

Semiotic ecology: different natures in the semiosphere

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Alles Lebendige bildet eine Atmosphäre um sich her.
J. W. Goethe (1977: 35)

“Natur! ... Wir leben mitten in ihr, und sind ihr fremde. Sie spricht unaufhörlich mit uns, und verrät uns ihr Geheimnis nicht.” These are the words from G. C. Tobler’s prose fragment “Die Natur”, which he wrote after visiting Goethe in 1781 (Goethe 1977: 29). The idea that nature speaks, i.e., has a communicative characteristic, was quite common in romanticism, and has been expressed also by F. W. J. Schelling (cf. Warnke 1998).

The two centuries which separate us from the romanticist era¹ have given us elaborated methods of scientific inquiry and an extensive practice of their application in order to free ourselves from *Geheimnis*. However, we are still, and probably even to a much larger and deeper extent, *fremde* to nature. Either we have not achieved the ability to communicate with her, or that has been a pathological communication². Or — as it is assumed by many contemporary natural scientists — the communication between humans and nature is nothing but a metaphor. A good description of the situation is given

¹ According to some estimations, romanticism in the Baltic countries, including Estonia, lasted to some extent up to the beginning of the 20th century, due to the persistence of agrarian culture and traditional type of land-use. Thure von Uexküll (pers. comm.) has hypothesised that this could be an indirect reason for the development of a strong non-Darwinian view to nature (K. E. v. Baer, J. v. Uexküll) namely in this region.

² Cf. Witzany (1993: 17): “Die ökologische Krise konnte in dieser Ausmaß nur entstehen, weil sich die Kultur der abendländischen Moderne zur (inneren und äußeren) Natur **kommunikationspathologisch** verhält.”

by J. Hoffmeyer (1997): “That evolution takes place in the ‘ecological theatre’, as G. E. Hutchinson has expressed it, implies that evolution is always co-evolution. But in neo-Darwinian tradition co-evolution, with the Red Queen Hypothesis as the standard illustration, is always treated like an arms race problem which implicitly figures evolution as a game against something ‘out there’. While this may of course sometimes be a representative model, it probably in most cases is a caricature.”

The notion of nature is itself the result of certain opposition, and there are many ways to build up further binary oppositions in human-nature relationships, used in different circumstances, which delimit or split nature in various ways.

Let me begin with an example to illustrate a view of man-nature relationships.

“When some time ago the anthropologist Claude Lévi-Strauss was asked what he thought was the ideal balance between man and nature, he responded by suggesting a way anyone might answer that question to for him- or herself. Begin, he said, by imagining conditions of extreme dominance of one world over the other. Then ask what condition in your own experience seems to strike a happy balance between these extremes.” Lévi-Strauss found the extremes to be India and the Amazonian jungle. “The ideal, he concluded, was to be found in his own native France where, in a predominantly agricultural district, towns were dense and compact, taking up as little of the land as they might, yet within them were healthy human communities living in close harmony. In the countryside was a pattern of small fields tended by farmer-owners of the land. At the margins of their fields were hedgerows, ...”³ (Crowe 1997: 8–9). Hedgerows — but where is the nature?

“Indeed, if there is to be an expression of an ideal relationship with nature, nature too must be seen in an idealized state” (Crowe 1997: 14). If this means that an ideal relationship with non-idealised nature (i.e., with natural nature, with wilderness) is impossible, then it imposes strong limits on the attempts of the green movement, on ecological ideals.

³ These different situations seem just to be examples of different human population densities, without any specific connection to the ideals of human-nature relationships. However, I assume that this is not what Lévi-Strauss primarily had in mind.

The understanding, that the human species together with its culture is entirely a part of the ecosystem, with its producers and element circles, and that humans can never escape the ecosystem, has been taught by ecology, with some holistic emphasis by E. P. Odum (1963). Hence, ecology as describing the material processes in ecosystems, can demonstrate the imbalances of carbon, nitrogen, or phosphorus cycles, can model the population dynamics and provide the optimum rates of fishing and resource management. It can give ideas how to develop ecological technologies and to protect species and communities in a more efficient ways.

However, ecological knowledge (as a natural scientific knowledge) is in principle not sufficient to solve many ecological problems, it is incapable of meeting the environmental issues of contemporary culture. Despite the fact that we apparently know why, the number of living species in the world is decreasing, the human population is growing, the mountains of waste reach from the backyards and oceanic abyss to the upper layers of the atmosphere. My guess is that it is so, not only because the solution of these problems also requires, in addition to the knowledge of ecological processes, an understanding of human behaviour, but because the semiotic aspects of human-nature relationships are of great importance everywhere, and these, particularly, are still not sufficiently taken into consideration or understood.

The relationships between humans and nature are connected to deep cultural processes. A possible example can be the behaviour of the primeval society on Easter Island, in which the establishment of religious symbols and the building of stone statues led to the entire destruction of the forest on the island, followed by the degeneration of the culture (Ponting 1991). Besides constructing our understanding of nature, we also construct the surrounding nature itself.

The ecological processes and dumping grounds enfold both *Umwelt* and *Innenwelt*, their real sphere is the semiosphere. Therefore, without understanding the semiotic mechanisms which determine the place of nature in different cultures, one has little hope of solving many serious environmental problems, and of finding the stable place of culture in nature.

In this paper, I attempt to demarcate the specifics of ecosemiotics, or semiotic ecology, to describe and classify some of its main problems, and to introduce several concepts using its specific perspective.

The main thesis of this work states that when looking semiotically and considering ecological knowledge together with what we know about the deep processes of culture, one can conclude that, despite any ecological consciousness or wish and attempt to build an ecological society, when living with nature we cannot avoid the building of a second nature and the replacing of the first. We can, in the best case, make the changes slower and maybe less harmful for biodiversity, but what we get is nevertheless nature with a human face. However, being aware of this, it might be possible, at least theoretically, to reach a semiotically sustainable world. But this assumes the semiotisation of ecology.

Defining ecosemiotics

The term ‘eco-semiotics’ (also ‘ecological semiotics’, ‘semiotic ecology’) still does not appear in the textbooks and reviews of, for instance, T. A. Sebeok (1997b), or J. Deely (1990). Although, the term was already used in the 6th International Congress of Semiotics in Guadalajara (Mexico) in 1997⁴ and in a recent meeting in Tartu⁵. Also, it appears in the first volume of “A Handbook on the Sign-Theoretic Foundations of Nature and Culture” (Tembrock 1997) as ‘Ökosemiose’ in German and ‘environmental semiosis’ in English. It was also used by J. Hoffmeyer (1997) in the form ‘eco-semiotic’.

The paper by W. Nöth (1996) was apparently the first to coin this term and to define it⁶. This work by Nöth was discussed in several papers of the same volume of the “Zeitschrift für Semiotik” (Böhme 1996, Bernard 1996, Hauser 1996a, Hoffmeyer 1996b). However, these were not the first works in which semiotic ecology was introduced. Already 15 years earlier, attempts to build semiotic ecology were made in the Moscow group of theoretical biology (Levich 1983), and these ideas were discussed in joint meetings with

⁴ For instance, in the contribution by Stephen Duplantier.

