24th Annual Gatherings in Biosemiotics

Bloemfontein, South Africa

24th Annual Gatherings in Biosemiotics

17– 21 June 2024

VENUE: Modlec Room 6

Monday 17 June

TIME	SPEAKER	TOPIC
15:45-16:00	Hosts	Welcome
16:00-16:30	Don Favareau	Introduction
16:30-17:30	Kalevi Kull	Semaphylls, and other means of interspecies sign relations
17:30-20:00	Cocktail event	

Tuesday 18 June

TIME	SPEAKER	TOPIC	In-person or online
09:30-09:45	Hosts	Welcoming and housekeeping	In-person
Chair: Jannie Hofmeyr			
09:45-10:15	Karel Kleisner	Worldwide Variation of Sexual Dimorphism in the Human Face: A Challenge for Biosemiotics?	In-person
10:15-10:45	Emiliano Vargas	AIs in music and biosemiotics. Notes for a study from a media evolution perspective.	In-person
10:45-11:15	**Tea**		
11:15-11:45	Filip Jaroš	Animal Cultures and/or Anthropological Difference?	In-person
11:45-12:15	Ľudmila Bennett	In search of C space: Umberto Eco between dyadicity and interpretation	Online
12:15-13:15	**Lunch**		
Chair: Wiida Fourie-Basson			
13:15-13:45	Hugo F. Alrøe	Science as (bio)semiosis	Online
13:45-14:15	Jannie Hofmeyer	The role of formal cause in biosemiosic processes	In-person
14:15-15:15	Panel Discussion: Biosemiotics and the Global South		
15:15-15:45	**Tea**		
15:45-16:15	Jaime F. Cárdenas-García	The Infoautopoietic Resemanticization of Anthropology	Online
16:15-16:45	Sergey Chebanov	What did biosemiotics give to biology and semiotics?	In-person

Wednesday 19 June

TIME	SPEAKER	TOPIC	In-person or online
Chair: Helen-Mary Cawood			
09:00-09:30	Thorolf van Walsum	The Blinding Invasion	In-person
09:30-10:00	Joshua Augustus Bacigalupi	Split Innenwelten: Augmenting Self-regulation of Human Semiosis to Mitigate Existential Risk	Online
10:00-10:30	**Tea**		
10:30-11:00	Emanuela Bove	Redefining ‘food confusion’: A biosemiotic approach to elucidating contemporary challenges in the identification of edible matter	Online

11:00-11:30	Arno L. Goudsmit	Situating code between proto-writing and proto-reading	Online
11:30-12:30	**Lunch**		
Chair: Thorolf van Walsum			
12:30-13:00	Kobus Marais	Translating innenwelt: The biosemiotics of art	In-person
13:00-13:30	Oscar Salvador Miyamoto Gómez	The anthropogenic disruption of episodic memory in animal societies	Online
13:30-14:00	**Tea**		
14:00-14:30	Victoria Alexander	Biosemiotics Responds to Transhumanism	Online
14:30-15:00	Camilo José Medina Ramírez	Butterflies as a model of false head biosemiotic analysis	Online
15:00-15:30	Don Favareau	Relevance, Choice, and Meaning: A Consideration of the Role of Active Inference in Biosemiotics	Online

