# Intrasemiotics and cybersemiotics

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**Abstract**. The concept of intrasemiotics designates the semiosis of the interpenetration between the biological and psychological autopoietic systems as Luhmann defines them in his theory. Combining a Peircian concept of semiosis with Luhmann's theory in the framework of biosemiotics makes it possible for us to view the interplay of mind and body as a sign play. The recently suggested term 'sign play' pertains to ecosemiotics processes between animals of the same species stretching Wittgenstein's language concept into the animal world of signs. With intrasemiotics there is an inner interplay. Lorenz in ethology has used the concept of motivation, and Uexküll the concept of tone, mostly describing the outgoing effect on perception and the reactions on perception. One could view intrasemiotics as the interplay between Lorenz' biologically defined motivations and Freud's Id, understood as the psychological aspect of many of the natural drives. In the last years of development of his theory Lorenz studied how emotional feedback can introduce just a little learning through pleasurable feelings also into the instinctive systems because, as he reasoned, there must be some kind of reward going through instinctive movements, thus making the appetitive searching behaviour for sign stimuli possible. But he never found an acceptable way of modelling motivation in biological science. A cybersemiotic model may combine these approaches, defining various concepts of thoughtsemiotics, phenosemiotic and intrasemiotics, combining them with the already known concepts of exosemiotics, ecosemiotics, endosemiotics to an approach which studies the self-organising semiotic processes in living systems.

## Introduction[1]

Peircian semiotics is specific from other semiotic paradigms in that it not only deals with intentional signs of communication but also encompasses non-intentional signs such as symptoms of the body and patterns of in-animate nature. Peircian semiotics breaks with the traditional dualistic epistemological problem of first order science by framing its basic concept of cognition, s*ignification*, on a triadic semiotic philosophy. The triadic semiotics is integrated with a theory of continuity between mind and matter (*synechism*) where the basic three categories (*Firstness, Secondness,* and *Thirdness*) are not only inside the perceivers mind, but also in the nature perceived. This is connected to the second important ontological belief in Peirce's philosophy, namely *tychism* that sees chance or chaos as a basic characteristic of Firstness. This is finally combined with an evolutionary theory of mind (*agapism*) where mind has a tendency to take habits in nature. Chaos or chance is seen as a First, which is not to be explained further (for instance by regularities). It is the basis of habit taking and evolution. The chaos of Firstness is not seen as the lack of law as in mechanicism and rationalism, but as something full of potential qualities to be manifested individually in Secondness and as general habits and knowledge in the dynamic objects and semiosis in Thirdness (Peirce 1992). This is the deep foundation of Peirce's pragmatism. As a result of the initiative of Thomas Sebeok in biosemiotics, Peirce's semiotics is now interpreted as covering all living signifying systems. Cybersemiotics is seen as a generalisation of biosemiotics using, among others, Niklas Luhmann's work for further development.

## Luhmann's triadic autopoietic systems

Luhmann has generalised the autopoietic concept of Maturana and Varela (1980) to also comprise psychological thinking systems and socio-communicative systems. He views psyche as a silent inner

[1] The present article sums up and develops the ideas published in recent works (Brier 2001b, 2001c), and combines these with a motivational theory of Brier (2000). Further, a visual model of the theory, inspired by Hermann Hesse's *The Glass Bead Game*, is developed, combining writing and symbolic visualisation to create a condensed expression of the theory.

system, a closed system of perception, emotions and volitions. A special linguistic system has to be created for communication to happen. Communication is again an organisationally closed system: only communication communicates. Social systems are communicative systems with human bodies and minds as surroundings.

To Luhmann (1995), communication is a sequence of selections, namely of (1) information, (2) utterance, and (3) meaning. The two first have to be made by what we traditionally call 'the sender', the last one by the receiver. The receiver chooses the understanding of the signs produced, and then one could say that a message is produced when the receiver says something that the sender chooses to understand as a confirmation of understanding of the intention of the sender's first message. Finally, in a fourth selection the message is connected to present practice.