⁵ Eco-semiotic aspects of the uses of nature were the topic of a North-European workshop on anthropology of environment, organised jointly by the Department of Anthropology of Åarhus University, Department of Semiotics of Tartu University, and Jakob von Uexküll Centre (May 1998, Estonia).

⁶ In the current volume his paper appears in its first English, edited, version.

colleagues from St. Petersburg and Tartu⁷. Also, there have been several publications in which some semiotic aspects of human ecology have been considered (e.g., Hornborg 1996, Teherani-Krönner 1996, Hauser 1996b), and many more, in which the semiotics of human-nature relationships are developed without the direct application of semiotic terminology (e.g., Simmons 1993; Larsen, Grgas 1994, Rapoport 1994).

Here, I prefer to define ecosemiotics in a slightly different way than W. Nöth, developing his concept in a way which allows biosemiotics and ecological semiotics to be distinguished. There are two main reasons to do so (although, generally, I consider the discussion on the meanings of the names of scientific disciplines senseless — it is not our convention which should define the limits, e.g., of biology, but rather the area of the applicability of the rules which are discovered in the field).

(1) According to the definition given by Nöth (1996, 1998), it is not very clear in many cases what distinguishes ecosemiotics from biosemiotics, or from the *Umweltlehre* of J. v. Uexküll.

W. Nöth includes under the name of ecosemiotics the semiotic aspects of all organism-environment interactions, both human and non-human, among them those which have been viewed by endosemiotics, i.e. considering that the environment can also be intra-organismic. In this sense, Nöth's term covers the area of biosemiotics which has been established in last decade of development in this field, and ecosemiotics would thus be just a synonym for biosemiotics.

(2) The second reason comes from my belief that ecosemiotics may become a large and important field of research with considerable practical applications. This is subjective human ecology (considering under 'subjective' here the meaning given by J. v. Uexküll), or in other words, it is human ecology as extended toward semiotics, human ecology from the semiotic point of view.

However, as Nöth (1998) also notices, "for example, F. de Saussure's anthroposemiotics is a semiotics without any ecosemiotic perspective. ././ Such a linguocentric program of semiosis is bound to impede any prospects for the study of the ecological determinants in the process of semiosis interaction of the organism and its environment". Here seems to be located an area which, indeed, is still not

⁷ It should be noted that the course on ecosemiotics is being read for the first time in Tartu University in 1998, whereas the course on biosemiotics has been taught in Tartu regularly since 1993.

entirely covered either by biosemiotics, or by anthroposemiotics, or by the semiotics of culture. However, the view of Saussure, according to which, all we know passes through the filter of language, may still be acceptable, provided we understand ‘language’ or ‘linguistic’ in a broad enough way.

The obvious need for ecological semiotics can also be seen from the point made by J. Deely (1990, p. 7): “As autonomous, the sphere of human culture is but *relatively* autonomous, as transcending, but only by incorporating and resting upon, a physical environment shared with all the forms of biological life in a larger network — biosemiosis — of mutual dependence. The understanding of that larger whole precisely in terms of semiosis defines the complete task of which cultural semiotics forms a part”.

Ecology can be seen as a great project which aims to overcome the dualism between man and nature in the sense of showing and explaining how human society actually represents only a constituent of the ecosystem and the biosphere, a consumer among the other consumers in the ecological cycles which include all plants, animals, micro-organisms and earth. As one of the consequences of the ecological approach, biocentrism has arisen to replace both physicalism and anthropocentrism.

Semiotics, somehow analogically to this ecological program, can be seen as a large project to get free from the dualism of mind and matter through the demonstration of the triadic nature of all primary and secondary processes of interpretation, which all are to be embedded in the semiosphere.

The involvement of biology in this is not surprising, since “that is traditionally the main threat to dualism — biology, which in itself covers a more or less continuous range from organic chemistry to human beings” (Stjernfelt 1992: 427). Also, Uexküll’s biological concept of *Umwelt* has been used in semiotics as a tool to extend the concept of semiosphere to the sphere of non-human organisms (Hoffmeyer 1996a, Kull 1998). According to J. Hoffmeyer (1996a: 24), “Usually biologists try to bring people close to Nature. I am going to adopt the opposite strategy, that of bringing Nature to people.” However, the application of a semiotic approach in biology or ecology is fundamentally different from applying mathematical or physical methods in life science. Semiotic biology, as well as semiotic ecology, means that we step over the limits of natural science, and what we get,

or what we need, is thus an extended biology, and an extended ecology as well.

To describe the realm of biosemiotics, J. Hoffmeyer (1996a: 96) builds a triangle which consists of culture, external nature, and internal nature. According to Hoffmeyer, the relationship between culture and internal nature is the sphere of psychosomatics, the relationship between internal and external nature is the field of biosemiotics, and the relationship between culture and external nature is the *environmental sphere*. This latter can also be named an ecosemiotic area (Fig. 1).

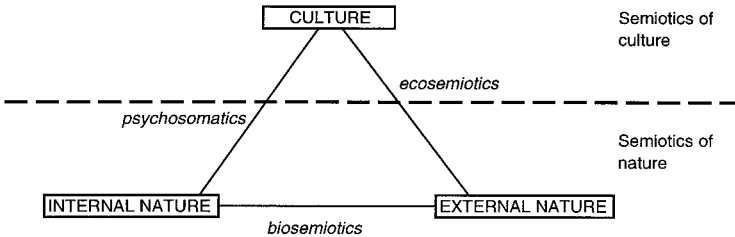


Figure 1. Defining the sphere of ecosemiotics, in relation to biosemiotics and psychosomatics. Under internal nature we mean the biological organism, and under external nature all the living and nonliving environment.

Biosemiotics is defined as an analysis of living systems as sign systems, the origin of sign being one of the problems in its competence. It investigates semiosis in the living which is much broader than human life, i.e. which exists beyond the mental (conscious) life, assuming the semiotic threshold to be close to where life begins.

Ecosemiotics can be defined as the semiotics of relationships between nature and culture. This includes research on the semiotic aspects of the place and role of nature for humans, i.e. what is and what has been the meaning of nature for us, humans, how and in what extent we communicate with nature. Ecosemiotics deals with the semiosis going on between a human and its ecosystem, or a human in ones ecosystem. In this, it can be related to ethnology and sociology of man-nature relationships, to environmental psychology and the anthropology of environment, which, although quite close to eco-

semiotics, deal more with the comparative than the semiotic aspects of the problem.

Ecosemiotics is thus quite different from biosemiotics. Ecosemiotics can be considered as a part of the semiotics of culture, which investigates human relationships to nature which have a semiotic (sign-mediated) basis, whereas biosemiotics can be seen as different from the cultural semiotic field. Both, nevertheless, are researching nature from the semiotic point of view.

Hoffmeyer (1996a: 32) has distinguished between vertical and horizontal axes in biological communication. He identifies vertical communication with genealogical semiosis (or genetic and evolutionary dimension), and horizontal communication with ecological semiosis. This can be seen as referring to diachronic and synchronic aspects in biosemiotics, ecosemiotics representing mainly the synchronic part. However, ecosemiotics, as I interpret it, should also include the history of culture-nature relationships, as the development of nature(s) in culture(s).