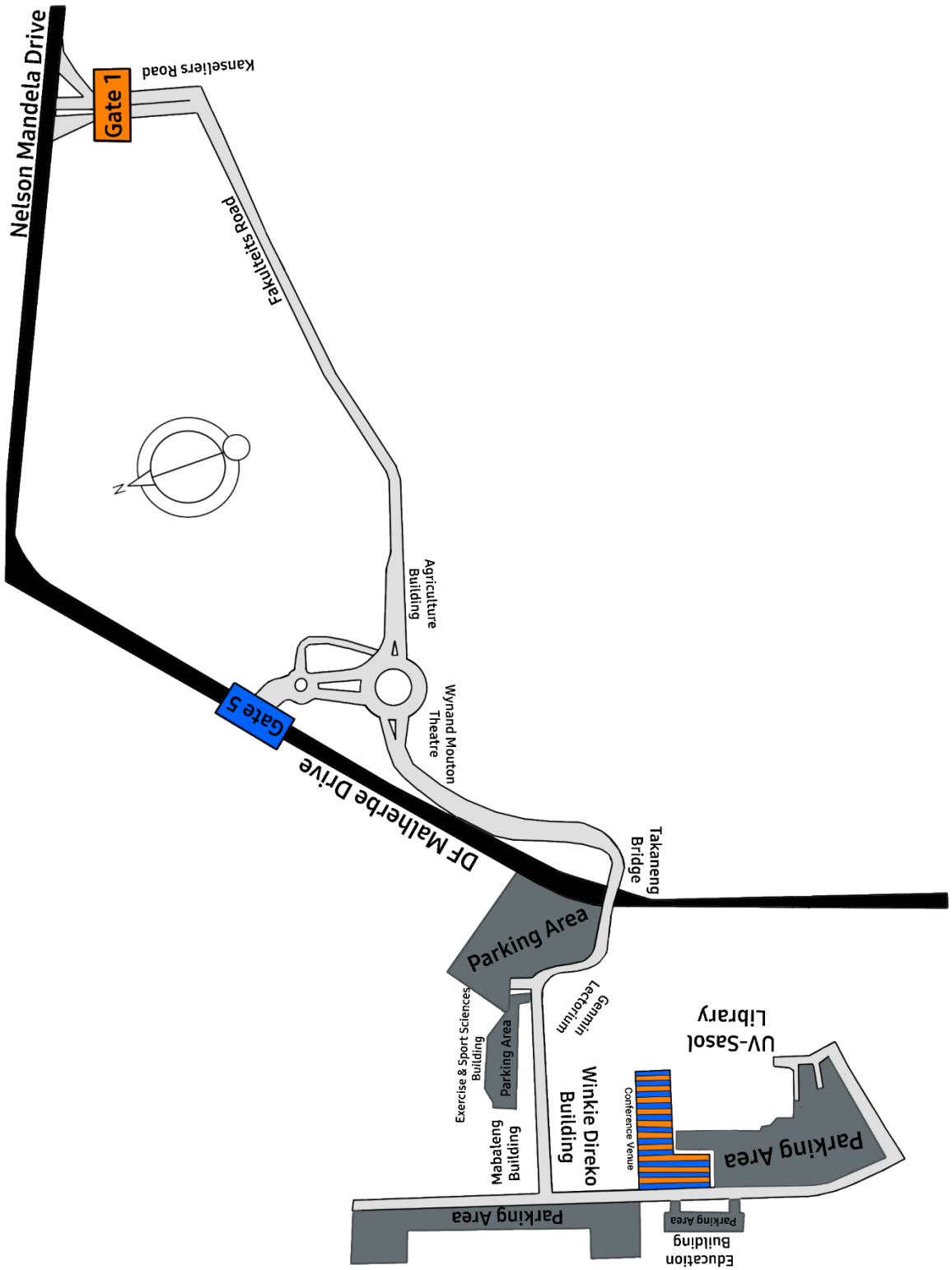
Thursday 20 June

TIME	**SPEAKER**	**TOPIC**	**In-person or online**
Chair: Xany Jansen Van Vuuren			
09:00-09:30	Nikolai Skipin	Allopatric speciation as a result of mutual evolution of interpretant and interpretation	In-person
09:30-10:00	Jana Švorcová, Martin Vrabec	F. W. J. Schelling on Organism and Autopoiesis	In-person
10:00-10:30	Innocent Dande	A canine bio-semiotic history of the city of Harare, 1950s-1970s	In-person
10:30-11:00	**Tea**		
11:30-11:30	Kalevi Kull, Frederik Stjernfelt	Co-presence and Co-localization in the Umwelt: The Semiotic Window	In-person
11:30-12:00	Wiida Fourie-Basson, Louise du Toit	Making sense of our place in the world: in conversation with Pierre Hadot and eco-phenomenology	In-person
12:00-13:00	**Lunch**		
Chair: Kalevi Kull			
13:00-13:30	**Tea**		
13:30-14:00	John H. Schumann	Exploring Predictive Processing from the Perspective of Semiosis	Online
14:00-14:30	Juan Alberto Bastard-Rico	The concept of Umwelt between Uexküll and Husserl: agreements and disagreements towards an ontology of life	Online
14:30-16:00	Panel Discussion: Paul Cobley		
17:30	Conference dinner (transport will be provided from the conference venue to the dinner venue)		

Friday 21 June

TIME	**SPEAKER**	**TOPIC**	**In-person or online**
Chair: Kobus Marais			
09:00-09:30	Xany Jansen Van Vuuren	An ecosemiotic approach to translating animals into human thinking: a look at animal advocacy in the global South	In-person
09:30-10:00	Helen-Mary Cawood	Photography in the ecosemiosphere: Hermeneutic reflections on the non-verbal translation of the 'veld'	In-person
10:00-10:30	**Tea**		
10:30-11:00	Morten Tønnessen	Applied Umwelt theory in the context of descriptive phenomenology and phenomenological triangulation	Online

11:00-11:30	Kalevi Kull	Natural contradictions	In-person
11:30-12:00	Ekaterina Velmezova	On the “Humanisation” of Language in the Categories of Biosemiotics: Jan Niecisław Baudouin de Courtenay	Online
12:00-12:30	Tim Ireland	bio-semiotic-logic: meaning and order	In-person
12:30-13:30	**Lunch**		
13:30-18:00	Conference excursion (Leaving from the conference venue and returning to the conference venue)		


Nelson Mandela Drive
Gate 1
Kanselliers Road
Fakulteits Road
N
Agriculture Building
Wynand Mouton Theatre
Gate 5
DF Malherbe Drive
Takaneng Bridge
Parking Area
Gemmin Lectorium
Exercise & Sport Sciences Building
Parking Area
Mabaleng Building
Winkie Direko Building
Conference Venue
UV-Sasol Library
Parking Area
Parking Area
Education Building

Introduction

We are very happy to be the first country in Africa to host the *Gatherings* in Biosemiotics. Not least because we feel that this setting, firmly situated in the Global South, provides opportunities for local and international scholars to connect around a common interest. This year, owing to travelling difficulties, we are back to hosting a hybrid conference, with half of our delegates attending online and the other half in person.

As usual, we have presentations covering a wide array of topics underlined by the common idea that meaning is an integral part of life, ranging from art, AI and music, to phenomenology, Innenwelten and Umwelten, to autopoiesis and infoautopoiesis. We also have a strong Global South voice through discussions of the South African 'veld', the history of dogs in Zimbabwe, and animal advocacy in South Africa. By engaging with these topics we hope that, as with all the previous gatherings, this year's *Gatherings* enable local and international participants to share and debate ideas, and form lasting collaborations transcending not only borders, but also conceptualisations.

While Bloemfontein may be small in size, we are big in hospitality and we hope that you experience the friendliness and sense of welcome that only Bloemfontein can offer. Most of all, we hope that this year's *Gatherings* is as stimulating and thought-provoking as the previous years and that these five days offer you countless opportunities for developing the field of biosemiotics.

Xany Jansen van Vuuren

Chairperson: Conference Organising Committee

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Worldwide Variation of Sexual Dimorphism in the Human Face: A Challenge for Biosemiotics?

Karel Kleisner
Department of Philosophy and History of Science, Faculty of Science, Charles University, Prague, Czech Republic

karel.kleisner@natur.cuni.cz

Over the last decade, we have delved into various aspects of human facial morphology and its perception, including the global variation in sexual dimorphism—the morphological differences in the face between men and women. Our findings reveal significant differences in sexual dimorphism among human populations (Kleisner et al., 2021; Kleisner et al., 2023). What causes these inter-population differences?

Researchers have attempted to explain facial dimorphism variation through factors such as mate preference, subsistence, mating systems, sex-division of labour, sex differences in body size, environmental conditions, and more. However, none of these factors adequately explains the observed variation across various human populations.

Based on this often contrasting evidence, it seems that sexual dimorphism of the human face was not directly selected for a specific functional role. However, it does not mean that in various human populations and socio-environmental situations, the dimorphic traits were not coopted for or fitted to various roles related to reproduction, labour, intra-sexual competition, social dominance, mating strategies, and so on.

The inherent differences between male and female faces, stemming from our gonochoristic nature as human beings, do not require special explanation. Our bodies exhibit morphological variation due to the physical separation of sexes into male and female bodies. Facial appearance thus reflects, to some extent, this setup due to various developmental and organizational reasons.

