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A note on biorhetorics

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Abstract. This article analyses the possibility to look at living systems as biorhetorical systems. Rhetorics of biology, which studies the rhetoric of biological discourse, is distinguishable from biorhetorics, which attempts to analyse the expressive behaviour of organisms in terms of primordial (unconscious) rhetoric. The appearance of such a view is a logical consequence from recent developments in new (or general) rhetorics on the one hand (e.g., G. A. Kennedy's claim that rhetoric exists among social animals), and from the biosemiotic approach to living systems on the other hand.

It is evident that forest peoples — such as Indians, or Finno-Ugrians — considered animals to be rhetorical. However, it has been unusual to describe the behaviour of organic beings in terms of rhetoric in recent biology. Thus, let us consider simple examples, e.g., in the form of the following questions: (a) does a cat, varying its meowing at the door, persuades its host to open it? (b) does an orchid, with the form and colour and fragrance of its flower, persuades a pollinator to approach and find it? A supposedly negative answer to the latter question, and a quite sceptical one to the former, both by a humanitarian and by a biologist, may refer to the absence of any effort by the plant, and a non-existence of free choice in animals. However, in order to be scientifically certain and precise in discussing questions of this type, one has to specify, on the one hand, whether an organic form is indeed passive in its communication, without an ability to choose and search, and on the other hand, how to define 'effort', and further, 'persuasion'. If so, according to the definitions obtained, living systems may be able to make an effort, and persuade, we may

conclude that they are rhetorical systems, from the point of view of biology.[1] Therefore, analysis of these concepts is required, before it will be possible to answer the above questions.

In addition, when speaking of biorhetorics, we need firstly to distinguish rhetoric of biology and biorhetoric. However, in order to define the latter, it is necessary to look at the meanings and boundaries of rhetoric itself.

Rhetorics of biology

Rhetorics[2] *of biology* concern the ways biologists express their intentions in their writings or presentations; it is a study of rhetoric in biology.

Rhetorics of biology is currently a rapidly developing field. We can see this, for instance, from a recent book by Leah Ceccarelli (2001), in which an ideological stance of formulations in the texts of such leading biologists as Dobzhansky and Wilson is analysed and compared. Another good example is a special issue of the online *Poroi Journal*[3] (published in 2001 and edited by David Depew), which is topically devoted to rhetorics of biology.[4] In addition, a recent meeting of the International Society for History, Philosophy, and Social Studies of Biology included a session *Rhetoric and Biology: The Strategy of Communication in Modern Biological Thought*.[5]

The relationships between biological rhetoric and academic biology are controversial. On one hand, applied rhetorics is used in

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[1] At least three independent sources have led me to think about biorhetorics: firstly, conversations with Mihhail Lotman, my colleage at the Department of Semiotics in Tartu, who loves rhetoric and teaches a course on this subject; secondly, letters from Stephen Pain (now in Paris), who is enthusiastically interested in biorhetorics, being its proponent already for a few years. However, his texts on this issue are mostly epistolary. And the last impulsion was given by a book of Richard Doyle (1997) which I recently came across in a bookstore in Toronto. That rhetoric has already been extended to plants (by G. A. Kennedy), I found only when the first version of this brief paper had taken a shape.

[2] I will distinguish here between *rhetoric* as a practice, and *rhetorics* as a study of this practice.

[3] See http://inpress.lib.uiowa.edu/poroi/.

[4] The contributors include David Depew, Celeste M. Condit, Richard Doyle, Leah Ceccarelli, Steve Fuller, Chuck Dyke, Cristina S. Lopez.

[5] This ISHPSSB meeting was held in Quinnipiac University (USA), 2001, its session on *Rhetoric and Biology* being organised by Lilian Al-Chueyr Pereira Martins (from Pontifícia Universidade Católica de São Paulo).

order to teach scientific writing to biology students. On the other hand, a knowledge of rhetorics is required in order to see behind the curtains set by the contemporary science writers, those who play a more important role in contemporary science than ever before. More generally, both green and gender studies include research on specific rhetoric. In addition, the growing interest in rhetoric of biology is an evident sign of a critique — often a hidden critique — of the contemporary views in biology.

A study of the role of metaphors in biological research (and in biology altogether) is one of the central issues for biorhetorics (e.g., Paton 1997). In many cases it has raised a set of questions of whether the use of metaphoric terms in a scientific discourse is just a literary method to add additional power to the statements via a more expressive language, or there is a deeper similarity on the object level. The role of metaphors has been particularly important, of course, in interdisciplinary approaches. Typical examples include the usage of the terms 'organism', or 'natural selection' in all possible fields from chemistry to sociology to study of literature. Throughout the history of biology there has also been another trend of applying humanitarian metaphors in biological realm.

