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[See table of contents](#)

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Article abstract

Many concepts used in semiotics today are derived from linguistics, philosophy, literature studies and other fields. Yet a genuinely ecosemiotic approach, requires modelling tools that go beyond imagery based on human culture and communication. In this paper, I develop an ecosemiotic research model that uses “forest” as its primary ground. Basing myself on the Tartu-Moscow school of cultural semiotics, I introduce modelling as an analytic method. Then I describe properties of the forest as an ecosystem as well as its experiential meaning for humans. The forest model can be applied in studying common objects of ecosemiotics, but it can also be mirrored back to the objects of general, cultural or social semiotics. The paper concludes with suggestions on developing the forest model in practical research.

Deep Ecosemiotics : Forest as a Semiotic Model¹

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Introduction

A distinctive feature of semiotics compared to other disciplines is its potential for self-reflectivity. Semiotics is suitable not only for describing semiosis and structures in human culture but it also allows for critical analysis of the very methods, premises and practices that it uses for research. The methods of the semiotic discipline themselves consist of sign processes, and therefore they themselves can be included among the objects of semiotic research. If our aim is to broaden the scope of semiotics with new subject matter, to shift it from the study of language, literature and other human cultural phenomena towards the study of sign exchange in other species, environments and ecosystems, then such ability for self-reflection becomes essentially important. The attention to methodology is necessary, as concepts used and questions asked will always partly constrain the later results of the study. On the positive side, self-awareness and the ability to self-reflect give semiotics greater flexibility to actively develop its methodological approaches to scatter across new territories.

Describing the nature/culture relation from the semiotic perspective appears to be challenging because available methods, concepts and their premises are mostly derived from the study of human semiosis and sign systems. Major conceptual tools of semiotics have origins in linguistics (e.g. distinction of content/form), information theory (e.g. communication, code), logic (e.g. proposition, reference) or literary theory (e.g. text, narrative). Each and every one of these concepts is encumbered by the specific set of premises and presumptions of the respective parent disciplines. For instance, notions of code and communication derived from the practical research in technically mediated communication in the 1940s, where a main challenge was developing informational codes that would

be resistant to noise and errors in telephone communication (Shannon & Weaver 1963) : as such they presume similitude of the sender and the receiver, one-directional communication, and a single channel separate and isolated from other possible channels of communication.

A major discrepancy between ecosemiotics, which aims to study the semiotics of ecosystems and culture-nature relations, and the conceptual framework of general semiotics results from the logocentrism and linguacentrism of the latter. Concepts in general semiotics often operate as discrete units, oppositions, typological distinctions or categorisation devices. Applying such concepts to ecosemiotic subject matter does not take into account that much of our semiotic relations with humans, with representatives of other species and with the environment is pre-linguistic and multi-modal. Matching rich, multi-layered and fuzzy pre-linguistic semiotic relations into formal concepts is highly reductive and produces a simplified and twisted understanding of ecosemiotics' subject matter (*cf.* semiotic criticism of framing nature in Augustyn 2013). My discernment here is in line with the "Ecosemiotic principles of deep ecology" that were developed in the early 2000s in Tartu by Kalevi Kull and colleagues :

Diversity, or heterogeneity, is a fundamental value. It is more general than any measurable value. Diversity results from the capacity of living beings to make a difference, to recognise, to distinguish. [...] Although culture is a powerful system for generating diversity, it has, especially during Modernity, extensively eradicated heterogeneity and increased uniformity. Fewer different forms are used in the action of building and reshaping than were found in what these activities replace. Additionally, the broad application of measurable values results in the proliferation of unification and standardisation, with a corresponding reduction in diversity. (2011 : 71)

Proclaiming *deep ecosemiotics* thus emphasises the recognition that for a fruitful ecosemiotic analysis, it is not enough to apply existing semiotic concepts to the environmental topics and problems, but the methodology itself needs transformation. For a truly ecosemiotic research framework, we need to anchor our modelling in a very different type of conceptual ground.

