1948: 150, *passim*). Unlike unfortunate Europeans Russian Formalists were active participants in this judicial process, who became its victims very soon. They successfully described a kind of historical logic that means suicidal results to them. Perhaps this is the destiny of any judge.

we talk about humanities, a sphere of word production. Researchers have been affirming this view on formalist doctrine during the last two decades, although Pavel Medvedev, inspired by Mikhail Bakhtin, already in 1928 performed an original ideological deconstruction of the formalist doctrine as a social phenomenon. The elaboration began with a gradual slowing down of the structuralist project, when the idea of social determination of the literary and cultural process became leading again. Here I have to emphasize that the question lies in the Russian version of structuralism, which is quite different from its Western namesake. Whereas structuralism was most fashionable in scholarship, the legacy of formalism was interpreted otherwise.

**The Formalist Riot.** Traditional description of formalism in terms of “pure” poetics has resulted in an aberration of the historical picture. Supporters of structuralist views ascribed to Formalism the role of a slightly mistaken predecessor, which prepared a birth of “the only scientific method” in humanities (that is the way how structuralism positioned itself).<sup>4</sup> But the declared independence from world outlook of the structuralist method was no more than inevitable abstraction. Being generalized it could be easily converted into indifference to the subject. The subject is the only bearer of the method that is one of the functions of cultural consciousness. The border of historical reflection is an invisible point where structuralist competence of synchronic description is over. This border presupposes attention to the category of “self” in principle ignored by structuralists. Consequently, their personal view on Formalism as a school of scholarship was shaped by their implicit ideology. Structural theorists were demonstratively distant from politics; they formed a more or less silent opposition to the ruling power and followed a mission preservation of true cultural values. Speaking in very rough terms, Formalism was oriented to breaking the rules of the cultural tradition and towards coordination with the Revolution in its general reorganizing sense<sup>5</sup>. Russian

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<sup>4</sup> One can find the symptomatic kind of Soviet structuralist discourse in the Introduction of Lotman 1968. Oppositely, Vyacheslav Ivanov, who has always been “the only consistent semiotician” (defined by Alexander Pyatigorsky) calls members of OPOYAZ “our forerunners” (Ivanov 1991: 11). There is no reason to develop the thought that “semiotics” is not a synonym of “structuralism”, and vice versa.

<sup>5</sup> For example, see the memoirs of Viktor Shklovsky: in particular, the first chapter titled “Revolution and front” in Shklovsky 1970.

structuralists could not be nice to the Revolution and its aftermath, but they could perceive its contemporaries in the corresponding context. That is the way they did not follow.

While formalists were very sensitive to modernity, structuralists intended to shun any its manifestations. In other words, the iconoclastic origin of Russian Formalism caused quite a reserved attitude from structuralists who had often been oriented towards restoration of the culture ruined by the Revolution. The very distinctive difference between formalist and structuralist types of consciousness is the anti-conservatism of formalists and its conflict with the philological tradition constituted by conservative values. Nevertheless, structuralists borrowed some theoretical ideas from formalism in order to arrange them as their own achievements (for example, talks on "device" and "conventionality" in Lotmanian *Lectures on Structuralist Poetics*). They actualized the theoretical legacy of Formalism out of touch with its revolutionary context. This circumstance is important to a great extent. The specific formalist outlook was determined by cultural changes of the period. In addition, formalists were much closer to living literature, while structuralists intended only to research cultural practices, not to take an active part in them<sup>6</sup>. They were ready to excuse formalists as victims of power (in part this was actually right). But the willing capitulation of the formal method at the turn of the 1920–1930s was perceived as renegade and considered a manifestation of conformist behavior. Thus, ideological hostility determined conceptual mistrust. When structuralism started to realize its limits from the inside, its leaders applied to revise the former explanatory models. Even if they did not turn to modernity, the revision in a whole could be interpreted as "a search for the Other" (Gasparov 1995). Also, it was a way to change the reputation of Russian Formalism. Starting from the second half of the 1970s reading formalists and rewriting their place in Russian culture had begun.

**Romantic identity.** In fact, Russian formalists were inspired by the formal theories of arts originated from the ideas Hans von Marees and Dietrich von Hildebrand. It is difficult to separate the thoughts of a painter from the concepts of a critic. Although academic masters (e. g.

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<sup>6</sup> The brightest picture of the structuralist creative sublimation was reconstructed in: Uspensky 1992; Uspensky 1995.

Heinrich Wölfflin) adopted some versions of German artistic theory, it was created by the romantic mind. Being originally dealt with Avant-garde, Formalism in Russia was also a form of romantic outlook. Formalists (especially Shklovsky and Eikhenbaum) considered literature as a way of existence, but tried to describe it in abstract terms. This paradox resulted in *conceptual* (not ideological) nearness with Western scholars, which can only emphasize the total split with academic tradition in Russia. Traditional literary historians from Petersburg University and impolite formalists that began to revise their habitual field here confronted from the very beginnings of the school. Formalists were oriented towards creation of new knowledge and new culture, not towards preservation and protection of the old one. They declared estrangement as a basic principle of art: Shklovsky referred to the authority of Aristotle and quoted that poetic language has to be strange, astonishing, it has to be actually strange one as compared with language of everyday life<sup>7</sup>. The very difference from something clear and habitual became the content of cultural message. During the period of revolutionary changes in Russia the declarative "otherness" of Formalists played an important role in their actualization on the market of symbolical production. They could argue with distant German academics, but they ignored close opponents in Russia on principle, being turned to a radical reconstruction of art (not only its notion). Their purpose was to appropriate cultural values renamed and consequently renewed by their new theory. The essential feature of the Formalist consciousness is the absence of gap between art, history and life itself. Reflecting on the primary results of the Revolution, Boris Eikhenbaum wrote that his generation has had to survive in this new world to reach the "moment of consciousness"

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<sup>7</sup> It means that things were being described just like for the very first time. "This key role of time in Shklovsky's theory (a first time, an aesthetic expansion of duration) is later complemented by his concept of device as the "rotation" of an object in its semantic space (like "turning a log on the fire"), the shifting of the object out of its typical association into radically different ones, thus presenting a fresh and uneffaced side in a sort of textual space for our perception" (Crawford 1984: 210). The device of "estrangement" ("making strange") encountered a critical attitude because of its "pure" perceptual nature. Insensibly for himself, Shklovsky represented more "reflexological" than proper "formal" approach. Thus, from the point of view of "New Criticism", "Shklovsky accepts the view that art is to restore the feeling for life. [...] The process of apprehension becomes an art, becomes its aim, and art is a means, to experience the making of a thing, that which is made being an important in art (Wellek 1991: 328).

(Eikhenbaum 1921: 10–11). It means that History is here, and they are historical people that have to live and write the history of their days, essentially the history of the self, not *private*, but *individual* history. The idea of self as a subject of historical process essentially separates Formalism from the so-called “pure study”. Its frankly conquering policy demonstrates a high resemblance to revolutionary politics. Practices of Russian revolution stimulated to a high degree the artistic practices of the Avant-garde the theoretical basis of which was essentially supported by Formalism.

In this respect, the Western bias of Russian Avant-garde criticism corresponds with the ideology of the Revolution imported from the West. Hence the Avant-garde goes through a short triumph after 1917, when outsiders and marginal brawlers find themselves in the center of official art made sacred by the new state. The rejection of the Avant-garde coincides with a return to bourgeois forms of art that could be seen at the end of the 1920s. The Russian revolution realized the theoretical identity of real and symbolic values and abolished itself by removal of innovation. The fact of the revolution itself was the most radical innovation after which nobody could pretend to surpass it. Destruction of cultural borders between Russia and Europe turned out to be their fortification, including intellectual xenophobia.

**After the storm.** From the beginning of the 1920s formalists won the leading positions in the new establishment following the masters of the avant-garde (V. Mayakovsky, V. Tatlin, A. Rodchenko, etc.). The short age of “Combat Communism” (1918–21) was the most productive period when Formalist theory was completely shaped. A little bit later most of the formalists actively participated in the projects of the Russian Institute of Art History formed by Earl Viktor Zubov just before World War I. It was a brilliant and successful rival to the nearly dead university (Shapovaloff 1972). When the bourgeois restoration (New Economic Policy) began, they could choose between two different ways. The first way assumed they would stay on the path taken by the Revolution and to continue revision of scholarship. The second one was to merge with the former intelligentsia and its idea of neutral learning. Formalists were no artists in a whole sense; they created a field of art service. They could not supply themselves with an inner creative energy, because literary theory is, so to speak, a parasite on artistic value (like practical language relating to poetry in

early Formalism).<sup>8</sup> Realizing the crisis of identity, formalists begin to break the circle. So, Roman Jakobson leaves Russia for Prague, Viktor Shklovsky escapes to Finland, then finds himself in Berlin and in the end returns to Russia. Boris Eikhenbaum works on his important book *The Young Tolstoy* (published in 1922) in which he strives to overcome his age crisis and academic temptations. At least, Juri Tynyanov begins collecting materials for his first historical novel. At the same time, Formalism had a very powerful initial impulse and effectively succeeded on the background of pre-revolutionary culture. By the middle of the 1920s, formalism as a school represented a bright example of a pop-science, the fashionable way of thinking. In other words, it was in demand as a way of cultural production and remained the most influential style in constituting the modern "literary field" (in terms of Pierre Bourdieu). Formalists have found resources to reconstruct their doctrine from the inside and have confirmed their abilities to remain against conservatism.

It could be claimed that Formalism was such a popular trend in the middle of the 1920s, that the fact of being taught by Tynyanov, Shklovsky and Eikhenbaum was enough to make one feel oneself at the top of "high" scholarship. As it is displayed in memoirs and evidences from the period, their personal charisma was exceptional.<sup>9</sup> Thus formalists turned to be victims of historical logic. On the one hand, they refused to be academics. On the other hand, they could not resist this phenomenon governed by natural laws. Searching for new fields and contexts, formalists elaborated the contradictory and short-lived strategy of "second profession".<sup>10</sup> It means that in order to survive formalist has to choose something different from literary theory as a field of theoretical and practical efforts. Thus, formalists have been occupied within film production (especially in screenwriting), journalism and literary fiction. In spite of the traditional notion of literature as an object of

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\* Cf.: "Not symbolists, but the symbolist and futurist contemporaries created our new scholarship. They are bad poets, amateurs who combined their poor poetic experience, which is necessary to be joined to conventional magic of poetic profession, with psychological possibility to repress this experience and to place it under pure research and generalization" (Ginzburg 2002: 35; my transl. – J. L.).

<sup>9</sup> "Our life would be another if there were no Eikhenbaum and Tynyanov. That is to say I would be another one, I would have another ways of thinking, feeling, working, acting with people and seeing entities" (Ginzburg 2002: 56).

<sup>10</sup> The complete version of this idea, see Shklovsky (1978: 84–85). The most detailed research on this subject is presented in Dohm (1987).

study, formalists have understood it as a subject, or a way of world construction. Borderlines between scholarship and invention are constructed pragmatically — nobody can say where the first one is over and the second one starts. In particular, Eikhensbaum does not analyze poetics anymore, he is interested in the social and historical identity of a person (studies on Leo Tolstoy's diaries); Shklovsky writes "I dance by my studies" (Shklovsky 1978: 68) and prefers an interpretation of his own poetics in a semi-artistic, semi-analytical manner. Indeed, this professional trick of a tail could not be long-lived. Representing one of the latest versions of romantic outlook and romantic behavior, formalists aspired to work out an ideal positive method. They were bearers of a romantic consciousness, but they also believed in historical determination (Hegel's influence and Marxist reference<sup>11</sup>) and preserved illusions of modernist idea of progress. At the same time they could not realize these illusions with reference to their private life. The school of revolutionary science turned to be a school of existential philosophy.

In order to fill the gap between historical and biographical realities, formalists have decided to imitate the school's institutional revival. At the end of 1928 Tynyanov and Jakobson published their famous manifesto in *Novyi LEF*, the journal of leftist arts founded by V. Majakovsky. Not only did this short abstract represent an intellectual power in new cultural conditions, but it was also notified as a theoretical medium between Russian and European humanities (at the moment Jakobson was already known as founder of the Prague school). Everything was done to declare an opposition to the social climate. I do not reject the conceptual components of "Theses", but consider its ideological message as a very important gesture at the end of the 1920s. This publication combines two tendencies. Firstly, theoretical reflection on the literary field remains real and the same for formalists, who are not afraid of free competition of ideas, which was typical of the ideology of the middle 1920s, during the second rise of the formalist school. Each following theory appeared within the community to abolish its predecessor, but formalists did not refuse the very principle of theoretical innovation associated with a category of success. Secondly, every formalist's private biography testifies that he is a bearer of culture and in this quality he projects against the state. This situation unintentionally groups the formalists together with the

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<sup>11</sup> The topic of convergence with the main ideology of the period is discussed in Mitchell 1976.

Russian intellectual tradition. In this respect, the title of the conclusive collection of articles published by Juri Tynyanov in 1929 "Archaists and innovators"<sup>12</sup> becomes surrounded by the social and political context of the period. History proves to be stronger than modern innovative intentions. Besides its conceptual content, "Theses" reveal a kind of provocative opposite posing. It could be interpreted as a paradoxical reminder of formalist revolutionary strategy. Social defeat correlates here with intellectual success: "Theses" appeared not *for* something but rather *against* it.

**Toward the formalist tradition.** Formalists demonstrate a similar same readiness to different ways of self-identification in history. If their ignorance towards social climate would not reflect on their everyday work, the further development comes as logically successful. The present case means periodical changes between conceptual revolutions and "normal science" (in terms of Thomas Kuhn), which stabilize reputation of scholarship as one of the most authorized arbiters of cultural industry. If this direction were not realized, the social climate itself would be much more repressive than anybody can foresee, the formalists remain in history and prepare a mixture for posterity. That is the text of "Theses" which formulates the latest formalist (or early structuralist) ideas without any unnecessary words. "Theses" formulate the model of evolution as a struggle and change, and we cannot argue with Peter Steiner's statement that the evolutionary model forced structuralism to be a conflicting successor of the formalist method.

As we know, the second scenario was realized. As the formalist expulsion from intellectual power, it could be understood as "the end of history" in its formalist interpretation. The problem is that history itself means free ideological and conceptual competition. The absence of the latter demonstrates a delay of historical mechanism. During the 1930s the former formalists continued unofficially, or, so to speak, "domestic" communication. It takes off any claims to symbolical power and intellectual management. There was no need of cultural legitimacy of the school. Only when ideological pressure had grown weak by the end of 1950s, and symbolic capital had been redistributed

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<sup>12</sup> Shklovsky inclined both to sharpen and to dynamize this dichotomy: "archaists — innovators". He thought it would be "clearer" (see Comments by A. Chudakov, M. Chudakova and E. Toddés in Tynyanov 1977: 568). Actually, the presence of the dash represents an endless swing of pendulum, in which synonyms turn to opposite poles, and vice versa.

again, the formalist doctrine was salvaged from oblivion not only because its usefulness for scholarship, but also because of its reputation of prohibited knowledge.

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### Русский формалист на rendez-vous со своей историей

Настоящая работа посвящена взаимоотношениям между изменяющейся исторической идентичностью русских формалистов во второй половине 1920-х гг. и их индивидуальной эволюцией в качестве писателей, членов общества, деятелей культуры. Формалисты с их агрессивным тяготением к современности противопоставлены здесь структуралистам, носителям консервативной, традиционной идеологии (которая является таковой в отношении революционных идей). Это можно объяснить специфически “романтической” идентичностью формалистов, в намерение которых входило присвоить культурные ценности, переименованные и обновленные горнилом их революционной теории. Она, как и революционная идеология, была результатом Европейского импорта. Однако сталинский “ренессанс” обесмыслил идею Революции как в сознании людей, так и в самом обществе. Именно поэтому русский формализм отошел в маргинальный культурный поток и начал разрабатывать новые, адаптированные формы интеллектуального сопротивления (частная жизнь, домашняя литература), ставшие актуальными в следующем десятилетии.

### Vene formalist rendez-vous’l oma ajalooa

Artiklis käsitletakse seoseid vene formalistide muutuva ajaloolise identiteedi ja nende individuaalse evolutsiooni (kirjanike, ühiskonna liikmete, kultuuritegelastena) vahel 1920ndate aastate teisel poolel. Formalistid oma agressiivse suunitlusega kaasajale on siin vastandatud strukturalistidele, konservatiivse, traditsioonilise ideoloogia (mis on selline revolutsiooniliste ideede suhtes) kandjatele. Seda võib seletada formalistide, kelle eesmärgiks oli omastada kultuuriväärtused, mis on ümber nimetatud ja uuendatud nende revolutsioonilise teooria sulatusahjus, spetsiifilise “romantilise” identiteediga. See identiteet, nagu ka nende revolutsiooniline ideoloogia, oli imporditud Euroopast. Kuid stalini “renessanss” muutis mõtteuks Revolutsiooni idee nii inimeste teadvuses kui ka ühiskonnas endas. Just seetõttu suubus vene vormikoolkond marginaalsusse ja hakkas välja töötama uusi, adapteeritud intellektuaalse vastupanu vorme (eraelu, kodukirjandus), mis muutusid aktuaalseks järgmisel aastakümnel.

## **Aesthetic conception of Russian Formalism: the cognitive view**

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**Abstract.** At present the theory of Russian Formalism becomes actual once again owing to the rapid development of cognitive science. Aesthetic theories recently put forward within the framework of cognitive science turned out to be consonant with the Formalist's views on the general principles of artistic activity. In my paper I argue that (1) the theory of Russian Formalism contains a number of methodological assumptions that are close to a cognitive approach; (2) some of the main principles of the Formalist theory (e.g., "elimination of automatism of perception" or "the dominant") permit the reformulation into cognitive terms; (3) such reformulation is not only possible, but useful because it makes the theory more powerful for explanation of the artistic phenomena. The findings from the new field of cognitive science not only prove some Formalist theses, but deepen and specify them as well.

The theory of Russian Formalism continued to be productive during the whole twentieth century. Although the group existed for a relatively short period and in difficult political circumstances, the ideas of Formalism were put into active intellectual circulation and proved to be capable of repeated "translations" into the languages of subsequent theories.

One cannot say that this translation was always smooth and unproblematic. As W. van Peer (1996) remarks, Formalism has "not fared well in the second half of the twentieth century: it has been misinterpreted (by the Post-Structuralists), misunderstood (by the New Critics), and stigmatized (first by the Marxists, now by various schools of 'ideological' critique). It has been declared 'superseded', 'out of date', and 'dead'". The abundance of not fully adequate interpretations testifies, however, to the rich potentialities inherent to the

Formalist theory. And the view that the ideas of Formalists are "out of date" and "dead" is exactly the point I would like to discuss. In this article I will argue that at least some of the key notions of the Formalism are now obtaining one more realization, though in a quite different appearance and in a rather unexpected area: cognitive science.

Cognitive science has been a major interdisciplinary enterprise of the last few decades; among its most important components are psychology, linguistics, philosophy, neuroscience and artificial intelligence studies. Cognitive science mainly explores human mental abilities and processes. The common methodological basis for this research is the assumption that mental phenomena can be accounted for as information-processing activities.

The placement of the Formalist conception of arts into the cognitive paradigm cannot be regarded as something totally unexpected. The Formalist conception contains a number of methodological assumptions which relate it more to science than to the humanities and put it in the intermediate position between these both poles of knowledge. Let us enumerate the most important of them.

1. The separation of the research object from adjacent and interlacing areas. One of the central claims of the Formalist program was to distinguish literariness as an independent research object, to isolate it from interconnections with social, historical, etc. factors. Although this approach was criticized, for example, by Medvedev for the "underestimation of ideological values, phenomena of social reality and history" (Medvedev 1978: 26), this Formalist position can be regarded as procedure of abstraction that is normal in the natural sciences and is usually applied if the nature of the object under examination exceeds certain grade of complexity.

2. In regard to the research object itself, the Formalists tended to dissociate themselves from those of its aspects about which they couldn't say much, given the present stage of knowledge. Formalism, especially in its early period, emphasized the separation of discrete elements of the artistic construction (*priemy*) and analysis of their relationship. The problem of meaning was hard to approach by means of objective analysis and was overtly bracketed out of their research agenda. Medvedev reproaches Formalists for being scared of meaning because meaning is "not here" and "not now". He notes: "Their fear of meaning in art led the Formalists to reduce the poetic construction to the peripheral, outer surface of the work. The work lost its depth, three-dimensionality, and fullness" (Medvedev 1978: 118). However,

exactly this fear — which can be also called scientific caution — allowed the Formalists to produce exemplary analysis of the phonetic and syntactic aspects of artistic works.

3. From the very beginning Formalism was characterized by the tendency to quantitative and verifiable methods, by “objective-scientific attitude toward facts” and “spirit of scientific positivism”, as Ejhenbaum (1978: 7) put it. The property of verifiability or, if we look from the reverse perspective, of falsifiability, constitutes a necessary attribute of any serious scientific theory. The Formalist position in respect of this point was very clearly formulated by Ejhenbaum:

In our scholarship we value theory only as a working hypothesis with the help of which facts are disclosed and take on meaning [...]. We establish concrete principles and adhere to them to the extent they are proved tenable by the material. If the material requires their further elaboration or alteration, we go ahead and elaborate or alter them. [...] The vitality of a science is not measured by its establishing truths but by its overcoming errors. (Ejhenbaum 1978: 3–4)

4. Lastly, some of the central notions of Formalism directly rest on linguistics and psychology, that is, on the same disciplines which afterwards became the main components of cognitive science. On the one hand, the Formalists claimed to separate the study of the artistic work from the surrounding cultural context, to break with “philosophical aesthetics and ideological theories of art” (Ejhenbaum 1978: 7). However, this isolation applied mostly to the areas that were just as (or even more) methodologically amorphous, than literary studies themselves. On the other hand, the Formalists were quite willing to use the achievements of the methodologically more consistent disciplines, like the linguistics and psychology of that time. At the beginning of the twentieth century exactly these sciences made a breakthrough to the realm of structural analysis. The key names here are de Saussure and Freud, whose methodological influence is present in the humanities till now. In the writings of Formalists we can find numerous references to linguistic and psychological works, and they use many terms borrowed from these fields. A number of central concepts of the Formalist theory are directly derived from psychological or linguistic notions: the “estrangement” essentially characterizes the alteration of the process of perception, the “dominant” refers to the selectively directed attention, the “set” (*ustanovka*) is a characteristic of the motivational sphere.