The widespread use of linguistic metaphors in biological science, particularly in molecular genetics, has been noted (e.g., Emmeche, Hoffmeyer 1991; Hoffmeyer 1992: 108). However, the use of linguistic metaphors has been helpful to a certain in developing the understanding (and a theory) of semiosic processes in organisms and their communities already in an ontological sense. In this context (i.e., of both rhetorics of biology and of starting biorhetorics), the book by Richard Doyle (1997) is particularly noteworthy.

Doyle's point of departure is not biology — rather the Department of Rhetoric at University of California Berkeley — but the biological culture he possesses is no doubt professional. Doyle does not emphasise the distinction of terms. His book speaks on both rhetorical aspects of biological research and rhetoric as a feature of life. The latter comes in when he focuses "on the ways in which implicit models of language and textuality helped constitute knowledge in molecular biology" (Doyle 1997: 86). Sometimes when speaking on rhetoric of life, he actually speaks of biosemiotics, the latter term being seemingly unknown to him.

Placing rhetorics

Rhetorics (or rhetoric)[6] — the art of persuasion, of expression — is an old discipline, dealing with the intentional aspect of communication, the language force, the effort of a message, the work done by semiosis. Not just pragmatic — rhetoric can mean either. However, it is relative to semiotics:

> According to its traditional definition as an art of persuasion, designed to capture the attention of an audience and to move it to pursue a particular course of action, rhetoric can be regarded as a precursor of the more general theory of textual semiotics and subsumed under the categories of semiotic analysis. (Rupp 1992: 10).

Rhetoric belongs to the pragmatic dimension of semiotics (Nöth 2000: 394). Indeed, if pragmatics is defined as broadly as Morris does (e.g., Nöth 1990: 52), then this relationship is evidently true. However, from a biological point of view, it is important to distinguish two approaches to pragmatics. These are the aspects of an attempt and of a result. One is originated by needs, by goals, by an organism that expresses signs. The other is dependent of what actually happens, of the results of expressive behaviour.

Persuasion is a communication intended to convince. Persuasion includes not only all arguments, but also refers to non-argumentative forms of communication, such as advertising, threats, appeals to the emotions, etc. Persuasion, according to its standard definition, is the process of consciously attempting to change attitudes through the transmission of some message. If to be conscious of it is an ultimate requirement for persuasion, then there will be no way and no sense to extend it toward a more biological field.

In this context it is interesting to see the developments in the study of metaphor. Initially treated as a restricted rhetorical trope, the concept of metaphor has been later extended into an extremely general figure of communication and knowledge (e.g., Ricoeur 1976, Eco 1986; cf. Richards 1936). A somewhat analogical expansion of a term has taken place with 'intentionality' (Searle 1993) and almost in parallel to these, one may notice a recent trend in a very different area — a reintroduction of the discussion on teleological issues in biology.

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[6] See footnote 2.

Rhetoric extends far beyond speech. Rhetoric has been found in image (Barthes 1977: 33–37), in material culture (Grier 1997), in action (Peshkov 1998). In a way, rhetoric deals with innate needs or wants that are expressed with consideration of the audience.

Thus, asking about the limits of rhetoric, one may notice that rhetorical behaviour is possible also in non-linguistic sign systems. Furthermore, we may notice that rhetorical turns are not always consciously planned — they may appear on the basis of various desires, and the form they take at the level of linguistic expression may be entirely involuntary. To illustrate, we can speak about rhetorical aspects of a child's language. If the rhetorical types take their origin on a prelinguistic level, then it infers that the language ability may not be required at all, at least for certain types of rhetorical behaviour. Consequently, a path is open towards zoorhetorics.

That human expressive behaviour includes ethological universals encompassing the figures of animal behaviour has been well demonstrated by many ethologists (e.g., Eibl-Eibesfeldt 1972; 1979). On the other hand, the audience effects have been described in expressive animal behaviour (Marler *et al*. 1990; Gouzoules *et al*. 1985). Here we may see certain assumptions for the placement of a lower threshold of rhetoric toward more biological area.

Defining biorhetorics

Biorhetorics is a view on, and a study of, living systems as rhetoric devices. This means that living systems are interpreted as analogical to *parole*, and not so much as *langue*. If a living organism is an entity that expresses and intends, then rhetoric is due. Because living systems have needs,[7] they cannot but express them, and accordingly affect the whole communication between organisms.

Although I know of no systematic work on this view — possibly because none exists — this field does not start with the definition here.

