

REFLECTIONS IN THE UMWELTEN

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This article presents a semiotic perspective on the phenomenon of reflection, and examines the meaning of self-recognition in the mirror for the Umwelten of different species, paying special attention to the role of reflections in the human Umwelt. Proceeding from the writings of Jakob von Uexküll, the mechanism of perception and self-recognition is analyzed and an extended functional circle is proposed as a result of the analysis. The concepts of the Tartu-Moscow School of semiotics and the cultural semiotics of Umberto Eco are also used as a framework for the current research.

Keywords: reflection, mirror, Umwelt, recognition

As an object of this article I chose the phenomena which are non-existing in material reality, but take place in Umwelt of every human (a closed world in which a man or an animal perceives and acts (Uexküll 1992 [1934]: 320) and also play a role in Umwelten of different species, being perceived by organs of sight. In the present article reflections and shadows will be discussed.

A mirror is an object which is used in the everyday life of every human, or at least, every modern person — under this notion, a wide meaning of this word is used. Before mirrors were invented people could see their reflection on the surface of water.

Not many animals can recognize themselves in reflections. Gorillas, chimpanzees and other great apes can — this fact was proved by series of experiments by G. Gallup and later by D. J. Povinelli and T. J. Eddy (Povinelli, Eddy 1996: 129-135). Some birds and fish recognize their reflection as an opponent or a partner. In such a way they create a *perceptual cue* — the unity of receptor signs perceived by organs of senses (Uexküll 1992 [1934]: 323), in this specific case, by organs of sight — and it gives the object another quality and meaning than it has in reality. In experiments with chimpanzees, researchers used painted marks which animals could see only in the reflection; these marks attracted their attention and they tried to touch them. The latest research of biologist Diana Reiss in the Bronx Zoo shows that elephants also recognize themselves in mirrors. According to D. Reiss, self-recognition may underlie the social complexity seen in elephants and could be linked to the empathy and altruism that big-brained animals have been known to display. This ability would not be possible without strict self-identification as a representative of species (Reiss 2005 cited in Bridges 2006).

Other research was performed in a similar manner by German scientists who studied the mirror-induced behavior of European magpie (*Pica pica*) and found that this species also recognizes its own reflection. This provides the first evidence of mirror self-recognition in a non-mammalian species. This fact led biologists to draw the conclusion that cognitive skills that provide self-recognition arose independently in corvids and primates, in the process of convergent evolution (Prior *et al.* 2008).

So, there are examples of different species' behavior regarding the same object — their reflection in the mirror. First of all, a distinction should be made between a mirror itself and a reflection, though a reflection, strictly speaking, is a quality which is regarded as an object. This understanding has some issues productive for further discussion. A mirror without a reflection loses its meaningfulness; it is only a tool, which provides support for the existence of a reflection as an object. It is not important to consider reflection as a physical object, or focus on its cognitive nature, what is essential is the fact that it exists.

All in all, we can distinguish between three types of species by the criteria of their relation to the reflection: those that recognize themselves, those that make mistakes in recognition, and those in whose Umwelt a mirror does not exist. If an animal understands the reflection as a sexual partner or an enemy, then he forms a perceptual cue for this object — and the effector cue adequate to it. We can also notice that animals follow the same logic: they see what they expect to see. In other words, they form an appropriate *search image* for the object. None of the animals expect to see themselves — if they have no previous experience of seeing their appearance in a mirror and just do not know about the human invention of it. A person who has never seen a mirror before, for the first moment will understand it the same way, expecting some kind of contact or aggressive actions from his own reflection. The most important thing for every living being is the protection of life and its continuation in the form of giving life to new generations. It is a natural instinct and this explains the misunderstandings in recognition. For example, J. von Uexküll speaks about the confusion of perceptual images in birds' Umwelten, e.g. duckling that followed Uexküll's boot regarded it as an image of the mother (Uexküll 1992 [1934]: 369). So the life protective mechanism or the mechanism of continuation of a generation also work in case of recognition of the reflection and also presuppose existence of specific types of search images.

However, in this case we have a difference — the reflection is not integrated into the spatial Umwelt. In such a way it provides two illusions at a time — the illusion of the “other” and the illusion of the existence of spatial environment for that “other”. It gives not only an image, but also an environment for that image. The attentive observer will mention that image's environment is the same space that is behind his back — and his own movements are repeated by his “twin”. But animals that do not recognize themselves are not able to see the similarities — mechanisms of perception in that case work on another level. T. Suddendorf and Collier-Baker described those species of apes that emerged 14-18 million years ago and can not recognize themselves. For example, gibbons look behind the mirror or touch it trying to reach the ape inside of it (Suddendorf, Collier-Baker 2008) — they don't have the capacity to find similar features in the real and illusive environment.