Although his view of information is partly based on Shannon's concept, it differs from it in that Luhmann does not believe in its use outside human social communication. The information concept functions as a quantitative aspect within a meaningful human context. Further he combines the information with the aspect of utterance and meaning. Luhmann stresses that both the sender and the receiver have to make their choices to produce a meaningful message. Information is choices related to subject matter, utterance is choices pertaining to the way to say something, and meaning is the choices of interpretation of the listener of the human context. It is especially in the social communicative construction of meaning that Luhmann's theory connects to semiotics. In the following I will reformulate it from a cybersemiotic viewpoint.

## The cybersemiotic view

One way to understand our inner mental world is to see it as a way of representing our bodily interactions with the environment through the constructions of a felt signification sphere. In this way, an individual "point of view" as a center of cognition, interest, and interpretation is created. What Spinoza calls conatus, self-value and self-interest in preserving the individual's and species' self-organizing structure, is basic to living systems' ability to signify. But this individual signification sphere is again perturbed by the species specific social inter-

actions starting with mating, rearing of the young, competition for hunting territory, hierarchy in the group, co-operation in food gathering and hunting. These social interactive activities first generate sign games and, later in evolution, in humans, language games.

The construction or development of meaningful and informative messages has as a prerequisite autopoiesis, signification and conatus/motivation/intentionality. It is only within this triad that the selections of information, utterance, and meaning are possible. I think that Luhmann's theory has problems producing a concept of meaning that relates deeply to the flesh, blood, and life (conditions) of biological systems and to the existential conditions of human consciousness. Here, pragmatic language philosophy, like Wittgenstein's language game theory and Lakoff and Johnson's embodied cognitive semantics as combined with ethology, all seen within Peirce's semantic framework (Brier 2000), tell us that signs as concepts and classifications arise in our embodied biological and social "life forms". From our inner world we express our bodily experiences in social relations.

Viewed in this way, Luhmann's (1990) three autopoietic systems are all needed to create meaning of a message and one needs the sign concept to understand their interaction. One way of getting out of the impasse of Luhmann's functionalism, where the role of body and mind in the production and meaning of social communication has not been adequately grasped by theory, is to view the interpenetration between the three organizationally closed systems semiotically. Signs acquire meaning where the systems interpenetrate. Interpenetration is Luhmann's term for the interplay between the biological autopoiesis, the psychic closure and the socio-communicative system with its own closure at the social level. We can conclude that *sign and language games arise on the basis of the interpenetration of the autopoietic systems.*

Meaning is then seen as generated by the interpenetration of the systems. For example, language is a part of the socio-communicative system, but it does not really get a meaning before it interpenetrates with psychic system and gets to indicate differences of emotions, volitions and perceptions 'putting words' on our silent inner being. But our cognitive, emotional and volitional qualities would only have a weak connection to reality if they were not connected to the survival of the living systems' organisation as a body in its interacting with the environment's differences in the development of a signification sphere in the evolution of the species.

Biosemiotics and metaphor theory have argued extensively for the importance of embodiment in semiosis (Brier 2001a). I have tried to show the connection between the biosemiotic (ethologically based) concept of motivation and the motivational concept of embodied cognitive semantics (Brier 2000). With the help of Figure 1, I showed that ethology and embodied metaphor theory both have discovered that the conception of a sign as standing for something for somebody in a particular way is controlled by some releasing mechanism that connects motivation, perception and behavior/action into one systemic process as already Jakob von Uexküll (1957) described in his *Funktionskreis* and, which Heinz von Foerster refers to as perceptual *eigenvalues*. Instinctually, the actual IRM (Innate Release Mechanism) is chosen through the urge coming from a specific motivation. This is again based on biological expectancies and vital needs, like for food and mating. I argue that the linguistic motivation that Lakoff and Johnson claim to control the ICM (Idealised Conceptual Models) have connection to the biological motivations in many instances. This is obvious in a much-used example where a woman classifies a man as a bachelor, and therefore as a potential mating partner. It is our bio-psychological embodiment that ties these relations together.

The analysis of Lorenz work showed that a phenomenological-emotional concept was necessary to understand the production of meaning. I want here to point out that this is consistent with Peirce's placing of feeling as an attribute of Firstness.