Sex-specific facial appearances are complex phenomena, influenced by various visual characteristics, including shape, colour, luminance, contrast, and texture. These components exhibit not only static but also dynamic features through an array of physiological and behavioural acts such as blushing, concerted facial mimics, gazing, and various emotional expressions. Applying Uexküll's parable of Kontrapunkt (counterpoint): the multidimensionality of these traits allows us to approach human sexual dimorphism as a polyphony of counterpointing male and female characteristics, forming a holistic continuum with varying mean differences in bi-modal sex-specific distribution for each trait. Unlike the all-or-nothing relation observed on the chromosomal level, sexual dimorphism in facial characteristics is continuous. However, this still does not elucidate why facial differences between men and women vary so significantly across various human populations worldwide.

In summary, we lack a clear answer to a seemingly simple question: why do facial differences between women and men vary across the world? In this contribution, I will provide a summary of the most recent knowledge on this phenomenon, drawing information from 15 distinct populations worldwide. Additionally, I will introduce the current ongoing project aimed at mapping sexual dimorphism in the human face across the world.

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AI in music and biosemiotics. Notes for a study from a media evolution perspective.

Emiliano Vargas
UNIURB – DISCUI
emilianov1988@gmail.com

This presentation is part of a broader ongoing research and aims to generate discussions in the field of experimental semiotics taking into account theoretical and methodological exchanges between biosemiotics and AI applied to music life forms from a media evolution perspective.

Different authors inside and outside the semiotic field point out the impossibility of AIs to perform abductive operations, identifying this weakness as the great limitation that makes it impossible to equate artificial intelligences to human intelligence.

Beyond the dichotomy and the comparative relations that are established between both types of intelligence, the question that guides the work pursues the possibility of studying AIs as a co-evolutionary (cultural/media) phenomenon, understanding them as processes that carry non-interpretative semiosis. That is, a notion present in our field of study through the concepts of *manufacturing semiosis* and *signalling semiosis*.

In this way the work describes different ways in which AIs adapt to creative production processes, specifically musical ones.

Thinking about AIs in music through a biosemiotic approach is part of an attempt to understand the functioning of these systems and their insertion in creative processes that contain them, combining at the production level quantitative aspects (mathematical and physical dimension of music) with qualitative aspects, such as the ability to automate the production of texts, taking specific cultural codes as a reference.

In a first moment, the work shows a synthesis of the evolutionary history of AIs, highlighting emerging aspects in its diachronic dimension and establishing links with the biosemiotic paradigm, discussing points of contact with the AIs paradigm.

In a second moment, cases of generative AI and biomimetic AI applied to situated environments will be exhibited.

The question that guides us has to do with the descriptive and analytical potential of non-interpretative semiosis to understand the ways in which AIs (both generative and biomimetic systems) operate in processes of meaning and creative production, in this case based on musical language.

The objective is to test and discuss theoretical and methodological proposals that contribute to the approach of the phenomena that evolve in the biosphere/semiosphere/technosphere relationship.

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Animal Cultures and/or Anthropological Difference?

Filip Jaroš
Department of Philosophy and Social Sciences, University of Hradec Kralove, Czech Republic
filip.jaros@uhk.cz

The existence of ape and other animal cultures presents adherents of Darwinian gradualism an opportunity to examine how human culture may have come about in the first place. In this respect, animal cultures represent a triumph of naturalism: the domain of human culture appears as a special instance of social structures that can be found in higher animals—a domain accessible to natural-scientific inquiry. But the question remains of how to evaluate the cognitive/semiotic capabilities of chimpanzees and other great apes in comparison with humans. The answer depends primarily on whether the research is conducted by ethologists (who focus directly on behavior) or comparative psychologists working in the laboratory (who focus on cognition deduced from behavior): while the former tend to look for analogies between animal and human behavior, the latter implicitly proceed with an agenda of finding anthropological difference (Jaroš and Maran 2019).

Field primatologists like Boesch (2012) attribute culture to chimpanzees and other great apes because, given the many analogies (hunting in groups, frequent tool use) and the close evolutionary relationship, it is economical to assume that the minds of humans and apes are similar. On the other hand, comparative psychologists concentrate on laboratory research into the cognitive processes that underlie the modes of cultural transmission. Tomasello shows that children, when using tools, copy exactly the sequence and implementations of steps demonstrated by their instructor (imitation), while chimpanzees are able to understand the intention of the demonstrator and then "willfully" employ whatever tactic leads them to this goal (emulation). Humans thus have greater accuracy and fidelity in the transfer of information and skills; this, together with the highly organized nature of their groups, results in the cumulative character of their culture.

Dispute between ethologists and comparative psychologists about the difference/similarity of human and chimpanzee cultures will be discussed on the background of the differentiation between three levels of modelling systems made by Sebeok and Danesi. Our concentric model maintains Sebeok's basically hierarchical division into three stages, but the categorization of these spheres is carried out differently, especially given that, in our opinion, each sphere is at least partially occupied by non-human species. The relationship between humans and animals is exposed in two steps: first, we introduce a general zoosemiotic characterization at each stage, which we then complete with a description of human specificities (Jaroš and Pudil 2020). We believe that such a modelling approach maintains the specificity of species-specific umwelten and avoids the pitfalls of Darwinian gradualism.

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In search of C space: Umberto Eco between dyadicity and interpretation

Ľudmila Bennett
International Semiotics Institute, Palacký University in Olomouc, Czechia
ludmila.lac@gmail.com

Umberto Eco's approach to non-cultural modes of semiosis was, at the beginning of his career, marked by skepticism. His attitude changed somehow after he started to cooperate with Giorgio Prodi. Eco invented the concept of natural primary iconism in order to study the semiotic competence of life forms at the biological level. Even though the concept of natural primary iconism – attributed to the genetic code and immune cells – represented a step towards the recognition of semiosis at the cellular level, Eco still remained very prudent and placed primary iconism below the lower semiotic threshold, defining it as a simple dyadic relation between a stimulus and a response (the dyadic nature of primary iconism is very clearly delineated in Eco 2007). One might see an inconsistency here, in fact, as admitting a certain level of semiosis for life forms while at the same time describing it as dyadic does not solve the problem. Fortunately, there is another concept developed by Eco that can aid us in solving the paradox of the lower semiotic threshold: the concept of C Space (Eco 1990), an interpretive space to guarantee thirdness. Eco himself applied this concept to the simplest life forms, even though this passage is not well known because of the fact that it was not translated to English. As is the case of many translations of Eco's books, the English translation of *The Limits of Interpretation* contains a different text from the original. The concept of C Space shows good potential in biosemiotic theory. In my presentation, I will stress on its applicability and usefulness for the biosemiotic project.