Speaking about recognition, the problem should be examined from various points of view. Representatives of the Tartu-Moscow School of semiotics and Umberto Eco have already touched upon that problem in several articles, though they emphasize first of all the human perception of the reflected image. Now a short

overview will be given of already made research in this topic and some comments are made in the frames of Umwelt-theory. Y. Levin writes:

The mirror gives a person a unique opportunity to see himself, his eyes, providing in such a way a chance for a dialogue with himself. From this a lot of important semiotic potencies emerge: 1) the topic of the “twin” arises, very rich in its own possibilities; 2) a reflection is connected to the “reflection” of self-consciousness; 3) the opposition to look inside him/at him arises. If the first part of this opposition gives a possibility to realize the uniqueness of “I”, not bordered in self, then the second one removes this feeling of uniqueness: I seem to be similar to others. Different implications can be connected with looking at self from aside – from disgust to narcissism. (Levin 1988: 9)

However, the topic of this article does not require a consideration of the symbolic or cognitive side of the mirror reflection. Levin also mentions that the movement of the reflection can be caused in a trivial way – by the movement of the original, as well as in the nontrivial way – by the movement of the mirror. As a result, the object which is stable seems to be moving (Levin 1988: 9).

Umberto Eco in his article “Mirrors” excludes reflection from the system of semiotic signs. Semiotic signs for Eco are all phenomena that can transmit information from a sender to a receiver. For successful interaction the information has to be coded and then decoded. This means that signs sent have to be part of the system familiar to both participants. Reflection does not exist as an iconic image of the reflected object, because it does not transmit its meaning (Kanevskaya 2003). The mirror is rather a threshold-phenomenon marking the boundaries between the imaginary and the symbolic. “Mirror does not translate; it records what struck it just as it struck. It tells the truth to an inhuman extent; as it is well-known by those who – facing a mirror – cannot any longer deceive themselves about their freshness. Our brain interprets retinal data; a mirror does not interpret the object” (Eco 1984: 207-208).

If we put this understanding on Uexküllian grounds, we can conclude that the subject interacting with the mirror already involves it in his Umwelt, understands the reflection not as an object, but as the self, or the same subject; while the mirror is not the subject – though it provides such an illusion. Of course, if we make an analogy with the bell (Uexküll 2001 [1937]: 111), the mirror as well appears in both perceptual and effector sides, which affect our senses and is impressed by our perceptual centers in the brain. However, the understanding of the reflection by any living organism that is able to see it, but not always able to recognize it, ascribes to it other perceptual and effector sides, more appropriate for a living being.

Eco speaks about erroneous interpretation (Kanevskaya 2003). From the point of view of the concept of Umwelt we can say that only conditionally. We may not find any errors in perception, because things are just such as they exist in the Umwelt. Returning again to the hypothetical person who has not seen a mirror before and does not have any idea of reflections, when seeing himself in the mirror after the primary surprise of recognition, he will probably react the same way great apes do – start exploring his body. But in fact, he explores the body of his “twin” at the same time – because sight perception is oriented at the reflection and touch perception is oriented towards the body itself. The “twin” will do the same – although it does not perceive.

Creating a functional circle model for representing the perception of a reflection which is recognized as a self is a complicated task — humans can not react to the reflection as to the “general” object in one’s Umwelt. The process of interaction with the reflection contains a significant part of auto-communication. The subject communicates with an object and, at the same time, with himself. It is difficult to fit this to the terms of Uexküll’s philosophy — it has a more external orientation, because it considers the subject fully involved in the closed cycle of interaction with the outer world. The communication inside the subject is understood as sign processing between perceptual and operative organs. It does not have anything in common with the “mechanical approach”, but it is hard to get rid of the feeling that Uexküll regards a subject as a very organized harmonic structure. Auto-communication is enabled by a contradiction, and any contradiction is the result of acceptance of something that is not natural to the subject, though he considers it to be such. In this case reflection plays the role of a non-natural phenomenon — it is an image of a subject and to some extent the subject itself, though it is not its part.