Many of our relations with the environment do not require linguistic mediation. Our encounters with rain, wind, the ground and other elements rely on the long evolutionary experience of human ancestors, and meanings in these relations will be attributed quickly and naturally. As we look for the passage in the dense forest undergrowth, our legs search for the firm ground in moss and our bodies adjust themselves in search for better balance. That is, our meaning making in the environment largely derives from the historical connections in and between our bodies, our *Umwelt*, the physical environment and other living organisms inhabiting the same environment (*cf.* Abram 1996; Ziemke *et al.* 2007). At nonverbal level, the meaningful correspondence will be achieved between our *Umwelt* and surrounding environmental structures in a

rather similar way to what happens in other animal species. Thomas A. Sebeok (1991a : 57) has described such a pre-linguistic semiotic process as zoosemiotic modelling, in which perceptions in a species-specific *Umwelt* will be fitted with suitable actions or behaviours.

Another central biosemiotic insight is that meaning making takes place in numerous layers of our body, each having its own semiotic agency and competence. Thomas A. Sebeok (1991b) has indicated this process by the concept of “semiotic self”, which is a configuration of sub-selves formed by compartments of our body that are equipped with some sign systems able to handle, store and retrieve information : genetic system, immune system, neural system, etc. The processes in these different semiotic systems may combine and accumulate. For instance, when going outdoors and into sunshine, our skin starts synthesising vitamin D. T-cells and leucocytes that are part of our immune system start interpreting pollen and other organic compounds of the inhaled air. The pineal gland increases the production of melatonin. Semiotic processes at the biochemical level lead to the rise of our activity and mood, and at some point, we may be able express our positive feelings in words. This corresponds to what Michael Polanyi (1966 : 18) has called “tacit knowledge” – a sign process in which a number of sign entities that remain below the threshold of our attention pile up to form a discretely perceivable sign. In Polanyi’s (1958 : 71; 1967 : 315) thinking, such from-to sign structure is common in making our linguistic knowledge – which remains a mere surface reflection of the richer experiential, bodily or environmental knowledges. Our perception of the surrounding environment is also intrinsically multisensorial and compound; we perceive colours, patterns, forms, sounds and smells as well as dynamics and rhythms in all these media. Such perception of the environment is often synesthetic or synchronic, and it can even be said that in environmental relations the human is engaged as a swarm of semiotic subjects.

The present paper is motivated by the recognition that ecosemiotic processes are not adequately understood today, and that there is lack of conceptual and methodological tools for analysing these. The potential of semiotics for self-reflection could, however, make such theory development possible. My aim in these pages is to consider the forest as a possible model for a semiotic analysis and to ask what kind of possibilities and properties such a modelling image could bring forth. Thus my interest is in finding new modelling devices or methodological tools for ecosemiotics through analogy-based reasoning. My concern is not to treat the forest as a semiotic system – which I think it is – but rather to ask : if we use the forest as a semiotic model to analyse some other object, what new perspectives would such an approach open? The approach taken here may at first glance resemble Deleuze and Guattari’s (1987) concept of *rhizome*, which was also inspired by a botanical entity. There are, nevertheless, crucial differences between their and

my approach. While *rhizome* assumes the univalence of all the points : “any point of a *rhizome* can be connected to anything other, and must be” (Deleuze & Guattari 1987 : 7), in the forest model this is not the case as the points or places in the forest are ontologically different. Also, for Deleuze and Guattari the negative antipode of *rhizome* is a tree, whereas in my view a tree as an integral part of the forest has positive meaning. The forest as model can be used beyond the common objects of ecosemiotic analysis and can be mirrored back to the typical objects of general, cultural or social semiotics. Analysing literary texts or human society through the lens of “semiotics of the forest” could indeed provide some fresh understandings.

Modelling as a Semiotic Method

Semiotic processes are often equated with modelling : Juri Lotman and his colleagues in the Tartu-Moscow semiotic school described natural language and other human sign systems as modelling systems; Thomas A. Sebeok (1986 : 80) reinterpreted Uexküll’s *Umwelt* as a model. Later, Sebeok and Danesi (2000 : 5–6) defined modelling as the use of forms for comprehending and processing perceived information in a species-specific way. Modelling in semiotics has a relatively wide meaning, as a process of making sense of some process or phenomena, with the help of (internal or external) representations that are at least partly based on analogies (Lotman 1967 : 130). Models retain a certain type of iconicity or analogy-based relation with their object and therefore have a capacity of representing this object and thus can later be applied back to the object. Ladislav Tondl writes that a “model is able to substitute for the original ... [and] permits some important functions of decision-making or evaluations concerning the original” (Tondl 2000 : 85). Models can be considered as tools of making sense of or handling more complex semiotic objects of the world. An easily accessible type of model on the linguistic level is metaphor; and we may note the plentitude of metaphor-based concepts in biosemiotics (e.g. *scaffolding*, *code maker*, *semiotic animal*). This is probably not a mere coincidence but has to do with the complexity and strangeness of biosemiotic objects that guide the biosemiotics paradigm towards using concepts based on figurative resemblances instead of precise formal concepts.