This aspect of the Formalist theory provokes the criticism on the part of Medvedev. He writes:

[...] in severing literature from the ideological world, the Formalists turned it into some kind of stimulus for relative and subjective psychophysical states and perceptions. [...] It is necessary to state that the Formalists' psychologistic premises are very deeply lodged in the foundations of their theory. Any revision or denial of these premises must result in the complete destruction of Formalism. (Medvedev 1978: 149, 169)

Vygotskij saw this psychologism of the Formalist theory in a less critical light. He ironically compared the Formalists with Moliere's Monsieur Jourdain who didn't know he spoke in prose until he was told it by his teacher: "Actually, the Formalists are compelled to be psychologists and to speak in sometimes confused, but absolutely psychological prose" (Vygotskij 1986: 74). Nevertheless, Vygotskij considered the connection between the Formalism and psychology as natural, because, as he put it, "every particular problem of artistic form meets on a certain stage of its development with psychological problems" (Vygotskij 1986: 86).

All these methodological assumptions facilitate the placement of Formalist theory in the cognitive paradigm. Why should we do it? The point is that aesthetic theories recently put forward within the framework of cognitive science turned out to be consonant with the Formalist's views on the general principles of artistic activity. Some of the main notions of the Formalist theory can be reformulated into cognitive terms. In fact, the achievements of cognitive science and, more recently, of neuroscience, make it possible to explain the inner mechanism of principles proposed by the Formalists.

Let us briefly summarize some of the main Formalist theses. A work of art is a sum of devices (or constructive elements). These devices are relatively autonomous and usually compete with each other. The aim of all devices is to influence a process of perception in one or another way. The character of this influence is defined as impediment or deformation of the perceptual process: "The technique of art is to make objects 'unfamiliar', to make form difficult, to increase the difficulty and length of perception [...]" (Shklovsky 1965: 12). In any work of art a leading device (or a group of devices) can be distinguished. This dominant governs the remaining devices and exerts a decisive aesthetic influence.

These theses are in many respects similar to aesthetic conceptions which rest on the recent findings in cognitive neuroscience, in particular, in the research on mechanisms of perception. One of the most important results of these studies was the conclusion that our perceptual system consists of a great number of areas, and each of these areas is concerned only with one definite feature of an object (such as colour, movement, form, location, etc., cf. Hubel, Wiesel 1979). The processing of these components of perception runs in parallel, is asynchronous and to a great extent autonomous; that is, these areas function as modules, independently of each other (Zeki 1998).

The integral image of the world is produced as a result of a subsequent convergence of different features extracted by the respective modules. However, this process cannot be considered as a mere mechanical summation. Before these features are transmitted to the higher associative areas they undergo a detailed preliminary processing, where the resolution into primary elements and the extraction of constants are of central importance.

The primary elements of our perception are extraordinary abstract and specific. For example, in the form perception module were found cells which respond only to horizontal or only to vertical lines. They are regarded as building blocks of form perception out of which all complex forms are constructed. There are other cells which respond maximally to a motion in one direction and don't respond at all to the opposite, or cells which are only concerned with profile vs. frontal views of human faces (cf. Zeki 1999: 91–92; Ramachandran 2001: 13).

The effective processing of ongoing information also could not be possible without the ability to extract constant features of perceptual signals. Information from the outer world accesses the brain as an amorphous and steadily changing flow of stimuli. Our brain must selectively process them to obtain only permanent and essential properties of objects. Thus, we perceive form and size of an object as constant, regardless of distance and viewing angle. Each object is categorized according to colour, although the precise composition of the light reflected from it never remains the same. The constancy of our world image is achieved owing to the intricate computational work of the neuronal mechanism which filters, selects, and fills out the primary sensory data.

These findings were recently applied to artistic phenomena. Semir Zeki, one of the leading specialists in the neurophysiology of visual

perception, argues that artistic activity follows the same principles and strategies that characterize the work of the brain. The artist and the brain both try to achieve knowledge about the world by extracting essential and constant features of objects and phenomena. Zeki writes:

[...] the function of the visual brain - a search for constancies with the aim of obtaining knowledge about the world - is applicable with equal vigour to the function of art. I shall thus define the general function of art as a search for the constant, lasting, essential, and enduring features [...]. In this process, the artist must also be selective and invest his work with attributes that are essential, discarding much that is superfluous. [...] The function of art is therefore an extension of the function of the brain - the seeking of knowledge in an ever-changing world. (Zeki 1999: 79-80)

According to this view, the function of art consists in an additional (in comparison to the routine work of the brain) transformation of our perceptual data which selectively emphasizes some of the most characteristic and constant features. This process of an additional transformation and rearrangement of features enables a work of art to be perceived as “distorting”, “alienating” the familiar picture of the world (which is a product of a “normal”, “non-artistic” activity of the brain).

This view is quite near to the Formalist conception of art. Both conceptions consider the alteration of the process of perception as the driving force to produce an artistic effect. Like Zeki, the Formalists pointed out that in art regular perceptual process is redirected by the artist and “brought out of automatization”. After additional processing the artistic image of an object is perceived as an “unfamiliar”, “distorted” representation of its habitual appearance.

In a number of articles, another well known cognitive neuropsychologist, Ramachandran, recently formulated his theory of art, which again recalls the Formalists. Ramachandran raises the question of general principles of art which are independent of its manifestations in different cultures and artistic styles (analogous to the universal grammar of natural language). As one such general rule Ramachandran postulates the “principle of isolation”. According to this principle, the optimal artistic effect is achieved in each case through the influence of only one aspect of perceptual signal (such as form, colour, contour, etc.), other aspects being not so important or even hindering: “[...] art is most appealing if it produces heightened activity in a single dimension [...] rather than redundant activation of multiple modules” (Ramachandran, Hirstein 1999: 15). For instance, the great

expressive power of the artistic graphics is based on this effect, for in graphics all aspects of image except contour are reduced to the minimum. If we take into account the modular organization of perception, this principle can be explained as a competition of autonomous areas of the perceptual system for limited capacities of attention. The isolation of a single aspect allows us to focus attention more effectively and thus better appreciate the "priemy" of the artist.

Like Ramachandran, Zeki also emphasizes that a great number of works of art are directed mainly to one isolated perceptual module. He argues that the modular organization of the perceptual system is projected onto the arts so that the arts can be regarded as modular as well. Artists consciously or unconsciously address a limited area of a perceptual system and through this achieve the maximal artistic effect (for example Cubist art is directed to the form module, Impressionism mostly to colour areas, Malevitch to the perception of lines, cf. Zeki 1999a).

We see that the "principle of isolation" displays clear parallels with the notion of the dominant which Jakobson characterized as "one of the most crucial, elaborated and productive concepts in Russian Formalist theory" (Jakobson 1978: 82). In this conception the artistic effect also depends on a single dominant feature which has a maximal influence on the perception. As Tynyanov put it, "without the sensation of subordination, the deformation of all the factors by the factor fulfilling the constructive role, there would be no fact of art" (Tynyanov 1924: 10). The notion of the dominant was used by the Formalists not only in respect to particular works of art, but in connection with the stylistic features of some poets as well (so called "stylistic dominant"). This is in line with Zeki's ideas about the specialization of some artists in certain perceptual modules.

Let us summarize. It can be seen that some of the main notions of the Formalist theory are supported by recent cognitive and neurologic research. The "elimination of automatism of perception" which was proclaimed by the Formalists as the main principle of the arts turns out to be comparable with Zeki and Ramachandran's conception of the deformation of an object through the extraction and emphasis of its most essential and constant features.

The discovery of the modular organization of the perceptual system throws a new light on the Formalist view on a work of art as on a totality of competing devices. It has been demonstrated that the image of the world is not a simple photographic imprint, but a filtered

and deformed representation of ongoing stimuli. Perception turned out to be a multistage and constructive process. For the artist this opens wide opportunities to manipulate, deform and impede the process of perception. Formalist theory and the cognitive conceptions of arts share the assumption that the aesthetic effect arises out of the alteration of normal, "default" course of perception.

Cognitive neuroscience also confirms the Formalist thesis that both in a particular work of art and in the whole style of an artist a dominant device with a decisive aesthetic potential can be distinguished. Resolution of perceptual data into many independent features against the background of the limited resources of our attention (which at any moment can be directed to only one of these features) explains the "principle of isolation" which is analogous to the principle of the dominant.

It is not only possible to reformulate the Formalist theory in cognitive terms — it is useful to do it. The findings from the new field not only prove some Formalist theses, but deepen and specify them as well. In spite of many interesting insights and plausible assumptions concerning the artistic process, the Formalist theory left open the question of its mechanisms and causes. In this respect the cognitive conceptions of arts possess more "explanatory power". For example, the notion of the artistic deformation that remained unspecified in Formalist theory is defined more closely if such deformation is considered as a result of an artist's effort to extract and accentuate the most characteristic features of a represented object. Artistic activity extends the functions of the perceptual system and can therefore be regarded as an adaptive process in an evolutionary sense. The Formalist view of the deformation of perception as a self-contained, "end-in-itself" process is replaced by the cognitive conclusion about the importance of biological functions in artistic activity.

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### Эстетическая концепция русского формализма: когнитивная перспектива

В настоящее время теория формализма вновь становится актуальной в связи с бурным развитием когнитивной науки. Теории искусства, развиваемые в рамках когнитивного подхода, оказываются созвучными взглядам формалистов на основные законы художественной деятельности. В статье показывается, что (1) теория формализма содержит в себе ряд методологических установок, сближающих ее с когнитивным подходом, (2) некоторые из основных положений теории формализма допускают переформулировку в когнитивные термины, (3) подобная переформулировка является полезной в познавательном плане.

### **Vene formalismi esteetiline kontseptsioon: kognitiivne perspektiiv**

Tänapäeval on vormikoolkonna teooria muutumas taas aktuaalseks seoses kognitiivteaduste kiire arenguga. Kognitiivse lähenemise raames arendatav kunstiteooria osutub lähedaseks formalistide vaadetele kunstitegevuse põhiseaduspärasuste kohta. Artiklis näidatakse, et (1) formalismi teoorias sisaldub rida metodoloogilisi lähtepunkte, mis lähendavad teda kognitiivsele arusaamadele, (2) mõned formalismi põhiseisukohad võimaldavad ümberformuleerimist kognitiivsetesse terminitesse, (3) taoline ümberformuleerimine on kasulik tunnetuslikus (epistemoloogilises) plaanis.

## Psychiatry in free fall: In pursuit of a semiotic foothold

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**Abstract.** Diagnostics of a mental disorder completely bases on an estimation of patient's behaviour, verbal behaviour being the most important. The behaviour, in turn, is ruled by a situation expressed as a system of signs. Perception of a situation could be seen as a function, which depends on the context resulting from the previous situations, structuring personal world. So the world is not given — it is being formed while the person is in action. We argue that distinctive features of behaviour, including its abnormal variants, can be explained not in categories of characters and diseases but in terms of situations taking place in individual worlds. The situation in which a person perceives himself is not simply a site in a three-dimensional space at a certain moment, but a part of the world and an episode of his life. Like a text composed of words, individual world is composed of situations. Each of them needs certain context to cope with ambiguity. This context is induced by the world as a whole. And the world, in turn, is presented as a chain of situations. If the context cannot help to interpret a situation adequately, uncertainty can be eliminated by actions clarifying a situation, which is changed in a predictable way. Thus, purposeful activity, skills to make predictions and corrections of one's own actions are crucial. Weakness of any of them inevitably leads to the distortion of the presentation of the world, to wrong evaluation of situations and, as a result, to inadequate actions that finally reduce the activity as being ineffective. Thus, the lack of activity becomes the key factor in the development of disorder, being simultaneously its cause and effect. In periods of insufficient activity conditions for violated (and violating) sign processing arise. Possible variants of sign malfunction are: *oligosemia* (reduction of the number of perceivable signs), *hyposemia* (decrease of significance of signs), *hypersemia* (increase of significance of some signs at the expense of others), *ambisemia* (uncertainty of sign, when situation remains unclear), *cryptosemia* (recognition of signs not obvious for other observers), and *parasemia* (perverted interpretation of signs influenced by a false context).

*Umwelt*, as elaborated by Jakob von Uexküll, is a model (as developed by Thomas Sebeok), a model of the world, or, better, the worlds, as there are innumerable models constructed by different inhabitants of our planet. Everyone has its own *Umwelt* adapted to its specific needs (Uexküll 1928).

Non-human signs are everywhere, investigated by different branches of semiotics endeavouring to understand stars and rocks, plants and animals (Hoffmeyer 1996; Kull 1998; 2001). However, humans are the only living beings who know that there *are* signs, i.e. who have the ability to engage in acts of reflection and self-reflection thereby creating a semiosphere of a specific character (Lotman 1984; 1990). As Deely puts it when discussing Peirce's views, all thought is in signs (Deely 1982). *Ethosemiotics*, or *teleosemiotics*, was proposed by Ponzio and Petrilli when elaborating upon an earlier idea of the *semiotic self* (Sebeok 1979; Sebeok *et al.* 2001); and *autosemiosis* was defined as a universal principle of Nature to reflect itself (Seppänen 2003) making biosemiotic space still richer.

Is there any relation between semiotics and psychiatry? Is semiotics essential for an understanding of the causes of mental disorders? Psychosemiotics, acknowledged by many authors as a branch of the biosemiotic sciences, is a domain that fills a huge but very important gap in our knowledge of human nature and its deviations. According to Jakob von Uexküll (1973), "in terms of semioses, we can conceive our world as a permanent dialogue between self and non-self. The world appears, then, as answers from non-self to questions of self and answers of self to questions of non-self" (Th. v. Uexküll 1992: 459). The idea of 'symptom' as a sign that in pre-Newtonian days made medicine a semiotic discipline seems to be in need of further elaboration now, when a crisis of biomechanical paradigms has become evident. It has also become evident that Peirce's (1931–1958), Bakhtin's and Lotman's concepts of dialogue as a basis for any informational process are of the utmost importance when we attempt to understand semiosis as arising from the need for an interpreter (*metainterpretation* in Thure von Uexküll's terms). As Tarasti discusses in the *existential semiotics* (Tarasti 2000), the central point is to see signs from the inside. He also discriminates between *strong* and *weak (inner)* signs like those of a dream, or those created by an abnormal psyche. It should be stressed that *weak signs* can dynamically form a person's behaviour and be existentially vital to it. In order to distinguish *weak* from *strong*, a person must be involved in

a Bakhtinian dialogical situation — while making efforts to understand the Other and his/her Umwelt (Bakhtin 1986).

When dealing with human behaviour and especially its deviations in pathology, the interpretation of signs becomes extremely important. A psychosemiotic approach can even change paradigms in practical medicine. The diagnostics of mental disorders, in contrast to those of somatic medicine, are completely based on an estimation of a patient's behaviour, verbal behaviour being of greatest importance. In this context Bateson's *mind-processes* and *ecology of mind* (Bateson 1972: 448–464) and Th. v. Uexküll's (1986) semiotic approach to medicine are of special interest.

Ignoring this approach is the main cause of the crisis in modern psychiatry, in which a nosological approach based on the triad 'symptom-syndrom-disease' still remains dominant. The nosological approach does not provide mechanisms for understanding what really happens with a patient, serving only as a tool for recognizing and describing a disease. It is no wonder, therefore, that certain supposedly internal factors hidden within the depths of the soul or brain of a patient appear to be the cause of insanity.

This situation arose from the Cartesian-Newtonian paradigm of the Universe and has the following implications for psychiatry: human beings explore the world existing apart from themselves. If a person acts inappropriately or makes irrelevant statements he is considered insane. Hence, in order to explain such behaviour, we necessarily have to study mentality and its 'organ' — the brain. It seems that the only way for scientific reasoning to proceed within the designated system of coordinates is again to search for a kind of an inner phlogiston inside combustible matter as the cause of disorder, as had been done centuries ago.

For our further reasoning it is important to admit that there are no such mysterious inner causes, but only certain *variants of behaviour* that seem to be abnormal. Then, the question should sound like: "Why does someone behave in one way and not in another?" And vice versa, question like "What is the cause for schizophrenia?" is a wrong question, as it has no reasonable answer. Usually we say: "He lies because he is a liar", "He wins because he is the strongest", "She helps because she is responsive". Curiously enough, most people are usually satisfied with such 'explanations'. However, if someone had not won he would not have been called 'the strongest'. If someone had not been lying he would not have been called 'a liar'. And finally, if I did

not smoke I would not be a smoker. I am a smoker because I smoke. Being a smoker is not the reason for my smoking. And even at those times when I am not smoking I remain a smoker — especially for those who know that nasty habit of mine. Thus, we should avoid such ‘explanations without explanations’ and stop asking, “What is the reason that someone is a liar” instead of: “Why does he sometimes lie”?

Why do people behave differently in similar situations? What are the appropriate criteria for discriminating the normal, or reasonable, from the abnormal? Is it really possible to talk about ‘similar situations’ at all? What is the motivating mechanism of human behaviour in general and of an insane person in particular? And what is the role of language and of the world-view of a suffering person — primarily keeping in mind his semiotic nature? Unfortunately, we are able to think of the world existing outside of and apart from a person, but it is most difficult to think of a person existing outside the world and apart from it. Having acquired such an ability, we shall realize the impossibility of the world existing apart from us. And then we shall admit that neither individuals nor the world can exist separately from each other. An individual is not a part of the world; neither is the world a part of him. They act as figure and background for one another. Which is figure and which is background depends on one’s point of view. The psychological barrier to such reasoning is as follows: if there is more than one person in the world, there is also more than one world in the Universe, which in this case would more appropriately be called the Multiverse.

Whoever or whatever an individual is, above all, he is a complex self-organizing and self-adjusting system. Any system like this engenders a certain amount of entropy that correlates with the degree of its complexity. Besides, all living systems aspire to maintain the most energy-efficient nonequilibrium and stationary condition known in biology as ‘homeostasis’. For this purpose a system has to be active in order to eliminate entropy and acquire so-called negative entropy (or negentropy), which is an ordered structure of any nature: food, air, information etc. Thus, activity is a major need of living systems and provides for their integrity and capacity to function. The destruction of a system occurs when the maximum permissible level of entropy is attained, a condition that is equivalent to approaching the polar stationary state with a minimum of energy — equilibrium. The death

of a system causes and signifies its total passivity, whereas the passivity of a system causes its death.

This brief synergetic digression is cited in order to reveal the widespread mistake of traditional rationality in the analysis of cause-and-effect relationships in a 'stimulus-reaction' paradigm. Not reaction as a whole is the consequence of a stimulus, but only a type of reaction among a set of possible variants. An action itself is not necessarily the consequence of the causal influence of a stimulus. The need to act in general is primary in comparison to the need to act in some specific way. An organism can respond to a stimulus with total inactivity and, vice versa, an organism's activity without any obvious stimulus is also possible. A person is not a machine programmed for reactions that occur in response to a stimulus.

People live not in space and time where stimuli occur and where they have to react somehow, but in one or another situation where their well-being depends on a successful choice of action. Any human life can be represented as a sequence of personal situations. In the same situations different individuals would operate identically. However, in practice, situations are never the same and are never repeated. A threat on the life of one person can be a challenge or even light entertainment for another. Of importance is that similar perceptions of a situation dictate similar behaviour. In other words, individuals, both normal, and pathological, behave similarly in similar situations. So, the question "Why do people act differently in similar situations?" is irrelevant, as well as the answer: "Because they have different personalities".

In contrast to animals, humans live not simply in reality, but in a specifically structured reality, which refers to concept of 'a world'. Each person is the inhabitant of his own world. These worlds are mutually penetrable and form a metasystem, which we designate as 'Multiple Worlds'. Penetrability means that each person is capable of perceiving only his own world (part of which he evaluates as himself), whereas all other worlds are presented to him in their convolute and underside forms, looking like other people, i.e. person perceives other worlds only through their external forms — as other people. We have discussed the similarities and differences between individuals, but in the same way we can discuss the similarities and differences between such worlds. Hence, the different features of form of behaviour, including its abnormal variants, can be explained not as categories of characters and diseases but in terms of the situations taking place

within individual worlds. Thus, people act differently because they live in different worlds.

It is time to ask: "Why are situations so ambiguous and what is the way to deal with the ambiguity"? We shall take advantage of an analogy: each word of a proposition has a complex set of meanings. Words receive certain value because of the fact that a proposition has a certain sense. If the sense is unclear, the context is not well determined; variations and mistakes in the interpretation of separate words become very probable. In turn, freedom of interpretation can result in a distortion of meaning. It will change the context, a change that will be reflected in the further interpretation of words.

The situation in which a person perceives himself is not simply a site in three-dimensional space at a certain moment, but a part of the world and an episode in his life. Just as a text consists of words, an individual's world is composed of situations. And each of situation needs a certain context in order to cope with ambiguity. Context is provided by the world as a whole. And the world, in turn, is presented as a chain of situations. More to the point, we should add that a person aspires to control a situation while the situation itself controls his behaviour.

Let us look at the behaviour of a person standing at a crossroads: the green light comes on and he crosses the road. The green traffic light is not the reason that he has crossed the road but only a regulator of his behaviour. The reason for this is that he has to go somewhere. The colour of the light is conventional but not accidental: green is associated with factors favourable to life while red — is associated with threatening factors. However, in order for the sign to be able to adjust someone's behaviour it is insufficient for it to have a meaning. It should also be significant: ignoring it will produce adverse consequences while paying attention to it, on the contrary, should lead to favourable consequences. Moreover, the sign serves as a sign to the degree to which it serves as a sign for others: there is no reason to wait for a green signal if drivers don't pay attention to it. As a rule, behaviour should not be controlled by factors which do not also control the behaviour of others.

It is impossible to remember the meanings and significance that billions of signs have for billions of people. Fortunately, we do not have to. The complete, integrated form of semiotic knowledge necessary for adaptive behaviour is just our belief that there is a world arranged in a determined, although not always clear, fashion.

While keeping in mind the level of active signs, let us turn now to the mentally ill person, and consider examples of the two most prevalent pathological conditions: depressive and paranoid.

### **A. The depressive patient and his reality**

In fact, he is not just a person suffering from a bad mood. He feels insignificant, a person who does not control the situation and he feels as if nothing in the world depends on his actions. His activity is dramatically reduced: he does not see any sense in activity and does not feel any satisfaction either from the results of action or from the process of action. The feeling of a wholeness to life and even of a wholeness to his own presence in the world is lost. He seems to be not quite alive. It is not surprising, therefore, that thoughts of death dominate. Nothing is positive for him: in the care of relatives he sees only that he has become a burden for them; in the encouraging words of other people he notices hidden irony; if people leave him alone, he considers it a sign of oblivion. Even in another person's smiles he sees a sign of hopelessness. He does not remember his former successes, conceiving himself as a loser, and his entire life is perceived as a circuit of continuous mistakes. Having such an experience, the patient becomes more disinclined toward an active life as his passivity and feelings of despair and hopelessness accumulate. The idea of death becomes a positive value. From this moment on, the risk of suicide sharply grows.