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Science as (bio)semiosis

Hugo F. Alrøe
Independent researcher
hugo.f.alroe@gmail.com

In his fundamental work on semiotics, Charles S. Peirce was very much concerned with the evolution of knowledge and science. Biosemiotics, which incorporates the observing system in form of living organisms and the necessary interaction involved in the act of observing by way of different senses, is important not only within science, but also to our understanding of science and scientific observation. This paper explores the challenges and ideas that emerge from the notion of science as (bio)semiosis, showing how biosemiotics forms a basis for scientific observation and, hence, for science.

Science is a cognitive system, or a type of cognitive systems, with unique capabilities for observation and learning (e.g., Giere 2006). In this sense, science can be compared to organisms capable of observing and learning. Of course science is much else and, in particular, science can be seen as an autopoietic, communicative social system in the sense of Niklas Luhmann, a system that differentiates into still more specialized systems and perspectives. Nonetheless, the cognitive aspects of science are crucial to understanding science, and in this regard it is fruitful to consider science as a process of semiosis, especially from the perspective of biosemiotics (cf. Alrøe & Noe 2014).

Specifically, to understand science in line with the new cognitive approaches to philosophy of science, we need to understand scientific observation as a specialized form of observing. Semiotics is a key element in this. However, observing should be understood not in a strictly semiotic sense, but in a broader biosemiotic sense that includes both representing and interacting, in line with Uexküll's theory of meaning where the phenomenological world of an observer, the Umwelt, is based on both perceiving, the Merkwelt, and acting, the Wirkwelt.

Some examples of how semiotics and biosemiotics can further our understanding of science and scientific observation: Firstly, Jakob von Uexküll's notion that each species has its own Umwelt, or phenomenological world, provides a strong analogy for the different phenomenological worlds of scientific perspectives and an importantly modest view of what each perspective can observe. Secondly, in line with this perspectivist view, the Peircean distinction between the immediate and the dynamic object of the sign is of key importance for enabling interdisciplinary research involving very different scientific perspectives with different immediate objects working on the same dynamical object (Alrøe & Noe 2014). Thirdly, Uexküll's Umwelt theory, where each species has its own world depending on its receptor organs etc., can also contribute to the understanding of scientific phenomena as necessarily including a description of the whole observational apparatus, in Niels Bohr's sense, and to a more general understanding of complementarity in science. Fourthly, the key semiotic concept of representation forms a basis for the notion that there are three and only three levels of semiosis and, hence, three general kinds of kinds in science and philosophy (Alrøe 2016).

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The role of formal cause in biosemiosic processes

Jan-Hendrik S. Hofmeyr
Dept. of Biochemistry, University of Stellenbosch, South Africa

jhsh@sun.ac.za

Any process, whether semiosic or other, can be modelled abstractly by a function $f(a) = b$, in which a processor f converts an input a into an output b. By their very nature semiotic processes involve an implicit or explicit representation of b, and the question is where this representation enters the functional description. One of Robert Rosen's seminal insights was that the entities in a functional description such as $f(a) = b$ could be related to Aristotelian causes, namely f as the efficient cause of b, a as the material cause of b, and b as the final cause of both f and a (Rosen, 1991). There is, however, a fourth Aristotelian cause, namely the formal cause, and it is precisely this cause that is coextensive with the representation of output b that we seek to incorporate into the function description. I shall show that there are four ways of doing this (three of them are described in Hofmeyr (2018, 2021). I distinguish between extrinsic and intrinsic formal causes, each of which can associate with either efficient or material causes (I prefer these terms to explicit and implicit). If formal cause is denoted by σ, then the four combinations are (f,σ), (a,σ), f_σ and a_σ. For example, an extrinsic formal cause is a freestanding entity such as a messenger RNA, the sequence of triplet codons of which represents the sequence of amino acids in the polypeptide into which it is translated. Formal cause (mRNA) and efficient cause (ribosome) remain distinct entities when they combine to form a compound processor $(f,\sigma)(a) = b$. An intrinsic formal cause inheres in either efficient cause f_σ or material cause a_σ. For example, in an enzyme the formal cause is the specificity of the active site: the stereochemical architecture of the active site is a (negative) representation of the molecular conformations of the substrate/product pair, whereas the chemical properties of the active site are the efficient cause of the catalysed reaction; efficient and formal causes are inseparable. Here, the functional representation is $f_\sigma(a) = b$. Besides these examples, I shall provide many others, both everyday and biological, to demonstrate the use of this approach to biosemiosis.

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The Infoautopoietic Resemanticization of Anthropology

Jaime F. Cárdenas-García
Department of Mechanical Engineering, University of Maryland, Baltimore County, USA
jfcg@umbc.edu

Infoautopoiesis is the self-referenced, interactive, and recursive process of information self-production that engages all living beings in their efforts to satisfy their physiological and/or social needs (Cárdenas-García, 2020). This means that information, i.e., Bateson's *difference which makes a difference* (Bateson, 1978, p. 460), is a derived quantity/quality obtained from the sensorially detected motion of matter and/or energy by living beings in their Umwelt (Uexküll, 1992). Leading to meaning-making as active manipulators/observers of their environment. This infoautopoietic process of meaningful engagement with the environment in a sensation-information-action cycle allows humans to create and transform endogenous semantic information into the many expressions of exogeneous syntactic information, synonymous with ordered material structure and artificial creation, which enriches our lives (Cárdenas-García, 2022).

Thus the need for a resemanticization of Anthropology, the scientific study of human culture, as, since the mid-twentieth century, we live in the Information Age. An epoch prioritizing the primacy of information, on a par with matter and/or energy. A new anthropological understanding of the impact of information entails sidestepping the influence on society of particular scientific and technological developments, such as those considered in the Anthropology of Cyberculture (Escobar, 1995; Escobar et al., 1994). The goal is to discover the fundamental role of information in anthropology, in its origins and development, as well as in its present-day local and global manifestations. Infoautopoiesis is at the center of resolving the fundamental problem of information of how we become what we become (Cárdenas-García & Ireland, 2019). This reconceptualization of information, making it accessible to our daily experience, allows its naturalization. Requiring, in our unavoidable homeorhetic recursive interactions with our environment, the finding of individuated meaning in all that surrounds us and of which we are a part. Elucidating how their interactions with their environment, from an anthropological perspective, are constitutive of information self-creation, information exchange, information relations and life.

