Semiotica Tartuensis: Jakob von Uexküll and Juri Lotman

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Abstract: The essay provides a brief analysis of correspondence between two scholars whose heritage forms the basis of contemporary Tartu semiotics—Jakob von Uexküll (1864—1944) and Juri Lotman (1922—1993). A comparison between Uexküll's and Lotman's work demonstrates a series of features in which their approaches are in concord. We find some aspects of local culture as supportive of their way of thinking. We also claim that the theoretical integration of Jakob Uexküll's and Juri Lotman's approaches is at the heart of the contemporary semiotics, which has a task to develop a theoretical and methodological apparatus that would delimit and specify the scope of general semiotics and that could be used as a basis for all branches of semiotics.

Keywords: Tartu semiotics; text; umwelt; semiosphere; history of semiotics

Creativity cannot be completely decontextualized, it is always related to a local culture, the place of life. The umwelt of a scholar is a part of the cultural semiosphere. This relation has sometimes been described as *genius loci*. The spirit of place may not belong to everybody at that place. *Genius loci* exists with those who are congenial to it.

An American historian of science Jane Oppenheimer (1990) has analysed the life and work of one of the leading scholars of the 19th century Europe—Karl Ernst von Baer's. She discovered a remarkable pattern. In certain periods of his life, Baer lived in Estonia, then in the German state Prussia, and then in Russia. When in Königsberg (Prussia), he was successful in studying experimentally the development of an organism, its embryology; he made a historical discovery by finding and identifying the mammalian egg cell. When Baer moved to Russia, he did not continue his embryological studies. His research instead focused on geography and ethnography; he formulated the law of asymmetry of river banks. In Tartu, Estonia, first as a student, he got the basis for his theoretical views, and

in his older age, he wrote a large work in which he criticized Darwinian views. Somehow, Baer's umwelt was susceptible to developmental biology in Königsberg, to the study of peoples and space in Russia, and to theoretical work in Tartu.

When one speaks about Tartu semiotics, one usually means Tartu-Moscow semiotic school which was an important and very influential intellectual movement in the humanities from the 1960s to 1980s. Most of the representatives of that school came from Moscow, thus, indeed, the name Tartu-Moscow or even Moscow-Tartu school is relevant. However, organisationally, the center was in Tartu, due to the leader of the school, Juri Lotman, who worked in the University of Tartu, and the summer schools that were organised in Estonia, and the very first semiotic periodical (on a world scale), published since 1964—*Trudy po znakovym sistemam* (*Sign Systems Studies*) was produced in Tartu.

Here, we would like to point out another aspect of the problem. Namely, as it occurs, Tartu semiotics did not stop after the 1980s, nor did it start only in the 1960s. It has a prehistory, and it has future—it has grown since the 1990s. In 2000, the *European Journal for Semiotic Studies* published a special issue under the title "New Tartu Semiotics" (Bernard *et al.*, 2000). This name characterises the period that started with the establishment of the Department of Semiotics in the University of Tartu in 1992.

This new period that has lasted almost two decades for now can be characterised by couple of keystones①:

(1) semiotics is understood as a science that studies sign processes of all living systems, i.e. all species of living beings included;

(2) the objects of study being geographically diverse, the analyses of culture tend to take the culture's relatedness to the ecosystem into account;

(3) semiotics is taught as a normal university discipline, at the bachelor, master, and doctoral levels②.

Point (1) is connected to the fact that there are two semiotic traditions that together form the basis for contemporary Tartu semiotics—the cultural semiotic one stemming from Juri Lotman, and the biosemiotic one stemming from Jakob von Uexküll③. However, already after the late 1970s there were attempts to merge these two—both in Tartu, and elsewhere. In Tartu, it was connected to Juri Lotman's relationships to the circle of biologists, among whom an interest

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① A detailed account is given in Kull, Salupere & Torop (2011).

② The point (2)—the role of ecosemiotic aspects in semiotics of culture—would require a separate analysis; as of recent publications on the topic, see Peil (2011). On the point (3) see, e.g., Väli & Kull (2008).