Accordingly to Eco the mirror should be considered as an artificial organ of image:

Mirror is an absolutely neutral prosthesis, and it allows us to catch visual stimuli from where our eye could not reach (in front of our own body, around the corner, in a hole) with the eye’s same evidence and force. [...] And, since mirrors are prostheses they are channels too. A channel is any material medium for the passage of information (the notion of information is here a physical one, that is, information as a passage of stimuli-signals which can be quantitatively measured, not yet connected with semiotic phenomena). (Eco 1984: 208-209)

Developing this idea in the light of the Umwelt theory, the conclusion can be made that it is possible to “include” the reflection into the world of the subject — and at the same time also exclude it, because it is created out of the borders of the organism. Combining all ideas, I suggest such a functional cycle, which shows the specificity of interaction between a spectator as the subject and a reflection as the object (Fig.1).

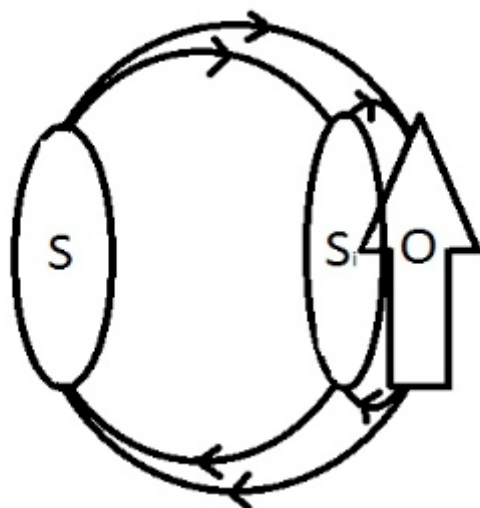


Fig. 1. A functional cycle that includes a recognized reflection.

In this picture, S_i is the image of a subject, which is interconnected with the reflection as an object O (it can be considered as an object in those traits that do not belong to the subject) and cannot be separated from it, and at the same time it is also indistinctive from the subject, which it reflects. It should also be mentioned that connections between S and S_i , as well as between S_i and O are not similar to connections between S and O . Maybe such an understanding lies far from Umwelt theory, but it is the result of trying to synthesize and compile understanding of the reflective phenomenon, given by different semiotic schools. This issue is further interesting because it is hard to find Uexküll's explanation for the given topic.

Y. Lotman says that the reflection of the face can not be included into the relations that are natural for the object. It can not be touched, but it can absolutely be included into semiotic connections — in this way it is similar to footsteps (Lotman 1993 [1979]: 309-310). Uexküll does not distinguish between symbolic and natural connections; for him all interrelations provided by the environment are fully involved into a process of sign creation and exchange. Besides, Uexküll's understanding of the notion of the sign differs from both Lotman's and Eco's. So it can be said that the current picture of the functional circle gives an idea of the combination of abstract semiotic relations with natural relations.

Another phenomenon as well can be considered, which Levin calls "antireflection" (Levin 1988: 9). It is a shadow. Y. Lotman mentioned that antique legends considered a shadow and a reflection as sources of doubleness, which became the source for non-verbal semiotic systems (Lotman 2002 [1979]: 308). But a shadow is different — it does not provide any direct analogy with the subject, because it differs from it in form and shape. Animals do not pay much attention to their own shadow, except for example when they recognise it as a potential threat, but this understanding is closer to an abstraction, because it can not be said that they interpret it as a living being. Recognition does not play such an important role here as in the case with reflections. But in the human Umwelt shadows also provide an interesting topic for thinking, because it is more often identified with "the other" than with the own "twin".

Maybe this article went too far from the Umwelt theory, but I have tried to interpret the phenomenon of reflection in the spirit of Uexküll's philosophy, and at the same time to integrate views of other semiotic schools.

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Artikkel pakub semiootilise vaatepunkti peegeldusnähtusele ja uurib enese äratundmise tähendust erinevate liikide omailmades. Erilist tähelepanu pööratakse peegelduse rollile inimese omailmas. Lähtudes Jakob von Uexkülli töödest, analüüsitakse enese äratundmise ja tajumehhanisme ning sellest lähtuvalt pakutakse välja laiendatud funktsiooniringi mudel. Lisaks kasutatakse antud uurimuse raamistikuna Tartu-Moskva semiootika koolkonna mõisteid ja Umberto Eco kultuurisemiootikat.

Märksõnad: peegeldus, peegel, omailm, äratundmine