Thus, the initial manifestation of depression (the periods of decreased activity arising cyclically) gradually changes the context of the patient's existence and, as a result, in subsequent situations negative values become more topical, confirming the dominant idea that everything is not only negative but even worse than it seemed before. The situation becomes still worse as the significance of life is diminished, the importance of all essentially decreases and, hence, the number of perceiving signs carrying a positive sense reduce. And finally, signs with negative content prominently arise from the general background, gradually filling all the semiotic space of the patient. The world becomes unipolar, nothing in it promises anything good; there is almost nothing to do in it; and it is not a place to live in. It all moves in a vicious circle: depression develops, the sufferings of the patient reach a culminating point, death, which had earlier symbolized

absolute evil, becomes a blessing — the most desired event. The only reason for not committing suicide in this case is total apoplexy of the will.

## **B. The paranoid patient and his reality**

Initially a paranoid is a person living in a world that is unsafe. The world is an arena for him, and his life is a struggle. He is a person who understands meanings, rather than feels senses: he is attuned to the analytical interpretation of signs rather than to the direct sensual perception of a situation as a whole. Thus, if he is intelligent enough, he might never fall ill. The level of intelligence defined semiotically is the amount of perceivable signs and the awareness of their meanings: intelligence is equivalent to the ability to operate optimally, taking all circumstances into account. Recent researches show that the intelligence of paranoid patients is roughly 10% lower than the average level in a population. Besides, the semiotic space for such individuals is wider, and the borders of their semantic fields are vague and fuzzy.

They appear in adverse situations more often than others; threatening feelings arise every time they face an indefinite situation — with signs that are not distinctly denotative. Although the ambiguity of a situation is overcome by context, there are cases when a context cannot help to interpret a situation adequately. In such cases uncertainty can be eliminated by taking action to clear up a situation which is changed in a predictable way. Otherwise, an alternative hypothesis is put forward, which also must be confirmed by practical experience. This is a way to overcome ambiguity and to form new necessary contexts.

Thus, purposeful activity, skills to make predictions, and corrections of one's own actions are crucial. Weakness in any of these areas inevitably leads to the distortion of representations of the world, to the wrong appreciation of a situation and, as a result, to inadequate actions. Without its clarifying contextual clues, the world becomes more and more unreliable, and situations become more unpredictable. Eventually, a feeling of confusion and fear of impending threats reaches a point when further life becomes impossible: the world can be hostile, bad, or any variant thereof, but it should be conceivable. However, a means for clarifying actions has already been foreclosed, because a person's activity only increases the adversity in a situation.

Together with a reduction in activity, a simplification of behaviour and a loss of control of the situation, the representation of a hostile world occupied by persecutors supervising the life of a patient crystallizes. This is the price which is paid for the world to regain its distinctiveness. However, a new context gives knowledge of the hostile intentions of other people, which is fed by a feeling of being threatened and under the control of others. Any word, any act in the person's surroundings is now a sign of potential danger. Minimal activity, withdrawal from the world and other people, and keeping a safe distance from them is the most expedient strategy now. Interaction with the world decreases, and consequently representations of it lose validity. Alienation and apathy gradually grow: the world becomes impoverished, losing its colour, signs and significance. The patient's activity lessens — from this time on total passivity guarantees safety in the world where there is no longer anything to do.

In summary, we should mention again that the most significant primary manifestation in psychiatry is abnormal behaviour. This behaviour, in turn, is completely ruled by a situation expressed as a system of signs. A person's perception of a situation can be seen as a function that depends upon the context that results from previous situations that structure a person's world.

The world is not given; it is formed while a person is acting. Adequate personal world formation is possible only through successful behaviour based on the ability to predict and to make corrections if necessary. Thus, activity deficit becomes the motivating mechanism, the key factor in the development of a disorder, being simultaneously its cause and effect. In this respect, a final semiotic equivalent of disease, as it has been shown above, proves to be the simplification of person's world and behaviour, which is represented as a reduction in the number of perceivable signs (or *oligosemia*) and a decrease in the significance of signs in his life situations, their fragments and in the world as a whole (or *hyposemia*).

We consider that, along with a lack of activity, the second leading factor determining abnormal behaviour is the malfunction of signs (compare with Rudnev's understanding of psychopathology as hyper- and hyposemiotization of reality — Rudnev 2002). This malfunction is related to such a fundamental feature of the sign as its ambiguity, which a healthy subject copes with during his activity. In periods of insufficient activity, conditions for violated sign processing arise. Several variants of such a violation are possible in addition to the

*oligo-* and *hyPOSEmia* mentioned above. Some of them we have tried to demonstrate in our clinical examples. We suggest the new terms for that:

- *ambisemia* — for the uncertainty of a sign when the situation remains unclear;
- *cryptoSEmia* — for the recognition of signs not obvious to other observers;
- *parasemia* — for the perverted interpretation of signs influenced by a false context; and
- *hyperSEmia* — for the increase in significance of some signs at the expense of others.

All of these conditions may be present in various proportions in any variation of abnormal behaviour. The particular structure of sign malfunction depends on such conditions as the initial features of the 'person-world' system, the origin of activity deficit and the duration of the disorder.

## Conclusion

We must reject thinking of psychoses as disorders of the psyche. However difficult it is, the less we use the terms *psyche*, *consciousness*, or *mind* the better. Although there really are individuals who are called mentally ill, mental diseases themselves are no more than the offspring of our theoretical speculations. We perceive and evaluate what we from our inside think to be the outer world, while its specificity is caused by language and more broadly by individual semiotic maps. This means that we are never looking out upon the world, but rather drawing and extracting 'the external' world semiotically. That is why the approach to mental deviations should be much more complex, taking into account the egocentric nature of an individual semiosphere with its own co-ordinates through all axes. This inevitably leads us to a necessity — and a possibility — to develop an alternative approach to the psychiatric domain in accordance with the synthetic thinking currently under discussion in philosophy of science.

Following Vijver's (1999) paper on *psychic closure*, we argue that human beings are hierarchically organized and embedded in language and socio-cultural space — which is also hierarchical and subject to its own constraints in addition to biological development or pathological

conditions; and further — it is most important to understand what makes up systems and how this understanding helps to realize sign functions within them. To understand the Other, who in the case discussed is a person exhibiting abnormal behaviour, we should reconstruct as thoroughly as possible his semiosphere, the Umwelt, and see how it functions *for him*, what *signal-values* are there (Hoffmeyer 1996), to understand *what* his signs mean *to him*. There is no way to recognize the semiosphere except in dialogue and by delicate language analysis, as we are language-determined systems, and this is species-specific.<sup>1</sup>

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### **Психиатрия в свободном падении: в поисках семиотической опоры**

Диагностика психического заболевания полностью опирается на оценку поведения больного, включая его речевое поведение. Поведение, в свою очередь, контролируется ситуацией, понимаемой как система знаков. Восприятие ситуации можно расценивать как функцию, зависящую от контекста, формируемого предшествующими ситуациями, структурирующими индивидуальный мир субъекта. Таким образом, мир не задан — он формируется в процессе активности человека. Мы полагаем, что различия в поведении, включая его аномальные формы, может быть объяснено не в терминах, описывающих характеры или болезни, а в рамках ситуаций, разыгрывающихся в индивидуальных мирах. Ситуация, в которой субъект воспринимает себя, является не просто местом в трехмерном пространстве в определенный момент времени, но частью его мира и эпизодом его жизни. Подобно тексту, состоящему из слов, индивидуальный мир составлен из ситуаций, каждая из которых требует определенного контекста для преодоления ее неоднозначности. Этот контекст порождается миром как целым по отношению к каждой входящей в него ситуации, выступающей как часть целого. В случае, если контекст не способен прояснить ситуацию, её неопределенность преодолевается путем активности, направленной на прогнозируемое изменение ситуации. Поэтому главными механизмами, определяющими адекватность представлений о мире субъекта, являются его целенаправленная активность, умение прогнозировать результаты своих действий и вносить в них необходимые коррективы. Слабость каждого из них неотвратимо ведет к формированию искаженной картины мира, ошибочной интерпретации ситуаций и,

как следствие, — к неадекватным действиям, в конечном итоге приводящим к редуцированию активности как неэффективной. Дефицит активности, таким образом, становится ключевым фактором, ответственным за развитие болезни, являясь одновременно ее причиной и следствием. В периоды недостаточной активности субъекта возникают условия для патологического (и патогенного) функционирования знаков. Выделены следующие возможные варианты такого функционирования знаков: *олигосемия* (уменьшение количества воспринимаемых знаков); *гипосемия* (снижение значимости знака); *гиперсемия* (усиление значимости одних знаков в ущерб другим); *амбисемия* (неоднозначность знака, оставляющая ситуацию неясной); *крипосемия* (восприятие знаков, неочевидных для других наблюдателей) и *парасемия* (извращенное толкование знаков под влиянием ложного контекста).

### **Psühhiaatria vabas langemises: semiootilise toe otsinguil**

Psüühikahäirete diagnostika tugineb täielikult haige käitumise hindamisele (kaasaarvatud tema kõneline käitumine). Käitumist omakorda kontrollib situatsioon, mida võib määratleda märgisüsteemina. Olukorra vastuvõttu võib hinnata kui kontekstist, mis on tingitud eelnevatest subjekti isiklikku maailma vormivatest situatsioonidest, sõltuvat funktsiooni. Seega maailm ei ole ette antud — see vormitakse inimtegevuse käigus. Me eeldame, et erinevusi käitumises, ka selle anomaalseid vorme, võib seletada mitte iseloomu või haigusi seletavate mõistete abil, vaid individuaalsetes maailmades lahtimängitavate situatsioonide raames. Situatsioon, milles subjekt ennast teadvustab, ei ole mitte lihtsalt koht kolmemõõtmelises ruumis kindlal ajahetkel, vaid tema maailma osa ja tema elu episood. Nagu tekst, mis koosneb sõnadest, nii koosneb individuaalne maailm situatsioonidest, milledest igapäev nõuab kindlat konteksti oma mitmetähenduslikkuse ületamiseks. See kontekst tekitatakse maailma kui terviku poolt iga selles sisalduva situatsiooni (mis on terviku osaks) suhtes. Juhul, kui kontekst ei ole võimeline situatsiooni selgitama, ületatakse selle määramatus situatsiooni muutusele (prognoositavale) suunatud aktiivsuse abil. Seetõttu on peamisteks mehhanismideks, mis määravad ära subjekti maailmanägemise adekvaatsuse, tema suunatud aktiivsus, oskus prognoosida oma tegevuse tulemusi ja viia neisse sisse vajalikke parandusi. Viga ühes neist mehhanismidest viib vältimatult moonutatud maailmapildi tekkimisele, olukordade eksliku tõlgendamise ja, kui taga-

järg — mitteadekvaatsete tegevusteni, mis lõppkokkuvõttes toovad endaga kaasa aktiivsuse (kui mitteefektiivse) redutseerimise. Aktiivsuse defitsiit muutub seega võtmeteguriks, mis on vastutav haiguse arengu eest, olles ühtaegu nii selle põhjuseks kui ka tagajärjeks. Subjekti vähese aktiivsuse perioodidel tekivad tingimused märkide patoloogilise (ja patogeense) funktsioneerimise jaoks. Tuuakse välja järgmised võimalikud variandid: oligoseemia (vastuvõetavate märkide hulga kahanemine); hüposeemia (märgi olulisuse vähenemine); hüperseemia (ühtede märkide osatähtsuse suurenemine teiste arvelt); krüptoseemia (teiste vaatelejate jaoks arusaamatute märkide vastuvõtt) ja paraseemia (märkide väär tõlgendus vale konteksti mõjul).

# Natural self-interest, interactive representation, and the emergence of objects and Umwelt: An outline of basic semiotic concepts for biosemiotics

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**Abstract.** In biosemiotics, life and living phenomena are described by means of originally anthropomorphic semiotic concepts. This can be justified if we can show that living systems as *self-maintaining far from equilibrium systems* create and update some kind of *representation* about the conditions of their self-maintenance. The point of view is the one of *semiotic realism* where signs and representations are considered as real and objective natural phenomena without any reference to the specifically human interpreter. It is argued that the most basic concept of representation must be forward looking and that both C. Peirce's and J. v. Uexküll's concepts of sign assume an unnecessarily complex semiotic agent. The simplest representative systems do not have phenomenal objects or *Umwelten* at all. Instead, the minimal concept of representation and the source of normativity that is needed in its interpretation can be based on M. Bickhard's *interactivism*. The initial normativity or natural self-interest is based on the 'utility-concept' of function: anything that contributes to the maintenance of a far from equilibrium system is functional to that system — every self-maintaining far from equilibrium system has a *minimal natural self-interest* to serve that function, it is its *existential precondition*. Minimal interactive representation emerges when such systems become able to switch appropriately between two or more means of maintaining themselves. At the level of such representations, a potentiality to detect an error may develop although no objects of representation for the system are provided. Phenomenal objects emerge in systems that are more complex. If a system creates a set of ongoingly updated 'situation images' and can detect temporal invariances in the updating process, these invariances constitute *objects for the system itself*. Within them, a representative system gets an *Umwelt* and becomes capable of experiencing triadic signs. The relation between representation and its object is either iconic or indexical at this level. Correspondingly as in Peirce's semeiotic, symbolic signs appear as more developed — for the symbolic signs, a more complex system is needed.

## 1. Why biosemiotics?

Modern biosemiotics, as a discipline or a united field of discourse, can be said to have been born about the decade ago, at the turn of the 1990s. At that time, isolated biosemiotically oriented researchers (and small discussion groups) found a connection with each other, and the name 'biosemiotics' was taken into common use.<sup>1</sup> As an approach to the phenomenon of life, modern biosemiotics has been characterized following ways:

The sign rather than the molecule is the basic unit for studying life. (Hoffmeyer 1995: 369.)

Biosemiotics can be defined as the science of signs in living systems. A principal and distinctive characteristic of semiotic biology lies in the understanding that in living, entities do not interact like mechanical bodies, but rather as messages, the pieces of text. (Kull 1999a: 386.)

According to biosemiotics all processes going on in animate nature at whatever level, from the single cell to the ecosystem, should be analysed and conceptualised in terms of their character of being sign-processes. This does not imply any denial of the anchoring of such processes in well-established physical and chemical lawfulness. Only, it is claimed that life-processes are part of and are organised in obedience to a semiotic dynamic. Biosemiotics, then, is concerned with the sign-aspects of the processes of life itself (not with the sign-character of the theoretical structure of life-sciences). (Hoffmeyer 1998: 82.)

*Biosemiotics* — [...] biology that interprets living systems as sign systems. (Emmeche, Kull, Stjernfelt 2002: 26.)

**Question:** Why should we approach life by mixing our internally meaningful semiotic concepts to the externally describable natural phenomenon of life? What makes the phenomenon of life so peculiar that we should develop *bio-semiotics*?

**Answer:** Firstly, living systems are not just complex collections of atoms and molecules, but they are *far from equilibrium* systems. They are relatively constant forms — like flames and vortices — in the continuous flow of matter. If this continuous change ceases,

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<sup>1</sup> Although modern biosemiotics has had a number of antecedents since the times of Peirce, it was not until the 1990s, when Thomas Sebeok, Jesper Hoffmeyer, Claus Emmeche, Thure von Uexküll, and Kalevi Kull (among others) began to organize seminars, publications, etc. where the biosemiotics was the leading theme. (About the history of biosemiotics, see Kull 1999a, b, and Hoffmeyer 2002.)

the system will start to fall apart and lose its identity as a living system.

Secondly, despite the ethereal vulnerability of far from equilibrium systems, especially living systems have a *tendency to stay alive* — although they are mortal, they are also *potentially immortal*.<sup>2</sup> We can easily imagine the self-extinction of human race, but the *self-extinction* of all life seems much more improbable — at least, it is most probably far beyond human powers.

**Question:** What gives the potential immortality to living systems?

**Answer:** The potential immortality of living systems is due to their readiness to change their behaviour and structure *appropriately* — i.e. *directionally* — in the pressure of the environmental changes. The *minimal* criterion for this appropriateness is ultimately the mere *survival* of the system.

**Question:** How is this possible? What makes this readiness to appropriate self-reconstruction possible?

**Answer:** Firstly, the readiness to self-reconstruction requires that living systems are more or less flexible, and secondly, the directionality or appropriateness of this self-reconstruction requires some kind of *anticipation* of possible future changes in relation with the flexibility of a system. The system has to make some kind of vicariate comparison between anticipated external change and anticipated internal changability and have means to indicate the appropriate action that this vicariate comparison suggests.

**Question:** What is the general mechanism or functional structure of that anticipation?

**Hypothesis:** Living systems have to be able to *create* and *update* some kind of *representation* about the *external and internal* conditions of their self-maintenance. These embodied 'representations' are used as an internal model of the world according to

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<sup>2</sup> If one looks at the proof, bacteria are still with us and thus constitute a living evidence of the potential immortality of living systems. Moreover, what we and all the current forms of life ultimately are but swarms of (the swarms of) developed and co-operative bacteria (cf. Hoffmeyer 1997c). Although (most) organisms are certainly mortal, it is not the death of an organism but the extinction of its *lineage* that means the total failure of its self-maintenance. Thus, it is a lineage rather than an organism that fits better the concept of living system (that can be 'potentially immortal'). And if organisms were still considered as living systems, they can be said to have 'life after death' in the form of their descendants. The identity of a system has to be based on *continuity* rather than on invariable essential characters or structures.

which the behaviour of a system — especially the use of *the constructive power* of a system (including the *self-constructive power*) — is appropriately guided.

If this hypothesis is redeemable, living systems are not describable as merely physical systems, but besides this, they have to be considered — in a certain strict and abstract sense — as *real mental systems*.<sup>3</sup> The core idea of biosemiotics follows: “Signs and life are coextensive” (e.g., Stjernfelt 2002: 337).

## 2. What biosemiotics could mean?

If the idea of living systems being mental is based merely on analogy, this will not lead us to anything definitive, because the analogy with the common sense conceptions of mind is at its best only partial, distant, or loose. The more definitive sense to ‘the core idea of biosemiotics’ is needed.

As demonstrated in the line of thought above, they are especially the signs or representations that are usually counted as mental and that therefore attach a mental character to life. Thus to make specifically *biosemiotics* means a study and search of signs, mind, and other semiotic concepts as they appear in living natural phenomena. Moreover, they have to be taken as (and not mere *as if*) natural phenomena. Thus, we (should) find ourselves at some kind of *semiotic naturalism* which, in turn, should lead us to the question what the correct semiotic concepts are and how they should be (re)defined. As I have proposed elsewhere (Vehkavaara 2002: 295–297), the core project in the semiotic naturalism should be a *certain* kind of naturalization of

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<sup>3</sup> This is the basic hypothesis — not only of biosemiotics — but of evolutionary epistemology too (Campbell 1974; Lorenz 1973). In evolutionary epistemology, evolutionary adaptation through natural selection is considered as evolutionary learning, i.e. as knowledge gathering. The basic point is to naturalize and generalize the ‘intuitive’ concept of knowledge — ‘true well-justified belief’ is a special case of *valid and reliable representation*. However, the criteria for validity and reliability are hard to distinguish when the subject matter is ‘phylogenetic knowledge’ etc. (in Vehkavaara 1998, I did not yet fully recognize this). Therefore, the concept of knowledge in evolutionary epistemology is rather the concept of *valid representation*. It can be noticed that they are exactly the concepts of representation (or sign) and its validity both of which constitute the object of study of Peircean semeiotic, and consequently, of its extension (or application) to biosemiotics.

semiotic *concepts*. They should be based solely on the objects of external experience.<sup>4</sup> The main reason for this project is the hope that within it, the risk of falling into anthropomorphic error, or more generally into 'zoomorphic' error, would decrease. It is too easy to make the erroneous generalization of cognitive structures peculiar only to human or animal cognition over all kinds of living systems. Another essential feature in this semiotic naturalism is the demand for *semiotic realism* — that signs are real and have real effects *as signs* and that this principle applies to every semiotic concept, i.e.,

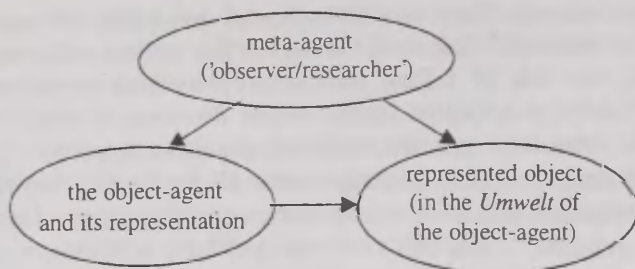
- (1) that at least *some* effects of signs are not reducible to physical (but are genuinely semiotic), and
- (2) that the semiotic concepts are definable independently of *our* internal conceptions and intuitions about them, i.e. that semiotic concepts could be defined entirely at the 'object-level', from the point of view of 'object-system', (or 'object-agent' if the 'object-system' can be considered somehow agential, see Fig. 1).

In search for the proper concept of representation (or sign) for bio-semiotics, we should first choose the proper motivation and 'prototype' for the concept in order to recognize what kind of conception is needed. There are at least three different motivations (accordingly, there are three basic 'prototypes') for the conception of representation:

- (1) representation for *explanation* 'how things are' (or for *interpretation* 'what is the essence of a phenomenon');
- (2) representation for *communication*, or for *explanation* how the (mutual) communication of *meanings* (usually between individual human minds) is possible and mediated;
- (3) representation for the *guidance of appropriate behaviour*, (i.e. for the *anticipative behaviour*), for the *model* of 'how things should be', i.e. for the *model* of the *real reconstruction* of the world; the 'real reconstruction' here includes both 'self-construction' and 'other-construction'.

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<sup>4</sup> An experience of a person is *external experience* if it refers to the object that is analogously sensible by others. An experience is *internal*, if it refers to (or is dependent on) some *subjective object* (or event) that is sensible by others only *mediately* through this internal experience. Naturalized concepts refer *only* to the objects of our external experience (Vehkavaara 2002: 295–297).



**Figure 1.** The phenomenology of the other one<sup>5</sup> (Vehkavaara 2002: 300).

The explanative representation is familiar and widely used in science, art, and religion. It is self-evidently one of the basic concepts in philosophy of science. The communicative representation is a special case of the first one but the significant one, because it has been a central background conception in philosophy and human sciences after the 'linguistic turn' of the 20th century. It has dominated the basic orientation of both structural and cultural semiotics (Saussure, Lotman, etc.), as well as the ones of critical hermeneutics (e.g. Habermas) and the post-Wittgensteinian analytic philosophy of language and logical semantics. These two models or prototypes are not adequate starting points here. Firstly, most of the living systems do not explain anything (for themselves). Explaining is specifically human action, and even for humans, explanations are often made in the name of some (scientific, religious, medical, etc.) institution that has specialized to give such explanations. Secondly, although many living systems do (or are able to) communicate with each other (at least occasionally), all living systems (and especially the simplest and the most primitive ones) do not need to do that. Moreover, many living systems have to survive also when they are all alone, without any actual contact (even causal) with other systems. They have to deal with the challenges rising from their non-living environment without any aid or interaction with other systems. The 'private' use and formation of representations for the guidance of their behaviour and reproduction are necessary.