At the same time, in a way, 'ecological' can be seen as a step forward from 'biological'. As expressed by F. Merrell (1996: 269), "I now wish to gravitate away from the biological focus /../ toward a broader, rather 'ecological' view."

Ecosemiotics describes the appearance of nature as dependent on the various contexts or situations. It includes nature's structure as it appears, its classification (syntactics); it describes what it means for people, what there is in nature (semantics); and it finds out the personal or social relation to the components of nature, which can be one's participation in nature (pragmatics). In all this, it includes the role of memory and the relationships between different types of (short-term, long-term, etc.) memory in culture. Due to considering the evolutionary aspect, ecosemiotics also extends to non-human systems.

The semiotic aspect of man-nature relationships may concern, for instance, the context-dependence of the valuation of nature, differences in seeing and understanding it. Also, it concerns the signal character of the behaviour of a person in nature — when living in a forest, or walking in woods, or seeing it on TV, reading or speaking or dreaming about it. And it certainly concerns the formation of nature, the designing and building of the environment using the human (linguistic, aesthetic, etc.) forms.

Effects of human-nature functional circles

Our knowledge of nature, at its best, however, is not nature itself, and not only in the sense that all the given is just the given in our personal *Umwelt*, but much more — semiotic processes have been and are continuously creating a second nature — through the changing of nature itself. As a result, nature has changed so much that the nature we know is already almost entirely the second (or third) one. It is a fundamental feature of semiotic processes — to change, to manipulate, to take under control, to make a difference, to build the other.

It is of interest here to note J. Derrida's view on J.-J. Rousseau's examination of the topics of nature and culture. "Rousseau starts out with nature as a primitive stage, with simple human societies living happily, who then add cultural complexity. Culture then adds to nature and substitutes for it, but Derrida argues that each time Rousseau uses the term nature he describes it in terms of nature supplemented by culture or indeed in terms of nature/culture polarity with the first term being a better state than the last. Nature thus must become something which is never unsupplemented" (Simmons 1993: 150).

Due to the interdependence of perception and operation, the way how humans perceive nature is itself influencing and creating environmental problems. There are several aspects to this phenomenon.

(1) Recognition and control. Recognition, and as a result — classification (categorisation), has a tendency to take the recognised under its control. In an organism's *Umwelt*, all that is recognised tends to become used or manipulated and, as a next step, taken under control; which means that the organism, automatically, unavoidably and obligatorily, changes nature.

One cannot use anything that one cannot recognise. To make a rope from bass, one has to recognise lime-trees. If lime is rare in the vicinity, its usage may lead to a decrease in its abundance. Thus — recognition has led to a change in nature. The local distribution of lime, at least in northern Europe, has, due to this, been severely modified in comparison to its indigenous growth areas.

It is obvious that game animals and useful plant species have been affected by human activities. But it is more interesting to notice that the species recognised as rare, and as a result taken under nature protection, may also change their abundance due to this attitude. Thus even nature protection is a way, although quite mild, of changing nature. In the course of development of biological knowledge about

species (including many small ones, e.g. those which are causing diseases) and their ways of behaviour, their abundance is taken under more or less strict control.

(2) Decontextualisation⁸. Recognition of an object, at least to some extent, decontextualises it. To be able to replant specimens of a useful species automatically means that specimens are taken out of their original biocoenosis, removing with this many connections with other species which are not taken with the plant to its new habitat. In built (artificial) ecosystems, for instance fields or parks, people often grow foreign, non-indigenous plants. Therefore, species in such places may encounter new relationships with other species which they have never experienced before. These plants are taken away from the context in which they have evolved. As J. N. Thompson (1994: 292) remarks, “the real tragedy accompanying the destruction of natural communities is the loss forever of specialized and highly coevolved interactions. These are the relationships between species that are probably disappearing fastest, yet they are precisely the ones that could tell us the most about the evolutionary consequences of particular ways of interacting. /../ [Detailed models] will remain an untested academic exercise if the most specialized interactions have disappeared or have lost the community context in which they were formed.” A typical example of decontextualised behaviour is that of weeds, which have lost the (semiotic) controls which limited their abundance in the primary habitat.

(3) Operation and remodelling (forming). Operation always depends on (is regulated by) the forms and images the organism (a human) has acquired. Operation does not follow the whole structure of the environment and its webs of relationships, but discretises it and disregards many sides. Consequently, it changes the environment, making it more similar to the human’s own face.

(4) Opposition and reduction. Recognition means an ability to make distinctions⁹, which, in a simple case, are polar. Making distinctions (polar oppositions) has a tendency to replace the importance of the whole by the importance of particular parts. A trivial example in our context would be the distinction between nature and culture, which leads us to think that the processes in culture and nature are

⁸ Various aspects of ecological decontextualisation have been analysed by A. Hornborg (1996).

⁹ Exactly as G. Bateson (1972: 315) says about information, which is “a difference that makes a difference”.

separated, and that the processes of culture or respectively of nature are more important to consider than those of the whole.

(5) Understanding and devaluation. Understanding the mechanism of a phenomenon has a tendency to remove the value previously attributed to this phenomenon. This can be explained as decontextualising the object from the self.

(6) Selfing and valuation. Including a phenomenon into self has a tendency to assign value to this phenomenon. The limits of one's self may be very different, for instance, these may include just one's body, or home, or family, or farm, or country (homeland), or Gaia.

The semiotic aspect of man-nature relationships may also include the distinguishing of species into useful and dangerous, into the familiar and the strange (or sometimes into more classes). National taxonomies provide many examples here (thus, a large part of ethnobiology happens to propose questions for ecosemiotics). In a similar vein, plants are divided into crops and weeds, animals into the tame and the wild.

Thus, perceiving nature already creates problems, as seen from this list. Therefore, it is not only Judeo-Christian belief which has necessarily stood at the root of the ecological crisis, as noted by L. White (1967). The causes go much deeper, into the main features of human behaviour and understanding. Also, there exist both, processes which make the environment mechanic (e.g., (5)), and which make it alive (e.g., (6)).

Multiple natures

Scholastics already made the difference between first and second nature; by second nature the one built by humans was meant¹⁰. The same discrimination has later been assigned to Hegel¹¹. The important point here is that nature is not unique, there is not one nature, but several.

J. v. Uexküll with his notion of *Umwelt* has emphasised that every organism has its own subjective environment, which is different from any other, and in the case of different species of animals these differences can be very large. However, this is not the aspect I am

¹⁰ Cf. Crowe 1997: 3.

¹¹ See Smith 1996: 49.

describing here — the problem here is the separation of notions within an *Umwelt* (particularly in human *Umwelt*), or in the semiosphere.

As a result of the differences humans can make, the nature in their *Umwelt* is distinguished into first, second, and third nature; what we think is outside the *Umwelt*, can be called zero nature. **Zero** nature is nature itself (e.g., absolute wilderness¹²). **First** nature is the nature as we see, identify, describe and interpret it. **Second** nature is the nature which we have materially interpreted, this is materially translated nature, i.e. a changed nature, a produced nature. **Third** nature is a virtual nature, as it exists in art and science.