Modelling takes place in the semiotic realm on very different levels of semiotic complexity. We can consider a mental map of a migratory bird to be a model which incorporates inherent and experiential knowledge, the image of certain landmarks, and the position of the sun and the constellations, among other sources of environmental information; this mental map can be thought of as a model of its migratory route. More complex forms of modelling are present in human culture either in the form of “technical modelling”, where the model is created based on strict algorithmic relations and has systemic correspondence with an original

(e.g. architectural drawings, strength calculations, *cf.* Rosen 2012), or as “artistic modelling”, where a loose set of codes is used to create a poetically organized and complex image (e.g. figurative artworks, literature adaptations for stage or cinema). In this paper we are interested in modelling that takes place on the meta-level, that is, the possibilities of semiotics to use modelling as a method in analysing objects under study.

On the meta-level, at least three types of modelling devices can be distinguished. Models can be built on the basis of : 1. artistic or specialized language (that is, languages of a discipline, languages of a cultural era, idiosyncratic languages of an author); 2. conceptual systems or typologies (e.g. terminologies of Greimassian or Peircean semiotics); 3. analogies or metaphoric relations to dominant cultural topics (anthropomorphism, technomorphism, linguamorphism, *cf.* Komarek 2009 : 108ff). These different types of models represent their objects not in all aspects but in a certain respect, and the specifics of this relation itself have semiotic significance and meaning. “The model represents a homomorphic representation, *i.e.* not identical to the original. It means the representation in the sense of the Latin ‘*pars pro toto*’, the part instead of the whole” (Tondl 2000 : 83). It is in this relation between the original and the model where the language, the cultural tradition, the discipline, the code and so on of the interpreter, become involved and make the difference. Consequently, there is a reason to distinguish and analyse *grounds of modelling*. On meta-level, semiotics would allow us also to critically attend and modify these grounds that we use for making sense of the objects of our study. We may also develop new models by playfully modifying the existing grounds of modelling.

When creating and using modelling in semiotic inquiry, we should be aware that this ground of modelling is never neutral (as it is selected consciously or unconsciously by us). For instance, if we depict material processes based on narrative logic, then our depiction belongs to the sphere of anthropomorphic modelling (see longer discussion in Maran 2014). Narrative assumes the involvement of language, since the description of a sequence of events requires syntactic elements. Such a modelling approach could be beneficial, as it accumulates and highlights the causality of the process (for instance, human involvement in environmental degradation) and may introduce empathy in humans for understanding and appreciating environmental processes. At the same time, it should be recognized that narrative description is a part of symbolic interpretation and is therefore itself alien to the material world. Applying narrative logic in such a case will bring along distortion of the described material processes.

Forest as an Environment

In the following, I will carry out a thought-experiment by taking the forest as a ground for modelling semiotic systems. For this, I will first

consider the forest as an environment from the perspectives of scientific ecology and phenomenological experience. My analysis is based on the knowledge of temperate forests. There are many other and more exotic forest ecosystems on Earth (tropical rain forests, mangrovia swamp forests, etc.), and taking one of these as a point of departure would probably yield somewhat different argumentations compared to the present one. A forest is a type of ecological community or consortium (Kull 2010) that has a specific structure and dynamics. In ecological vocabulary the main autotrophs and primary producers of biomass in a forest are trees that provide ecological niches for many other organisms. A specific component of a forest ecosystem is the decay cycle with different decomposers (insects, worms, fungi) and a bulk of fallen leaves and woody debris that provides nutrients to insects and other invertebrates, fungi, rodents and many other creatures living on the forest floor (Chapin *et al.* 2011 : 183ff). A large amount of biomass in forests is below ground (up to 60 % [Lukac, Godbold 2011 : 26]).