<sup>5</sup> As an idea and a term, 'the phenomenology of the other one' (or 'the epistemology of the other one') is originated by Donald T. Campbell (1969). However, the more appropriately it should be called the logic or semiotic of the other one (cf. Vehkavaara, in preparation).

Therefore, the third conception of representation, representation for the real reconstruction of the world is the starting point we need. It can be called the *constructive* or *anticipative representation* because of its orientation to future — it implicitly contains some kind of anticipation of the future reconstructions that it tends to produce. If we think about any externally determinable object-system (or -agent), the only hallmark of its act of anticipation is its apparently 'intelligent' or 'foresighted' control of behaviour. The constructive representation is familiar especially in politics and technology, but also in certain (mechanical) sense in genetics.<sup>6</sup>

The conception of constructive representation can be taken as the most general or primitive form of representation, because (A) the motivation behind the search of correct explanations is often the hope that this knowledge can somehow be useful. (B) In many cases, these anticipative representations can be and are used for communication too, i.e. as communicative representations. (C) If the basic hypothesis of biosemiotics holds that living systems are not essentially mechanical systems (but semiotic ones), the constructive representation is certainly the form of representation whose availability is necessary. Living systems have to reproduce themselves (if they are going to stay living), and for this self-reconstruction, some kind of internal 'guide-book' is needed. If genes, enzymes, hormones, etc. are considered as signs, most of them are principally signs in a sense of constructive representation, they function for the reconstruction of the system and its environment.

### 3. Peircean objective logic and its insufficiency for biosemiotics

The modern biosemiotics has dominantly been based on two different traditions, on Charles Peirce's semeiotic and on Jakob von Uexküll's (1928; 1982) theoretical biology. In 'Copenhagen interpretation' of biosemiotics initiated by Jesper Hoffmeyer, some ideas drawn from these two traditions have been tried to consolidate and utilize in the

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<sup>6</sup> When a piece of DNA-string is said to be the gene of some trait, it is thought to represent (or code) that trait in the sense of anticipative representation — the occurrence of the gene is necessary for the construction of that trait in the organism.

light of current biological and biochemical knowledge. Although both Peirce's semeiotic and Uexküll's *Umweltforschung* and *Bedeutungslehre* share a common antecedent, Immanuel Kant's transcendental philosophy, and both of them relativize and naturalize Kant's transcendental idealism in some respects, they nevertheless did not go very far in their 'naturalism'. Still, certain features make especially Peirce's semeiotic more than a promising *starting point* for the naturalization of its semiotic concepts.

Firstly, Peirce's concept of sign is general enough to support all the above described three different motives for the concept of representation. Secondly, Peirce's concept of *mind* suits more than ideally with the consequence of the basic hypothesis of biosemiotics: living systems are mental systems (and *vice versa*). If we think what makes the concept of representation or sign essentially mental, we find that it is ultimately some kind of *normativity* internal in it. Any interpretation, translation, or other transformation of signs can be judged successful or unsuccessful according to some normative criterion like the grade of fruition of the anticipated result of the process. According to Peirce, it is this normativity, purposiveness, or more generally, *final causation* in a sense of a *general tendency* that may or may not fulfill, which is the definitive character of mind or mental systems in the most general sense:

Mind has its universal mode of action, namely, by final causation. The microscopist looks to see whether the motions of a little creature show any purpose. If so, there is mind there. Passing from the little to the large, natural selection is the theory of how forms come to be adaptive, that is, to be governed by a *quasi* purpose. [...] But the being governed by a purpose or other final cause is the very essence of the psychical phenomenon, in general. (Peirce, CP 1.269 [1902])

Thus, mind can be found in any natural system whose action appears (quasi)purposive, and therefore, it can be studied as it appears in nature. No consciousness or free will is the necessary (or even common) companion of mind although both of them are real possibilities, their reality in certain phenomena is not denied. The scope of biosemiotics could then be determined as applied Peircean *objective logic*, as a *theory of mind objectively operative in nature* (cf. Vehkavaara 2002: 302–303). A summary of Peircean scheme of objective logic is represented on Fig. 2.

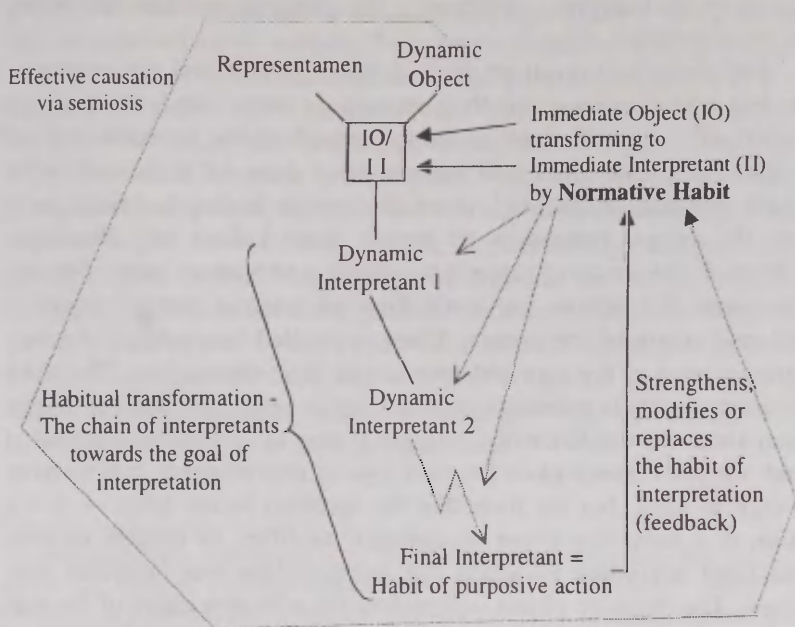


Figure 2. Peircean scheme of habituation.

Peirce defines a sign or representation as a non-reducibly triadic unity of *representamen*, *object*, and *interpretant*. The act of the recognition of a representamen as a sign of its object creates the interpretant (see Peirce, W3: 82–83 [1873]). There are two perspectives to the object: (1) the *immediate object* is the object as it is presented in the sign, and (2) the *real* or *dynamic object* can be considered as the hidden totality of *past* causes of the sign as an *event* to be the sign it happens to be. The dynamic object is always more or less absent or hidden in the sign, but it has to be in certain ways 'previously acquainted' for the system (cf. Peirce, CP 8.178–179 [1909]). The result of the interpretation is another sign, the *interpretant* that is representing the *same* object as the original one. This interpretant-sign is further interpreted so that the whole chain of interpretants proceeds. The process of interpretation is not just a simple succession of signs, but it is a (quasi)-purposive or goal-directed process — a representamen is recognized to represent its object by a *normative habit* of interpretation. This 'norm' in the habit gives the criterion for the *success-*

fulness of the interpretive process — the interpretation may *fail* during its actualization.

The immediate result of the interpretation is called the *emotional* or *immediate interpretant* that appears as some kind of ‘feeling’, ‘irritation’, or ‘excitement’ in the system where the interpreting habit is embodied. The process of interpretation does not necessarily arise above this state of ‘feeling’, in which case the feeling just fades away and the system returns to its earlier state without any significant effects. If the process proceeds beyond that temporary state, it produces some real action, i.e. some directed internal restructuration or external action of the system. These are called *energetic* or *dynamic interpretants* of the sign and they act as signs themselves. The chain of interpretants is potentially endless (as in seemingly endless discussion about the existence of God), but it may as well achieve a kind of end, the *final interpretant* (or *final logical interpretant*). It is no more a sign in itself, but the *form* that the resultant action takes — it is a form of a *habit* that either strengthens, modifies, or entirely replaces the habit according to which the interpretation was originally executed. The dynamic object is therefore the effective cause of the sign at least in this way by becoming the effective cause of the habit of interpretation in habit formation. The process of interpretation, *semiosis*, is a process of *self-control*, a process of *self-controlled habit-formation*.<sup>7</sup>

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<sup>7</sup> This description of *semiosis* is based mainly on “Prolegomena to an Apology or Pragmaticism” (Peirce CP 4.530–572, 1906) and chapter 28 in EP 2 (MS 318, 1907). In the latter one, semiosis is described as a thought process that starts from perception and ends up to totally internalized and embodied belief (i.e. habit of action) about the dynamic object of the perceived sign. “[W]e have to distinguish the Immediate Object, which is the Object as the Sign itself represents it, and whose Being is thus dependent upon the Representation of it in the Sign, from the Dynamical Object, which is the Reality which by some means contrives to determine the Sign to its Representation. In regard to the Interpretant we have equally to distinguish, in the first place, the Immediate Interpretant, which is the interpretant as it is revealed in the right understanding of the Sign itself, and is ordinarily called the *meaning* of the sign; while in the second place, we have to take note of the Dynamical Interpretant which is the actual effect which the Sign, as a Sign, really determines. Finally there is what I provisionally term the Final Interpretant, which refers to the manner in which the Sign tends to represent itself to be related to its Object” (Peirce, CP 4.536 [1906]).

This scheme of habituation is plausibly applicable to most human and animal horizontal semiosis,<sup>8</sup> as Peirce himself certainly thought. But its *general* biosemiotic applicability, e.g. to phytosemiosis (i.e. to semiosis in plants, cf. Krampen 1981; Kull 2000), to intracellular semiosis, to prokaryotic semiosis (Hoffmeyer 1997; 2002) and especially to vertical semiosis (i.e. to phylo- and ontogenesis, cf. Hoffmeyer, Emmeche 1991; Hoffmeyer 1996b) is more dubious. This concerns the application of Peirce's triadic concept of sign and especially the concept of object. The concept of *semiosis* should, perhaps, be defined in terms that are more general. Then the sign-action would be only a special type of semiosis, as Peirce himself seems to suggest.<sup>9</sup> I nevertheless doubt that it is not justifiable to extend the concepts of sign or representation, its objects and interpretants, etc. so that they could be used to describe any such semiosis.<sup>10</sup>

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<sup>8</sup> In 'Copenhagen interpretation' of biosemiotics, the term *horizontal semiosis* refers to systemic "communication throughout the ecological space" in contradistinction with *vertical semiosis* referring to "genetic communication down through the generations" (Hoffmeyer 1997b: 933).

<sup>9</sup> "But by 'semiosis' I mean, on the contrary, an action, or influence, which is, or involves, a cooperation of three subjects, such as a sign, its object, and its interpretant, this tri-relative influence not being in any way resolvable into actions between pairs." (Peirce CP 5.484 [1907]. Cf. also Peirce's self-criticism in CP 1.565 [c. 1899].) However, there are some Peirce-scholars like Peder Voctmann Christiansen (2002), John Deely (1990: 83–92), and Edwina Taborsky who define both semiosis and sign in metaphysical terms. E.g. Taborsky (2002: 363) defines semiosis in terms of codification, energy, and informed mass.

<sup>10</sup> Peirce himself does not seem to be quite consistent. This kind of extension of the concept of triadic sign would, at least, violate Peirce's "ethics of terminology" (Peirce EP 2:263–266 [1903]), but not merely the ethics of terminology speaks in favor of this interpretation. A comparison of Peirce's maxim of pragmatism (e.g. Peirce CP 5.9) with his examples of sign-action that concern almost exceptionally about human agents, should lead to the same probable conclusion. Moreover, the most famous of the rare examples of non-human representations, the turning of a sunflower towards the sun (Peirce CP 2.274 [1903]), is used to demonstrate whether there are any genuine representamens that are *not* signs. If the concept of triadic sign is extended too far, there is a danger of a kind of 'overformalization' (as seems to be in Taborsky 2002) that the habits of inanimate nature are no more considered as strictly *normative*, but they are diluted to merely *formative* habits. This degenerated semiotic ceases to be a 'positive science' but it flows under the field of 'negative sciences' (as Peirce himself forewarns in CP 4.241). It becomes mere 'mathematics' in the sense that Peirce gives to it: "the Conditional or Hypothetical Science of *Pure Mathematics*, whose only aim is to discover not

The general thesis in this paper is that, from the point of view of the interpreting system ('object-system'), the *environment does not have to be divided into objects* at all. At the metalevel, from the point of view of human observer (meta-agent), the environment of an object-system is divided into objects, but object-systems do not necessarily have access to this or *any* such division — they do not necessarily have any *Umwelt*.<sup>11</sup> Interaction with the undivided environment (or more properly, within the whole local world that consists of both the object-system and its environment) is sufficient. This does not mean that the concepts of object, the whole Peircean triadic sign, and *Umwelt* were not real or applicable but that they are not properly applicable in *all* cases where meaning and final causes are present. They are not primitive semiotic concepts but emerge within relatively complex semiotic systems. The objects of representation step into the stage side by side with the emergence of real zoösemiotic (or perhaps also robosemiotic) *Umwelt*. This is well in line with the original use of the concept of *Umwelt* — for Jakob von Uexküll it was a *zoological* concept and he explicitly rejected the idea that it could be applicable to plants:

The plant has no nervous system, receptors, or effectors; therefore, no meaning-carriers, functional circle, perceptual, or effector cues exist for the plant. [...] The houses of plants lack mobility. Because they possess neither receptor nor effector organs, plants are not able to construct and be in command of an *Umwelt*. (Uexküll 1982: 33)

As Kalevi Kull (2000: 330–331) has noticed, Uexküll wrote almost nothing about plants in his *Theoretische Biologie* (Uexküll 1928) and other early writings. This does not nevertheless mean that there would not be *meanings* or even signs for plants,<sup>12</sup> but whether there are any *objects* for plants is questionable.

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how things actually are, but how they might be supposed to be, if not in our universe, then in some other" (Peirce CP 5.40 [1903]).

<sup>11</sup> The concept of *Umwelt*, introduced by Jakob von Uexküll (1928), can be defined as a species-specific "subjective world of an organism" (Emmeche *et al.* 2002: 30). The *Umwelt* of a species of object-system is the environment (or more generally the *world*) as it is *appearable* for the object-systems according to their species-specific (sensory) capacities. The concept of *environment* is treated here as a meta-level concept, the environment of an object-system is externally determined (or defined) by the meta-agent, the observer or researcher.

<sup>12</sup> Instead of *Umwelt*, Uexküll introduced the concept of *Wohnhülle* (dwelling-integument) for plants (Uexküll 1982: 34; discussed in Kull 2000: 330–332).

### Implicit adaptationism in Peircean objective logic

The object of sign/representation was, however, a necessary compound of sign for Peirce. It had a certain *explanatory* task — it was needed to *explain* the potential success of interpretation: the habit of interpretation is able to track the right object for the interpreted representation, because this object has already affected the formation of that habit in earlier semiotic processes. Especially in the context of scientific investigation, which was Peirce's central prototype for objective logic (cf. Vehkavaara 2002: 301), the concept of object is needed to provide both an initial contact with the real world and the criterion for the successfulness of the interpretation. The investigation is looking for the *truth* about the real *object* of the representation.

The problem is that as a general explanation of habit formation, this is in the certain respect parallel to the adaptationistic mode of thinking in sociobiology and functionalistic anthropology. The initial criticism of 'Panglossian adaptationism' (Gould, Lewontin 1979) attacks on two common assumptions: (1) natural selection is assumed to forge *optimal* — not just *sufficient* — adaptations, and (2) every identifiable common trait is implicitly assumed (or perhaps better, *defined*) to be a real adaptation, i.e. that nature has really selected it because of its advantageousness. The general form of the latter of these assumptions — with its practical consequence that only adaptive historical explanations are drawn — seems to be present also in the Peircean scheme of habituation. It is, namely, an explanation and description about how cognition, knowledge, or 'synthetic judgements'<sup>13</sup> are possible and how the knowledge acquisition or learning can be cumulative or otherwise positively progressive. And the explanation was that our habits of interpretation tend to interpret signs we are receiving correctly, since our habits of interpretation are already predetermined to do that because of the earlier influence of the objects of these signs. This is an adaptationistic *a priori* story if it is taken as the universal model of habit formation.

Both sociobiological (etc.) and semeiotic adaptationism seem to be based on the strong implicit (although simultaneously often explicitly rejected) intuition that there can be no event without a cause. This

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<sup>13</sup> While Kant started his *Kritik der reinen Vernunft* by asking 'how are synthetic judgements *a priori* possible', Peirce argued that "before asking that question he ought to have asked the more general one, 'How are any synthetical judgments at all possible?'" (Peirce CP 2.690 [1877]).

claim may sound odd, because Peirce is so well known for his anti-necessitarianism in cosmology (cf. "The Doctrine of Necessity Examined", Peirce EP 1: 298–311 [1892]). Still, although one of Peirce's basic metaphysical conceptions was that absolute or objective chance is real and effective force in every event, it was not meant to explain the *regularities* of phenomena but their inevitable *irregular* characters.<sup>14</sup> The habits (of interpretation), if any, are *regular* phenomena and the possibility that some formation of a *successful* habit of interpretation could be *completely* accidental or unmotivated might seem to ruin the basic doctrine of the internal normativity of sign-action. Namely, without an object of sign, any *internal* criterion for successfulness of an interpretation cannot be drawn — if there were any normativity in the interpretation, it would be completely *external* to the sign interpreted. Otherwise, there would be no directionality in habituation and interpretation.

Thus, for Peirce, appealing to chance probably did not appear as an intellectually satisfying *explanation* for the *regularity* of the successful habit formation.<sup>15</sup> Similarly, Panglossian adaptationists feel it intolerable to leave the existence (or even usefulness) of some traits to remain unexplained, because the situation reminds them too much about (or leaves open space to) such intellectually unsatisfying supernatural explanations as 'God made it so'.

Nowadays it is quite commonly accepted that besides natural selection, there are also other natural forces in the evolution. Many life forms have useful or functional traits that are not selected because of their usefulness or functionality, but that are *exapted*. They have been adapted for some other function (which may not be functional anymore) *or not adapted at all*, e.g. when they are just consequences of some material constraints or genetic drift (Gould, Lewontin 1979; Gould, Vrba 1982). This thought is analogously applicable to general semiotics, and especially to biosemiotics, in which evolutionary adaptations have to be considered as useful habits of biosemiotic interpretations. All apparently useful traits or habits of behaviour do not

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<sup>14</sup> Continuously effecting chance was also needed to make the emergent development or creative evolution, i.e. the arousal of essentially new forms in nature possible.

<sup>15</sup> Peirce rejects the explanations that appeal to miracles etc: "[A]n explanation should tell how a thing is done, and to assert a perpetual miracle seems to be an abandonment of all hope of doing that, without sufficient justification" (Peirce CP 2.690 [1877]).

necessarily have adaptive origin, but their historical origins do not explain — or have anything to do with — their usefulness. Thus, if the object of sign is tried to determine in such cases, either it has not been attended in the formation of the interpreting habit or it has nothing to do with the successfulness ('goodness') of the interpretation. This does not mean that history would not matter. It does matter in many cases but not in *all* cases. But even in the cases in which the history is significant, it is often *not known* what were the particular historical forces in the development of an apparently useful trait or habit. In such cases the mere usefulness of a trait or habit does not give enough evidence to conclude that it is also *designed* (whether by self-organization or by natural selection) to be useful. It would be mere story-telling, which both Peirce, biosemioticians, and sociobiologists (among many others) have all tended to commit in some respects (cf. Gould 1978; Gould, Lewontin 1979).

Despite the problems due to its implicit adaptationist logic, Peirce's concept of representation is still a promising starting point. It is not merely an explanatory concept, but independently of its explanatory use, an *anticipatory* concept too. A sign or representation is not just looking at its past causes — it has no meaning or signification, i.e. it is not a sign at all, if it *could not have future effects*, if it is not *able to direct future actions*. What is needed is such a criterion (or norm) for the validity, value, appropriateness, or successfulness of the interpretation that is definable without any reference to the concept of the object of representation. After all, they are essentially the goals, norms, or purposes of action that make actions semiotic (or, in the generalized sense, 'mental'), and distinguish them from phenomena that are nothing more than physical. If there were no kind of goal, norm, or purpose in interpretation, there would be no criterion for the value of interpretation and there would be no real sense in calling this transformation process an interpretation or a sign process — nothing would distinguish it from a sheer physical process.

Now we are coming into the crucial point concerning semiotic naturalism. If any kind of normativity or teleology is somehow defined in natural terms, it offers, in a sense, some kind of positive solution to the one of the most central philosophical questions of modern era, *how 'ought' can be defined in terms of 'is'*. However, we must first make it clear what *kind* of normativity we are looking for.

1. A naturalist cannot rely on or refer to anything supernatural, and even if naturalism would be taken only as a methodology, there cannot be any place for God or other supernatural forces in natural science. Naturalism endeavours to explain away the need for any supernatural or vitalistic principle in science (cf. Stjernfelt 2002: 342).
2. We are looking for a *system relative* concept. What does it mean if something is said to be *beneficial for the system*? Most of all, any normativity, criterion for progress or purpose is *not* supposed to be found for *global evolution*.
3. We need a *real* concept of a system relative normativity or 'natural self-interest'. The success or unsuccessfulness of a system must have *real* effects in the world — success must, on the one hand, be externally observable phenomenon, and on the other hand, be effective independently of our human descriptions, definitions, and observations. It must give objective criteria for the value of the interpretations of a system *for itself* (i.e. independently of our human purposes, needs, interests, and ideas).
4. The concept is not necessarily representational for a system. Norms for action are only some kind of general guiding principles that need not be in any sense conscious any more than individual 'existing things' or 'Platonic ideas'. Goals, (purposes) or interests of a system are not necessarily in themselves represented at all in the system.<sup>16</sup>

There are numbers of notions (or words) that biosemioticians (and others) have used to refer to this distinguishing character of the semiotic realm. Among these are *finality* or *final cause* (e.g., Peirce, Hoffmeyer), *purposefulness* (e.g., Peirce; Hoffmeyer, Emmeche 1991; however, notice Hoffmeyer 2002: 102f), *goal-* or *end-directness* (e.g., Bickhard 1998), *intentionality* (Hoffmeyer 1996a), *value* (e.g., Sharov 1998), *need* (e.g., Kull 2000: 340), and *appropriateness* (e.g., Vehkavaara 1998). The list is certainly incomplete. In the standard neo-Darwinism, the concepts of *fitness* (as '*reproductive success*') and *function* have played the same role as the normative or teleological concepts of the list above.

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<sup>16</sup> This is in accordance with Peirce's 'extreme scholastic realism' that there are real generals (although not all generals are real, cf. Peirce CP 5.430, 1905) that are (like natural laws) not existing 'things' in the 'world of ideas' or anywhere else. Peirce's conceptual realism is Aristotelian rather than Platonic.