In order to discover the seeds of rhetoric in biology, new rhetorics had to arise. While classical rhetorics emphasised style, delivery, and arrangement, new rhetorics focuses on knowledge-making techniques. According to new rhetorics, or epistemic rhetorics, language is seen as

[7] On the concept of *biological need*, see Kull 2000: 339–343.

the medium for all knowledge-making. Correspondingly, if we assume that living organisms may possess knowledge-like qualities — an experience, a habit — then it should also require sign systems, a semiosphere. In this way we approach a topic analogous to rhetorics in the biological domain.

In comparative rhetorics, it has been possible to speak about rhetoric in animals, e.g., "the rhetoric of reed dear stags in seeking rights to mate with females — vocal encounters, stalking, and fights with their horns if one animal does not give way" (Kennedy 1998: 77).[8] According to George A. Kennedy's (1998) approach to general rhetoric, rhetoric exists among social animals. Moreover, he states that humans and animals share a "'deep universal rhetoric", and he also argues that plants share a rhetoric (Kennedy 1992: 109, 112). However, he distinguishes between plant or animal rhetoric as *purposive* and *unconscious*, and the human one as *purposeful* and *intentional*. Therefore, biorhetoric — if it exists — works on the level of unconscious persuasion, although one may also notice that biosemiotics can be defined as the linguistics of unconscious.

The crucial question of biological sign systems — on which depends whether biosemiotics can be a true part of semiotics — deal with choosing between two alternatives: is biocommunication is nothing more than signals, releasers, etc., absolutely unintentionally released and transferred, or an active process — the process of interpretation that transforms behaviour into signs. Since the latter has become a more viable view in current biosemiotics, it also opens a gate for the intentional aspects of biocommunication, i.e., to biorhetoric.

Indeed, much of animal communication does not seem as being simply information transfer. It is often very likely that animal behaviour is designed from itself to attract, to pay attention, to deceive. A recent analysis of deception in animals has been provided by M. Hauser (1996: 571ff).

In the framework of the semiotic turn in biology currently taking place, the birth of subfields (such as biosemantics, biopragmatics, etc.), and among them biorhetorics, is logical, predictable, and even inevitable. How this niche becomes filled is interesting to see. Thus, moving further from zoorhetoric, we may think, e.g., about endorhetorics, and on several other branches, likewise or analogically, to how these subfields have been established in biosemiotics. If a system has

[8] See also Lyons 2000: 460.

desires, these may have a reflection in the signs evoked, and rhetoric begins.

If rhetorics has some relevance to biology, one may also ask about the situation with its sister discipline — stylistics. Indeed, the possibility and role of stylistics in biological systems has been pointed out by Sergey Meyen, for instance when he wrote about refrains in biological taxa. Thus, it may become possible to speak on an area that should be called *biostylistics*.

Few notions for biorhetorics

Taking into account the sharp difference between rhetoric and biorhetoric, it is quite improbable that the classical notions of rhetorics are of much use in a biological realm. However, it is reasonable to assume that there exists certain diversity among biorhetorical figures, or biotropes.

Biotropes can be defined as trope-like figures used in biological communication. In order to emphasise the fundamental differences between the biological and human communication, I prefer not to neglect the prefix 'bio-' when speaking on animal communication. The biometaphors should be distinguished from the metaphors used in human speech.

We may hypothesize that one can find and define among the biotropes: *biohyperbole* (as an example it may be proposed the body enlargement effects through the ruffled up plumage during courtship displays of some birds, e.g., *Philomachus pugnax*, or *Lyrurus tetrix*), *bio-onomatopoeia* (perhaps when *Sturnus vulgaris* is using the strophes from other species' songs), *handicap* traits as described by Zahavi (still alternatively interpreted), or *threatening poses*, *warning coloration*, and *alarm signals* as used by many animals. It is also known that *intention movements* — the incomplete initial phases of behaviour patterns — can be recognised by conspecifics and used in communication (McFarland 1987: 317–318). However, a much more proper candidate for a type of biotrope can be found in *mimicry* — mimicry *sensu stricto*, or Bates' mimicry. A semiotic classification of mimicry types (see Maran 2000) may thus serve as a more detailed distinction of biotropes.

The same biological phenomena can be interpreted, of course, in a more traditional neodarwinian way, without any assumption about the

subjective or inner activity of the organisms, and thus, without biorhetoric. The distinction line has a relationship to biological needs — whether these are considered secondary traits that have developed in order to increase fitness, or if these belong to the primary features of organisms responsible essentially for all their behaviour. Biological needs start from the recognition of absence. A result of the recognition of absence is expressed in searching behaviour. The ways an organism expresses its needs (and desires) can be turned into signs recognisable by other organisms of the community. It is very unlikely that there will be no feedback if the other organisms' behaviour in any way affects the appeasing of the needs.