For an ecological view, a characteristic of the forest is the presence of several interconnected structural layers. These can be mapped spatially, temporally or structurally, as different layers of the vertical structure in vegetation, different stages of succession or different levels of the ecological pyramid. Natural forests are characterised by the presence of trees of different ages and different species : there are always young trees, overgrown trees, fallen trees as well as a under-bush and herb layer with seedlings. Such layering provides structural or spatial diversity, in the sense that due to differences in microgeography, development of trees and the effect of wind and fire, forests are usually patterned or patchy. The large amount of biomass and patterned structure create suitable living conditions for many species that belong to the higher levels in the ecological pyramid. It also provides conditions for many different ecological niches and living strategies as well as space for a complex network of interspecies relations.

As with many other ecosystems, forests are also autopoietic entities in the sense that they are capable of renewing themselves and restoring themselves after natural or human-induced disturbances (Messier *et al.* 2013). Many forest ecosystems are resilient to quite significant changes (e.g. clearings caused by storms or forestry management), and some are even dependent on the physical effect of elemental forces (e.g. forest fires, floods) in their rejuvenation (Peh *et al.* 2015). As an ecosystem, forests significantly modify their own conditions; for instance, temperature and humidity in forests can be much different compared to the surrounding open environments. Such dynamics are not based on any fixed or hierarchical control system, but are a result of the abundance of living matter in forests and of the local regulatory feedback cycles between different species.

In the human phenomenological perspective, forests are often per-

ceived as greater wholes or contexts that surround the individual human agency. There appear to be two contrasting interpretations of how this perception can develop : 1) becoming a member of the forest as a community, or 2) dissolving into the forest. In the forest, humans tend to become subjected to the intentions and agency of other beings and natural forces. This is a basis of multispecies ethnography as initiated by Eduardo Viveiros de Castro (1992, 1998) and elaborated by Eduardo Kohn (2013), Phillippe Descola (2013) and others based on the experience of anthropological studies in South America. In American Indian forest communities, other species tend to show their agency towards humans in a way that results in the interplay of different human and more-than-human perspectives. Transformations, metamorphoses and role-reversals are the integral part of this semiotic web. Multispecies ethnography apparently comes close to Jakob von Uexküll's (1982) understanding of *Nature*, as an intertwined web of different *Umwelts*, whereas in this web species become reflected in the eyes of the others and become objects of meanings attributed by other animal subjects.

Perception of the forest as a multispecies web presumes, however, that humans are able to distinguish between species, to know their identity and behaviour. If this is not the case, the agency becomes abstract and the forest as a whole animated. A precise metaphoric concept for this overwhelming livingness of the forest was proposed by the Norwegian deep ecologist Arne Næss. In his critical essay of the infrastructure development in forests, he uses the concept "*heart of the forest*" to denote this wholeness :

Many cultures express awe of the heart of the forest. To be in the heart of the forest has been, and still is, considered something very special, something quite different from merely walking along its outskirts or knowing or feeling the direction in which you should walk to reach the edge of the forest. [...] "distance" here has much to do with our imagination : you look one way, forest, forest, forest [...]; you look another way, forest, forest, forest, FOREST. The forest fills your mind; you are not a subject and the forest is not an object. The dualism is overcome. (Næss 1997 : 258–259)

The forest as an animated whole tends to overwhelm the human and dissolve his/her individual identity. In cultural interpretations, this can be played out in a positive way as a romantic desire to become one with the forest or in a negative way as a fear of losing one's identity and becoming lost in the forest. Both imaginations are, in my understanding, related to the ecological properties of the forest : its ability to transform any agencies and matter due to its autopoietic capacities and overwhelming decay cycle. A negative accent of the encounter with the forest is present in many descriptions of going astray in the forest. For instance, the Estonian nature writer Juhan Lepasaar has described his experience losing his way in the large forests of Alutaguse in Eastern Estonia :