Before the concepts of representation, its object, interpretation and *Umwelt* can be thoroughly considered, it is necessary to define the concept of 'real' system related *normativity* or *natural self-interest*. How the 'benefit for object-system' is definable at object-level and what is its origin or emergence in natural systems. I am proposing that the Peircean concept of triadic sign and Uexküll's concept of *Umwelt* are both definable in terms of Mark Bickhard's interactivism — that interactivism would offer more general (but not too general) and definite conceptual scheme to biosemiotics than either of these.

#### 4. Function and natural self-interest

In Bickhard's interactivism, the naturalistic treatment of normativity, how 'ought' can be defined in terms of 'is', is based on the concept of function or (self)functionality. Marc Bekoff and Colin Allen (1995: 254) have classified three main accounts to the concept of function as follows.

1. *The etiological or historical account.* "A trait *T* has function *F* for the organism *O* if *F* was an effect of ancestral versions of *T* that contributed, via natural selection, to transmission of *T* from *O*'s ancestors to *O*" (Bekoff, Allen 1995: 254). The function of a trait or organ is defined according to its appropriate evolutionary origin. This is a backward-looking account. The concept of the etiological function is used when a historical explanation for the origin or 'becoming' of the existence of a trait in a given population is requested. The etiological concept of function can be successfully used in the *explanations* of how the systems have developed as they now are (e.g. Williams 1966; Gould, Vrba 1982).
2. *The 'function as capacity' account.* "A trait *T* has function *F* for organism *O* if *F* is an effect of *T* that contributes to some capacity of *O*". This conception is neutral to all normative judgements about the function — no distinction between function and dysfunction can be made. "According to this account, it is just as much a function of blood to carry pathogens as it is a function to carry oxygen" (Bekoff, Allen 1995: 254).
3. *The forward looking 'current utility' account.* "A trait *T* has function *F* for organism *O* if *F* is an effect of *T* that contributes to *O*'s fitness. This definition is forward looking (dispositional) in the

sense that function is defined with respect to future reproductive success" (Bekoff, Allen 1995: 254).

The 'capacity-account' is transparently unsuitable here, because we are looking for a *normative* concept. The etiological concept is heavily criticized by Bickhard being *causally epiphenomenal*: in the etiological model, the mere current state (or process) of a system is not sufficient to specify function, but the right kind of history is essential — still, only current state can be causally efficacious (Bickhard 1998a: 266). In interactivism, the concept of function is thus defined as a forward looking concept, which is, in a sense, a natural choice, because we are not trying to explain how this or that functional trait has emerged, but what is its *future* value to the system.<sup>17</sup> However, we need more general definition than the 'organismal' one above — organism does not necessarily fit well enough to what is counted as a living system here (cf. footnote 2).

The concept of function can be based on the property of the *potential immortality* of living systems — *anything that contributes to the maintenance of a system is functional to that system*. Because living systems maintain themselves far from equilibrium, the property of *self-maintenance* is an *existential precondition* of these kinds of systems. If any self-maintenant far from equilibrium system, the maintenance of which is based on its own activity, can no more serve this function, it starts to fall apart and will soon become extinct (i.e. it falls into some equilibrium state). In this way, we become able to say that *servicing* a function of self-maintenance is a *natural self-interest* of any self-maintenant far from equilibrium system. It is not about the plain survival of a system, but about the survival of a system *by means of its own activity*, by its internal continuous flow. The self-interest for self-maintenance is not necessarily the only 'value' for the system (like Darwinian 'survival value') though still, perhaps, *minimal* natural self-interest. Additionally, it may set up new goals, 'values', or purposes as the system develops in its continuous self-organization. Moreover, living systems are not merely self-organized but also 'other-organized' by other living systems so that they may additionally function for alien goals, interests, etc. As these alien interests

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<sup>17</sup> This does not mean that the backward looking concepts of function were needless. Some of them are probably necessary to explain the course of past evolution. Both backward and forward looking concepts are useful, but they should be kept separated — they are suitable for explaining different issues.

mix with self-interests, it may be impossible to make sharp difference between them. The self-interest for self-maintenance provides only *initial* normativity.

Notice firstly, systems that are not in far from equilibrium but in some (stable) 'energy well' — state do not *need* to maintain themselves — the 'successfulness' of their action is not their existential precondition. Therefore, there is no natural criterion of success *for themselves* (at the object-level) — a 'meta-agent' is needed for the definition of success. Similarly, such far from equilibrium systems that are not even indirectly *self-maintenant* but *completely* 'other-maintenant' do not have any natural self-interest either — the consequences of their action do not affect their maintenance. Secondly, every particular self-maintenant far from equilibrium system has its *own* natural self-interest(s), because "function, in this view, is always relative to a particular system — something might be functional for one system and simultaneously dysfunctional for another" (Bickhard 1998a: 266). Thirdly, there is no natural self-interest for the whole universe. Even if the universe might be considered as a far from equilibrium system, it is nevertheless questionable whether the universe needs to maintain itself. How could the universe be unsuccessful in its self-maintenance? If there is no possibility for failure, there is no *natural* criterion for success either. Thus, the local emergence of system relative normativity does not contain any assumption about the purpose, progress, or even direction in global or cosmic evolution.

### **Primacy of normativity and function over habituation and signs**

The concepts of natural self-interest and function are not applicable only to living systems but to all non-living self-maintaining far from equilibrium systems. If this sounds counterintuitive or inappropriate, it will not need to do so. Although such non-living physical systems as a candle flame or a tornado are serving their self-interest and, as a consequence, are 'staying alive' (without being living), they are nevertheless not *trying* to serve it. Their self-interest is not *forcing* or 'suggesting' them to do anything. They are not *seeking* how they can survive but they just *happen* to have such a structure that fulfils their sole self-interest and existential precondition some period. Their self-

maintenance does not yet give birth to any real growth or increase in complexity.

The situation is different if a system has alternative ways of self-maintenance available and it can switch one alternative to another if the first one did not succeed. Bickhard calls systems of this kind *recursively self-maintenant*:

The conditions under which the serving of a function succeeds constitute the *dynamic presuppositions* of those functional processes. [...] Some systems, however, have the ability to switch among two or more means of being self-maintaining, two or more functional processes, such that if the dynamic presuppositions of one fail, the dynamic presuppositions of the other may hold. (Bickhard 2001: 462)

Within the recursively self-maintenant systems — and living systems are certainly such — representation and internal error recognition (and consequently, ‘pre-rational’ choice) can emerge and the evolutionary growth becomes possible.

Before going deeper into recursively self-maintenant systems, I would like to propose that one basic ‘chicken and egg’ problem of biosemiotics (or semiotic naturalism) can now be resolved (cf. Emmeche 2000; 2002). If we look at the rise and development of biosemiotics in the 1990s, the point of view and solutions that especially its ‘Copenhagen interpretation’ have suggested to the problematic of the origin and emergence of life have been the main strength and legitimation of the biosemiotic approach (cf. Hoffmeyer 1996b; 2002; Hoffmeyer, Emmeche 1991). The potential impact of biosemiotics on the understanding about living phenomena is to demonstrate how the historical (evolutionary and developmental) and the structural ways of description can be inextricably conjoined, and if they are not seamlessly conjoined (as in mainstream biology), how their ‘methodological’ separation distorts the interpretation.

The standard biosemiotic solution that the thesis about the coextensivity of signs and life underlines, is that in the cosmic history, all the basic semiotic concepts have emerged simultaneously within the emergence of first living systems. But now, if we agree that there has been an era when life has not yet emerged, and that at that time, some self-maintaining far from equilibrium systems — like Kauffman’s (1995) autocatalytic closures — have nevertheless been existed, we have to conclude that these systems, even if neither living nor representative ones, have already had real natural self-interests of their

own. Natural self-interests and functions have emerged *before* life and signs (or representations) in the cosmic history. The norm of interpretation that makes the interpretation possible has become first (before any interpretation) and the actual interpretative systems have developed afterwards. Normativity, self-functionality, and self-interest are more primitive and general concepts than the ones of sign, representation, and interpretation are — they can be described and defined without any reference to the concepts of life and sign, they are properties of *physical systems* of a certain kind. The extension of living or genuinely semiotic systems is a subclass of the extension of systems with self-interest.<sup>18</sup> However, there is still point to call the problem a ‘chicken and egg problem’, because although natural self-interests can be said to have been emerged before life and semiosis, they have played no role in cosmic evolution until the emergence of recursively self-maintenant systems, i.e. of life and signs. They were ‘insignificant’, had no power over the course of evolution without the agent, without the living system that *tends* to fulfil its self-interest. Real final causes co-emerge with life and signs.

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<sup>18</sup> Although Peirce’s classification of sciences (cf. Peirce CP 1.180–202) does not offer any cosmological order of concepts, it gives some support to the thesis about the primacy of norms or goals over signs. In this classification, Normative science (as the second order of *Philosophia Prima*) is divided into three ‘families’: *aesthetics*, *ethics (practics)*, and *logic (semeiotic)* (cf. Peirce, CP 1.281). Logic as the science of self-controlled thought is subordinate to ethics (and a subclass of it). Ethics, in turn, as the science of self-controlled action needs aid from aesthetics in determining its ideals or goals, i.e. establishing its norms (Peirce, CP 1.191). Thus, in Peirce’s system, the esthetic concepts like norm, goal, or purpose are more abstract than logical concepts like sign, representation, and interpretation. Norms can be studied without the concept of sign (at object-level), but signs and semiosis cannot be studied without the reference of some esthetic concepts (norms, goals, ideals, etc.) — or in terms of Peirce’s ‘method of precession’ (cf. Peirce CP 1.549 [1867]), norms (etc.) can be pre-scinded from signs, but signs can not be pre-scinded from norms. I have elsewhere (Vehkavaara, in preparation) concluded that according to Peirce’s classification of sciences, only minor part of biosemiotics can be properly characterized as applied semeiotic (i.e. logic) but rather applied ethics and aesthetics (in Peircean theoretical sense).

## 5. There are a million ways to maintain oneself in the long run

If a far from equilibrium system is recursively self-maintenant and thus may have alternative procedures for self-maintenance, then the future development of the system is dependent on which alternative, on which 'way of life', it chooses. Sometimes these 'choices' are irreversible as when recreating the basic material structure of the system and constraining thus all the future development. However, even if these irreversible 'choices' can not be cancelled, the construction of additional functional structures can compensate their inappropriate effects. In contrast, if the system *fails* in its maintenance, it is insignificant which way that happens, its causal effects, as well as semiotic ones (if it has any), end anyway. So, there is a kind of anti-symmetry between failure and success, the meaning of total failure is absolute for the system, but one of success depends on the way of self-maintenance. If the concept of representation can successfully be based on this concept of minimal natural normativity, the similar anti-symmetry holds between the invalidity and validity of representation, between its inappropriateness and appropriateness, and between its falsity and truth. There is the absolute negative limit, extinction, but no necessary positive limit, because future growth and development is dependent on the successfully chosen way of self-maintenance.

The success in self-maintenance can be achieved by two basic strategies: by the manipulation of the system itself or of its environment. In variable external conditions, a system can maintain itself either 'directly', by *self-reconstruction*, i.e. by altering *itself* (as in adaptation to environmental pressures), or 'indirectly', by the *active reconstruction of the local environment* so that the altered environment would function for the maintenance of the system. These basic ways of self-maintenance do not exclude each other but are often carried through simultaneously and the distinction between them is not a sharp one, especially in cases where the self-maintaining activity operates in the borderline of the system and its environment.

For instance, (most) poikilothermic animals have only behavioural thermoregulation available. Their only way to maintain their optimal internal temperature (for self-maintenance) is to change the temperature of their environment. There are several possible ways for this 'environmental reconstruction'. An animal can exchange its environment for another one of a different locality, as in seasonal migration. It

can also make 'real reconstructions' in its present local environment by building nests, digging tunnels, etc. Homeothermic animals have, in addition to behavioural thermoregulation, also means for metabolic thermoregulation that does not affect much on the environment but that function self-constructively. When metabolic heat production (as well as winter sleep or hibernation with decreased metabolism and internal temperature) is switched on, the organism is changing its own mode of action in order to fit better with changed environmental conditions.

### **Self-reconstruction — choosing the 'way of life' and constructing new purposes**

Recursively self-maintenant systems are more complex than a simple candle flame or tornado. They contain subsystems the operation of which the whole system is maintained. When these subsystems take care the maintenance of the whole system, each of them functions in itself for some subgoal (like the maintenance of the optimal internal temperature of the whole system). If these subsystems are far from equilibrium systems, they have to be maintained either by the whole system (i.e. by other subsystems) or by the subsystem itself. In the latter case, a subsystem has its own self-interest of self-maintenance in addition to its functioning for the interests of the whole system. As the system develops and evolves, some goals of the subsystems may become independent of the goals of the whole system. They may even evolve in the pathological direction where the existential conditions of a subsystem and of the whole system are in conflict. Phenomena like cancer, mental illnesses, suicide, and many seemingly 'pathological' cultural tendencies (whatever they were) might be considered as examples of this kind of development and 'conflict of interests'. The self-reconstruction means thus either the creation or assimilation and integration of new subsystems within the whole system or the development of old subsystems to strive for new subgoals or 'needs' that some internal or environmental changes 'forces' the system to take into account. If newly created or assimilated subsystems are integrated, the whole system has to take account of their existential preconditions, i.e. the system has to begin to strive for the self-interests of new subsystems. Thus, the self-reconstruction of a system means the *adoption of new subgoals or purposes* for the system, either

by the system itself or by its environment. It is a kind of *choosing the way of life* — the choosing of the direction of (or some limits to) the evolution of the lineage.

### Reconstruction of environment — ecological implications

(A) *Passive reconstructions*. Some of the effects, and even the most permanent ones, that living systems set off in their environment do not have much, if at all, to do with self-maintenance. They are not active reconstructions of environment but more like *passive* ones. The most obvious examples are coral limestone, coal-beds, and the other geological formations of fossil origin. These *passive reconstructions* of environment are ‘side-effects’ of a kind — if they happen to be functional, their functionality is purely accidental. They can not be considered as genuinely semiotic effects, but like the proportion of oxygen in the atmosphere, they may still be the most significant for current living systems.

(B) *Active reconstructions*. Reconstructions that are clearly *designed* (by the system) to be functional to the maintenance of a system can be considered as the *genuinely semiotic* effects of self-maintenance. By such *active reconstructions* of their environment, organisms (or living systems in general), in a sense, *externalize their interests or purposes* into their environmental structure.<sup>19</sup> If this external structure is firm enough, these ‘externalized purposes’ may remain effectual even if they were no more functional to the system. The structures with externalized purposes may continue to strive for these purposes even after the extinction of the system.

The active reconstruction of environment can be divided into two branches: to the active reconstruction of *non-living elements in the environment*, and of the *other (living) systems* in the environment.

(B1) *Active reconstruction of non-living elements in the environment*. The most ‘natural’ examples of active reconstruction of non-living elements are nest building (when it uses inorganic materials), the construction of coral reefs, etc. One of the most striking examples is nevertheless the *machine construction* of humans, and especially

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<sup>19</sup> The idea of *externalized purposes* is comparable with the concept of *extended phenotype* introduced by Richard Dawkins (1978)

the creation of external non-living *goal-directed* or *self-regulating* devices and machines. When a (wo)man designs and builds machines, (s)he externalizes her/his purposes into the non-living material system that (s)he is currently organizing. This gives the sense in which thermostats can be said to be semiotic systems (although not genuine semiotic *agents*), as is proposed in the next chapter. A thermostat or any self-regulating system can be said to form representations that guide its functioning. It is a kind of representative system, but not a genuinely semiotic one, because the *goals* of its functioning are *not of its own* but set up by humans. It is functioning for *human* purposes. Mechanical man-made devices like thermostats do not have to maintain themselves, because usually they are not far from equilibrium systems. They have no self-interests — their existence as systems is not (necessarily) dependent on their action. The norm for their 'interpretations' (that distinguishes well-functioning from malfunctioning) does not contribute their maintenance.

**(B2) Active reconstruction of other living systems in the environment — ecological implications:** A system can manipulate other systems (that are in its environment) to maintain itself, to fulfill its self-interests, needs, or purposes that are in itself foreign to these other systems. However, this manipulation is not the necessary direct construction of other systems — other systems do not necessarily have to be in one's *Umwelt* as 'Other' (or at all). No direct contact between systems is needed. It is sufficient that only some of the effects (i.e. reconstructions) of other systems belong to one's *Umwelt*, (or if it has no *Umwelt*, to common environment) so that no genuine communication between systems exists. There is just a competition between the mutually exclusive reconstructions of the common environment. The one who 'loses' have to adapt oneself to the environmental reconstruction of the other system, i.e. to find new ways to maintain oneself. If this kind of *indirect construction of other systems* is reciprocal, it may bring along new symbiotic relations and a co-evolution of systems.<sup>20</sup> It is at least logically possible that the emergence of symbiotic relations (or more generally, of heterogeneous metasystem

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<sup>20</sup> When one system forces the other one to adapt its reconstructions in their common environment, this other may develop oneself into such a form that it can reconstruct some other characters in their environment to which the first system has to adapt oneself. In such a way, they may start to maintain each other without any direct contact between them.

transition<sup>21</sup>) does not require direct contact between symbionts (although it may develop later).

However, in many biological examples about symbiotic relations, there is a direct contact between symbionts in such a way that at least for one system, the others are in one's *Umwelt* as independent semiotic systems. Then, we can talk about the genuine *semiotic construction of other systems*. This does not necessarily imply that there would be a genuine communication between systems, because the relation of semiotic construction does not need to be reciprocal. Besides symbiotic relations, all parasite-host -relations (including human breeding of livestock etc.) are also examples of semiotic construction of other systems. For genuine (reciprocal) communication between systems, such a community of systems, where each one has others in one's *Umwelt* (as systems of 'similar kind'), is required.

## 6. Minimal interactive representation — a representation without the object

One of the basic claims in Bickhard's interactivism approach is that within recursively self-maintenant far from equilibrium systems, the minimal concept of representation emerges. Although Bickhard (1998b) presents a ten-level hierarchy of different concepts of representation, there is no need to consider all its levels here. For the basic semiotic concepts, three levels suffice. The *level of minimal (interactive) representation* "constitutes a minimal emergence of ontological representationality" (Bickhard 1998b: 189). The *level of phenomenal objects* is needed for Peircean concepts of the object of sign, the iconic and indexical types of signs as well as Uexküll's concept of *Umwelt*. Finally, at the *level of symbolic signs*, symbolic signs emerge. Further levels, where e.g. genuine intersubjective communication (language) and self-awareness might emerge, are not considered here.

Although the emergence of system-relative normativity or natural self-interest is essential both in biosemiotics and interactivism, the origin and ontological status of the norm, goal, purpose, or interest, according to which representations are judged, is not relevant merely for the theory and concept of interactive *representation*. It is sufficient

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<sup>21</sup> About metasystem transition and its types, see Sharov 1999.

that the concept of natural normativity (or self-interest) can be defined without any reference to the concept of representation and that the world can be said to contain such real natural interests that are influential independently of our knowledge and concepts. For any representative system, some kind of goal, norm, or purpose is necessary, but this does not have to be its own. Thus, we can consider representative systems with non-natural purposes and goals that are set up e.g. by humans and that are serving — or are planned to serve — human interests.

For instance, if the goal of a man-made mechanical thermostat is to keep up steady temperature, the fulfilment of this goal has generally no survival value for the thermostat itself (except perhaps indirectly), although it may be beneficial for the man. They can continue their existence without doing anything, i.e. their *good* functioning is not their existential precondition (although the *assumed* or *anticipated* good functioning by humans may be the necessary cause for their becoming into existence). Ultimately, this means a kind of 'over-generalization' of the concept of representation beyond genuine semiotic systems and processes. But does that matter much? It just means that mere appearance of sign-like acting 'representations' is not sufficient to determine the semiotic realm. Additionally, real natural self-interests are demanded.

This kind of 'overgeneralization' of the concept of representation has several benefits. First, it gives a clear sense in which respects robots and other self-regulating devices are human-like (or life-like) and in which respects they are not. Robots can be considered, modelled, and developed as representative systems. Second, mechanical man-made representative systems can be considered as extensions of their constructor (or user), i.e. as newly constructed subsystems of human agent. This is quite natural point of view especially when devices produced by medical technology are considered — e.g. when a malfunctioning organ is replaced by such an artificial device that secures the (main) function of the organ.

Whether within a natural or non-natural goal, whether a far-from-equilibrium or equilibrium system, a minimal ontological representative system (*S*) has to include a subsystem, a *differentiator* (*D*), engaging in interaction with its environment (*E*).

[T]he internal course of that interaction will depend both on the organization of the subsystem and on the interactive properties of the environment being interacted with. [...] [T]he internal state that the subsystem [*D*] ends up in

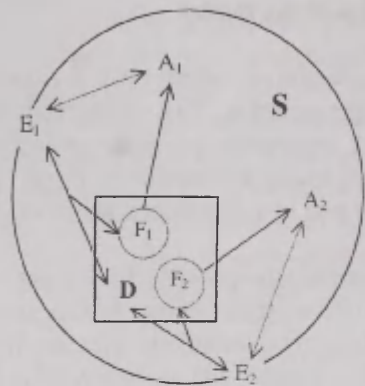
when its current interaction ceases will depend on the environment that it has interacted with. Some environments [ $E_1$ ] will yield the same final state [ $F_1$ ], while other environments [ $E_2$ ] will (or would) yield a quite different final state [ $F_2$ ]. The possible final states of such a subsystem, then, serve as classifications of the possible environments: each final state classifies all of the environments together that would yield that particular final state if interacted with. Each possible final state [ $F_i$ ] will serve as a differentiation of its class of environments [ $E_i$ ]. (Bickhard 1998: 186)

However, this is not yet enough to define the possible final state of a differentiating subsystem to be a representation of the corresponding class of environments. What are needed more are indications to some goal-directed activity ( $A_i$ ) of the whole system (i.e. to some effector-subsystem) that may provide feedback to the environment. This corresponds to representation at level 4 in Bickhard's hierarchy of representations (Bickhard 1998: 189–191).

This basic model can be applied to any goal-directed control system, even to such a simple system as a mechanical thermostat that is connected in a radiator (see Fig. 3). The interaction of the differentiating subsystem (temperature measuring device) of a thermostat with its environment indicates different activities (switch on or off heating) depending on the quality of the environment (the temperature). A thermostat makes the environmental representation and uses it when it is functioning to fulfil its goal (to keep up minimum temperature etc.).