Knowledge systems thus unfold from our bio-psycho-socio-linguistic conscious being. Their function is to help us to orient (ourselves) in the world and act together in a fruitful way, but they do not explain us to ourselves. I here see Peirce's view, that we cannot split the concepts of mind and matter from the beginning, as a very sound and a profound basis for further analysis. I do not see any good reason why the inner world of cognition, emotions and volition should not be accepted as just as real as the physical world as well as our cultural world of signs and meaning. Finally to both the spiritualist and the materialistic, embodied life, even with only one cell as the body, has to be a basic part of, or a component of constructing a reality. We are thinking *in*, or maybe even *with* the body. The psyche and its inner world arise within and between biological systems or bodies. With Peirce one may say that there will always be some kind of psyche in any kind of biological autopoietic and code dual system.

Still, a partly autonomous inner world of emotions, perceptions and volitions, only seems to arise in multi-cellular chordates with a central nervous system. Lorenz (1973) argues that such a system with emotions and experiences of pleasure is necessary for animals to have appetitive behavior, searching for the objects or situations that can elicit their instinctual behavior and release the motivational urge built up behind it. This is qualitatively different from how reflexes function on a signal, which is a proto-semiotic informational level. The sign function of instincts is on a genuine semiotic level.

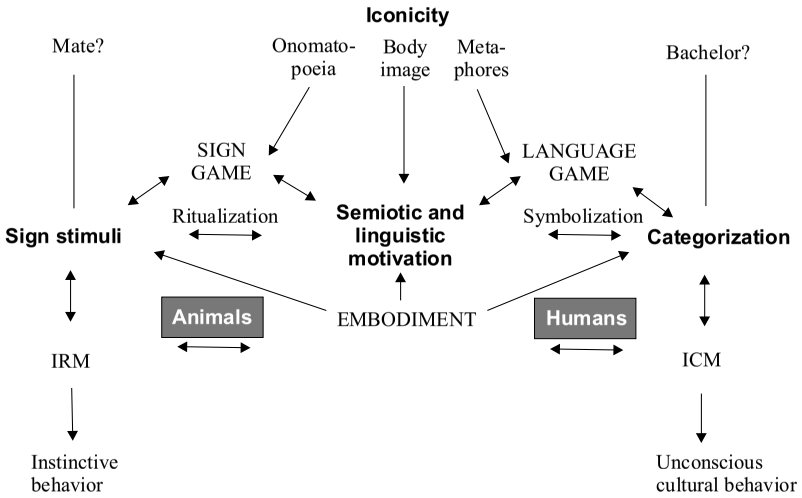


*Figure 1.* Shows the relation between linguistic motivation and instinctive motivation in animal behavior by relating animal and human signification through a biosemiotic framework combining knowledge from ethology and embodied cognitive semantics. It is suggested that although animals do not have language games, they have sign games. Semiosis is thus going on in two different levels in animals and humans. But in both cases it is embodied and basic biological motivation has a role to play although other forces (cultural) are additional influential on the linguistic level. The figure points to the similarity between the ethological concept of IRM (innate release response) and the cognitive semantic concept of ICM (idealized cognitive model) as postulated structures guiding motivational attention and ideas of iconicity. The figure is quoted from (Brier 2000) where further explanation is to be found.

I consider the contribution of cybersemiotics as mainly being the clearing up of the metaphysical background of both cybernetics and semiotics to make it possible to place cybernetics and semiotics in relation to each other, especially in their modern versions of second order cybernetics and autopoiesis theory on one hand, and as biosemiotics on the other. Cybersemiotic has further accepted the concept of motivation and embodiment as an important part of the biosemiotic communication concept. As argued above, embodiment and motivation are seen as important common aspects between the sign games of animals and the language games of humans, thus integrating biosemiotics with the cognitive-semantic embodied metaphor theory of Lakoff and Johnson, and with the elder Wittgenstein's language philosophy.