Go to the great woods of Alutaguse and look up as you walk, towards the

tops of the trees branching out, leave the ground unnoticed, never pay attention to it. Minutes go by, the weather is windless and cloudy, the winter has shaped the trees uniform, so similar to one another, so alike in appearance. And henceforth, without you noticing, Alutaguse has caught you in its web. [...] Even some fear creeps into the chest as images of a vague danger are becoming stronger and the reality is receding. We wade through the snow for yet another kilometer or so, then I start feeling a cramp in my left leg from overexertion. I am stumbling along with difficulty now. No, I cannot remain in the forest, I have to go on. My hat and my fur coat are stiff from the cold and covered with frost like the trees of the forest, the only difference seems to be that the forest is standing still, while I, in my coat and hat, am trying to move on at all cost. (Lepasaar 1989 : 119. My translation)

Also in such literary interpretations, a certain shift tends to take place between the subjectivity of the protagonists. The author is willing to denounce his position as a specialist with good knowledge, as he acknowledges his restrictions and admits the possibility of making mistakes. The difference between the human and the forest diminishes as the human becomes “covered with frost like the trees of the forest”, the only distinguishing feature being his will to move on. To conclude, in human experimental relations with the forest, the usual agency-relations tend to be transformed, and this has to do with the ecological and semiotic richness of the forest as an ecosystem.

Forest as a Semiotic Model

Taking the forest as a ground for semiotic modelling could bring forth and highlight properties of the analysed objects that more conventional semiotic models would overlook. In the following discussion, I will juxtapose the ecological and experiential features of the forest with ecosemiotic theory to bring forth five key properties of the forest as a semiotic model.

1. *Diverse and Distributed Communication Codes*

Forests are inhabited by a great number of species with different physiologies and *Umwelts*. These species also use different communicative means – sign systems and communication codes – yet at the same time they are able to communicate with one another and give positive or negative feedback to one another. What makes such partial communication possible are particular, local and place-specific communicational conventions that can be called ecological codes (Maran 2012; Kull 2010). Ecological codes are not general rules but distributed conventions : every participant has a partial variation of a code. An example of such ecological codes are the common warning colour patterns. In insects, yellow and black patterning that signifies poisonousness and inedibility exists in many different variations, and different insectivorous bird species are able to interpret this to different degrees (see discussion, Maran 2017 : 123–137). Thus the warning coloration has the shared meaning

to a number of species but only partially, in variations.

The same principle of ecological codes can be broadened to the forest as a semiotic model. When you move in the forest, the environment that surrounds you changes. With every step, new views and perspectives will open up, and the previous views, experiences and options will close. You will move from the partial variations of the semiotic code to new variations. There is no single background system, but the semiotic rules or codes themselves are changing. Using the forest as a semiotic model would thus emphasise that every location has its own semiotic character or quality. Situatedness in the forest is the case by default, and the neutral position of the observer is a special condition.

II. *Tolerance of Meaning*

The forest is rich in ecological relations between different species. In these relations, two or more species – which often have very different life habits and life necessities – interact. It would follow that meaning-relations are mutual – meanings are not just perceived and interpreted but also attributed, and on behalf of the communication partner, accepted and carried. These two sides of semiotic relations develop simultaneously and in reciprocal influence. When you walk into a forest, you may notice different birds, recognise their species and attribute meanings to them. At the same time, other living organisms perceive your presence and attribute meanings to you based on their *Umwelt* structures. Let us recall here again Arne Næss' "heart of the forest". His phenomenological intuition appears to be based on the meaning attribution by a number of living organisms in the forest. Næss writes : "To meet a big, wild animal in its own territory may be frightening, but it gives us an opportunity to better understand who we are and our limits of control : the existence of greatness other than the human. The same applies to meeting the greatness of the forest. We are not in control" (Næss 1997 : 259). Even tragic encounters, such as Val Plumwood's (1996) experience of a crocodile attack, may transform the perception of our relatedness with the environment to become more mutual and inclusive.

What is specific about the forest as a semiotic model is this general architecture of relations. Every species is in relation to the manifold relations to other inhabitants of the forest, and therefore the acceptance of or submission to meanings tends to outweigh the outbound semiotic activity of the subject. This process, which Jakob von Uexküll (1982 : 59–62) calls the tolerance of meanings, is a dominant form of the semiotic activity in the forest. The *tolerance of meaning* appears to be a central notion to understand human involvement in any complex semiotic systems. It is not enough to know the sign systems and codes to be used in a semiotic system, but the more crucial question is, to what degree do semiotic subjects of a given system endow a human with meanings? Ecosemiotician Riin Magnus expresses the similar

thought : “The organism’s existence as both a subject and an object (*qua phenomenon*) is revealed in its functioning in the ecosystem as an actor and an acted-upon, consumer and consumed, and, last but not least, as having meaning and as being a generator of meanings” (Magnus 2012 : 159). In regard to the forest, the meaningful relation between the human subject and the forest depends on how other living beings perceive us, how they make sense of us and our activities and how they act upon us. Even a mosquito, which bites me in a forest, endows some meaning to me.