The basic model of minimal interactive representation suits well also for the 'hidden prototype' of horizontal biosemiosis (cf. Emmeche 2000), the chemotaxis of *Escherichia coli*. (See the more detailed description of *E. coli*, e.g., in Hoffmeyer 1997a.) Coli bacteria move in the direction which offers more nutrient molecules rather than less. They do this by measuring the saturation of their transmembrane chemoreceptor-sites while they move and by transmitting the weighted result of this measurement to the flagellar motors that are coordinately moving the cell. The system of transmembrane chemoreceptors that is sensitive to nutrient-molecules (wherever its internal limits will be defined) is a natural candidate for the differentiator for *E. coli*. Relative saturation and non-saturation of these receptors (or in the 'internal ends' of the receptors, the corresponding binding of ligands) form the two possible final states of this differentiator. When an external nutrient concentration is increasing relative to the motion of a bacterium, receptors will keep on saturated, otherwise the degree

of saturation of the receptors will diminish. Each of the final states indicates counter clockwise or clockwise flagellar movements respectively and these will make a bacterium either to move linearly or to tumble around itself.



- S = Representative system,
- D = Differentiator (differentiating subsystem),
- E<sub>1</sub> = Possible local environment 1 of D (alternative to E<sub>2</sub>),
- E<sub>2</sub> = Possible local environment 2 of D (alternative to E<sub>1</sub>),
- F<sub>1</sub> = Final state 1 of D (alternative to F<sub>2</sub>),
- F<sub>2</sub> = Final state 2 of D (alternative to F<sub>1</sub>),
- A<sub>1</sub> = Activity 1 of S (alternative to A<sub>2</sub>),
- A<sub>2</sub> = Activity 2 of S (alternative to A<sub>1</sub>),
- = Indication, ↔ = Interaction.

**The case of S = *Escherichia coli*:**

- D = System of transmembrane chemoreceptors
- E<sub>1</sub> = Increasing concentration of nutrient molecules
- E<sub>2</sub> = Decreasing concentration of nutrient molecules
- F<sub>1</sub> = Relative saturation of receptors in D
- F<sub>2</sub> = Relative non-saturation of receptors in D
- A<sub>1</sub> = Counter clockwise flagellar movement (leads to linear movement of S)
- A<sub>2</sub> = Clockwise flagellar movement (makes S tumble around itself)

**The case of S = thermostat**

- (connected in radiator):
- D = Thermometer or temperature sensor
- E<sub>1</sub> = Environmental temperature below the goal-temperature
- E<sub>2</sub> = Environmental temperature above the goal-temperature
- A<sub>1</sub> = F<sub>1</sub> = Switch on heating
- A<sub>2</sub> = F<sub>2</sub> = Switch off heating

**Figure 3.** Basic model of minimal interactive representation.

Although both thermostats and coli bacteria are representative systems, thermostats (like the most of the man-made self-regulating machines) are not alive in any sense unlike *E. coli*. The difference between these is not based on the nature of the representation they are using but on the nature of the goals they are pursuing. Unlike thermostats, coli bacteria are real far from equilibrium systems and have to maintain themselves continuously thus having the natural self-interests of their own. The open question arises: is it sufficient to

characterize living systems — or (bio)semiotic agents — as minimal representative systems with at least one 'own' natural self-interest? Or are these merely necessary conditions?

### Some characteristics of the model

1. *Formality of the model.* The interactivism offers only a *formal* model for the most primitive *real* representation. The counterparts in *real systems* have to be identified separately in each case. For instance, a differentiator need not be spatially differentiable 'organ' in the whole system, but it can be integrated in a distributed manner into the system.

2. *Constructivism.* The representations, the possible final states of the differentiator, are not continuously existent things. In this most primitive type of real representation, representations are not like already written letters or stable DNA-segments that are just waiting to be read and interpreted. Instead, their *construction* is repeated in every interaction/interpretation again by the differentiator (or by the interaction between the differentiator and its environment). They are permanent only as *possibilities*, not as existing states.

3. *Internality of representations.* Consequently, minimal representations are *internal states* of the system — they are not stable external things or objects that are just waiting to be perceived. Still, these final state representations are not purely internal or 'solipsistic' constructions of the system, but they are constructed in interaction with the environment so that they are produced *in contact* with the environment.

4. *No objects of representations.* Therefore, *for the system* there are no objects any more than the qualities of objects in its environment. All that a simple thermostat 'perceives' is the type of the environment it is interacting with. They are *we, humans* (who use thermostats) who can say that a thermostat measures the temperature and compares the measured value with its goal- or limit-temperature. Concepts as temperature and object are human concepts — they belong to human *Umwelt* and thermostats have no access to them. Thermostats have no *Umwelt* at all.

If *E. coli* bacteria were as simple systems as thermostats are, the situation might be the same for them as for thermostats, i.e. there would be no represented objects for them — bacteria 'recognize' only

the type of the environment, not the nutrient molecules, and respond with the appropriate strategy. However, depending on the details of the bacterial representation processing, they may turn out to be complex enough so that bacteria can be said to perceive the objects — i.e. that nutrients (molecules or the gradients of their concentrations) appear as objects to them — and to give an appropriate interpretation of the interactively constructed internal representation of these objects.

5. *Objective error and internal error-detection.* It is important to notice that goals or interests do not have to be represented in the system. A mechanical thermostat has no self-interest, there is no goal for the thermostat itself (although there is for the man), and in the case of a bacterium whose ultimate self-interest is just self-maintenance, the interest is not represented either, life or death is the criterion for the success. Thus, it is not circular to define the concepts of function, self-interest, and goal first, and the concept of representation afterwards.

In the recursively self-maintenant far from equilibrium systems, minimal interactive representations guide the goal-directed activity, and that guidance can be appropriate or erroneous — to be in error does not undress the representationality of the representation. Moreover, the system might even have means to find out that its representation is in error at this same level of minimal interactive representation. There is not only the possibility of error *per se*, but the possibility that the system might discover that it is wrong. “Specifically, if the system fails to reach its goal, then something was in error in the indications of further interactions for that goal, and, since that failure to reach its goal is itself an internal condition of the system, information of such failure is functionally available to the system for further processing” (Bickhard 1998b: 190).

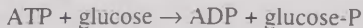
Consider, as an example, the case of the so called *alarmones*, the bacterial signal molecules that signal stress (like glucose starvation), discussed e.g. by Gordon Tomkins (1975) and Jesper Hoffmeyer (2002: 111–112). When, say, saccharin molecules block the chemoreceptors of a bacterium, the bacterial system erroneously interprets the situation as if the glucose concentration is still increasing. The bacterium keeps on swimming linearly although it does not catch its primary nutrient, glucose, enough by doing so. If the bacterium had no other means to ensure its energy production, it would starve to death. However, in glucose starvation, when there is no glucose in the cell, the same enzyme (*glucose kinase*) that starts the process of glucose

degradation starts its minor side reaction (because of the privation of the substrate of its main reaction), to degrade ATP to cyclic AMP (cAMP).<sup>22</sup> Because cAMP and ATP tend to bind to the same regions of cellular proteins, the increasing concentration of cAMP leads up to increasing displacement of ATP from its normal binding sites. Therefore, since ATP is the major energy-carrier molecule of the cell, this process blocks effectively the energy consumption of the cell. This blocking effect on energy consumption is, in the situation like this, self-functional to the bacterial system. It gives more time to the system to detect the apparent error in the interpretive process that guides the chemotaxis (i.e. movements) of the system. The earlier dysfunctional indication (straightforward moving) of chemoreceptor-subsystem is blocked off by switch in energy-consumption-subsystem. The energy-consumption-subsystem 'detects' and even *compensates* 'detected' errors in chemoreceptor-flagellar-subsystem. Production of cAMP-molecules (from ATP) is a way of controlling the behaviour that is already controlled by other subsystems.

The description above is a somewhat speculative story about the evolutionary origin of the production of cAMP. The increasing concentration of cAMP is here a mere *side-product* of an error-detection process, but such a side-product that appears to correlate with errors in chemotaxis. Nowadays, bacterial systems use the increasing concentration of cAMP as an 'alarm-sign' of their internal state of glucose-starvation so that cAMP is used as a *release-sign* for specific transcription processes of the production of a series of enzymes needed for the degradation of non-glucose sugars. If the story about the origin of cAMP-production is correct, it is plausible to assume that the bacterial systems have learned — in the course of evolution — to 'cognize' the positive correlation between cAMP and starvation.<sup>23</sup> and even developed additional methods of getting out of

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<sup>22</sup> The main reaction catalyzed by *glucose kinase* is



and the minor side reaction is



where ATP = adenosine-tri-phosphate, ADP = adenosine-di-phosphate, AMP = adenosine-mono-phosphate, and P-P = pyrophosphate (Hoffmeyer 2002: 111).

<sup>23</sup> The high concentration of cAMP has become a *sign* of its correlate (starvation) for the bacterial system, which fits well in Hoffmeyer's 'rule of thumb' of biosemiotics: "Wherever there has developed a habit there will also exist an organism for whom this habit has become a sign" (Hoffmeyer 1997b).

that undesirable state. I.e. when glucose starvation is detected, the production of the means for an alternative energy production system is launched and after that, the original interpretation-error in chemotaxis may no more appear dysfunctional, i.e. erroneous, for the system.<sup>24</sup> It is noticeable that even if this evolutionary story were incorrect, it shows that minimal interactive representation is all that is needed for these kinds of switches in behaviour. Error of reaching a goal can be detected and compensated by other differentiators at the level of minimal interactive representation.

## 7. Emergence of the objects (of representation) and Umwelt

If we consider the basic concepts of Peirce's semeiotic, some of them have equivalents in the above described minimal interactive representative system. Most notably, the normal behaviour of a differentiator-effector subsystem ( $D$  + the set of potential  $A_i$ 's in Fig. 3) constitutes a systemic *habit*, each final state ( $F_i$ ) of a differentiator ( $D$ ) constitutes the representamen of a sign, and indicated action ( $A_i$ ) of the system constitutes the (dynamic) interpretant of a sign. Because there is no object of a sign (for the system), signs can not be characterized either iconic, indexical, or symbolic.<sup>25</sup> However, the concept of phenomenal object is still a real one, and the structure of systems that experience phenomenal objects — and that can thus have *Umwelt* and triadic signs — can be defined on the basis of minimal interactive representation.

A representative system can contain several interlinked differentiators and several different goals. Indications based on one final state of one differentiator can be multiple — which one will be chosen can

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<sup>24</sup> After these developments, these supposed original means of producing cAMP (as a side-product) has become *dysfunctional* for the system. The lowering of activity is no more needed, if these non-glucose sugars that block the chemoreceptors really prove to be eatable.

<sup>25</sup> These constitute the possible relations that a triadic sign has with its real (or dynamic) object. Because in this minimal model there are the equivalents of the representamen and the (dynamic) interpretant, at least some equivalents of the other Peircean sign-types (based on the possible relations between a sign and its representamen and between a sign and its interpretant) might, perhaps, be detectable.

be dependent on other differentiators and the success in reaching other goals. In such a complex representative system, the internal processing time of a system may become too long for fast enough checkings of the environmental conditions. For such a system, it may be profitable to create and maintain a set of *standard* or 'default-settings' of activity indications and to keep them *updated* *ongoingly*. These 'defaults' are then available if needed, without time-taking computation or processing of final states and indications to further actions at that time (the level 6 in Bickhard 1998: 194). An organization of the indications of interactive potentialities based on these defaults forms a kind of *situation image* that is used as a base for interaction while the continuous updating of its default-settings (*apperception*) is alienated to an independent process.

The updating process of the situation image leaves great parts of it untouched, so that there are certain temporal invariances in the situation image. If the system is able to discover such types of organizations of interactive potentialities in its situation image that tends to remain constant, unchanged or invariant as patterns with respect to the most potential updates of the situation image, then these invariances constitute something like *objects for the system itself*. Physical objects are then *epistemologically*, i.e. as they are accessible to the system, the "invariances of patterns of potential interactions under certain classes of physical interactions" (the level 7 in Bickhard 1998: 197).

Within this level of complexity, appears the emergence of certain biosemiotically central concepts. I suggest that both Peirce's and Uexküll's biosemiotic concepts presuppose this level.

**1. Memory and perception.** Discovering temporal invariances in the situation image constitutes a system *memory* and makes active *remembering* possible. Past 'experiences' can be reconstructed and the actual updates of the situation image ('actual experiences') can thus be identified with the past ones — objects and their invariant relations can be identified and recognized over and over again. Within memory and possibility to recognition, genuine *perception* emerges or becomes at least possible — perception which presupposes at least some kind of recognition and therefore also memory.<sup>26</sup>

<sup>26</sup> Two forms of memory (and perception) emerge: one of environmental continuities and the other of internal system flows of activity (Bickhard 1998b: 197). Although

The conception about perception is in coherence with Peirce's conception (see his Harvard lectures, 1903 on Pragmatism, CP 5.14–212). Individual things or objects (including external signs), like individual persons, are not perceived directly as individuals. They are directly perceived, but if the different reacting perceptual singulars are to be identified as one individual object or other invariance, some kind of general character have to be associated with them. Thus, our common sense individual objects etc. are not 'singular existent things' but semi-instinctively derived general notions, relations of identity between singular perceptual reactions (cf. Peirce, EP 2: 222 [1903]).

At the level of minimal representation, there are just classes of environments — at the level of objects, invariant features of different classes of environments are constructed and differentiated from each other.

**2. Umwelt and triadic sign.** As phenomenal objects and percepts emerge the first time at this level of complexity, and especially because they are not external to the system but constituted as its *internal states* (although not without contact with its exterior) — they can be said to constitute the *Umwelt* for the system. Similarly, the simplest types of Peircean triadic sign or representation becomes applicable at this level. In my criticism of application of Peircean concept of sign in biosemiotics, the concept of the object of sign was troublesome. Now we have objects constructed by the system itself (in interaction with its environment, however) and internal to the system — *immediate objects* of signs can emerge.

**3. Iconic and indexical signs.** Within the ability to 'experience objects', i.e. to discover invariances in the situation image, the system becomes able to discover also invariant relationships between these invariances, as causal, similarity, part whole, and nearness (i.e. spatial) relations between objects. Especially, a system can remember the objects it has perceived in the past and find them in some respects

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both of these forms of perception are internal states of the system, the difference between them constitutes the difference between *external* and *internal experience* (cf. Vehkavaara 2002: 295–296). The difference lies in the interacting environments: the perception about environmental continuities constitutes the external experience in which the interacting environment is at least partly exterior to the system boundaries. Consequently, the interacting environment in the perception of the activity history of the system is internal to the system and so it constitutes internal experience.

similar to a new perception. *Likenesses* can be recognized which makes it possible that this new perception is cognized as the *iconic sign* of the objects perceived in past. Similarly, because also causal and other real relations (like nearness) between objects become recognizable, a system becomes able to handle *indexical signs*.<sup>27</sup>

Although I have suggested earlier (in this paper and in Vehkavaara 2002: 306–307) that no higher level than the one of minimal interactive representation is *necessary* for bacterial chemotaxis, it remains still somewhat open question. The more detailed biochemical descriptions are needed to resolve the question, whether the bacteria as *real* systems function at some higher level of complexity and after all construct internal objects. Or, perhaps we can say that bacteria have some kinds of situation images without ability to discover its invariances (like objects). Moreover, if this possibility is confirmed, we can raise a question: did the most primitive real *living* systems emerge already at that level or did some lower one suffice?

### Emergence of symbolic sign

Although the concepts of *Umwelt* and iconic and indexical signs have now found their place and proper interpretation in the theory of interactive representation, no symbols, no language, no genuine social communication, and no self-awareness can yet be introduced. More complex levels of representation are needed for each of these. A corresponding situation occurs in Peirce's semeiotic, e.g. when symbolic signs are considered, they are defined as more developed than iconic and indexical ones, moreover, symbolic signs may have icons or indexes as its *constituents* (Peirce CP 2.261, 293 [1903]). I will consider only symbolic signs<sup>28</sup> here in order to make complete the most widely used trichotomy in Peirce's semeiotic: division of signs into iconic, indexical, and symbolic.

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<sup>27</sup> *Iconic signs* are representations that are based on the recognition of a similarity between the representamen and the object of representation. Correspondingly, *indexical signs* are based on the knowledge or recognition of causal or other real relation (like nearness) between the representamen and the object of sign.

<sup>28</sup> *Symbolic signs* are representations in which the relation of the representamen with its object is based merely on the *habit* that the representamen is *used* to represent its object, i.e. merely on the fact that the representamen is habitually interpreted as that particular sign.

A system may have separate situation images for activities of a different kind that it uses in order to reach its goals. Each situation image has a direct 'on-line' effect into some activity. However, the environmental information that is gathered for one activity, may not be available for another activity,<sup>29</sup> it may, for instance, be in an inappropriate form. The system can, however, create a 'second order situation image' that does not refer to environment directly but by the mediation of directly functional situation images. (This constitutes the level 8 in Bickhard 1998b.) The representations of this abstract situation image are alienated from 'direct' connect to their environmental referent, and this makes 'theoretical', vicariate, or 'off-line' processing of representations possible.

If we consider symbolic signs, the only property that makes a symbolic sign represent its object is that it is just used to represent it — that there happens to be such a *habit*. Now, the invariances in the relation of 'second order situation image' and directly functional situation images can be just such postulated habits (although they need not be). Thus, the symbolic representation and symbolic signs emerge. Still, these 'symbols' are purely internal to the system, they may be kind of 'private' symbols for the system — whether the genuine inter-subjective communication of symbols (language) can be based on this or some higher level is not settled.<sup>30</sup> For this, at least a community of systems is needed, the systems of which may need to have more complex or specialized internal structure.<sup>31</sup>

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<sup>29</sup> For instance, according to Konrad Lorenz (1941), water shrew has separate spatial maps for hunger, thirst, escape from each predator, etc. The spatial information that is saved in 'hunger-map' may not be available when it is thirsty and seeking water etc.

<sup>30</sup> On the other hand, even at the lower levels, there are certainly reciprocal interaction and interdependence between systems. This is communication of a sort, but here the term 'communication' is used in a narrower sense referring to interaction where some content is *intended* to transfer to other systems. In genuine communication between systems, a message is sent that is supposed (by the sender) to be received and interpreted in some certain sense (by the receiver).

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### **Естественный интерес, интерактивная репрезентация и формирование объектов и умвелта: определение главных семиотических понятий в рамках биосемиотики**

Жизнь и жизненные проявления в биосемиотике описываются с помощью семиотических понятий, которые по происхождению своему антропоморфны. Это могло бы быть оправдано, если бы мы могли доказать, что живые системы как самосохраняющиеся далекие от равновесия системы создают и обновляют своего рода *репрезентацию, информацию* об условиях своей сохранности. Это — точка зрения *семиотического реализма*, в котором знаки и репрезентации рассматриваются как реальные и объективные явления природы, не нуждающиеся в интерпретаторе-человеке. В статье утверждается, что основное определение репрезентации должно быть более дальновидным и что понятие знака как у Пирса, так и у Юкскюлла предполагает наличие слишком усложненного семиотического посредника. Простейшие репрезентирующие системы вообще не имеют явных объектов и умвелта. В качестве альтернативы выдвигается предложение основывать элементарное понятие репрезентации и источника нормативности, необходимого для ее интерпретации, на *интерактивности* М. Бикхарда. Первичная нормативность или естественный интерес опирается на концепцию “полезности” функции: все, что входит в комплекс сохранности нестабильной системы, является функциональным для этой системы, — каждое проявление самосохранения нестабильной системы обладает чертами минимального естественного интереса, это ее *экзистенциальное неперемutable условие*. Минимальная интерактивная репрезентация проявляется, если подобные системы могут соответствующим образом переключаться с одного на другой или большее количество модусов самосохранения. На уровне такой репрезентации мы можем выявить ошибки, даже если система не имеет объектов репрезентации. Явно выра-

женные объекты проявляются в более сложных системах. Если система создает ряд постепенно обновляющихся “образов ситуации” и способна определить временные промежутки в этом процессе обновления, то в таком случае эти инварианты *создают объекты для самой системы*. Репрезентируемая таким образом система образует умwelt и делает возможным применение триадических знаков. Отношение между реперезентацией и ее объектом на этом уровне может быть либо иконическим либо индексальным. Как в семейнике Пирса, так и здесь символические знаки появляются как более развитые: знаки-символы нуждаются в более сложных системах.

### **Loomulik huvi, interaktiivne esitus, objektide ja omailma kujunemine: peamiste semiootiliste mõistete piiritlemine biosemiootika jaoks**

Elu ja elunähtusi on biosemiootikas kirjeldatud päritolult antropomorfsete semiootiliste mõistete abil. See oleks õigustatud, kui õnnestub tõendada, et elussüsteemid kui *ennastsäilitavad tasakaalukauged süsteemid* loovad ja täiendavad mingeid *esitusi* oma püsimumingimuste kohta. See on *semiootilise realismi* vaatekoht, mille kohaselt märgid ja esitused on reaalsed ja objektiivsed loodusilmingud, ilma tarviduseta inimtõlgendaja järele. Vajalik on esituse mõiste fundamentaalne määratlus; nii Peirce'i kui Uexküll'i märgimõisted eeldavad liialdatult keerulist semiootilist toimijat. Lihtsaimad esitavad süsteemid ei evi objekte ega omailmu. Minimaalne esitus ja normatiivsuse allikas (mis on vajalik esituse tõlgendamiseks) võivad põhineda M. Bickhard'i *interaktivismil*. Esmane normatiivsus ehk loomulik huvi põhineb funktsiooni 'kasutus-mõistel': see, mis aitab kaasa tasakaalukauge süsteemi püsimisele, on selle süsteemi jaoks funktsionaalne; iga ennastsäilitava tasakaalukauge süsteemi *minimaalne loomulik huvi* on täita seda funktsiooni, see on ta *eksistentsiaalseks eelduseks*. Minimaalne interaktiivne esitus ilmub, kui sellised süsteemid saavad sobivalt umber lülituda kahe või enama enesesäilitamise viisi vahel. Niisuguste esituste tasandil võib areneda võime ära tunda vigu, kuigi süsteemil pole esitusobjekte. Nähtumuslikud objektid ilmuvad keerukamates süsteemides. Kui süsteem loob rea järjest täiendatavaid 'olukorra kujundeid' ja suudab määrata ajalisi invariante selles täiendusprotsessis, siis moodustavad need invariandid *objekte* süsteemi enda jaoks. Esitaval süsteemil kujuneb seejuures omailm ja võime kogeda triaadseid märke. Suhe esituse ja ta objekti vahel on sel tasemel kas ikooniline või indeksiline. Nii nagu ka Peirce'i semiootikas, ilmuvad sümbol-märgid kui enamarenenud, kuna sümbolmärgid vajavad keerukamaid süsteeme.

## Ladder, tree, web: The ages of biological understanding

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**Abstract.** Fundamental turns in biological understanding can be interpreted as replacements of deep models that organise the biological knowledge. Three deep models distinguished here are a holistic *ladder* model that sees all levels of nature being complete (from Aristotle to the 18th century), a modernist *tree* model that emphasises progress and evolution (from Enlightenment to the recent times), and a *web* model that evaluates diversity (since the 20th century). The turn from the tree model to the web model in biology includes (1) a transfer from modern to postmodern approaches, (2) a shift of semiotic threshold to the border of life, and (3) building the semiotic models of living systems, i.e., the rise of biosemiotics.