KEYWORDS: Information; Gregory Bateson; infoautopoiesis; anthropology; culture; nature

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What did biosemiotics give to biology and semiotics?

Sergey Chebanov
St.-Petersburg State University, Professor

s.chebanov@gmail.com

Biosemiotics is based on the presence in organisms of their own internal semantics, which are plan of expression of specific signs. Biosemiotics as a relatively independent field of research and applied development emerged in the mid-1990s – the first half of the 2000s. However, it has a long prehistory, going back to Antiquity (including Aristotle), passing through the Middle Ages and early modern times. This tradition was almost interrupted in the second half of the 19th century due to the fight against anthropomorphism. At this time, only external semantics remained in biology, related to how features of morphology, physiology and lifestyle affect the survival and mortality of organisms.

However, with the emergence of semiotics as an independent discipline in the first third of the twentieth century, the question arose about the semiotic phenomena of animal behaviour (Ch.Morris). Meanwhile, starting from the end of the 19th century, I.M.Sechenov, I.P.Pavlov, Ch.S. Sherrington, J. von Uexküll, A.A.Ukhtomsky discussed sign (signal) processes in the nervous system. In addition, quite complex verbal and graphic means were used in the biological morphology, taxonomy, nomenclature. They were conceptualized by their developers in the context of ideas about signs. However, for most biologists, signs in biology were not relevant.

The situation changed in the middle of the twentieth century when the genetic code was discovered. This made the ideas of genetic determinism popular. Impressive achievements in ethology, zoopsychology, discovery of cognitive functions in plants, etc. were an addition to genetics. Thus, the work of biologists has become focused on the processes of regulation and control at different levels. Such regulatory mechanisms are interpreted as morpho-functional results of the expression of coding nucleotide sequences. This relegated classical morphology and physiology to the background. However, what happened was not recognized by biologists as having anything to do with semiotics. From the point of view of biosemiotics, individuals of living beings studied by traditional biology (morphology, physiology, cytology, biochemistry, etc.) appear as exponents of signs (transparencies, bodies of signs), representing the plane of expression of organisms interpreted as signs, and genetically signalling processes act as a plan for the content of such signs. The significance of this idea is underestimated by many biologists. Nevertheless, based on this idea a complete semiotic rethinking of all biology is possible. This is discussed when it comes to the idea that the extended evolutionary synthesis should include biosemiotics.

Although sign processes in living organisms have been mentioned in connection with semiotics since its formation (beginning of the XXth century), nevertheless, until the mid-1990s. semiotics developed as a humanitarian discipline (allowing comparisons with the behaviour of higher animals). Under pressure from biologists who elucidated the mechanisms of biosynthesis, immune reactions, behaviour, communication of living organisms (starting with bacteria), which were given a semiotic interpretation, semioticians agreed (as can be seen from the inclusion of relevant sections in many manuals on semiotics) along with anthroposemiotics, to distinguish biosemiotics and their background semiotics of technology (including computers as semiotic machines). However, semioticians in the humanities resist recognizing biosemiotic phenomena as full-fledged semiotic phenomena. This is partly due to the fact that understanding biosemiotics and semiotics of technology requires semioticians to have knowledge in areas far from humanitarian issues. Nevertheless, general semiotics should now be a generalization of anthroposemiotics, biosemiotics and semiotics of technology (but not an extension of "traditional" humanitarian semiotics). At the same time, the study of biosemiosis allows us to consider the historical generation of anthroposemiosis, and on its basis, technosemiosis.

Thus, it can be stated that biosemiotics, having a colossal potential for transforming both biology (and natural science) and semiotics (and all humanities), actually concerns the interests of a relatively narrow circle of biologists and semioticians. The main result of the formation of biosemiotics is that

the U. Eco's semiotic threshold has been transferred from the border biology / anthropology to the border physics / biology. This circumstance marks the return of semantics, meaning to the field of natural science, from where they were expelled during the era of the fight against anthropomorphism (which violated not only the subject connections of different disciplines, but destroyed the unity of the picture of the World).

The Blinding Invasion

Thorolf van Walsum
MA Semiotics University of Tartu

thorolfvwalsum@gmail.com

The summarized purpose of this presentation is to make the case that present ecologies of invasive species operate with a significant aporia that biosemiotic interpretation could fulfill. In modelling populations of invasive species along the lines of strictly naturalistic variables, such as environmental temperature, contemporary ecologies of invasion fail to account for semiotic variables that can define an invasive scenario. This will be demonstrated with reference to two areas of invasive ecology, which represent positive and negative examples of this in the field. In the first case, the Tribolium beetles invading midwestern America, we see a range-expansion facilitated by a shift in environment-sign relations. The second is that of the pink salmon of Finnmark, which have shown catastrophic population size increases in the last seven years, an event best explained by shifts in species umwelt composition not presently factored. This latter case bears significance to both theoretical ecologies and actual urgent species control policies. In addition to the already-existing ecological-scientific understanding that invasive species tend to be generalists, we must add that an invasive species conceived biosemiotically also eschews specificity of behavioural-environment interaction or 'umwelt', such as would be found in typically specialized indigenous populations. As the behavioral generality that is required by an invasive species develops, it will have evolutionary semiotic consequence that is ultimately the degeneration of a species' umwelt. As this degradation of environmental signs continues, there is the simultaneous relative promotion of behaviours and signs that facilitate intraspecific recognition and overlap. It will thus also be shown that significant for all invasive behaviors is facilitation by way of some semiotic constraint, which makes possible the establishment of colonial populations across ecological space. In both cases here shown, the development of an invasive behavior is associated with what is essentially an 'umwelt degradation'. We may call this simultaneously generalizing and expanding behaviour a 'blinding invasion'. I believe that this particular theoretical proof of demonstrably biosemiotic problems, invasivity, will carry with it further connotations for concepts of space, thought of ecosemiotically. This will hold true beyond merely invasive contexts. Moreover, given the nature of the logic of invasivity, which is demonstrably that of emergent and dialectical processes, I believe biogeographies of signs will have great connotation both for the application of biosemiotic philosophies and the rejuvenation of the biological sciences.