Luhmann's theory of the human socio-communicative being consisting of three levels of autopoiesis can be used in cybersemiotics to distinguish between (1) the languaging (Maturana) of the biological systems, which is the coordination of coordination of behaviors between individuals of a species on the reflexive signal level, (2) the motivation driven sign games of the bio-psychological systems and, finally, (3) the well driven language games level of the self-conscious linguistic human in generalized media of the socio-communicative systems. A semiotic understanding has thus been added to Luhmann's conception, and his theory is placed in the Peircian triadic metaphysics. This leads to formulation of a number of new distinctions and concepts.

## Intrasemiotics

It is obvious that what we call language games arise in social contexts where we use our mind to coordinate our willful actions and urges with fellow members of the culture. Some of these language games are then about our conceptions of nature, filtered through our common culture and language. But underneath that, we also have emotional and instinctual *bio-psychological sign games* (Brier 1995). These function for humans as unconscious paralinguistic signs such as facial mimics, hand movement gestures and body positions with an origin in the evolution of species-specific signification processes in living systems.

Simultaneously, we have also an internal communication going on between our mind and body. In Luhmann's version it is something

different from what Kull (1998) calls *psychosomatics*, as it is not a direct interaction with culture but only with the psyche. On the other hand it is not only *endosemiosis*. The terms endosemiosis and exosemiosis were probably both coined by Sebeok (1976: 3), endosemiosis denoting the semiosis, which takes place inside the organisms, and *exosemiosis being the sign process that occurs between organisms*. Endosemiosis became a common term in semiotic discourse (see Uexküll *et al*. 1993), meaning a semiotic interaction at a purely biological level between cells, tissues and organs. Nöth and Kull (2000) introduced the term *ecosemiotics*, specifically for the signification process of non-intentional signs from the environment or other living beings that takes a meaning for another organism that is, for instance, hunting. Thus a sign signifying an organism as a suitable prey is not intentionally emitted by the organism preyed on, and is therefore rather endosemiotic than ecosemiotic. What can we then call the internal semiotic interaction between the biological and the psychological systems?

The interaction between the psyche and the linguistic system I call *thought semiotics*. This is where our culture through concepts offers us possible classifications of our inner state of feelings, perceptions and volitions. These, in their non-conceptual or pre-linguistic states is not recognized by conceptual consciousness, I call *phenosemiotic processes*. For short I just call them *phenosemiosis.*

As the interactions between the psyche and the body are internal bodily, but not pure biological as in endosemiotics, I call the semiotic aspect of this interpenetration between the biological and the psychological autopoiesis *intrasemiotics.* These different names are coined to remind us that we deal with different kinds of semiotics. In the future, we have to study more specifically the way semiosis is created in each instance.

Today we know that there are semiotic interactions between the hormone systems, the transmitters in the brain and the immune system and that their interactions are very important for the establishment of the autopoietic system of second order, which a multicellular organism constructs. Its parts are cells that themselves are autopoietic systems and these are again on a new level organized to an autopoietic system. But we do not know very well what the relations are from our lived inner world of feelings, volitions and intensions to this system. It seems that certain kinds of attention on bodily functions, such as

imaging, can create physiological effects in this combined system. As mentioned above, this is partly carried by different substances that have a sign effect on organs and specific cell types in the body (endosemiotics). We also know that our hormonal level influences our sexual and maternal responses. Fear turns on a series of chemicals that change the state and reaction time of several body functions, and so on. This is a very significant part of the embodiment of our mind, but intrasemiosis seem to function as a meta-pattern of endosemiotic processes. For example, our state of mind determines our body posture through the tightness of our muscles. There is a subtle interplay between our perceptions, thoughts, feelings, and bodily state, working among other things through the reticular activation system. There is still a lot we do not know about the interaction between these systems.

The nervous system, the hormonal system and the immune system seem to be incorporated into one big self-organized sign web. Now, the autopoietic description of living cybernetic systems with closure does not really open for sign production *per se*, and semiotics in itself does not reflect very much about the role of embodiment in creating signification. Thus, the cybersemiotic suggestion to solve this problem is that signs are produced when the systems interpenetrate in different ways. The three closed systems produce different kinds of semiosis and signification through different types of interpenetration, plus a level of structural couplings and cybernetic 'languaging', as Maturana and Varela (1980) call it.