Zero nature is seen as changing by itself, the objective nature itself, ‘out there’ (or ‘in here’). The first nature is nature as we have it due to (or thanks to) our language, a language-filtered (or sign-filtered) nature. It is like a translation of zero nature into our knowledge; this is our image of nature at the same time, either mythical, or social, or scientific. The second one can be seen as a back translation of the first into the zero, nature as changed through our participation, a manipulated nature. And the third nature is the interpretation of interpretation, the translation of translation, the image of image of nature.

Zero nature, at least when living, is changing via ontological semiosis, or via physiosemiosis if applying J. Deely’s term. The first nature is nature as filtered via human semiosis, through the interpretations in our social and personal knowledge. This is categorised nature. The second nature is changing as a result of ‘material processes’ again, this is a ‘material translation’ in the form of true semiotic translation, since it interconnects the zero and the first (or third), controlling the zero nature on the basis of the imaginary nature. The third nature is entirely theoretical or artistic, non-natural nature-like nature, built on the basis of the first (or third itself) with the help of the second.

These terms from ‘zero’ to ‘third’, although arbitrary, are chosen as corresponding to the quite widespread meaning given to ‘second nature’ (e.g., Crowe 1997). Also, in a similar vein, McKenzie Wark (1994a; 1994b: 20) has proposed to use the term ‘third nature’¹³: “Second nature, which appears to us as the geography of cities and roads and harbours and wool stores is progressively overlaid with a

¹² The true wilderness, obviously, is the untouched nature, which, in an absolute sense, is even untouched by our knowledge. It follows that we are not able to describe it, at least in correct scientific terms.

¹³ N. Smith (1996).

third nature of information flows, creating an information landscape which almost entirely covers the old territories. ././ If there is a qualitative change in the social relations of culture which deserves the name postmodern, perhaps this is it.”

All four natures are here, as I write this on the open balcony of my summer cottage in the south Estonian forests, in a place which is far more distant from the towns and roads than Walden. Zero nature lives its life in every leaf and blade, and in the forest behind the trees, and in the soil with the earthworms. First nature is all the green I see, the birds that sing and dragonflies and the big spider in the upper corner of the balcony keeping its leg on the web. Second nature is all of our garden, and well, and smoke sauna, but also a great deal of the forest, since I know that it is growing on the old pastures and meadows which were abandoned nearly sixty years ago; also, in this forest, some of the trees were cut to give the others more space to grow. And third nature is all this nature on the screen of laptop, and in my theoretical constructions, and in the book my daughter is reading.

In the course of the development of human *Umwelt*, the part of zero and first nature in the semiosphere, as well as in the biosphere, inevitably diminishes; the causes of the loss of wilderness are as deep as the laws of the development of knowledge. Second nature cannot be built on an empty space.

The building of second nature generally means that people apply certain models, or we may even say, certain general linguistic patterns upon nature. This is particularly well illustrated in park architecture or garden design. It can be easily demonstrated when considering the notions used to describe gardens. *Lawn* is smooth and homogeneous, with gramineous forms and almost without forbs. *Flowers* need to be with coloured flowers seen — either in distinguished monospecies patches, or if with single shoots then with remarkable flowers. Bushes or *trees* should not have dried branches, and the crowns should not be intertwined. There should be no large herbs growing out of or over bushes. These or similar rules of ‘order’ can be seen as belonging to (and coming from) certain traditions of gardening schools. However, these are probably something much deeper, since regardless of the particular school, the rules always apply idealised forms to nature. Namely, rules like these originate from the discretised descriptions of nature, from the linguistic nature, as limited by the general mechanisms of perception and operation, i.e., of functional circle.

The logical relationships between the four natures (from zero to the third) can be represented as dealing with the (creation) processes between nature and its image (construct, or schema), through a simple combinatorics:

- 0 — zero nature is — nature from nature
- 1 — first nature is — image from nature
- 2 — second nature is — nature from image
- 3 — third nature is — image from image

The same can be represented in a figure (Fig. 2).

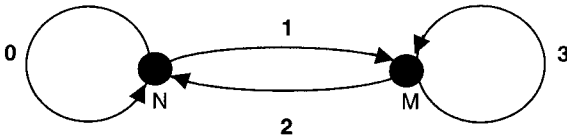


Figure 2. The processes which generate the 0th, 1st, 2nd, and 3rd nature. N – nature, M – image.

All four natures participate in the usual discourses of natural science. Zero nature is that which biologists want to describe. The first one is that which they perceive and describe. The second one is the one in their lab. And the third nature is what they get in their papers and models. However, in all cases I assume that nature is a complex of processes, not a pattern.

In a way this is trivial, but without paying attention to this, scientists are often misguided. For instance, field biologists in Europe, when describing what they call nature, are dealing mostly with second nature, since almost all landscapes and ecosystems in their countries are already secondary, designed or influenced by culture. This does not concern only so-called seminatural communities like meadows and ‘non-cultivated’ pastures, but also forests which are either sown or planted or thinned or fertilised or meliorated, and waterbodies which are polluted or purified, and populations which are harvested or protected. The result is, that the scientific literature on various aspects of ecology is describing humans and culture in disguise, very often without noticing or even not being really aware of it (or of the extent of this aspect). The mean age of the existing biocoenoses (if mea-

suring from the last greater change in the management regime, or from a considerable change in the edificator density) is very short, usually extending to few decades and rarely to several centuries, whereas biodiversity is directly dependent on community age, together with population structures, species relationships and element cycles all of which are in transition. To recognise the culture in nature is not easy, it requires very rich experience on the part of the biologist, but without this the conclusions made may happen to be just artefacts.

The natures from zero to the third can be seen as the steps (or types) which distinguish the meditative, descriptive, experimental (technological), and theoretical science. Here we can see that, what are being described are, in one aspect, the stages of the development of science, and in another aspect, the different natures. Nature as described by theoretical biologists may not coincide with the nature described by descriptive naturalists.

A remarkable feature of the scheme on Figure 2 is that it is almost isomorphic with the schemes of the functional circle as represented and described by J. v. Uexküll (1928). In his scheme of the functional circle, 1 would mean *Merkwelt*, 2 — *Wirkwelt*, and 3 — *Innenwelt*; 1 and 2 taken together is *Umwelt*; 0 is nature itself as the Kantian *Ding an sich*.

An additional aspect appears if we ask whether a bird's nest can be considered as second nature for the bird, or does there exist wilderness from a bird's (or bee's) point of view? If the main principles of the functional circle (of perception and operation) are the same, then the answer tends to be 'yes'. This is the more so if we accept that the general learning process (phylogenetic or ontogenetic) exists in all living organisms, and the linguistic properties can be seen in the behaviour of each cell (assuming the semiotic boundary laying at the beginning of life).

A similar idea is presented by S. Plant (1996: 205): "It can either be said that 'natural', human intelligence is 'artificial' and constructed in the sense that its apparatus mutates as it learns, grows and explores its own potentiality; or that 'artificial' intelligence is 'natural' insofar as it pursues the processes at work in the brain and effectively learns as it grows. Either way the distinction between nature and artifice is collapsed."