To illustrate this principle, I would like to recall here an old friend, an amateur naturalist, who tends to take long walks in the forests around his home cottage. His slow movements were always accompanied by the clinking sound of the keychain that he carried around his neck and by mumblings of the rich repertoire of old folk songs that he continued without beginning nor end. And amazingly, he saw more animals from closer distances than any other nature enthusiast. My hypothesis is that animals of the surrounding forests were so used to his presence that they recognised him by the sounds he made and endowed him with the meaning of a strange but relatively harmless creature of the forest. How different this approach is from the attitude of the modern man, who, by being always worried about his/her individuality and by showing little tolerance towards the meanings attributed to him/her, sentences him/herself to the solitude and alienation from the rest of the environment.

III. Local Diversity of Sign Structures

Deriving from the two previous points, in the semiotic model of the forest, the basic unit of analysis should be a knot, a focal point where semiotic activities of different participants and local conditions meet and actualise. The focal points in the forest are distributed unevenly, and they have different qualitative properties. They are active, creative and poetic, and the meanings that grow in these cannot be deduced from the surrounding conditions or from the inner properties of the involved organisms of objects. This understanding comes close to the notion of “*lifelines*” developed by British anthropologist Tim Ingold :

The lifelines of organisms issue from the sites of their symbiotic connection, but in a direction that runs not from one to the other but forever in between, as the river flows between its banks in a direction orthogonal to their transverse connection. The life of the spider thus runs in counterpoint to that of the fly : to the melodic line of the first, the second figures as a refrain. (Ingold 2011 : 84)

In the forest, the lines of semiotic histories run between the many participants, and therefore a knot where multiple lines intertwine would be a more precise mental image to think about the semiotic organisation of the forest. It is not an exaggeration to say that the forest grows through these knots or, in other words, that the local configurations

in the forest-like semiotic model change and recreate the reality of the forest as a broader system.

The knot as a basic unit of analysis also indicates that describing the forest in its entirety is not possible. This is on one hand due to the local creative dynamics and on the other hand due to the limitlessness of the forest. In its entirety, the forest is more complex, the number of different possible relations more vast, than any possible description of the forest. This is due not only to the limited scope of human measurement capacity, but even more to the fact that our language-based modelling devices themselves are too simple and reductive to represent a huge variety of possible relations. Some years ago I expressed the same idea in more poetic language :

Forests stand for a type of phenomena in the world, which have their own existence, and which the human cannot restrain to his/her control, and not perhaps even describe or understand to a full extent. The forest stands for this principle. I have used the term 'forest-sacredness' [*metsapüha* in Estonian] to denote this, by indicating the type of sublimeness of the ancient forest, the feeling that it has its own story that frames you more than anything that you can possibly say or write about it. (Vabar 2008 : 1085, my translation)

The forest as a system also surrounds and contextualises any specific organism or entity in the forest, turning it inevitably into a locality or knot. The same logic appears to be valid in regard to large semiotic systems of humans, like culture or language, as their all-encompassing description is also problematic. It is important to recognise that the capacity of the forest-like semiotic system to exceed the limits of our description is a fact with great importance. It is this very resistance to descriptions made in any single code that allows cultures, languages and forests to self-organise and be resilient to the disturbances.

IV. Strong Ontological Presence

In forests, features, meanings and qualities are not just accidental and ephemeral phenomena but strong ontological properties of the living beings and the environment. Meanings and qualities do not derive from the subjects' interpretations, but meaning potentials are embodied in the bodies of animals and in the physical structures of the ground. The forest as an environment makes possible certain interpretations and constrains others. The presence of a strong semiotic ontology of the landscape was described as "perceptual affordance" by J.J. Gibson (1986). To make a practical example, if you take the wrong turn in a forest, you are in danger of getting lost. An animal that is not attentive enough to its surroundings is in danger of being caught and preyed upon. The forest gives quick and effective feedback to the perceptions, interpretations and actions of a semiotic subject.