The autopoiesis theory underlines that two interpenetrating systems are closed black boxes to each other. But Maturana points out that interpenetration develops over time to a coordination of co-ordination of behavior that he calls languaging. By then reciprocal structural coupling has formed between the two systems where signs can be produced and exchanged. Maturana's concept of *languaging* seems to be the bio-psychological connection between two individuals in a social species. But it is not the sign and/or language game as such; it is the cognitive coupling that is the coordination necessary for communication to develop as a signification system with its own organizational closure. I would, therefore, suggest that we distinguish between *languaging* and *sign games* at the level between reflexes and instinctual movements. The perception eliciting reflexes is independent of motivation, whereas the perception of sign stimuli is motivation-dependent, which leads into the instinctual sign games.

Ethologists would here point to how certain instinctual movements become ritualized and get a release value for instinctive behavior as 'sign-stimuli'. As Lorenz (1973), in his last period, realized that emotions had to be connected to the performances of instinctual movements to create the motivational urge of appetitive behavior, we here have criteria to distinguish between the two levels. We here see how the connection between signs and internal or phenomenological understanding is constructed. Lakoff (1987), and Lakoff and Johnson (1998) have shown how this basic mechanism of bodily meaning can be extended by the workings of metaphorical processes to encompass socially and culturally produced signs.

Based on ethology and biosemiotics it appears that our cognition manifests itself as embodied semiosis, motivated in our biological social interest that is a powerful creator of structure and meaning in our signification sphere. Most animal behavior is — like much of our linguistic categorizations and use of metaphors — considered to be unconscious. Still ethologists had to realize that motivation is not a physiological concept (Brier 1992, 1998), emotional experiences are connected to the perception and behaviors with an instinctive basis.

Sign games are developed into language games through evolution and in the life of the infant human. As we are born and grow into human social communication the psyche is perfused with signs. Our mind is infected with language and we become semiotic cyborgs or what we call humans. We are in this view born as animals with a capacity to construct this interpenetration between the psychic and socio-communicative systems, creating internal interpretants that are meaningful to us because of the mutual structural couplings of languaging established in evolution.

Meaning is seen in biosemiotics, cognitive semantics, autopoiesis theory and ethology as embodied. But with the new cybernetics and Uexküll, I suggest that embodiment is thought of as much broader than only the structure of the nervous system, or even the integration of the neurotransmitter, the hormone and the immune systems through reaction to common sign substances that they secrete. As Fogh Kirkeby (1997) suggests, we should look at the body-mind or the body-thought as a complex phenomenological dynamical system, including the construction of the environment and the other (body-mind) systems that make it possible for signification to appear.

Realising that a signification sphere not only pertains to the environment, but also to the perception of other members of the species in cultural and proto-cultural behaviour as well as to perceptions of own mind and body hood, I use a little ‘eco’ as a prefix to the signification sphere, when it is the aspect of it pertaining especially to non-intentional nature and culture outside the species in question. Both in in-animate nature, in other species and in cultural processes, we can observe differences that signify meaning to us, although never intended by the object where we will sum up the concepts developed so far).

## A cybersemiotic model for biosemiotics

I conclude the article by putting the mentioned and new developed concepts together in a rather complicated model. By symbolically placing the concepts on, between and outside the various parts of the human body I am visualizing the difference for instance between levels of semiosis and signalling, exosemiotic and internal semiotic processes. The meaning is to provide a visual overview for those that like this. Those that only see simplifications and limitations in models like this can just skip it.

See Figure 2 for an overview of the cybersemiotic concepts built up so far. On the left side we see only the cybernetic-autopoietic-functionalistic described processes. In the middle we see the communicative aspects or the exosemiotics between two organisms. On the right we then look at the internal-semiotics of the organism. Finally to the far right we look at the organism’s perceptual connections to the environment, creating its signification sphere. With Nöth and Kull (2000) we call this signification aspect ecosemiotics.