Although the double secondness of nature may be the case (e.g., due to behaviour of cognitive robots), these examples still demonstrate that a further step is needed after we have extended the feature of

semioticity to include all the living. For the latter (i.e. the statement that semiosis begins with life) to be true and acceptable, does not mean that there is no difference between bio- and anthroposemiosis. The human language and design remain different from that of other living creatures on Earth. This difference is simply not so easy to find.

Approaches to nature

Depending on either the exclusion the nature from one's self, or the inclusion of nature into it, there are generally two basic approaches of humans towards living nature. According to the first, humans try to repel wild animals and plants from the neighbourhood of their homes. According to the second, humans attempt to live together with plants and animals. The first approach has created the cultural deserts and strictly protected reservations of wilderness, the second one has given the semi-natural ecosystems and gardens. Both of them, of course, change nature in the sense of building a second one, however, these are two radically different strategies for doing it. These strategies can be called 'balance through power', and 'balance through humility'.

Here are few small examples of peoples attitudes toward tiny animals.

(a) When a mosquito is biting us, we usually kill that insect using our free hand. It has a certain sense to do so in our homes, in the closed rooms in which we live, because so we can diminish the probability of being bitten again. It has become customary to kill the insects which land on our legs or face. However, this is absolutely senseless if we work or walk in the open air, in a forest, for instance. Killing a biting fly in the forest does not change the probability of being bitten again due to the great number of insects. Killing animals because they cause some discomfort is senseless altogether when we are in their natural habitat, in nature, since, for our body, wiping the insects away would have exactly the same result.

(b) Spiders, together with all other non-domestic or wild creatures which can be seen with the naked eye, are either killed or at least repelled from contemporary human apartments. The different relationship concerns dogs, cats, aquarium fish, caged birds. Whereas mosquitoes sometimes really bite, and even flies can make windows dirty, the small spiders do not cause any harm to humans. The reason why people remove them from their rooms has, therefore, a somewhat

different source. This seemingly has to do with the classification of living organisms which is specific to culture. It should be noted that the relationship, e.g., to spiders in our rooms, has been different in some cases, or in some cultures. For instance, I have seen in some Estonian farmhouses that spiders' webs are carefully kept. The hosts explained that the spiders may reduce the number of flies in their rooms, and therefore it is reasonable to preserve them.

(c) A similar story was told by U. Eco of his visit to the University library in Coimbra, Portugal. "Spread out on the tables they had green towels, as for billiards. I asked why. They said it was to protect the furniture from the shit of the bats. They have bats; the ceiling is full of bats. During the day they sleep; during the night they shit. So I asked, why don't you get rid of the bats? But you see, the bats eat the bookworms that would otherwise damage the books. For 400 years the bats have been protecting the books."¹⁴

Thus, on a larger scale, we can notice the two quite different ways of the organisation of nature protection.

According to the first, the main way to protect nature is through the reserves in which nature is left by itself, repelling people from the area. These are the state- or federally-owned national parks of many western countries, on the territory of which humans are not allowed to live or change anything. What is allowed is to come and look, but even this is strongly regulated spatially and temporally, for some areas with access only for park personnel and researchers (and even for them only with special licenses).

According to the other, the way to protect nature is through the preservation of the traditional life styles of humans on the basis of the non-intensive use of nature. An example of the latter is the traditional wooded meadow on the calcareous areas of the Baltic Sea islands and on the mainland of Estonia and Sweden.

It is very interesting to notice that while the first type of nature protection results in high values of large-scale species diversity (the number of species in, e.g., one square kilometre being higher than in the surrounding areas of the same habitat), then the second type retains the examples of the highest small-scale (few square metres) species diversity (Kukk, Kull 1997). The nature reserves, in which the wilderness is left by itself, without any management, can retain their

¹⁴ From Stephen Smith, Ask Umberto, In *Toronto Globe & Mail* (National edition), Oct. 26, p. D14. The story is retelled in Sasha Jerabek (1996), *Echoing Thoughts on Bats and Books*. In *The Marginal Librarian* 4(1), p. 4.

number of species if the area was not managed before. However, the highest known small-scale species diversity occurs in some managed ecosystems, provided that the management is mild and regular over a very long period of time. In this way, for instance, the meadows which are regularly mown (but not more than once a year) or grazed (but never overgrazed) can have more plant species growing on a square metre than any non-managed plant community. Also, a traditional fishery can sometimes keep the diversity of the fish community higher than that in non-managed lakes. This can be explained through the diminishing of the level of competition in the loosely managed communities — for example, mowing removes relatively more biomass from bigger specimens (and from the species which have bigger specimens), equalising the conditions for different species and diminishing the intensity of competition for light. However, this is certainly not the only reason for the diversification of nature in some managed ecosystems. For instance, it is quite common that the density (and number of species) of nesting birds is higher in a traditional semi-cultural landscape than in neighbouring large forests — which is probably the result of a larger variety of niches created by human activities.

A human community with nature, even at its best, cannot be a community with wilderness. Living with nature ultimately means changing nature. Ninety percent of trees growing in England are not of indigenous species; people, however, may describe this landscape as beautiful. The forests of Finland are monocultural plantations, although some people may think of them as true forests. The most colourful and species-rich old meadows in Estonia are a result of human management which created them less than two thousand years ago. The models of nature's beauty and naturalness, which people apply when protecting valuable areas, are ideal models, which, due to this, change the order of nature.

However, this does not mean that there is no sense in nature protection, or ecological management. What I want to stress here is that there is a strict limit in these activities, in the sense that even the most carefully protected nature is a somehow changed nature, and it is important to see and understand this.

Nature is soaking into culture and cultural landscapes anyway. Everywhere wherever possible, life tends to cover the Earth with a green coat. Only very dry, very cold, or highly contaminated places may be inaccessible for plant life. Every crack in the “tarmac” or hole

in a wall is found, after some time, by a diaspore which starts to grow and distribute its greenness. The same goes for many groups of animals (insects, spiders, birds, small rodents, etc.), fungi (e.g., molds), protists and bacteria, in addition to lichens, bryophytes and vascular plants — that means all larger taxa.

The power of expansion of life makes it very difficult to rid ourselves of all life forms in our surroundings — it has required the technology of the 20th century. The exclusion of living organisms from apartments became efficient only just in the ‘ecological’ era, i.e. in the last decades, with the invention of hermetically sealed windows and doors and hermetic building materials which enabled the filling of the smallest cracks around water pipes etc. Various preservatives make it possible even to sterilise our food.

Semiotic extension of ecology

Ecology, despite the great variety and resulting diffuseness of its meaning, and despite the existence of areas like ecological psychology or ecological linguistics, is nevertheless traditionally considered in its true meaning as a natural science. Human society belongs in ecological systems not via its mental abilities, but through metabolism and energy consumption, through the mutual relationships with other species. The ecological aspect in all the eco-branches of the humanities means either an emphasis on the environment and environmental factors, or just the application of natural scientific methodology. J. Hoffmeyer (1996a: 143) emphasises: “it is hard to see how ecology can be our guide and mentor in managing nature when it keeps splitting the world up into two distinct sectors — the natural and the cultural — thereby upholding all of the emotional superstructure, all the illusions, that alienate us from nature.” In this, the ecosemiotic project remains apart.