③ Peeter Torop (2000, p. 9) writes: "Thanks to the place, Tartu semioticians have the luck to continue two traditions, adding the one of Jakob von Uexküll to that of Lotman's."

towards Jakob von Uexküll's heritage arose and who searched for connections with semiotics[①]. Elsewhere, particularly in Thomas Sebeok's writings and usage of the concept of modelling systems as covering all kinds of signs systems—both the language-based (cultural) and prelinguistic animal ones are included[②]. Lotman's biographer, American semiotician Edna Andrews, has noted that "it is clear that Lotman's system is in harmony with the models presented by Sebeok, Jakobson, and von Uexküll" (Andrews, 2003, p. 24).

Here we attempt to demonstrate that the relatedness of Jakob Uexküll and Juri Lotman can be seen as deep indeed. This gives us a basis to speak about their works as the partakers of one and same tradition that we call *Tartu semiotics*.

We also see that the theoretical integration of Jakob Uexküll's and Juri Lotman's approaches (which may not be as easy as it seems) is at the heart of contemporary semiotics, which has a task to develop a theoretical and methodological apparatus that would delimit and specify the scope of general semiotics and that could be used as a basis by all branches of semiotics. Here, we expect, Tartu semiotics has a role to play[③].

Below, comparing Jakob Uexküll's and Juri Lotman's work[④], we list some features in which we find their approaches in concord.

1. The Fundamental Concepts of Umwelt and Semiosphere

Jakob Uexküll, when he described the worlds of animals and men[⑤], required an inclusive fundamental concept, for which he introduced the concept of umwelt. Juri Lotman, when describing the universe of mind[⑥], texts and cultures, also required an inclusive basic concept, and thus he introduced the concept of semiosphere.

Umwelt is the world of an organism, the world as known, or modeled. It consists of sign-relations, of the distinctions an organism makes, of everything

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① See a detailed account in Kull (1998).

② "Sebeok [...] saw in the role assigned perception within Lotman's view of language an opening to biology that was not present in Saussure himself, or semiologists generally. Thus he was able to forge a synthesis wherein the Innenwelt of the German Estonian biologist Jakob von Uexküll and the modeling theory of the Russian Estonian cultural semiotics of Juri Lotman combined to form a three-tiered modeling system" (Cobley *et al.*, 2011, pp. 8—9). See, for instance, Sebeok, 1994.

③ Cf. Deely, 2010.

④ Detailed biographical and academic accounts can be found about Juri Lotman in Shukman, 1977 and Andrews, 2003, and about Jakob Uexküll in G. von Uexküll, 1964, Kull, 2001 and Mildenberger, 2007a.

⑤ Note Uexküll, 2010 [1934].

⑥ Note Lotman, 1990.

an organism can recognize or deal with. Semiosphere is even more general—it does not require a particular organism to focus on, it covers them all.

A sign cannot make sense except in the context of other signs. Lotman's insistence on the prior existence of semiotic space in relation to single texts as well as to the interrelationship of texts within the semiosphere has an analogue in C. S. Peirce's principle *omne symbolum e symbolo*. In biology, an analogical relationship has been formulated as Francesco Redi's law (formulated already in the 17th century): *omne vivum e vivo*. Another version of it is Jakob von Uexküll's *every design is from design* that he describes in the introduction to his *Theoretische Biologie*①.

Lotman got the idea to formulate the concept of semiosphere from reading Vernadsky. And, interestingly enough, Edna Andrews (2003, p. 64) observes that "Uexküll's umwelt shares many of the same basic concepts as Vernadsky's principles for the biosphere".

Andrews (2003, p. 68) adds: "In the final analysis, Lotman attributes as much importance to the metatextual level in the semiosphere as von Uexküll does to metainterpretations within the umwelt".

The concept of umwelt is radically different from the concept of environment. Umwelt includes perceiving and acting (*Merkwelt* and *Wirkwelt*). The relationship between an organism's innenwelt and umwelt is analogous to Lotman's view on the relationship between text and extratextual reality (or context). Lotman often used "organism" as a metaphor for "text"—thus text having not only structure and autonomy, but also an internal dynamical mechanism, a physiology. As umwelt is a consequence of organism, analogically extratextual relations are the product of text, as Lotman has stated②.