Split Innenwelten: Augmenting Self-regulation of Human Semiosis to Mitigate Existential Risk

J. Augustus Bacigalupi
University of Tartu

bacigalupiworks@gmail.com

In comparison to other non-human species, humans tend to exhibit habits of self-alienation and domination that have put the existence of both human and non-human organisms at increasing risk. This presentation will outline a semiotic hypothesis for how humans may be the cause of this risk and – insofar as this hypothesis is warranted – how our current unsustainable modes of self-regulation can be altered to mitigate this existential risk. A principle premise of this hypothesis is that human culture is an emergent solution to humans' intrinsic problem: hyper-*symbolicity*.

To justify this premise, the first section of the presentation will suggest that, via genetic drift of distinct neuronal populations, the ratio between *iconic*, *indexical* and *symbolic* semiosis (Peirce 1878, sect. 2.264, 2.275) in humans has drifted significantly towards *symbolicity* in contrast to other non-human species. This drift, it will be argued in section two, has created two distinct forms of semiosis that are in tension in human semiosis: more *icono-indexical* semiosis, which is bound to neuronal circuits dedicated to the action-perception loop, and more *symbolic* semiosis. This increased *symbolic* capacity in humans is relatively independent from the action-perception feedback loop, as characterized by von Uexküll's *functional circle* (Uexküll 1926, pp. 155–157). These two distinct, yet inter-related, modes of semiosis, will be shown to be in constant tension with each other, resulting in the self-reflexive anxiety, or "split Innenwelt", that is characteristic of being human.

The third section will build off the biosemiosis in the previous two sections to illustrate how cultural semiosis is both the result of this tension and its regulatory salve. A byproduct of this salve, however, is the tendency for humans to cultivate habits of domination – both of each other and the biosphere. To mitigate this human-caused existential risk, the concluding section will suggest how our species, via novel and synthetic modes of action-perception bound *icono-indexical* semiosis, can balance our species' hyper-*symbolicity*. This higher-order synthetic balance is characterized in Lotman's later works (Gherlone 2022, p. 137) where he:

> "… speaks of … a tension that does not end in the conflict/synthesis between opposite poles, but always seeks a 'complex unity' (сложная единица) or 'higher unity' (высшее единство)."

This presentation will suggest how these "complex" and "higher unities" can be realized via augmented modes of self-regulated semiosis. It is hoped that such novel "higher unities" at the cultural scale can mitigate the existential risks our species has foisted upon ourselves.

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Redefining 'food confusion': A biosemiotic approach to elucidating contemporary challenges in the identification of edible matter

Emanuela Bove
Middlesex University, London UK
eb944@live.mdx.ac.uk

This paper is concerned with the phenomenon of food confusion, approaching it through a biosemiotic lens. Rather than confining it to the realm of nutritional misunderstanding (Van Oosterwyck 2020), it broadens the analysis past its manifestations in human dietary choices, exploring the complex semiotic dynamics influencing how organisms, including humans, perceive and interact with their sustenance.

Situated within the theme of 'cultural implications of biosemiotics' (Cobley 2016), by which biosemiotics extends beyond illuminating cultural practices derived from physical needs—such as food habits—the research suggests that food confusion, as it currently emerges, is not merely a by-product of inadequate nutritional literacy but a compounded interplay of biological and semiotic processes unfolding within a dynamic food landscape. Whereas traditional paradigms of food identification and misidentification often fail to encompass the breadth of biological and cultural dimensions, a biosemiotics-informed investigation can unravel the composite layers of confusion that affect the recognition of edible matter across different strata of biological organisation. This approach includes examining conflicting food narratives at the human-specific abstract-symbolic interpretative level. Furthermore, it involves an evaluation of misleading sensory cues in the wider animal sphere, exemplified by the commercial manipulation of foodstuff's perceptual features, which decouple them from their evolutionarily established nutritional content. This is paralleled in ecosystems inhabited by non-human animals, where anthropogenic factors analogously hinder the natural processes of species-specific food identification. Finally, this line of inquiry must consider disruptive molecules (Vojdani 2015)—introduced through alterations in nourishment composition—that interfere with normal cellular signalling, representing cellular-level food confusion incidents, increasingly linked to the rise of food allergies and intolerances in developed countries.

Overall, this paper will demonstrate that a biosemiotic perspective can enhance a holistic understanding of food practices, beyond traditional disciplinary boundaries. Such a perspective, focusing on semiotic processes within organisms' *Umwelt* and acknowledging how individual cognitive and perceptual capabilities underpin instances of food confusion, it will be shown, offers a platform to integrate and synthesise insights from manifold fields, thereby revealing a common pattern of distorted signification in all food confusion scenarios. Ultimately, the study will seek to substantiate that biosemiotics not only enriches the grasp of what is ostensibly metabolic-driven cognition but also challenges existing views of how food can be understood, exposing the intricate interconnections between biology, culture, and semiotics.

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Situating code between proto-writing and proto-reading

Arno L. Goudsmit
EDT Maastricht Psychotherapie
goudsmit@edtmaastricht.nl

According to Giorgio Prodi (2021), an author who was active both in oncology and in semiotics, the most primitive forms of interpretation in living cells are the interactions between material 'structures'. Prodi's work has drawn attention to what Eco (2018) called the 'lower threshold of semiotics': when and how does signification emerge in a living organization? Prodi's concern was that, for a proper understanding of the interactions between cells, the regular concept of 'interpretation' was too anthropomorphic, too much built on the idea of an already preexisting subject that is capable of interpreting signs. Hence, Prodi looked for the minimal conditions for that subjectivity (in terms of Peirce's semiotics: 'thirdness'). He considered meaning as emerging from "a process of contact, of which the existence of code is a facet" (2021, p. 121). Likewise, Eco speaks of a 'natural primary iconism', a concept of signification without the burden of a 'mental representation/interpretation'. Hoever, such understanding of 'interpretation' is dyadic, i.e., it pertains to a 'secondness', i.e. the effects of one particular object (a substance or a stimulus) on another entity, such as a cell within an organism. It is not in line with the triadic tradition of Peirce, in which 'interpretation' is considered a 'thirdness', a moment at which an interpreting subject obtains some symbolic understanding of something as a sign for some object. Prodi's concern was that such triadic understanding of 'interpretation' was too anthropomorphic for the interactions between cells. As Eco put it:

> "... if the human being reaches thirdness, this can happen only if thirdness is already there, inchoative, as it were, lying in ambush, but ready to evolve." (2018, p. 349)

The type of signification that I would like to present in this (online) contribution is even more rudimentary than one based on iconicity or functionality. It is the possibility of something that to some degree affords a constraining counterweight to a system's dynamics, something of a statics that could evolve.