Ecosemiotics is not just an application of ecology — in the sense of its methods or environmental factors — in semiotics. This might be more like an application of semiotics in ecology, however, this does not happen to be the precise formulation either, since — as emphasised by J. Deely (1990: 12) — semiotics is more a standpoint than a set of methods or ideology. Looking into ecology from the semiotic standpoint, as a matter of fact, is impossible from the inside, or in the

framework, of ecology as a natural science. It requires an extension of the viewpoint.

Ecosemiotics, or semiotic ecology, in which semiotic processes are those which make the organisms living and the living themselves interconnected, means the introduction of a view which is beyond the limits of natural sciences. In semiotic ecology, a subject is taking part in life, a subject which has no behaviouristic description. Thus, also, the natural scientific methods of model testing happen to be too narrow for this field, and should be extended. Ecology, which includes culture, and not mere material processes of producing waste or of producing energy or even competition between the firms, turns out to be a fundamentally different field — which still includes ecology, seen however as standing on a considerably different basis.

Semiotic ecology is extended ecology, with a change in its philosophical and methodological assumptions. It is no longer a natural science — in the same way that semiotics is not, and like biosemiotics or semiotic biology is essentially an extended biology, for which the existing biology is a special, restricted case.

To accept this view means that we interpret the J. v. Uexküll's¹⁵ concept of *Umwelt* as being broader than the 'Umwelt' meaning environment in a natural scientific sense. A. Meyer-Abich (1963) expressed it as the physics being a special case of biology — a statement which cannot be acceptable within a natural scientific view, according to which the situation should be just the reverse. However, the idea of biosemiotics is to develop an extended concept of knowledge¹⁶, within which the strongly natural scientific knowledge is a restricted part, or a particular case.

Semiotic sustainability

Despite its immanent eternity, the semiosphere is ever growing. In this, it is, or at least it seems to be in contradiction with the ecological model of a sustainable economy. The sustainable economy almost cannot grow. Semiotically extended ecology would, thus, tell us that the stability and limitedness which we can see in balanced natural ecosystems and which, although with serious difficulties, seems to be,

¹⁵ E.g., Uexküll (1980).

¹⁶ Cf. T. Vehkavaara's (1998) explanation of this subject.

at least in principle, possible to achieve in ecosystems with humans, will be lost if we take into account the semiotic processes and inevitability of the growth and extension of second nature. The unlimited growth of sign systems follows from the principle of the growth of signs. The claim ‘no limits in learning’ proposed by the Club of Rome seems to suit as a proof of this.

The idea of sustainability, dominating in ecological publications of the last decades, is almost entirely absent in semiotic literature¹⁷. This can be explained by the apparent rarity of a feature like sustainability, in semiotic systems. However, the situation in semiotics deserves a further insight and analysis, particularly considering the recent growth of biosemiotics into a regular branch of this field.

If we accept a principal statement of biosemiotics, according to which the elements of living systems are signs (Hoffmeyer 1996), or that life begins with semiotic controls (Pattee 1997), then it follows that the non-human living systems are sign systems. Therefore, the examples of balanced ecosystems can serve as examples of balanced sign systems with limited growth.

Biological sustainable systems still have history, in the sense of their unique sequence of internal changes. However, they lack an extensive self-description of their history (or, at least, they have to lose it when becoming old enough, otherwise the size limit cannot be strictly applied)¹⁸. Here is one reason why the applicability of bio-semiotic systems as models for culture is very limited.

Biological organisms have memory in the sense of the inheritance of unique patterns and codes, which go back billions of years for several features. However, this is a memory without time, or with quite restricted time. The narratives which may be included into biological memory as certain developmental sequences are like short tales, they never reach the length of the historical narratives one can read from the books about phylogeny or human and cultural history.

However, the absence of lengthy narratives does not restrict the existence of the sign systems and languages. Vice versa, it can be a

¹⁷ The rarity of references on ecological problems in semiotic literature is the more surprising due to the fact that both, semiotics and ecology, became very popular and started a period of rapid growth almost simultaneously in 1960s.

¹⁸ It is important to emphasise that the absence of the self-description of history does not mean the absence of self-description at all. The partial self-description of some structures is a general feature of living systems.

precondition for ecological systems to persist. The sustainable way of long-term existence as has existed in pagan tribes could persist without literacy. Many forest nations (e.g., Finno-Ugric ones in Siberia, Indian ones in North-America) do not have traditional stony architecture, or long-lasting religious buildings. The continuity of cultural semiosis does not presume the simultaneous detailed long-term storage of self-description.

The myth of progress is certainly related to the idea of unlimited memory, since, otherwise, history may happen to circulate.

The character of intentions is obviously also connected with the character of memory. If memory does not include narratives, as it is the case in many non-human organisms, then wishes (needs) and plans cannot have any complicated temporal structure either. This is also the reason why only few species of animals are able to possess something we call morals.

Thus, the natural sustainable ecosystems, despite their semiotic essence, have quite little in common with contemporary human societies. If so, then the conditions of persistence for cultural systems should be found separately, in addition to the principles which work for biological systems. The necessary ecological requirements like the closure of element cycles and the limitedness of energy flows should not be violated, but due to the increased semiotic freedom the mechanisms which lead to sustainability of natural ecosystems cannot achieve this in the systems with civilised culture. We cannot violate the physical laws, but as a result of the increased semiotic freedom, we can violate many simple and old (biological) semiotic controls.

We can also change our system of values. In relation to sustainability, it is important to notice that it is also possible not to change the valuation of many things. For instance, the attribution of value to organisms of other species living in the human environment can be kept. Also, the value of non-living nature and landscapes can be persistent for a very long time.

It took more than two billion years for the biosphere to stabilise the carbon cycle and the chemical composition of the atmosphere, removing large amounts of carbon from use. Humans, during two centuries, are turning the situation rapidly back at least half a billion years, with the burning of fossil fuels. It looks like the semiosphere still cannot take the biosphere as his/her own.

The problem with semiotic connections is that these can be violated if there is the knowledge and a wish to do so. Natural science

teaches that it is impossible to build a perpetuum mobile, but it is possible to make a dead from the living, and it explains how to do so.

The danger of the extensive replacement of zero nature by the second one comes from the incompleteness of linguistic knowledge, and the loss of information due to the discrete character of linguistic forms, together with a mythical belief for the achievability of complete knowledge. Although living nature is itself largely linguistic and discrete, human signs cannot copy all the details of non-human signs, and thus, the reconstructed and constructed natures always simplify and restrict some of the relationships in nature itself.

“We can learn valuable lessons from the study of ecosystems, which *are* sustainable communities of plants, animals, and microorganisms. ././ We need to become ecologically literate. Being ecologically literate ././ means understanding the principles of organization of ecological communities (ecosystems) and using those principles for creating sustainable human communities” (Capra 1997: 297). My statement is that this is not the whole story. Humans, together with only a few other life forms, are able not to do what they wish. Our nature is culture. The paradox is, that sustainable living means living forever with incomplete knowledge, and with memory that forgets.