2. Primacy of Autocommunication

Both for Jakob Uexküll and for Juri Lotman, autocommunication is where the communication starts. This is also related to the understanding that translation is the process where meaning arises.

Here, we may again quote Edna Andrews, who writes (Andrews, 2003, p. 63): "There is an interesting point of coincidence between von Uexküll's theory and Lotman's modelling of the semiosphere: in both, auto-communication

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① "An der Satz: *Omnis cellula e cellula* darf man den Satz hinzufügen: *Alles Planmässige aus Planmässigem*" (Uexküll, 1920, p. 6). We could add here also Gregory Bateson's analogical observation: "The mental world is only maps of maps, ad infinitum" (Bateson, 2000, p. 460).

② More on the relationship of the concepts of umwelt and semiosphere, see Kull, 1998, M. Lotman, 2002, and Andrews, 2003.

must be present for sign interpretation. Lotman's model of autocommunication [...] defines the mechanism of meaning generation as a combination of two modelling types: I-I (or auto) communication and I-s/he communication①. All cultural spaces rely on these modelling systems for the production and transference of information. [...] For Lotman, autocommunication underlies the ability to qualitatively restructure and translate what is never less than a double-version of code and message in the creation of meaningful texts②. For Uexküll, the primacy of autocommunication provides the backdrop for any metainterpretation that may be formulated③. Given the structure of each umwelt, it becomes clear that in Uexküll's modelling system, all meaning is created through translation—a process that necessarily provides the outcome in the form of a metainterpretation"④.

The role of the concept of autocommunication in the Tartu school has also been described by Peeter Torop (2008, p. 394): "That which on one level of culture manifests itself as a process of communication and a dialogue between addresser and addressee can be seen on a deeper level as the autocommunication of culture and a dialogue of the culture with itself."

3. Cybernetics and Semiotics

A cybernetic approach was close to both Jakob Uexküll and Juri Lotman, in the sense of a study of the structure of complex regulatory feedback systems and in the sense of an interest in the mechanisms of complex behaviour. However, neither of them used mathematics directly in their work, despite their mutual inclination towards a mathematically clear thinking.

Uexküll has been seen as a predecessor of biocybernetics (Lagerspetz, 2001). His research on the regulation of muscular work and tonus in marine invertebrates led to the discovery of so called "Uexküll's rule". It was the basis of his model of functional cycle (*Funktionskreis*), which is the core mechanism of umwelt-making. Ludwig von Bertalanffy was strongly influenced by the work of Uexküll when he developed the general systems theory. Much later, René Thom's approach in modelling semiotic processes was also influenced by the work of Uexküll.

Besides the linguistic theory of Saussure, cybernetic theory played a remarkable role in the Tartu-Moscow school. Particularly the work of Norbert Wiener and W. Ross Ashby provided a view for a dialogic understanding of the

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① Lotman, 1990, pp. 21—35.
② Lotman, 1990, p. 22.
③ T. von Uexküll, 1982, p. 9.
④ About translation between umwelten, see Kull & Torop, 2003.

development of subject in its relationships to environment (which is different from a Darwinian or Marxist view as these were interpreted in Soviet Union in the 1960s and 1970s). Cybernetic ideas were also growing at that time, after their ban in Soviet Union since the late 1940s. The concept of semiotic systems as modelling systems is certainly one that marks the relationship of semiotics with cybernetic thought. Besides the mathematician Vladimir Uspenskij, who was a participant of the first Semiotics Summer School in Estonia, a remarkable influence on the Tartu-Moscow school was also made by Aleksander Kolmogorov①, a leading Russian mathematician and cybernetician of the time.

Later, one may find several references to Ilya Prigogine's work in Lotman's writings (e.g., Lotman, 1990, pp. 230—234).

4. A Kantian Inspiration

Jakob von Uexküll refers in his works often to Kant, whereas J. Lotman was more like a "hidden" Kantian (M. Lotman, 2000). Obviously, for both of them, Kant was an important predecessor in getting the epistemological problems solved; the solution itself, clearly semiotic, already deviates from Kant's analysis remarkably.