The main issue of the 20th century has been the end of modernity. However, it has not yet been understood very well that this will also mean the end of the modern model of natural science. The modern age, as starting in the 17th century and being characterized particularly via the formation of experimental science together with the philosophy of Descartes and Bacon, would be replaced by anything that also replaces the experimental science, a strive for technological progress or innovation, and cartesianism. As John Deely (2001; 2004) has stated, this can be semiotics. Several analyses have shown that much of what has been called post-modern is more like late modern, or ultra-modern (Deely 2003: 22), which means that we still see the extension of modern era. This particularly seems to be true for the modernist science, the current situation of which demonstrates large fluctuations and extremist approaches. It is not an entire end of

science, however, it is an end of the science as we know its image from the modernity.

A study of meaning and semiosis cannot be provided via physics, even via physics of the 20th century. Because, in order to detect meaning, the measuring device has to be alive. And the question is whether a research that uses organisms instead of ruler could be called physics any more. It is more like biology, of course, but biology of a special kind — biosemiotics. As C. Emmeche has put it — it is an experiential biology, instead of experimental one.<sup>1</sup>

In this paper, I am not going to analyse the end of science as a modernist creation. However, since the period of modern science ending has its reflection in every field of knowledge, we cannot avoid the theme either. Still, this paper confines itself with biological knowledge only, attempting to understand the meaning of the semiotic turn in biology, or the meaning of the development of biosemiotics as an approach declaring a principal change in the fundamentals of biological theory — i.e., in biological understanding.

The age of modernity has been an age of revolutions, one after other (cf. Cohen 2001). In biology, the turn from preformism to epigenetics in 1830s, and the Modern Synthesis of 1930s, have been distinguished as the turns of major importance for biological understanding in last centuries (e.g., Mayr 1982). However, the turn that would consider biology not as a *Naturwissenschaft*, but rather a *Bedeutungswissenschaft*, would appear no less profound than any other in the history of biology since at least Carl Linnaeus.

Considering the *turn* in biology, or a remarkable shift in biological understanding, we find several quite different approaches to this, to the turn itself. At least three different aspects of the semiotic turn in biology should be distinguished. Namely, the semiotic turn in biology can be interpreted,

- (1) as entering into a next phase or period in the historical development of biological understanding, e.g., from the modern to a type of postmodern;
- (2) as a shift in the placement of the semiotic threshold — from the boundary of human culture, to the boundary of biological life; accordingly, life appears to be semiosis, biology being a part of semiotics;

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<sup>1</sup> Cf. Pesic 1999.

- (3) as a change of the theoretical basis for biology — the replacement of physical models by the ones of semiotic when interpreting the phenomena of life.

We are going to characterise the aspects of the turn briefly via a characteristic change in the deep models used in biological thinking, particularly the replacement of the archetypic model of tree by a model of web.

## 1. Ladder, tree, web

When interpreting the influences of biological ideas to other spheres of science (including humanities) in any period, or even to the biological discourse itself, the paradigmatic identification of the period and of the discourse would be necessary. For instance, the influence of biology to linguistics has been of several different kinds. On one hand, there exist the works of August Schleicher, who has applied the Darwinian model of diversification to language evolution (Dahlke 2001). And on the other hand, there exist works of Roman Jakobson of his Prague period, when using the ideas from the works of Karl Ernst von Baer and Lev Berg for the formation of his views on linguistic structuralism (Seriot 2001).

E. Mayr has noted that, despite some historians of science distinguish different periods, each with a single dominant paradigm (like T. Kuhn), or episteme (M. Foucault), or research tradition, “this interpretation does not fit the situation in biology” (Mayr 1982: 113). Indeed, there cannot exist any final and best periodization of the history of ideas, or the history of thought. Instead, there are several different, overlapping periodizations. The scientific debates can be characterized as relations between the different basic models or metaphors. This is because any model is situated in a context of other contemporary models, and the dialogue between these would create meaning and identity to any proposed one.

Among the metaphors, there exist some that characterise the very stable and basic models — archetypic models — used in the interpretation of knowledge in certain area. These are the ones we are going to describe and analyse here.

The basic metaphors form rows and opposites. This means, there are some that replace one another during the paradigm changes (like ladder/tree/web, or preformism/epigenetics). These are row meta-

phors. And then, there are ones that appear as pairs, and as such seem to represent the eternal opposites (like holism/reductionism, or tychasm/anancasm) (cf. Berg 1969; Lyubischev 2000; Kull 2000a; 2000b).

Arthur Lovejoy (1964) has described in detail an early biological knowledge as organised on the basis of a deep model of ladder, *scala naturae*, and its replacement by a profound alternative during the Enlightenment. Accordingly, in the history of biology, three basic metaphors or models have been used that represent correspondingly three major types of paradigms:

- (a) *scala naturae*, or ladder, or chain; this is a non-temporal model, a whole, in which the creatures differ in their level and complexity, however being complete (in plenitude) and non-evolutionary;
- (b) tree, ever branching and growing *arbor vitae*; this model appeared in biology in concordance with the Enlightenment view that nature may be incomplete, and accordingly, there is an evolution towards perfection, a progress;<sup>2</sup> this is the core of the Darwinian or Haeckelian view, where growth and divergence are the basic processes and competition being the progressive force; in classification, it corresponds to hierarchical systems;
- (c) web, or network, *tela*; this seems to appear together with an ecological view that sees every creature to have a (symbiotic) role in the element cycles of ecosystem, or in an ideas of the biosphere and semiosphere that emphasise the interconnectedness, however it is rooted also in a Romanticist views to nature or early semiotic ideas; here, time is rather periodical, recognition and interpretation turn to be the important features of nodes, and the model of classification is non-hierarchic.

The change of the ladder-model by the *tree*-model in the 18th century included very much more than just a temporalizing the ladder. The basic idea, indeed, could be the (supposedly, Voltairean) idea that nature can be improved.<sup>3</sup> If so, then it infers the situations of choice, i.e., the branching points of the path. The branching structure as such, the replacement a linear staircase by a hierarchic branchy form, as, e.g., used for classification purposes, may not itself still assume any

<sup>2</sup> As Cassirer (1955: 5) has mentioned, “perhaps no other century is so completely permeated by the idea of intellectual progress as that of the Enlightenment”.

<sup>3</sup> According to Heelan (1994), a characteristic of modernity that the individual subject can authoritatively impose an order of things traces back to Luther.

temporal dynamics. However, an application of the form of the tree to any set of facts, etc., implies an asymmetric representation, together with identification of a “stem” and divergences that provides good conditions for a temporal interpretation. Still, the first extensive representation of the system of organisms via the form of a branching model — the one of C. Linné — did not imply a temporal interpretation yet. However, it appeared soon, e.g., as the one by J. B. Lamarck.

The frequent usage of tree-like schemes as representations of the system of organisms does not go back much more than the first decades of the 19th century, according to M. Ruse (1996) who has made an attempt to trace the early usage of tree diagrams.<sup>4</sup> There has also been found, for instance, a tree-diagram of types of ontogenies, drawn by K. E. v. Baer in 1827. Since E. Haeckel, the tree diagrams have been extensively used for representation of phylogenies.

The tree-model includes growth and sequential branching as built-in features. The exponential growth is just an implication from the tree structure. Also, tree model leads naturally to a problem of the insufficiency of space for all subsequent generations of branches, and thus to a concept of competition and survival. Accordingly, the Darwinian concept of evolution via struggle for existence and natural selection is an evident and natural implication from the tree-model (cf. Gould 2002: 146, 1334, 1342). Darwin’s role was just to supply this model by examples that could illustrate its evolutionary interpretation.

The tree-model enforces an investigator to ask about the origins of the features under study, in order to identify the placement of the “stem”. It also leaves one with thinking about the ever-going progress, and of endless fight for available resources.

The tree-model has spread, of course, to many areas. It has been applied almost in any science together with an evolutionary approach. Interesting parallels of its usage can be found, e.g., in linguistics (e.g., Sutrop 2000).

Most of the biology textbooks in the 20th century are so completely built on the basis of the tree-model that it might be very difficult to see any alternative to it. However, the model of web provides this.

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<sup>4</sup> The icon of *arbor vitae* is, of course, much older, e.g., as used in Christianity; however, it seems that earlier usage mainly refers to its features like bending, crossing, persistence, instead of hierarchy and growth.

The *web*-model has been introduced mainly through two approaches. One is the idea of trophic network between the organisms in an ecosystem. The other is a representation of communication processes in a population, in a social community. Thus, these are the ecological and semiotic approaches that mainly begin to replace the tree-model by a web-model, a process that should be remarkable since 1960s.

The contemporary biology is using the web-metaphor widely. This includes cell biology ('metabolic web'), ecology ('trophic web', 'web of life', Capra 1996), evolutionary biology (e.g., 'the tangled web of life', Katz 1998). However, Darwin, for instance, did not use the term 'network' at all, and 'web' appears in the *Origins of Species* only twice.

The first appearance is in the chapter where Darwin speaks about the 'complex relations of all animals and plants throughout nature' (Darwin 1872: 59): "I am tempted to give one more instance showing how plants and animals, remote in the scale of nature, are bound together by a web of complex relations. I shall thereafter have occasion to show that the exotic *Lobelia fulgens* is never visited in my garden by insects, and consequently, from its peculiar structure, never sets a seed." And Darwin continues with examples about local plants, for which the pollinators exist and are often obligatory.

The second appearance of the word 'web' is in the chapter on classification: "We shall never, probably, disentangle the inextricable *web* of the affinities between the members of any one class [...]" (Darwin 1872: 333).

It is interesting to mention that these are the only cases of the usage of the word 'web' in Darwin texts, in which this word appears in the functional or relational sense. All the other usage refers to the structural meaning, as for instance describing the spider's web.

As different from tree, web (as if) has no origin. Because web represents polyphyly, instead of a monophyly of tree. The nodes of web represent the points of meeting, not only divergence, thus recognition, co-existence and symbiosis, instead of competition. Web is a model for a communication network, not so much for a dominance of inheritance.

Thomas A. Sebeok, a biosemiotician, has emphasised the importance of web-metaphor: "*Web* conjures up the organic world of a spider, as well as, in their ineluctable correlations, its inorganic complement, the scaffolding of dry thread that the spider spins. *Web*

suggests the reciprocal lives of both invertebrate and vertebrate creatures; it depicts the interplay between hub, spokes, and periphery; it kindles the dialectic of suspense and abatement; and many summon up still further cascades of contrasts or oppositions" (Sebeok 2000: 76). Thure von Uexküll (Uexküll *et al.* 1993: 9) has characterised an organism's body as a web of semioses.

When comparing the logics that are based either on dyadic or on triadic relations, J. Hoffmeyer (1996: 17–18) points out a simple feature — only triadic relations allow to build networks. He has used this as an argument for Peirce's approach that thus can be used in biology.

If the web-model can be identified as the one that is related to a semiotic approach, then the analysis provided by John Deely (2001) would be applicable also for biology. According to Deely, the Postmodern Age replaces the Modern via the semiotic understanding of sign, which has been given in the works of C. S. Peirce, and also, by Jakob von Uexküll.

The discussions on these three basic models and metaphors (*scala, arbor, tela*) have been superimposed in the history of biology by two alternative interpretations of the concept of natural system — either it to be as a real, actual, or as a potential, ideal. Accordingly, the research programs differ in a study of origins — one that requires a reconstruction of genealogy, and the other that is searching for a deduction from general laws.

There have been several other widespread deep models used in biology (e.g., *map*), however, of clearly lesser importance (Barsanti 1989; Gruber 1972).

As different from the ladder/tree/web periodization, which marks as focals the 1760s and 1960s, there can be seen a periodization on the basis of the models that treat dynamics — history/development/evolution — with the turning points (or turning periods) of 1830s and 1930s. This marks the age of dominance of the developmental view in biology from the establishment of embryology around 1830, until the Modern Synthesis in 1930s. As E. Mayr has said, the idea of Darwinian evolution did not win before 1930s. In a larger perspective, there have been alternating periods of preformism and epigenetics in the history of biology. The Baer's work of 1827–1837 has been claimed to overcome a long period of preformism. His epigenetic emphasis has been replaced by a modern form of preformism — genetic determinism, since 1930s.

## 2. Life as semiosis

In 1986, in a conference on semiotics of cellular communication and immunological systems, in Italy, Umberto Eco was among the contributors. Attempting to ask about the features of sign processes in the cellular reactions that can distinguish between the alien and self, he still remained his hesitation. He finished his talk with these sentences (Eco 1988: 15): "As you probably understand, such a question concerns the dramatic problem of the boundaries between Spirit and Matter, Culture and Nature. Let me stop. I feel afraid."

U. Eco (1979) has formulated in his *A Theory of Semiotics* the concept of *semiotic threshold*. This is a boundary between the world of signs and the world of non-signs. At one side of this threshold there is the universe of meanings, at the other side — "stereochemistry": either the spatial correspondences between molecules, or the balances and imbalances of physical forces, but not anything "standing for something else".

Where is this semiotic threshold situated, and whether it exists at all? These questions have caused more than one debate.

According to Eco's quite clear statement in *A Theory of Semiotics*, "translation", as the term has been used by geneticists when they describe the relationship between nucleic acids and proteins, is only a concept transfer, a metaphor, without any concern to the nature of this process itself. In other words, the semiotic threshold, according to Eco, is situated on the boundary of culture.

Thomas Sebeok, a founder of zoosemiotics, has not agreed to Eco in this. Sebeok stated that there are sign processes in all living processes, and therefore, the semiotic threshold is placed at the boundary of life.

Signs are always connected to *codes*. Codes are the correspondences that cannot be inferred from the general physical laws. For instance, the fact that namely green light is permissive and not red neither yellow, does not follow anyhow from the universal laws about photons. The rules of lights are local, they became fixed in the history, they are bound to a culture.

Following Sebeok's approach, we notice that there are no universal laws in biology or in any other field that describe the phenomena of life and living. As different from the physical laws, biological rules do not hold universally, they include exceptions. This is because the biological rules represent codes, or because they are themselves codes.

Thus, from the point of view of semiotic threshold, it is important to see the principal difference between the DNA–RNA and RNA–protein correspondences. The first is a code, the second is no. Guanosine fits cytidine due to stereochemical reasons; it is possible to predict it via calculations, there is no code. The relationship between a nucleotide triplet and an aminoacid in a protein, instead, is not due to stereochemistry, but due to sequences, the sequences that create the genetic code through the fixed order in the chains of transport-RNAs and aminotransferases. The gene sequences cannot be deduced from the universal laws of physics.

According to this approach, semiosis, the sign process, appears together with life. Which also means that there are many more codes — in addition to the genetic code — already in each cell (several of them have been illustrated by M. Barbieri 2003). Thus, the genetic *code* is not a metaphor — this is a true code. And there are no codes before the appearance of life.

When Eco discusses the concept of genetic code (Eco 1988: 7), he does not notice the difference described above — the one between transcription and translation in a cell. When he returns to this topic in his *Kant and Platypus*, asking how “lymphocytes have the capacity to distinguish infected from normal macrophages” (Eco 2000: 108), then he is going to allow speaking about a ‘primary iconism’ in the cellular level, however, again, he does not distinguish it from the ‘primary iconism’, e.g., of a trace of stone on sand.

Thus, one should distinguish between recognition as a biological, and interaction as a physical phenomenon. *Recognition*, as different from interaction, is based on a memory, i.e., it refers to something else via the relationship of the remembered. In this sense, we may say that enzymes are the simplest systems where recognition occurs. Enzymes may fit to their substrate not only due to their structure, but also due to the habit, due to the former interactions that have shaped it.

The life process is an endless self-interpretation. Namely in this code-dependent process, it is the same as endless semiosis.

The shift of the semiotic threshold from the Culture–Nature border to the one of Life–Non-life, took some time, and some research. At first, it was the zoosemiotic argument that Sebeok used, and only much later, probably influenced also by Uexküll, he arrived to the statement of coextensiveness of life and semiosis.

A difference between a dead and a living may appear no less great as the difference between being a (languageing) human or being an

(other) animal. This would mean that we could speak about a semiotic threshold in both cases. And there may even be a third threshold — a semiotic threshold between the vegetative and the animal sign systems.

What exactly distinguishes between the different sign systems? This would be a topic for semiotic modelling.

### 3. Semiotic modelling

In late 1960s and early 1970s, during a peak of the ‘general theory of systems’ as initiated, e.g., by L. v. Bertalanffy, a search for a theoretical basis of biology led several biologists to an idea to apply the principles of semiotics in biology. Among them, it is important to mention at least four: C. H. Waddington (1972), who claimed that a paradigm of general biology should be taken from general linguistics; T. A. Sebeok (1969; 1972), who developed semiotic models for analysis of animal communication; F. S. Rothschild (1962), who formulated first principles of biosemiotics; R. Jakobson, who interpreted the genetic phenomena in linguistic terms.

Since then, biosemiotics has slowly grown. It has found its forerunners, like Jakob von Uexküll (1928; 1982). It has established its first institutions, and became a university discipline, in 1990s (Kull 1999; 2001). There has been published a series of books (Sebeok, Umiker-Sebeok 1992; Hoffmeyer 1996; Deacon 1997; Emmeche *et al.*, 2002; Markos 2002; Barbieri 2003; Weber 2003; etc.) and several special issues of journals devoted to biosemiotics — e.g., *Semiotica* vol. 120(3/4), 1998; 127(1/4), 1999; 134(1/4), 2001; *Sign Systems Studies* 30(1), 2002; *Zeitschrift für Semiotik* 18(1), 1996; *Cybernetics and Human Knowing* 10(1), 2003; *European Journal for Semiotic Studies* 9(2), 1997; etc. Annual meetings (*Gatherings in Biosemiotics*) as established by Copenhagen and Tartu biosemiotic groups, have turned into a regular event.

Despite of these rapid developments during the last decade or two, the semiotic theory of life is still in a period of formation. There are not many well-elaborated semiotic models to be applied in biological situations. However, there are some.

As U. Eco (1988: 14–15) has nicely put — “the properties of the model must be better known than the properties of the object” — otherwise there will not be much use of a model. In physics, the

models have almost always been more sophisticated than the observations. In a large part of biology it has never been so.

That the models of semiotics may look too simple for biology may seem so only in a superficial approach. The indirect information a semiotic model includes, itself being formulated briefly, can be huge.

Recently, a state-of-the-art of biosemiotic theory has been briefly reviewed by Emmeche *et al.* (2002). Thus, let me here list only some points that can be taken as tasks for the further work. Because, the development of semiotic models as applicable in biology is very much a task for the coming decades.

(1) Biological things — organisms, species — are systems that hold together due to communicative reasons. They are not natural kinds, likewise the linguistic things (e.g., a sentence, or a phoneme) are not natural kinds. They exist as communicative structures, as natural categories. The process that leads to their formation is generally analogous to the one of perceptual categorization.

(2) Biological species that appear due to biparental reproduction, are related to the width of the organisms' recognition window. The recognition concept of species is the one close to this biosemiotic model of species (Paterson 1993; Lambert, Spencer 1995).

(3) The discretization (a formation of discrete units) is a general feature of any communication system. Most probably, the formation of distinct tissues and tissue types in a multicellular organism is an example of the same general phenomenon. However, a general typology of biological units that are created by communication processes is yet to be done.

(4) The meaningful communication requires at least two codes and the asymmetry of partners. Diversification and stability as the general consequences of communication can serve as a basis for a biodiversity theory.

(5) Biological needs are the codes that relate innate instabilities to the behavioural forms or categories. Thus, biosemiotics provides an approach for a theoretical study of biological needs.

(6) A semiotic classification of the types of biological communication should be further specified. It should, particularly, include a theory of vegetative and animal (i.e., non-linguistic, or non-propositional) sign systems — the sign systems that are functioning without, e.g., sentences, or narratives. Thus, despite there exist many good surveys about biological communication, the theory of the field is still in its youth.

(7) Changes in the cellular interpretation of a genome may appear as a factor of evolution, on the basis of a mechanism close to the Baldwinian (Hoffmeyer, Kull 2003).

As Myrdene Anderson (2003: 298) has stated: "Biosemiotics transcends ordinary science through its attention to communication, a nondeterministic open process of self-realization".<sup>5</sup>

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**Лестница, дерево, сеть:  
вехи понимания в биологии**

Главные биологические воззрения можно различить на основе глубинных моделей, которые одновременно организуют многие аспекты интерпретации и достаточно явно различаются в разные периоды. В статье рассматриваются три основные модели или метафоры: “холистская” модель природы как лестницы, характерная для эпохи, предшествующей XVIII веку, биологическая модель дерева начиная с конца XVIII века и постмодернистская модель сети. Тем самым замена научной модели Нового времени семиотической оказывается связанной со сменой модели дерева на модель сети и с созданием биосемиотики.

**Redel, puu, võrk:  
arusaamise ajastud bioloogias**

Peamisi bioloogilisi vaateviise saab eristada süvamudelite alusel, mis organiseerivad ühtaegu paljusid interpretatsiooniaspekte ning mis võrdlemisi selgesti erinevad eri ajastuil. Artiklis vaadeldakse kolme põhilist mudelit või metafoori — uusaja-eelset holistlikku looduse kui redeli mudelit, uusaegse bioloogia puu-mudelit, ning postmodernset võrgu-mudelit. Seega uusaegse teadusmudeli asendumine semiootilisega osutub seotuks puu-mudeli asendamisega võrgu-mudeli poolt ning biosemiootika kujunemisega.

## An epigenetic machine

Review: Marcello Barbieri,  
*The Organic Codes: An Introduction to Semantic Biology.*  
Cambridge: Cambridge University Press, 2003.

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Attempts to grasp the essence of the living can be grounded in different areas of human knowledge. If we set aside theological or mythical explanations, we are left with two basic approaches. Biology as a natural science prefers assuming pre-existent and well defined entities, subjects of immutable laws and therefore discernible, describable and computable. In contrast, "humanities" (semiotics, hermeneutics, philosophy and the like) stress the historical and contextual aspect of the "lifeworld", i.e. namely those properties that cannot be covered by constructs of physics. Both approaches are mutually incompatible and the trench dividing them seems to be insurmountable. Perhaps the best difference between them can be perceived in their approach toward concepts like *information*. Whereas in natural sciences it represents a computable and measurable entity, in humanities it is an entity that, in spite of its immaterial and unquantifiable nature, exerts its influence upon the world.