Conclusions

The main message of this article is that ecological knowledge is not sufficient to understand or solve the ecological problems which humans face, since these are consequences of certain deeply semiotic and cultural processes, intertwined with ecological and biological ones. There exist different types of cultures, among them some which have been able to create balanced relationships with nature, and many others which automatically create environmental problems for themselves. Thus, the understanding and possible solution of ecological conflicts assumes knowledge of both cultural and biological parts, which means that cultural semiotics and ecology can constructively interact in this field. Consequently, ecosemiotics seems to be a possibility for facing these most important, and most difficult challenges of the contemporary world.¹⁹

¹⁹ I owe my thanks to Peeter Torop who has, among others, inspired me to think about ecosemiotics, and to M. Lotman, W. Nöth, S. Brauckmann,

References

- Bateson, Gregory (1972). *Steps to an Ecology of Mind*. New York: Ballantine.
- Bernard, Jeff (1996). Über dialektische Zusammenhänge der Natur. *Zeitschrift für Semiotik* 18(1), 23–30.
- Böhme, Hartmut (1996). Über vormoderne Naturkonzepte. *Zeitschrift für Semiotik* 18(1), 19–22.
- Bramwell, Anna (1989). *Ecology in the 20th Century: A History*. New Haven: Yale University Press.
- Capra, Fritjof (1997). *The Web of Life*. New York: Anchor Books.
- Crowe, Norman (1997 [orig. 1995]). *Nature and the Idea of a Man-Made World: An Investigation into the Evolutionary Roots of Form and Order in the Built Environment*. Cambridge (Mass.): The MIT Press.
- Deely, John (1990). *Basics of Semiotics*. Bloomington: Indiana University Press.
- Goethe, Johann Wolfgang (1977). *Schriften zur Naturwissenschaft: Auswahl*. Michael Böhler (ed.). Stuttgart: Philipp Reclam jun.
- Hauser, Susanne (1996a). Natur, Umwelt, Zeichen. *Zeitschrift für Semiotik* 18(1), 3–6.
- Hauser, Susanne (1996b). Repräsentationen der Natur und Umweltmodelle. *Zeitschrift für Semiotik* 18(1), 83–92.
- Hoffmeyer, Jesper (1996a). *Signs of Meaning in the Universe*. Bloomington: Indiana University Press.
- Hoffmeyer, Jesper (1996b). Für eine semiotisch reformulierte Naturwissenschaft. *Zeitschrift für Semiotik* 18(1), 31–34.
- Hoffmeyer, Jesper (1997). Biosemiotics: towards a new synthesis in biology. In *European Journal for Semiotic Studies* 9(2), 355–376.
- Hornborg, Alf (1996). Ecology as semiotics: Outlines of a contextualist paradigm for human ecology. In *Nature and Society: Anthropological Perspectives*, Philippe Descola and Gisli Pálsson (eds.), 45–62. London: Routledge.
- Kukk, Toomas and Kull, Kalevi (1997). Puisniidud [Wooded Meadows]. *Estonia Maritima* 2, 1–249.
- Kull, Kalevi (1998). On semiosis, *Umwelt*, and semiosphere. *Semiotica* 120(3/4), 69–80.
- Larsen, Svend Erik and Grgas, Stipe (eds.) (1994). *The Construction of Nature: A Discursive Strategy in Modern European Thought*. Odense: Odense University Press.
- Levich, A. P. (1983). Semioticheskie struktury v ekologii, ili suschestvuet li ekologicheskij kod? In *Chelovek i Biosfera* 8, 68–77. Moskva: Izdatel'stvo Moskovskogo Universiteta.

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- Merrell, Floyd (1996). *Signs Grow: Semiosis and Life Processes*. Toronto: University of Toronto Press.
- Meyer-Abich, Adolf (1963). *Geistesgeschichtliche Grundlagen der Biologie*. Stuttgart: G.Fischer Verlag.
- Nöth, Winfried (1996). Ökosemiotik. *Zeitschrift für Semiotik* 18(1), 7–18.
- Nöth, Winfried (1998). Ecosemiotics. *Sign Systems Studies* 26 (this volume).
- Odum, Eugene P. (1963). *Ecology*. New York: Holt, Rinehart and Winston.
- Pattee, Howard H. (1997). The physics of symbols and the evolution of semiotic controls. In: *Control mechanisms for complex systems: issues of measurement and semiotic analysis*, Michael Coombs and Mark Sulcoski (eds.), 9–25. Albuquerque: University of New Mexico.
- Plant, Sadie (1996). The virtual complexity of culture. In *FutureNatural: Nature, Science, Culture*, George Robertson, Melinda Mash, Lisa Tickner, Jon Bird, Barry Curtis and Tim Putnam (eds.), 203–217. London: Routledge.
- Ponting, C. (1991). *A Green History of the World*. London: Sinclair-Stevenson.
- Rapoport, Amos (1994). Spatial organization and the built environment. In *Companion Encyclopedia of Anthropology*, Tim Ingold (ed.), 460–502. London: Routledge.
- Sebeok Thomas A. (1997a). Global semiotics. In *Semiotics around the World: Synthesis in Diversity*. Proceedings of the Fifth Congress of the International Association for Semiotic Studies, Berkley 1994, vol. 1, Irmengard Rauch and Gerald F. Carr (eds.), 105–130. Berlin: Mouton de Gruyter.
- Sebeok Thomas A. (1997b). The evolution of semiosis. In *Semiotics: A Handbook on the Sign-Theoretic Foundations of Nature and Culture*, vol. 1, Roland Posner, Klaus Robering and Thomas A. Sebeok (eds.), 436–446. Berlin: Walter de Gruyter.
- Sebeok Thomas A. (1998). The cognitive self and the virtual self. In *New Approaches to Semiotics and the Human Sciences: Essays in Honor of Roberta Kevelson*, William Pencak and J. Ralph Lindgren (eds.), 307–321. New York: Peter Lang.
- Simmons, I. G. (1993). *Interpreting Nature: Cultural Constructions of the Environment*. London: Routledge.
- Smith, Neil (1996). The production of nature. In *FutureNatural: Nature, Science, Culture*, George Robertson, Melinda Mash, Lisa Tickner, Jon Bird, Barry Curtis and Tim Putnam (eds.), 35–54. London: Routledge.
- Stjernfelt, Frederik (1992). Categorical perception as a general prerequisite to the formation of signs? On the biological range of a deep semiotic problem in Hjelmslev's as well as Peirce's semiotics. In *Biosemiotics: The Semiotic Web 1991*, Thomas A. Sebeok and Jean Umiker-Sebeok (eds.), 427–454. Berlin: Mouton de Gruyter.
- Teherani-Krönner Parto 1996. Die Uexküllsche Umweltlehre als Ausgangspunkt für die Human- und Kulturökologie. *Zeitschrift für Semiotik* 18(1), 41–53.