Thure von Uexküll writes about one of his father's major works, *Theoretical Biology* (Uexküll, 1928):

> Hier greift Uexküll zwei Gedanken Kants auf und führt sie biologisch weiter: den Gedanken der apriorischen Kategorien von Raum und Zeit als Formen unserer Anschauung und den Begriff des Schemas②(J. Uexküll, 1980, p. 55).

J. Deely (2009, p. 157) says about Uexküll:

> Among modern biologists he is the one who struggled most from within the coils of German idealism and in the direction of a semiotic. [...] Uexküll, in extending Kant's ideas to biology, was also doing something more, something that the Kantian paradigm did not allow for, namely, achieving objectively and grasping as such an intersubjective correspondence between subjectivities attained through the sign relation.

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① See Kolmogorov, 1997.

② "This is where Uexküll took two thoughts of Kant and developed them further biologically: the thoughts of a priori categories of space and time, as forms of our intuition and the notion of schema."

The deviation from Kantian epistemology is very important in both scholars' views. Jakob von Uexküll posed species specific categories of perception that result from the work of functional cycles. Lotman proposed that the categories of perception can only put in relief by means of tracking the inconsistencies between multiple different modelling systems. This disagreement over the categories of perception is also one of the corner stones of Charles Sanders Peirce, who renamed the categories firstness, secondness, and thirdness, and who recommended among other things abductive inference as a key component to not losing access to the categories and things and the constitution of things in themselves in symbolic representation①.

The analysis of antinomies and the strive towards exactness characterize both Uexküll's and Lotman's work.

5. A Non-Classical Take on Evolution

Uexküll expressed openly his non-Darwinian views, directly criticizing E. Haeckel. In this, he follows and develops the biological theory as understood by Karl Ernst von Baer, in which phylogeny is a derivative of ontogeny (evolution is a derivative of development), and not vice versa as approved by a Darwinian biology. Uexküll got his view during his study years in Tartu University, despite of (or due to) a Darwinian professor②. For Uexküll, Darwinian biology was not scientific enough.

Uexküll stresses the organism's role as an actively choosing and selecting subject, as different from the environmental selection (i. e., the natural selection) of the Darwinian view.

The structuralist view in biology has been non-Darwinian. Some of its representatives were close to the Tartu-Moscow school, and thus these appeared in the pages of *Sign Systems Studies* in the 1970s (Aleksander Lyubischev, Julius Schreider). Juri Lotman's own model of historical process as an alternation between explosion and stasis, together with the division of cultures into binary and ternary on the basis of the types of autocommunication, is similar to some recent models of evolution (e. g., of S. J. Gould and N. Eldridge).

For Juri Lotman, the references to biological aspects are not accidental. In his early years, he prepared himself to become a biologist, before the decision to study literature③.

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① We thank Tyler Bennett for the formulation of this paragraph.

② See G. von Uexküll, 1964.

③ See Kull, 1999.

6. Classics of Semiotics Re-Established

Neither Uexküllnor Lotman followed directly any of the classics of semiotics. Thus, indeed, "As he [Jakob von Uexküll] knew neither Peirce nor Saussure and did not use their terminology, his theory cannot easily be accommodated to any of the known semiotic schools of thought" (T. von Uexküll, 1987, p. 148).

Juri Lotman cited the works of Ferdinand de Saussure and Roman Jakobson quite often, however his analysis was not directly based on the earlier semiotic classics; he rather learned about them after working out of his own concepts.

One should also notice, of course, that the history of semiotics as it is taught nowadays has been constructed mainly after the 1960s; the institutionalization of semiotics started in the 1960s and only then did it require its history.

7. An Opposition to Mainstream

Neither belonged to their contemporary mainstream, both were academic dissidents. They opposed themselves to mainstream thought, but they were also dissidents within the branch where they belonged.

Uexküll opposed himself to mechanicist and Darwinian biology. The holistic biology, to which Uexküll's approach belongs, had some popularity in the early decades of the 20th century, however, with the Modern Synthesis in 1930, the physicalist methodology in biology became strongly dominated and Uexküll's view almost completely forgotten for 3—4 decades.

Sometimes, Uexküll is listed among representatives of neovitalism, together with Hans Driesch, with whom he shared many of the views on morphogenesis and self-regulation of organism. However, Uexküll did not identify himself as a vitalist. He rather saw his view as a third way, a way to overcome the vitalist-mechanist controversy.