Ecosemiotics focuses on the part of our language that is about how all living systems represent nature in signification spheres, ending with language games in culture. Cybersemiotics points out that the basis of these eco-language games is the eco-sign games of animals, combined with a signification sphere (originally called ‘Umwelt’ by Uexküll), created through evolution. Further, these are based on an intricate interplay between the living system and its environment, establishing what Maturana and Varela call structural couplings. The signification sphere is a workable model of nature for this living

system that as a species has existed and evolved through millions of years. This is also true for the human species, indicating that our language has a deep inner connection to the ecology of our culture. Any existing culture is a collective way of making a social system survive ecologically. As such, the cybersemiotic theory of mind, perception and cognition is a realistic one, but not a materialistic or mechanistic one. It builds on an inner semiotic connection between living beings, nature, culture and consciousness carried by the three Peircian categories in a synechistic and tychastic ontology in an agapastic theory of evolution delivering a philosophy going beyond the dualistic oppositions between idealism (for instance in the form of spiritualism) and materialism (for instance in the form of mechanism).

Based on the concept relations in figure 2 we can go back to figure 1 and now see that the linguistic motivation must be placed in the area of thought-semiotics where our internal non-linguistic phenosemiotic processes of mind meet with the concepts of language and imbue them with inner meaning. Whereas the animal motivation stems from the intrasemiotic area where the endosemiotic processes of the body cells meet with the phenosemiotic processes of mind and awareness. The cybersemiotic model thus provides a conceptual framework, in which these different levels of motivation can be represented and distinguished (in a way that was seemingly not possible in the earlier three different frameworks of biology, psychology and socio-culture). Thus by viewing meaning in an evolutionary light as always embodied, and seeing the body as semiotically organized in Peirce's triadic worldview, where mind as pure feeling is Firstness, a transdisciplinary framework can be constructed that supersedes some of the limitations of the earlier divisions of subject areas. This was my goal, when I started these quests in the early eighties, when the depth of the problem of motivation in ethology dawned upon me. This gives us hope that the cybersemiotic development of biosemiotics can contribute to an inter- and transdisciplinary semiotic theory of information, cognition, communication and consciousness.

**CYBERSEMIOTICS**

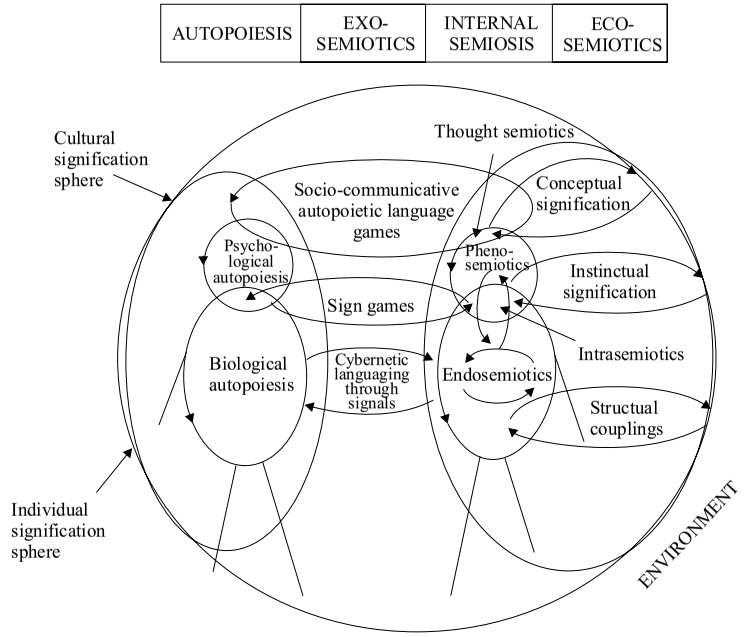


*Figure 2.* The cybersemiotic model classifying different types of semiosis and proto-semiotic processes. The semiotic language here is symbolic not iconic. Thus localization of the processes has nothing to do with the actual bodily locations as the head, for instance, is also a part of the biological autopoiesis, and has endo-semiotic processes. To limit the complexity, I have placed most of the cybernetic-autopoietic concepts on the left person and all the semiotic ones at the person to the right. But all concepts concern both persons. Each person is placed in a signification sphere. When these are combined through socio-communicative autopoietic language games a common signification sphere of culture is created. The vertical gradient is symbolically referring to basic biological processes as lower or more basic than linguistic conscious processes. Underneath language games is the biological level of instinctually based sign games, and under that, the cybernetic languaging game of the coordination of coordination of behavior. The higher levels are seen as depending on the function of the lower. The autopoietic view is seen as describing functionality and the semiotic meaning producing and exchanging processes. To get the concepts explained you will have to refer to the articles text. If, from this model, we go back to Figure 1, we can now place the linguistic motivations in the area of thought semiotics and the animal motivation in the intra-semiotic area.