Thus, we may consider evolution as the history of inventing new (bio)rhetoric figures, in order to persuade the surroundings to fulfil the organism's needs. The latter being able to grow in a semiosic chain, maintaining certain relationships to the biological needs without even knowing of them — as in the series of need, desire, craving, want, wish.[9]

A characteristic feature of any rhetoric figure is the effect on the audience, due to the effort expressed by a rhetorical subject. The effort means a semiosic effort here. Douglas (2000: 270) has written about semiotic work and proposed a definition: "semantic work is done whenever the extension of a concept is expanded". What rhetoric does is namely semiotic work.

Where is the difference?

Rhetoric is an aspect of social semiosic behaviour. Thus, the problem raised here has a direct bearing on the relationship between anthroposemiotics and biosemiotics, or in contrast, between human culture and endosemiosis.

Language is a social phenomenon. Indeed, this clear and evident statement claims that there would not be any language without a social system with members who communicate; outside of society, no one can ever invent a language. This is a statement hold by many semioticians (Saussure, Greimas, Eco, Bachtin, Sonesson, i.e., by the representatives of anthroposemiotics, and also cultural semiotics) who put the semiotic threshold somewhere at the place and time of the

[9] Cf. Young 1936: 251ff.

appearance of humans, with an assumption of the existence of consciousness.

However, what does it actually means? The question is important, since from this it is often concluded that there can be no language or language-like system outside human society, e.g., in simple organisms, not speaking about the semiotic processes inside organisms. In other words, endosemiosis must be impossible.

Thus, what does the social determination and social origin of language mean, i.e., what is the statement about? Most evidently, the proponents of this view emphasise that there should be a higher-level holistic system actually responsible for the behaviour of its elements. This system is usually called culture. Without culture, regardless of how one defines it, it is probably impossible for semiosis to exist.

Therefore, for biosemioticians to approve their statement on the origin of semiosis together with the origin of life, or first cells, requires proof that culture or something isomorphic to it exists in cellular non-human systems, and that there is a culture (or at least anything culture-like) inside organisms as well.

The view of biosemioticians (who usually have biological background) is backed by their knowledge of the vast complexity and individuality of so-called primitive or simple living systems, about the immenseness of the cell, applying W. Elsasser's term. The mechanism of semiosis, as described in the works of anthroposemioticians, is recognised by biosemioticians as something for which an almost exact correspondence can be found in the mechanisms of life of the cell.

The definitions and descriptions of semiotic figures are, as a rule, quite simple from the point of view of their logical structure. This makes these inherently suitable for extension towards more biological application. An assumption of consciousness often becomes declarative, rather than built in into the structure of conceptions. However, the extended semiotics, as well as the extended rhetoric, cannot really erase the difference between the anthropological and biological spheres. After mapping the territory with these extended terms, the distinction has to be built again. The rhetoric as an elite art has little in common with the biorhetoric of an orchid flower.

Therefore, a possible reason for this controversy comes from the oversimplification of models applied and of descriptions made about human semiosis. The solution to this problem requires a task to improve and sophisticate these descriptions, so that the isomorphism with biosemiosis would to a large extent disappear.

My guess is that this is just what will happen. And it means that it will be an improvement in the theory of semiotics as generated by a more biological approach, biosemiotics, from outside of the main field of the science of signs. If this happens, the acceptance of semiosis of living cells will be obvious.

As much as rhetoric is unavoidable for us, there is apparently no life in which biorhetoric is absent.

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Замечание по поводу биориторики

В статье анализируется возможность рассмотрения живых систем в качестве риторических. Риторику биологии, которая рассматривает риторику биологического дискурса, отличают от биориторики, как от взгляда, согласно которому экспрессивное поведение организмов можно описать как первичную (бессознательную) риторику. Появление биориторической точки зрения — логический шаг, вытекающий, с одной стороны, из развития общей риторики (напр. Д. А. Кеннеди утверждает, что риторика свойственна социальным животным) и, с другой стороны, из биосемиотического подхода к живым системам.

Märge bioretoorika kohta

Artiklis analüüsitakse võimalust vaadelda elussüsteeme kui retoorilisi süsteeme. *Bioloogia retoorikat*, mis käsitleb bioloogilise diskursuse retoorikat, eristatakse *bioretoorikast* kui vaatest, mille kohaselt organismide väljendavat käitumist saab kirjeldada kui esmast (mitteteadvuslikku) retoorikat. Bioretoorilise vaate ilmumine on loogiline samm, mis tuleneb üheltpoolt üldise retoorika arengust (nt. G. A. Kennedy väidab, et retoorika on omane sotsiaalsetele loomadele) ja teiseltpoolt biosemiootilisest lähenemisest elussüsteemidele.