In our work on movements of form (Mowitz & Goudsmit, 2024), we describe a type of dynamic geometry within which a kind of construction ends at certain points and a different kind of development newly starts from these same points. The very transition at these points is an event that itself is not part of the dynamics of the geometry. There is no real code at these points that is written or read. However, these transition points could obtain qualities of real code as soon as they have a nonzero duration in which they exist beyond the dynamics of the geometrical processes.

Such code is not preexisting its interpretation. It is 'lying in ambush', not specifying how it should be interpreted, not giving room for multiple interpretations, but at least as a statics that is situated beyond both the dynamics (proto-writing) that produced it and the dynamics (proto-reading) that can be derived from it.

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Translating innenwelt: The biosemiotics of art

Kobus Marais
Department of Linguistics and Language Practice, University of the Free State, Bloemfontein

jmarais@ufs.ac.za

Semiosis, John Deely (2009) famously noted, entails turning things into objects. What he meant by this is that semiosis always entails a process of creating relations. As we create cognitive relations with things in our environment, we turn those things into objects of our experience. They always remain things, but once translated, they have the additional quality of being objects of our experience. Humans share this semiosic ability, namely the ability to use and interpret signs, with all living organisms.

Deely also argued that humans have a unique semiosic ability, namely the awareness that they are using signs. Because they are aware that they use signs, human beings can contemplate their semiosic ability. This would mean that humans are able to contemplate their own Innewelt, the inner world that they create in their own minds. Part of this Innewelt are emotions and feelings, which are also things that need to be translated into objects.

This Innenwelt can also be expressed in various ways by various living organisms. In humans, it is often expressed through language, but also through aesthetic creativity.

In this paper, I draw together a number of strands of my earlier thought to provide a translational conceptual framework with which to explore and explain the translation of the human Innenwelt into aesthetic objects. Building on Deely's work, I explore cognitive semiotics (Sonneson, 2012; Sonneson, 2016) and the semiotics of emotion (Petrilli & Ji, 2022; Petrilli & Ji, 2022), and I link these to my own work on the biosemiotics of translation (Marais, 2019). I plan to demonstrate my argument with data from the online art game "Telephone" (Langston, 2021).

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The anthropogenic disruption of episodic memory in animal societies

Oscar Salvador Miyamoto Gómez
Semiotics Department, University of Tartu, Estonia
miyamotounam@gmail.com

Cultural habits, intersubjective knowledge, and arbitrary codes. These zoosemiotic features are key for the survival of complex animal societies, which depend on forms of long-term memory (such as episodic or 'autobiographical' memory) that are not genetically inherited but learned during a lifetime. For example, some matriarch elephants teach younger members of the herd a traditional route and methods to find water during drought times in Africa (Fishlock et al 2016).

Under this cognitive view, it is crucial preventing animal interpreters to fall 'victims' of some logical forms of misremembering due to manmade environmental changes. This presentation will sketch a pragmatic typology of animal memory 'errors', analogous to the human typology proposed by Michaelian (2016: 1), based on "the accuracy of the memory representation, the reliability of the memory process, and the internality (with respect to the remembering subject) of that process".

First, in the case of *veridical relearning*, I will address how some animals may relearn *true* dicisigns to navigate dangerous urban spaces (e.g., not to get hurt in a highway). Second, in the case of *falsidical relearning*, I will explain how animal interpreters may relearn *false* dicisigns and develop more cautious attitudes or beliefs in response (e.g., in deception strategies, and when food sources are confused with pollutants). And third, concerning *falsidical confabulation*, I will capitalize on already existing applied umwelt studies (e.g., Magnus & Mäekivi 2023) to describe strategies for the relocation of endangered species, and for the development of better artificial but realistic habitats for captive populations.

Nevertheless, I will observe, the pragmatic essence of animal episodic memory (AEM) seems to be future-oriented or anticipatory rather than being just past-oriented. Namely, the virtual habits and logical interpretants expressed in AEM are dispositional or predictive. With this in mind, the typology will also consider categories analogue to *simulation*, *prediction*, *intention*, and *planning*, which are considered within the cognitive spectrum of human episodic memory.

'Anthropomorphising' or not, such multispecies perspective opens the possibility to consider varying degrees of simulation and action in AEM, which is necessary to biosemiotically understand, for instance, how wild chimpanzees plan their tomorrow's breakfast type and location; how New Caledonian crows strategize for specific future tool use; and how some rodents are able to episodically anticipate future scenarios.

Just like human episodic memory, I will conclude, AEM is fallible. This means that, instead of making 'information processing errors', animal interpreters are continously testing the validity of their own memories, in an inquiry or trial-error process between experiences and embodied affordances. This pragmatic perspective of AEM as habit-changing, therefore, demands discussing ecosystems beyond mere physical factors, and framing extinction as a mnemonic disruption of the ecosemiosphere.

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Biosemiotics Responds to Transhumanism

Victoria Alexander
Dactyl Foundation, New York, USA
alexander@dactyl.org

The September 12, 2022 White House Executive Order* pledges R&D funds to the biotech industry to enable it "to write circuitry for cells and predictably program biology *in the same way* [emphasis added] in which we write software and program computers." Technocrats believe that such advances will be possible once they "unlock the power of biological data, including through computing tools and artificial intelligence."

Behind this kind of transhumanist outlook is a philosophy of materialism that follows a logic something like this: living systems are composed of matter and energy, whose interactions can be represented in code, and the hardware that runs the code should be irrelevant and therefore could be synthetic. Thus, transhumanists think that they can upgrade biological "hardware" with non-biological materials, and reprogram biological "software," after cracking its "code," and mix and match with electronics to augment human capabilities.

In this talk, I will use lessons learned from complex systems science, the philosophy of creativity, and Biosemiotics to push back against the impoverished reductionism that sees biology in terms of digital computing. I will look at the myriad kinds of physical interactions that can make organisms impossible to precisely control without risking unforeseeable side effects. Medicine is said to be an Art for good reason.