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## Интрасемиотика и киберсемиотика

Концепция интрасемиотики указывает на семиозис при взаимопроникновении биологических и психологических автопойэтических систем, как это определяется в теории Луманна. Комбинирование в рамках биосемиотики пирсовской концепции семиозиса с теорией Луманна делает возможным рассмотрение игры разума и тела как игры знаков. Недавно предложенный термин "игра знаков" указывает на экосемиотические процессы между особами одного вида, распространяя таким образом витгенштейновскую концепцию языка на знаковый мир животных. В этологии Лоренц использовал понятие мотивации, а Юкскюлль понятие тона, описывая выделяющееся влияние перцепции и связанные с перцепцией реакции. Интрасемиотику можно рассматривать и как связь между биологически определяемой мотивацией у Лоренца и понятием Id Фрейда, понимая это как психологический аспект многих естественных стремлений. В последние годы своей жизни Лоренц изучал, каким образом эмоциональная обратная связь может посредством приятных ощущений в определенной степени вызывать переход выученного в систему инстинктов. Он утверждал, что инстинк-

тивные движения должны сопровождаться каким-либо поощрением, что привело бы к возникновению прочной связи между поведением, связанным с поисками пищи и определенными знаковыми стимулами. Но он так и не нашел подходящий модус для описания мотивации в биологических науках. Киберсемиотика может объединить эти подходы, дефинируя разные концепции семиотики мышления, фено- и интрасемиотики и комбинируя их с уже известными концепциями экзо-, эко- и эндосемиотики для подхода, изучающего самоорганизирующие процессы в живых системах.

## Intrasemiootika ja kübersemiootika

Intrasemiootika kontseptsioon osutab semioosile bioloogiliste ja psühholoogiliste autopoeetiliste süsteemide põimumisel, nii nagu seda määratleb Luhmann oma teoorias. Kombineerides biosemiootika raames Peirce'i semioosi kontseptsiooni Luhmanni teooriaga, saab võimalikuks keha ja vaimu vastasmängu vaatlemine märgimänguna. Hiljuti väljapakutud termin 'märgimäng' viitab sama liigi isendite vahel toimuvatele ökosemiootilistele protsessidele, laiendades nii Wittgensteini keelekontseptsiooni loomade märgimaailmale. Etoloogias on Lorenz kasutanud motivatsiooni mõistet ja Uexküll tooni mõistet, kirjeldades pertseptsiooni väljaulatuvat mõju ja pertseptsioonile osakssaavaid reaktsioone. Intrasemiootikat võib vaadelda ka seosena Lorenzi bioloogiliselt defineeritud motivatsiooni ja Freudi *Id*-i vahel, käsitledes seda kui mitmete looduslike ajede psühholoogilist aspekti. Oma teooria viimastel arendamisaastatel uuris Lorenz, kuidas emotsionaalne tagasiside võib meeldivate tundmuste kaudu teataval määral põhjustada õpitu kinnitumist instinktide süsteemi. Ta väitis, et instinktiivsete liigutustega peab kaasnema mingit tüüpi hüvitis, mis võimaldaks toiduotsimisega seonduva käitumise kinnistumist teatavatele märgilistele stiimulitele. Kuid ta ei leidnudki vastuvõetavat teed kirjeldamaks motivatsiooni bioloogiateadustes. Kübersemiootika võib need lähenemised ühendada, defineerides mõttesemiootika, fenosemiootika ja intrasemiootika erinevaid kontseptsioone ning kombineerides neid juba teadaolevate eksosemiootika, ökosemiootika ja endosemiootika kontseptsioonidega lähenemiseks, mis uurib iseorganiseeruvaid protsesse elussüsteemides.