The strong ontology is related to the historical dynamics of the

forest. It is partly there due to certain temporal and spatial logics of how different plant and tree species replace one another in the process that ecologists call ecological succession. On the other hand, the strong ontology allows us to interpret the history of the forest – to the professional eye, the forest is an open book about growth of trees, about past clearings and human actions, forest fires and wind damage. Such interpretation would not be possible without a certain reality of the forms of the landscape. For the forest as a semiotic model, this means that semiotic structures are motivated : content and form of the meaning units are related to each other, and arbitrariness is rare, occasional and constrained. Instead of arbitrariness, the forest model is abundant with history of forms. The essential sign type in the forest-like semiotic system is not a symbol but an indexical sign that denotes its own descendance. Understanding of that type of signs is characteristic to Finno-Ugric semiotic thought as well as to other indigenous cultures that still have a living tradition and memory of hunting activities in the forest (cf. Voigt 1999). This sign type can be called “*jälg*” in Estonian, “*jälki*” in Finnish (“trace” or “track” in English); the same ancient word root has given the general notion of the sign “*jet*” to Hungarian, which is a third large Finno-Ugric language.

V. *Surplus of Semiotic Material*

The forest in an ecological sense is characterised by many decay chains, the existence of abundant debris and dead organic matter. Also in the forest as a semiotic model, semiotic processes are flourishing, overwhelming, and there is a surplus of semiotic material. Various signs and texts are used simultaneously, in support to one another or in a contradicting or comparative way. This overflow of the signs is another reason why the forest as a semiotic model cannot be formal or arbitrary – forms and contents are in loose relations and do not build a unified semiotic system.

The forest as a semiotic model also consists a lot of semiotic material that is not actively used or interpreted in a given moment but that is in a passive stage or forgotten, or that remains in various stages of degradation and decay. Unused and forgotten semiotic sources have a huge potential to be reused, reorganised, filled with new meanings and put into use in new relations, in new knots of the forest as a system. Emphasising the relevance of the decay change would also mean that reuse, adaptation and remodelling are common strategies of such a semiotic system : emerging signs co-opt earlier semiotic structures, which can be remainders of the previous semiotic material or that have a foreign origin (cf. semiotic co-option, Kleisner 2010). For applying forest based semiotic modelling to other semiotic phenomena (texts, cultures, and languages), the creative potential of the partial, incomplete and decaying semiotic material needs to be taken into account (recently also

Donna Haraway (2016) has argued for the “compost” and “compost-ist” as suitable terms to describe human creative effort in the Anthropocene (to overcome boundaries of culture, species and kin). This would also mean blurring the binaries : borders of the forest, life and dead matter, culture and nature.

Let us now sum up the basic properties that were brought forth when describing the forest as a semiotic model. I have claimed that in the forest as a semiotic system, meanings and codes are shared partially in variations; being in the forest means tolerating meanings and becoming an object of meaning attribution; the basic unit of analysis in the forest is a knot or focal point where semiotic activities and local conditions meet; characters, meanings and qualities have strong ontology and history; and there is a surplus of semiotic material beyond the semiotic processes currently active. To provide an even shorter description, the forest as a semiotic model would describe an object of analysis as heterogeneous, locally regulated and accidental, but at the same time well integrated.

A Way Forward

My claim in this paper has been that for developing an ecologically sensitive semiotics, a principal change in our conceptual tools is needed. I have also praised semiotics for a capacity of self-reflection, emphasised modelling as a central methodological tool for semiotic research and sketched an ecosemiotic research model based on the image of the forest ecosystem. Now it is possible to make some preliminary suggestions about applying forest-like semiotic models in the research.