- Tembrock, Günter (1997). Ökosemiose. In *Semiotik: Ein Handbuch zu den zeichentheoretischen Grundlagen von Natur und Kultur*, vol. 1, Roland Posner, Klaus Robering and Thomas A. Sebeok (eds.), 571–591. Berlin: de Gruyter.
- Thompson, John N. (1994). *The Coevolutionary Process*. Chicago: The University of Chicago Press.
- Uexküll, Jakob von (1928). *Theoretische Biologie*. 2te gänzlich neu bearbeitete Auflage. Berlin: Verlag von Julius Springer.
- Uexküll, Jakob von (1980). *Kompositionslehre der Natur: Biologie als undogmatische Naturwissenschaft* (Herausgeg. von Thure v. Uexküll). Frankfurt am Main: Ullstein.
- Vehkavaara, Tommi (1998). Extended concept of knowledge for evolutionary epistemology and for biosemiotics: hierarchies of storage and subject of knowledge. In *Emergence, Complexity, Hierarchy, Organization*, George L. Farré and Tarkko Oksala (eds.). Espoo.
- Wark, McKenzie (1994a). *Virtual Geography: Living with Global Media Events*. Bloomington: Indiana University Press.
- Wark, McKenzie (1994b). Third nature. *Cultural Studies* 8(1), 20.
- Warnke, Camilla (1998). Schellings Idee und Theorie des Organismus und der Paradigmawechsel der Biologie um die Wende zum 19. Jahrhundert. *Jahrbuch für Geschichte und Theorie der Biologie* 5, 187–234.
- Witzany, Günther (1993). *Natur der Sprache — Sprache der Natur: Sprachpragmatische Philosophie der Biologie*. Würzburg: Königshausen & Neumann.
- White, Lynn jr. (1967). The historical roots of our ecological crisis. *Science* 155, 1203–1207.

Семиотическая экология: разные природы в семиосфере

Экосемиотика определяется как семиотический анализ взаимоотношений культуры и природы, а также рассмотрение этих отношений как семиотических. Этим она отличается от биосемиотики, которая занимается рассмотрением живой природы как знаковой. Если биосемиотика является разделом семиотики на равных правах с семиотикой культуры, то экосемиотика оказывается скорее частью семиотики культуры, хотя и в определенной мере расширяя ее границы. Данное определение экосемиотики уточняет и развивает определения предложенные W. Nöth'ом и J. Hoffmeyer'ом (рис. 1).

Все распознаваемое может стать объектом манипуляции. Текст природы находится в знаковом процессе, включающем перевод этого текста (т.е. природы) в образы, и обратный перевод этих образов в видоизмененную природу. Следовательно, детальность распознавания, или мера знания природы, непременно связаны с возможным возрастанием манипуляции природы.

Существует простая типология в основе которой лежит различение природы (рис. 2) на нулевую (творческая природа сама собою), первую (природа через языковой фильтр), вторую (природа, преобразованная на основе образов), и третью (образы, полученные на основе образов; виртуальная природа).

Такая классификация оказывается изоморфным членению функционального круга J. v. Uexküll'a (Objekt, Merkwelt, Wirkwelt, Innenwelt). Это также связано с разделением науки на медитативную, дескриптивную, экспериментальную и теоретическую.

Развитие естественно-научного описания природы оказывается недостаточным для решения многих экологических конфликтов. Так как взаимоотношения человека и природы глубоко связаны с основными процессами культуры. Единственным выходом является учет культурно-семиотических процессов. Наряду с условиями экологического равновесия, следует также рассматривать семиотическое равновесие и семиотическую стабильность.

Semiootiline ökoloogia: erinevad loodused semiosfääris

Ökosemiootikat võib defineerida kui inimese (kultuuri) ja looduse suhete semiootilist analüüsi, ning nende suhete vaatlemist semiootilisena. Sellisena eristub ta biosemiootikast kui kogu eluslooduse märgilisest käsitlemisest, olles pigem kultuurisemiootika osa. Kuivõrd aga loodus on kultuurisemiootika objektiks traditsiooniliselt vaid piiratud määral, laiendab ta selle sfääri. Kuna inimese ja looduse suhe on vaid üks näide üldisemast organismi ja ta ümbruse suhtestikust, on ökosemiootikal ka ühisosa biosemiootikaga. Niisugune määratlus täpsustab W. Nöthi ja J. Hoffmayeri käsitlusi (joon. 1).

Kõik äratuntav ümbruses võib olla manipulatsiooni objektiks. Märkiprotsess, mille tekstiks on loodus, sisaldab selle teksti, s.o. loo-

duse, tõlkimise kujundeiks ning tagasitõlkimise muudetud looduseks. Seetõttu on äratuntava diferentseerituse määra, ehk looduse tundmise aste, otseselt seotud looduse manipulatsiooni võimaliku ulatusega. Areng looduse tundmises toob paratamatult kaasa looduse manipuleerimise ulatuse suurenemise.

Inimese suhtes jaotub loodus esmalt tundmatuks ehk ühtseks ja tuntuks ehk diferentseerituks. Teiseks, tuntu jaotub omakorda esmaseks ehk kontrollimatuks ja teiseks ehk kontrollituks. Kuigi loodus kogu oma tuntud osas võib olla manipuleeritav, võib inimõju olla siiski nii nõrk, et see praktiliselt mingit toimet loodusele ei oma. Kasutatavate vahendite suurema jõu või inimeste suurema tiheduse korral aga muutub manipulatsioon ülekaalukaks ja kontrollivaks, mis läbi luuaksegi teisene loodus.

Äratundmine ja sellega seostuv manipuleerimine kujutab endast samaaegselt teatavat kontrolli manipuleeritava üle. Seeläbi osa loodusest muudetakse, ta pole enam ehe, vaid asendatakse teise loodusega. Inimese kui looduse arhitekti mõju teise looduse kujundamisel ulatub üksikute liikide või koosluste kaitsmisest (ja seeläbi kontrollist) või tarbimisest kuni niisuguste ehituslike ümberkorraldusteni, kus algne elustik on täielikult asendatud (nt. linnades).

Eristatavad teine, kolmas jne. loodus moodustavad lihtsa tüpoloogiat, milles null-loodus on loov loodus ise, esimene loodus on keelefiltri läbi nähtud loodus, teine loodus on kujutluste alusel muudetud loodus, ning kolmas loodus on looduse kujutluste alusel loodud kujutletud loodus (joon. 2). See jaotus osutub isomorfseks J. v. Uexkülli funktsiooniringi komponentidega (vastavalt objekt, märgi-ilm, toime-ilm, sise-ilm; Uexkülli märgi-ilm ja toime-ilm koos moodustavad maailma).

Looduse detailsem tundmine (ökoloogiliste protsesside teadvustamine) ei osutu piisavaks, et paljusid ilmnevaid ökoloogilisi probleeme lahendada. Kuna inimese ja looduse suhted seostuvad tugevasti kultuuri süvaprotsessidega, ei ole palju lootust ka neis suhetes ilmnevaid sügavamaid konflikte lahendada ilma kultuurisemiootilisi protsesse mõistmata. Sellest lähtuvalt on lisaks ökoloogilisele stabiilsusele vajalik vaadelda ka semiootilist stabiilsust.