Lotman's view was in opposition to the official soviet academic philology of his time, but Lotman was also special within Tartu-Moscow school. Most of the Moscow members of Tartu-Moscow school were linguists. Lotman with his St Petersbourg background was a literary scholar. For instance, I. Revzin has defined semiotics as an application of linguistic methods to the study of non-linguistic objects. For Lotman, semiotics is not a ready method. Instead, it builds itself during its usage.

8. From Structuralism to Semiotics

Lotman's first period was definitely structuralist. However, at least since the early 1980s, his approach was so processual that it could no longer be seen as semiology. This has been strongly emphasised, e. g., by Amy Mandelker

(1994; 1995), who sees in the "organic turn" made by Lotman the greatest achievement of semiotics in the 20th century.

Some other Lotman scholars reveal a more gradual development of Lotman's views, emphasising the processual and dynamic aspects already in his works ofthe 1970s. Still, the main conclusion is the same—his model of semiosis that is described in *The Universe of Mind* and in *Culture and Explosion* (Lotman, 1990; 2009 [1992]) represent a deep understanding of the underlying general processes of meaning-making characteristic to the post-structuralist stage of semiotics.

Structuralism is not limited to an approach in humanities and anthropology—there exists a similar quite widespread approach in biology. The structuralist biology has been dominantly non-darwinian (e. g., of Osaka group). Uexküll's work has received some hermeneuticist interpretations (Chang, 2004), but most of interpreters in semiotics tend to relate him to Peircean semiotics.

9. A Flavor of Romanticism

Romanticism can be seen as a revolt against Modernity within Modernity. Semiotics as a deeply non-Modern view therefore shares some elements with the Romanticist approach. This can be seen in the type of ecology for which Uexküll was an early representative, and in semiotics as it has been developed by Lotman and expressed well in his later work.

Thure von Uexküll has pointed out that since the romantic era in the Baltic countries lasted much longer than either in Russia or in Western Europe, it also facilitated the corresponding views in the region. For this reason Baer-Uexküll approach in the study of living systems could emerge namely in the Baltics.

Juri Lotman's study of literature was focused on the romantic period in Russian culture, but one can see in the models Lotman developed for that period allusions also to his contemporary world. Of course, "Romanticism occupies only a part of the semiosphere in which all sorts of other traditional structures continue to exist" (Lotman, 1990, p. 126).

It is nice to mention that both Jakob von Uexküll and Juri Lotman were very polite persons and gallant in their behaviour, and were also very fond of the art of Romanticist period.

10. Tartu as the Place

The whole traditional atmosphere in Tartu can be characterized as late-Romanticist, supporting interdisciplinarity, remarkably non-Darwinian (see also Mildenberger, 2007b), and supporting individuality. This intellectual atmosphere was formed in 19th century Tartu, where Karl Ernst von Baer and his circle had a core influence.

Jakob von Uexküll's wife has mentioned in the biography: "Für Uexküll hatten sich jedenfalls in jenen Jahren seiner Dorpater Studienzeit ernsthafte Zweifel erhoben, ob das Gewand, das Darwin und Haeckel für die Dame Natur geschneidert hatten, ihr auch nur einigermaßen paßte"①(G. von Uexküll, 1964, p. 37).

Lotman has stated that Tartu was probably the only place where his school could have formed.

As a place with long academic traditions (Tartu University was established in 1632 as the second oldest in Northern Europe), it is situated at the crossroads, at several cultural, historical, political, linguistic, biogeographical, and ecological boundaries that may support cultural creativity in a broad sense.

Concluding Remarks

With the brief analysis above, we have mentioned some aspects of semiotic theory as we find these to characterize the core of the Tartu approach to semiotics, knowing all the while that such a brief summary is inadequate. However, one point should be underlined—this approach sees semiotic processes as multi-level processes. In order to understand a human, we find it necessary to include all types of sign processes, from the cellular all the way to the cultural level.

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① "Uexküll, during his student years in Dorpat [Tartu], had certainly serious doubts as to whether the garment that Darwin and Haeckel were tailored for Mother Nature, in any extent also may fit to them."

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