It is therefore both surprising and encouraging when a scientist takes a term used by the humanities and makes a serious effort to incorporate it into the standard toolbox of experimental biology. The term is *meaning*, and the author is Marcello Barbieri (Barbieri 2003). The principal claim of his book is that contemporary biology fails to understand life properly, because it is focused only on two principal aspects out of three: energy and information. The third aspect — meaning — remains totally neglected. It is meaning through which memory, frozen patterns (e.g. the genetic code), and conventions come to existence in living beings, in contrast to blind causal relations reigning in the realm of the inorganic. Ordinary chemical reactions, for example, will proceed repeatedly and predictably according to their energy charge and external conditions (e.g., temperature). No such causality

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is obvious in case of processes like protein synthesis. Without doubt, energy to drive the process must be available, but digital “information” in the form of mRNA is also required. The synthesis of a polypeptide would not, however, proceed without a third factor, connecting the realm of the nucleic acids with that of proteins: the system of tRNAs (and code-bearing enzymes — aminoacyl-tRNA-synthetases). Thanks to this interface, determining how a specific non-random polypeptide chain is synthesized, proteosynthesis gains its *meaning*. If we dare to incorporate meaning into biology, states the author, we shall witness reformulation of both great biological narratives: evolution and ontogeny. “Evolution by natural selection” would turn into “Evolution by natural selection and natural conventions”. Similarly “Ontogeny as an execution of a program” will be reformulated as “Ontogeny as epigenetic reconstruction from (genetic) projections”. What follows is partly a review of Barbieri’s book, partly discussion and comments on the main issues of his work. We investigate both the firmness of the proposed footbridge across the gap and possible ways of further reinforcing its construction.

### Information, meaning, code: a language analogy

“Meaning is an object, which is related to another object via a code”, says Barbieri (p. 5), and to illustrate the statement, he takes a language analogy:

Mental objects (meanings) are related to objects of the world by the language code, i.e., words. We can easily measure the amount of information<sup>2</sup> in a world, say “ape” — which equals the number of bits necessary to pick the letters from a given alphabet and align them in a given order. Information, however, has nothing to do with the meaning of that world in different languages (e.g. “ape” in English and Italian). In contrast, the world for male family progenitor has diverged substantially in Indo-European languages: words *pater*, *father*, *père*, etc. obviously contain different amounts of information, in spite of their identical meaning. (p. 94)

This analogy, however, brings more questions than explanations: (1) Does it suggest that languages were devoid of *information* before the invention of alphabetic (i.e. digital) script? (2) Is information simply a matter of spelling? Can we change the “information content” of words simply by changing orthography? If so, what is such “information” good for? (3) Are words “mere labels” for things out there in the world, having no meaning by themselves? Sure, the string APE as such has no meaning, but a string of 3 letters is *not* a word. Only after we state that this string *represents* a word (not a thing!) in, say, English, a plethora of possible dictionary meanings will pop out immediately, and the context will decide which one we take. Words *do*

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<sup>2</sup> In the technical, Shannonian sense.

have meanings; strings of letters may or may not. Such strings, however, *can* evoke an interpretative effort, which *may* create meaning, but we believe that meaning is not *there*. Strings like *padre, père, father, Vater* will gain their meaning only in an environment where there is somebody (a sentient being) speaking the respective language(s) and, moreover, able to read. All such questions and parables can be brought back to a biological context.

The whole analogy, however, can be turned upside down. One can argue that language is not *only* a code; language, not the alphabet, makes words; and language defines, makes, *creates*, not simply *connects* objects, mental or "real". As stated by J. Lotman (e.g., 2001), should the addressee and the receiver share identical information or text, it is necessary that they share authentic coding and decoding devices. What is possible theoretically (and in technology), will never be attained in "live" communication systems. Culture, language, texts, consciousness (and living beings, we add, to complement Lotman's list) work in two directions: they create a unified semiotic situation to allow exchange of messages and, at the same time a dis-unified situation creating *new* texts, new information. Communication or reading thus means breaking of symmetries: the original entanglement of many possible meanings will "collapse" into a single interpretation; the interpretation attained will, in its turn, become new superposition of new statements, etc. The body of a culture, a language (and a living being, we add) represent thus structures which can act as their own inputs. In this way the structure is able of self-transformation.

In coding, similar superpositions are forbidden: codes cannot acquire *new* information. Only thanks to this property it is possible to quantify *coded* information. An example of an unequivocal code is a transcription between two sets of signs, i.e. the English alphabet and the Morse "alphabet" ("c" is transformed, by convention, as "—·—·").<sup>3</sup> Note that only *whole* tables of codes exist, in which all conventions are contained at the same time. For codes, history is forbidden, says Lotman — codes cannot evolve, they can be only changed as a whole by a single synchronous decision act. We are not interested in how the code came into existence. Since it does not change in the time interval of our interest, rules of transcription can be programmed into machines (or to ribosome's in the cell). No subject is necessary to do the job; the code is independent of the context.<sup>4</sup> J. Monod (1970) acknowledged the existence of codes by the term *gratuity*, which meant that some functions will

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<sup>3</sup> Equivocal or degenerate codes do also exist. For example, in Czech "c" is also transcribed as "—·—·", but backward translation allows both "c" and "č". Similar situation in the genetic code.

<sup>4</sup> Even if sometimes it can be dependent on its position in the string. The genetic codon AUG codes for the amino acid methionine. In bacteria, however, AUG at the beginning of the string will code for N-formyl methionine.

be mediated “for nothing”, simply thanks to existing conventions, rules, not deducible from natural “laws”.

Thirty years after Monod, Barbieri tries to broaden gratuity also to natural languages by stating that written and spoken languages are also nothing but a code connecting objects of the world with mental objects. Of course we can find areas, in language, where unequivocalness is a goal and codes prevail, like in military. Outside such special areas, however, grammar is overwhelmed by semantical, semiotical, or hermeneutical levels: contexts, experience, situation enter the game, which is accessible to a sentient subject, not a machine. Similar levels can be distinguished also in proteosynthesis, where the genetic code represents one important level of control *out of many*, not all of them hardwired (see Markoš 2002).

Barbieri, however, suggests hardwired codes not as a derived situation but as the very basis of meaning. This is a very courageous reduction: Even the most elementary usage of the word *meaning*<sup>5</sup> excludes its usage in a sense of “context-independent decoding rule”. More sophisticated usage — as, e.g., intention, purpose, spirit of the told (or written), interpretation, signification — points clearly towards a conclusion that meaning cannot be subject of any coding table or context-independent rule. Only when we accept this, can we speak — in a natural language — of semantics.

Barbieri in contrary intends to introduce *meaning* in a technical sense, similarly as Shannon did for *information*. He explicitly states:

The term codes, or conventions, normally indicates the rules which are adopted by a human community, but it has also a wider meaning. A code can be defined as a set of rules that establish a correspondence between two independent worlds. The *Morse code*, for example, connects certain combinations of signs with letters of the alphabet. The highway code is a liaison between illustrated signals and driving behaviors. *A language makes words stand for real objects of the physical world.* (p. 89, emphasis by us)

This sentence brings us to a very strange world, where “real objects” stick “out there” and we simply attach our linguistic labels (i.e. codes) to them. No semantics and no semiotic process are allowed in this world, where meaning is indistinguishable from code! This may hold only in some variety of perfect languages, be it artificial languages, computer language, or mathematical calculus (see, e.g., Eco 1997).

The quotation above, moreover, continues as follows: “The extraordinary thing about codes is that a new *physical quantity* appears in them, since they require not only energy and information but also meaning” (p. 94). In what sense codes are “physical quantities”?<sup>6</sup> We argue that *meaning* is a

<sup>5</sup> As in “What should this all mean?”

<sup>6</sup> An effort to make virtual entities real and thus “justify” their usage in science is apparent from sentences like “codes [...] must have had a specific mechanism”

relationship, which must be negotiated in every particular situation. There may be a finite table of codes, but never of meanings (see, e.g. Heelan 1998: 279, 288). Meaning is understanding, not a table of codes.

### The logic of embryonic development

In the 1940s, C. H. Waddington (1975) introduced the concept of *epigenetics* to give a name to causal *interactions* between genes and their products that lead to the accomplishment of the phenotype. Today, epigenetics serves practically as a synonym for ontogeny; its meaning is occasionally broadened also to heritable changes in gene function, to innate operations taking place in the brain, practically to any biological patterning which does not involve changing DNA sequences (examples of such usage see, e.g., Lodish *et al.* 1995: 1286; Russo *et al.* 1996: 1; Wilson 1998: 193, respectively). What all such perspectives have in common is that they see development as a process being canalized along some preexisting trajectory (program); the trajectory may branch, i.e. contain alternative subroutines called forth by the environment. The living being remains fully passive, without any say in the ongoing ontogeny; no *meaning* is necessary to understand the process.

Barbieri is, rightly, not happy with this neat preformist world where novelty can arise only by random mutation. Instead he presents a view of epigenetics as a convergent process<sup>7</sup> of *reconstructing structures from projections* (i.e. from *incomplete information*, p. 3).<sup>8</sup> Information contained in the zygote or spore is somehow insufficient, unsatisfactory, and new information must be generated to build an adult organism.<sup>9</sup> "The reconstruction of structures from incomplete information is therefore a model that could make us understand how it is possible for a system to obtain a convergent increase of complexity" (p. 70). Notice: information must be *created*, a great leap forward from the traditional views held by informatics. Author provides an original model (MCM, see below) how such a process might take place.

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(p. 2); "mechanism of natural conventions" (p. 2); "organic codes are not metaphorical but real" (p. 3); "organic code requires molecules" (p. 3), etc. Also the physical terminology is not new — see Driesch's definition of entelechy as a "physical quantity" (Driesch 1905).

<sup>7</sup> Terminological note: ontogeny is understood as *convergent*, whereas evolution as *divergent*, increase of complexity.

<sup>8</sup> "As anyone can see, this is a mathematical version of the problem that we face in embryonic development. The fertilized egg contains far less information than the adult organism (whatever criterion is used to measure information in biological systems), and embryonic development can be described therefore as a process that is reconstructing a structure from incomplete information" (p. 68).

<sup>9</sup> It is a priori presupposed that the adult form is the very goal of ontogeny.

### The cell

To understand further reasoning, we make a short detour to the cellular level. The cell is depicted (pp. 34–35) as, (a) something which builds itself like a crystal (obviously a view inspired by self-assembly of viral particles or ribosomes); apparently the absence of beginning poses no problem; (b) a “machine capable of self-replication” as in von Neumann automata; (c) an autopoietic system.

Obviously, Barbieri considers these three descriptions as practically synonymous. Indeed, he apparently treats the whole ontogenesis of an ape or a bee as a mere *assembly* of a body from organs, organs from tissues, tissues from cells etc. (pp. 95–96). We believe that this extrapolation, well in the line with the famous “an elephant is just *E. coli* writ large”, deserves a word of caution, instead of being treated as a simple and indisputable fact. If not, we will remain marooned in contradictions like “a mechanical model of epigenesis”.<sup>10</sup>

### Ontogeny as program execution

As already mentioned, Barbieri is criticizing the naive self-satisfaction exerted by some molecular biologists that “we know by now” that development is simply an execution of a program inscribed in genes.<sup>11</sup> Barbieri takes Maynard Smith as an authority to corroborate this opinion, and continues: “embryonic development is a process that increases the complexity of a living system, but we do not know how to build *machines that increase their own complexity*, and we cannot therefore understand the logic of development” (p. 67–68). It can be argued whether the logic of such a process can be understood only through modeling it as a machine, i.e. by deterministic rules. The question of “how does a system manage to increase its own complexity in a convergent way?” was more or less satisfactorily answered by mathematical models for systems, which *are* able to increase their complexity, like whirl-pools, tornadoes, or even biosphere (see, e.g., Kauffman 2000; Prigogine 1980). It is simply not true that “there cannot be a convergent increase of complexity without memory” (p. 86), or better, the

<sup>10</sup> “We need to understand how does a system manage to become more complex, otherwise the word “epigenesis” becomes a mere label that is conveniently used only to cover up our ignorance, just as “*vis vitalis*” in the past. We need, in other words, a mechanical model of epigenesis in order to understand it. Luckily today we do have such a model [the one presented], and we can at least try to apply it to the cell” (p. 212).

<sup>11</sup> See, for example, Davidson (2001: 7): “It was possible to deduce that genomic regulatory architecture constitutes the structural, genetic basis for the morphological features of animals 30 years ago; now we know it for a certainty”.

memory may sometimes reside in the very structure of the "body" of the system.

Back to the logic of embryonic development. "The real key to embryonic development is the logic of systems which are capable of increasing their complexity in a *convergent way*, and in order to understand this we need if not a machine, at least a model that is functioning according to that logic" (p. 68). The model offered by Barbieri is rooted in his rich experience in image analysis and reconstruction of the shape of three-dimensional objects from two-dimensional projections. Such a task can be solved relatively easily if there are enough data (projections) available, so that they "contain (in a compressed form) all the information that was present in the original structure" (p. 69).<sup>12</sup> However, surprisingly good results can be obtained even with substantially less data, if we employ special iterative algorithms such as the Memory Reconstruction Method (MRM), developed by the author. The model exploits memory matrices as very suitable to describe the logic of embryonic development.

### Increase of complexity

If we have a model for the reconstruction of structures from incomplete information, it will help us understand how it is possible for a system to obtain a convergent increase of complexity. However, what does it mean if we say that the egg contains less information than an adult does, what is meant by the convergent increase of complexity? Barbieri admits that "there is no satisfactory definition of complexity. However we do not need to provide a precise definition of complexity in order to build a model", because "we can start from a different formulation of the problem, and say that embryonic development is a reconstruction from incomplete information" (p. 196). The difference between complexity and information is fuzzy, but we leave these details aside for the moment. For a closer approach to *the convergent increase of complexity*, let us discuss two examples.

The first comes from R. Dawkins' famous definition: "a complex thing is something whose constituent parts are arranged in a way that is unlikely to have arisen by chance alone" (Dawkins 1987). If we jumble parts of an airliner at random, the likelihood that a working Boeing 747 will come out spontaneously is vanishingly small. Only one or very few contraptions out of zillions would actually fly. *The arrangement of the parts that flies is meaningful and the other arrangements are meaningless regardless the fact, whether the right arrangement of the parts was specified in advance or not.*

Certainly, the documentation does not contain the "complete" information for the construction of an aircraft. No project will bother with providing

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<sup>12</sup> Again we face the question what is meant by "all the information".

information concerning, e.g., how to screw bolts or use a hammer, not speaking about iron-ore mining instructions, theory of wheel, and Newtonian mechanics... No project is accomplished in 3 dimensions and in 1:1 ratio, to contain the *complete* information. It has to be detailed enough to be *understandable for the comprehensive reader* or even for a robot equipped with necessary instructions. Let us now imagine 747 documentation with some pages and drawings missing. It may even appear that only as little as 10% of the files is really crucial for the construction of a functional plane. Plans for kitchens, seats, bathrooms, seatbelts etc. could be supplied by anyone who understands what kitchens, seats, bathrooms, seatbelts etc. are good for, i.e. what they mean. Somebody who understands aeronautical engineering may even do it without all those detailed mechanical drawings; he even might be able to assemble the parts in a better way than what was intended in the (now lost) documentation. *Any* (re)construction requires a big deal of experience and/or constructive imagination.

Barbieri's book will serve as our second example. Certainly, the book does not contain all the information on *semantic biology*, *organic codes*, *ribotype*, *phenotype* etc.; all these items are much more complicated than the book itself. Is it a deadlock forbidding our understanding of the book? We hope not, we have even methods, how to *reconstruct that missing information*, how to complete the picture, even how to understand better the intentions of the author. We have to read the book carefully again and again, to interpret it and to remember what was read and interpreted, and confront it with our own experience and knowledge.

The message of both our examples is as follows: *any* reconstruction from a projection requires a comprehensive reader who understands what is to be reconstructed. Otherwise that blank could be filled only by pre-defined rigid structures given in advance, but these are surely not the concern of semantic biology.

### **Increase of information**

An increase of information in the Shannonian sense within a system is inconceivable. Information can increase only if (1) a wired comprehensive model exists for the reconstruction of structures (i.e. the model contains additional information), or (2) an understanding, informed reader can build a whole structure from incomplete source (see above the 747 example). In its core, the MRM is a mathematical compression/reconstruction model, which accepts that "there cannot be a convergent increase of complexity without memory" (p. 90). The problem of the MRM model is not in the model itself, as it is used for reconstruction of 3-dimensional structures from a limited set of 2-dimensional projections, but in its use as a biological metaphor. Therefore, it may be even an advantage that it is vague as concerns the nature

of the "organic memory", which plays a crucial role in the reconstruction process and "generating information."

The task of compression/reconstruction consists of two components, an encoding algorithm that takes a message and generates a "compressed" representation, and a decoding algorithm that reconstructs the original message or some *approximation* from the compressed representation. These two components are intricately tied together since they *both* have to understand the shared compressed representation. The methods can be divided into two types: Lossless algorithms (typically used for texts) reconstruct the original message from the compressed message exactly, whereas lossy algorithms (used for images and sounds) recover with somewhat lower resolution. Methods can also be classified as either static or dynamic. In a static mode, the mapping from messages to codewords has been fixed before the transmission begins, so that a given message is represented by the same codeword every time it appears in the message ensemble (Huffman coding). In a dynamic mapping, the set of codewords changes over time. An algorithm may also be a hybrid of both static and dynamic regimes. The MRM, in this respect, can be characterized as a static lossy reconstruction model.

### Reconstruction

Barbieri takes morphogenesis as a reconstruction (of an adult) from an *n*-dimensional "projection" (DNA sequence) or from a bunch of projections (images) represented by the zygote. The first problem of this approach lies in the far from obvious translation (rather than coding) of a *bodily* structure into a *digital* string of the genetic text. In the model, it is us who decide (1) what properties of the object should be "scanned" and (2) what the accuracy of digitalization (size of "pixels") should be.<sup>13</sup> Who or what is the decision-maker in zygote — body transformations?

The process of reconstruction, in the model, resides in an interplay between the state present at the beginning, and a "memory matrix", which is empty at the beginning. (Note that there is a beginning when all parameters of a living being are reset to "time zero".) The model works as follows:

The initial memory matrix is a *tabula rasa*, a white page that is gradually filled during the reconstruction process, while the reconstructed picture starts with a uniform image and becomes progressively differentiated in the course of time. A reconstruction with a MRM method, in other words, is a set of *two* distinct reconstructions that are performed in parallel. The point is that this double reconstruction is necessary for reasons which are absolutely general. (p. 90)

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<sup>13</sup> Note that it cannot be refined ad infinitum because of the uncertainty principle.

The whole model is reminiscent of bootstrapping of a computer upon startup. We can view the relatively small and simple system files as "projections" from which the complex and in some aspects almost lifelike "image" of the running operation system is produced by action of a "codemaker" (hardware and BIOS) and a "memory matrix" (RAM). Completeness or incompleteness of system files is just a matter of complexity of the hardware and BIOS and/or RAM size.

We have thus two independent worlds: that of an image or projection and that of *organic memory*. They intensively communicate in both ways, which leads to filling the memory and, at the same time, elaborating the picture. As the nature of both worlds is different, the flow of communication between them can be accomplished only thanks to the existence of suitable conventions called *organic codes*. Embryonic development is possible, states Barbieri, only if organic codes and organic memories are in charge. If "resetting" to time zero really takes place in a zygote, then epigenesis might indeed work according to the model.

The principal question, however, is *why do we need to introduce meaning into such a system?* The whole model is indeed a variation of the computer metaphor, with a concealed presence of a creator of the computer in the background — only in his/her head there is something like meaning.

### The third space

Even if the book is not really about meaning as the author suggests, but rather about decoding, it still touches the enigma how two worlds — that of "immaterial" digital symbols, epitomized as genotype and that of "material" bodies, shapes, and patterns (phenotypes) — can become related. According to Barbieri, the interface is codes. However, here comes to the focus the question of their origin and of the *codemaker* (and of course also the decoding entity).

A paradigmatic (if by no means single) example of coding in living system is presented by a set of tRNAs, representing the *ribotype*, mediating between the genotype and phenotype, although many elaborated coding systems exist at different levels of organization. The effects that external [we add: also internal] signals have on cells, in conclusion, do not depend on the energy and the information that they carry, but only on the *meanings that cells give them* with rules that can be called *signal transduction codes*" (p. 106). Yes, most of "reactions"<sup>14</sup> going on in the cell are important not metabolically, but semantically. But if it is the cell that *gives* a meaning to the signals, does it mean that these signals — in contrast to the genetic code —

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<sup>14</sup> We put quotation marks because many cellular signaling processes represent rather molecular recognition than standard chemical reactions on covalent bonds.

are not universal? Not only in the sense of *frozen accidents* but also as *frozen conventions*? Barbieri may be disposed towards such an explanation: "This implies that there is in cells an equivalent of the *contextual information* that plays such a relevant role in language" (p. 107).

We fully agree, but as we have stated above, language is not *only* a coding system. Everything is prepared here for semantic biology, at a price: biology will not remain in the realm of (fully?) experimental science. Barbieri is not willing to take this last step. He will protest against "frozen accidents", he will even suggest that the barrier between nature and culture should be brought down. He does not say it explicitly, but we can interpret his words as follows: if we have a "countless number" of "codes" in living beings, then living beings can be taken as an analogy of culture. One of us (Markoš 2002) has developed a similar analogy, arguing that a species can be understood as an analogy of culture, with its internal language and convention how to interpret its own living according to internal or external cues. What we are uneasy with, is the antinomy *code-language*. Codes cannot be used to tell a story. With codes, living beings remain safely in the realm of science, with language they cross the barrier towards "humanities". We can, of course, try to bring natural language to science's side of the barrier. Such a move would, however, change substantially science as we know it.

### Semantic biology

Can we constitute a *semantic biology*? Barbieri gives a positive answer, but the more we read, the more we suspect that what is being discussed is not *semantic* but *syntactic biology*, in other words, a kind of *grammar* and (complete sets of) rules of a biological "language" (in the sense of computer language). But how can we know at what moment the code became "complete"? Why it must not be modified? Is not the only reason for such a claim that it is necessary to stick to timeless "laws" in order to stay in the realm of science? We remind again the Morse code, *created* indeed as a *complete set*. However, the fullness of a statement's meaning lies not in its internal grammatical or logical structure but in its ability to illuminate the totality of fore-understandings which are the grounds of its intelligibility. In this context, we should refer to another contemporary book, which also attempts to constitute a general biology: *Investigations* by S. Kauffman (2000). But Kauffman acknowledges internal activity in his *autonomous agents*, conventions in his models are truly generated and changing in evolution — they are product and subject of history, not of a list of given immutable rules!

We agree with the general conclusion that "every cell must have (1) organic structures, (2) organic memories, and (3) organic codes" (p. 212; albeit *organic* seems to be a mere *epitheton ornans*). However, we maintain

that these pre-requisites, although necessary, are not sufficient, and that in order to grasp life, we have to introduce yet another component, very close to what we call *habits* in our culture.<sup>15</sup>

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