Using forest-like semiotic models is not limited for studying real forests, landscapes and other common objects of ecosemiotics. It can be also used for studying literature and other cultural artefacts and phenomena with promising results. A preliminary attempt to apply this type of methodology in literature research was carried out two years ago in a study of Estonian nature writing focusing in two essayists : Juhan Lepasaar and Edgar Kask from the Alutaguse region in Eastern Estonia. We made an attempt to map the heterogeneity of their writing beyond any formal dichotomies of author/text, culture/nature, content/form, etc. I provide here a longer quotation from the published results of this study as it may help to illustrate the possible applications of the forest as a semiotic model :

The books of both authors have recognisably similar structures : they are extremely heterogeneous collections that include reflections about the Alutaguse landscapes, the various components, species, and places of these; stories of local people, their opinions and folklore; chapters dedicated to different wild animals and encounters with them; observations on phenological data and environmental change; recollections of personal experiences, poems and autobiographical information. Different storylines involving people, culture, and nature run parallel in these books, the text as a whole creates

a meshwork out of the individual story lines. As such, the structure of the books represents the artistic modelling and marks a sensitive relation to the local conditions. The authorial position manifested in such structures is characterised by the lack of binary oppositions in positioning human and animals, nature and culture, the past and the future. [...]

In the case of nature writing about the Alutaguse region by Kask and Lepasaar, the dominant feature appears to be the local diversity of the environmental experience and the meshwork-like-connections between the Alutaguse wilderness and the people living there. By having an intense local experience, the author, his life, recollections and style of expression are turned into a medium and a bridge between the reader and the environment, understood as a meshwork of culture and the diversity of nature, memories of the past and potentials of the present. The authors' personae are manifested in different stories, experiences and localities to the degree that the distinction between the author, the text and the referent, *i.e.*, the natural environment, appears to dissolve. (Maran & Tüür 2017 : 295-296, 298).

Our experience in this analysis as well as in other ecosemiotic case studies has been that pre-established ontological categories often are too limiting for describing the distinctive features of the object analysed. As indicated before, *the forest of semiotic relations* is always larger and more comprehensive compared to an observer. Therefore it is rather difficult to find the neutral position of an out-stander, a viewpoint from where to make an objective description. A more fruitful way to work with the forest as a semiotic system would be through the participatory approaches. Participatory involvement is necessarily partial and has temporal and spatial localisation. But how could this help us to gain any understanding about the forest-like semiotic systems in their entirety? The answer would be, through repetition. Go into the forest, become a knot and describe the meanings around you. Or dive into culture, or into text. If possible, describe the meanings that the forest attributes to you. Change the position, change a role and repeat. Take another focal point and repeat. Take samples, wander around, a bit like a field ecologist. Do not work with the general concepts but dig into semiotic decay, study fragments and rudiments of signs. In its applications, deep ecosemiotics would mean getting one's hands dirty, becoming involved and going deep into forest, literally.

Notes

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Abstract

Many concepts used in semiotics today are derived from linguistics, philosophy, literature studies and other fields. Yet a genuinely ecosemiotic approach, requires modelling tools that go beyond imagery based on human culture and communication. In this paper, I develop an ecosemiotic research model that uses "forest" as its primary ground. Basing myself on the Tartu-Moscow school of cultural semiotics, I introduce modelling as an analytic method. Then I describe properties of the forest as an ecosystem as well as its experiential meaning for humans. The forest model can be applied in studying common objects of ecosemiotics, but it can also be mirrored back to the objects of general, cultural or social semiotics. The paper concludes with suggestions on developing the forest model in practical research.

Keywords : Ecosemiotics; Semiotic Modelling; Forest as a Semiotic System; Affordances; Tolerance of Meaning.

Résumé

De nombreux concepts employés aujourd'hui en sémiotique dérivent de la linguistique, de la philosophie, des études littéraires et d'autres champs. Une approche écosémiotique authentique nécessite cependant le développement d'outils de modélisation qui vont au-delà d'un imaginaire fondé sur la culture et la communication humaine. Dans cet article, je développe un modèle de recherche écosémiosique qui s'appuie essentiellement sur la "forêt". Procédant de l'école de sémiotique culturelle de Tartu-Moscou, j'introduis la modélisation comme une méthode d'analyse. Puis je décris certaines propriétés de la forêt, entendue comme écosystème, et de sa signification expérientielle pour les humains. Le modèle de forêt peut s'appliquer à l'étude d'objets ordinaires de l'écosémiotique, mais il peut également être réfléchi sur des applications pratiques de ce modèle.

Mots-clés : Écosémiotique; modélisation sémiotique; la forêt comme système sémiotique; affordances; tolérance du sens.

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