I will also look at new approaches in regenerative medicine, used for example by Michael Levin's lab at Tuft's, that are more amenable to Biosemiotics.

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* Section 1. Executive Order on Advancing Biotechnology and Biomanufacturing Innovation for a Sustainable, Safe, and Secure American Bioeconomy. https://www.whitehouse.gov/briefing-room/presidential-actions/2022/09/12/executive-order-on-advancing-biotechnology-and-biomanufacturing-innovation-for-a-sustainable-safe-and-secure-american-bioeconomy/

Butterflies as a model for the biosemiotic analysis of *false heads*

Camilo José Medina Ramírez

Instituto de Ecología, Posgrado en Ciencias Biológicas, Universidad Nacional Autónoma de México (UNAM)

camilo@ciencias.unam.mx

C. David Suarez Pascal

Departamento de Biología Evolutiva, Facultad de Ciencias, Universidad Nacional Autónoma de México (UNAM)

david.suarez@ciencias.unam.mx

In this paper, we adopt a zoosemiotic approach to analyze the wing morphology of false-headed butterflies such as *Callophrys xami*. These insects present morphological modifications on the hind wings which in some butterfly species are known as false heads (FH). It has been suggested that such structures simulate a second head in the posterior part of the butterfly body (Medina & Cordero 2021), however, a satisfactory explanation of them is still lacking.

We hypothesize that changes in FH over the life history of the butterfly (complete/incomplete, moving/static) can serve as a source of information for potential intra- and interspecific observers (Delahaye et al. 2019).

To analyze these relationships, in this research, we categorize each stage of FH using Charles S. Peirce's basic three types of sign relations (indices, icons, and symbols), describing, and discussing how the encoding of information occurs for intra- and interspecific individuals (Sebeok 2001). Hence, we propose that:

• The relationship between *false* and real head is iconic for interspecific individuals, which produces a kind of deception which might cause confusion regarding the location of the real head.

• The relationship between the damaged or absent FH and the potential partners serves as an indexical sign, since it might refer to a past predatory event, which the individual passed through. This could confirm a mate’s quality, since it was able to both deceive and escape its predators.

• Finally, the hindwings' movement might be regarded in terms of a symbolic relationship since each species with FH could use this modification as a communication-specific tool.

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Relevance, Choice, and Meaning: A Consideration of the Role of Active Inference in Biosemiotics

Donald Favareau
National University of Singapore
favareau@gmail.com

Jakob von Uexküll once famously observed that nature comes to the organism in the form of questions. And in my own writings, I have often written that the existential question of "What to do now, given this?" is one that nature forces every organism, including us, to confront and to answer with our actions at every moment (Favareau 2015: 590).

Current-context-dependent and next-context-creating, these fallible and provisional actions "collapse the wave function of possibility" not blindly, but *guided by the use of signs* that are inseparably entangled with the objects and with the other signs of our fellow interactants in the real world, and, in so doing, shaping the possibility space upon which all subsequent such action must take place.

Within the last twelve years, a mathematical model of predictive inference known as the *free energy principle* (Friston 2010) has been gaining popularity as a possible theoretical framework for modeling and understanding the ways by which organisms navigate the uncertainty of the ever consequential worlds they're in by employing an enacted predictive coding strategy of Bayesian inference-updating that its adherents refer to as *active inference.* Here, organisms likewise are in a constant state of enacted inquiry with the world, at all times seeking to align their current experience of the world with their updatable repertoire of methods for anticipatorily acting in it.

Strongly reminiscent of Peirce's seminal semiotic principles of *pragmaticism, abductive reasoning* and the *economy of research*, scholars Ahti-Veikko Pietarinen and Majid D. Beni (2021) argue that Friston's *free energy principle*, especially in its realist, possibilist, and non-nominalist articulation, may be precisely the kind of theoretical grounding needed for the realization of a naturalistic explanation of biological meaning-making that biosemiotics has long been pursuing.

In this talk, I will attempt to lay out what I see as the possible contributions, as well as the possible limitations, of incorporating Friston's *free energy principle* within the explanatory framework of biosemiotics.

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Allopatric speciation as a result of mutual evolution of interpretant and interpretation

Nikolai Skipin

Institute of Scientific Information for Social Sciences of the Russian Academy of Science

skipinns@my.msu.ru

In this paper, we intend to link ecological inheritance, allopatric speciation, and biosemiotics.

Recent studies show the important role of ecological adaptation in allopatric speciation1. Also, genetic adaptation is facilitated by the fact that organisms modify their ecological niches. As a result, it can be concluded that organisms themselves are possible causes of subsequent genetic changes leading to speciation2. The explanation of these processes can be carried out with the help of biosemiotics.

Allopatric speciation is based on the thesis that the reproductive barrier due to geographic isolation contributes to the emergence of a new species from a population separated by landscape or other reasons. In our opinion, this can only be the final stage in the evolution of the interpretant and interpretation.

An organism (population), finding itself in new conditions and due to natural or anthropogenic factors, without the opportunity to return to its usual habitat, may face a crisis of its umwelt. The natural strategy of an organism (population) is the transformation of a new space into a familiar one. Of course, if the characteristics of the new territory that needs to be explored are similar to the characteristics of the original one, then the existing means of interpretation do not contribute to the evolutionary process, but rather, on the contrary, work for the stability and inclusion of new spaces in the range of the species.

Otherwise, if the interpreter encounters problems of interpreting a new environment, for the organism (population) the adaptation of its umwelt to new conditions becomes a matter of survival. New interpretation strategies in this case first expand the umwelt of the organism (population), removing the strict binding to the habitual ecological niche (expanding it and making the organism less specialized), then narrowing it (making the species more specialized), developing new strategies. New interpretations can be reproduced by ecological inheritance, which allows the next generations to further develop the chosen strategy and form phenotypic and genotypic changes. The last stage is usually called allopatric speciation, although as we can see, the reason for this may not be a reproductive barrier, but interpretation strategies, which demonstrates the mutual evolution of the interpreter, his interpretation, umwelt and space as a whole.

A promising direction of this continuation of the study may be the search for "reserves of consumption", as well as the introduction of the concept of "biosemiotic infection of the body", which is the limiting factor in the occurrence of speciation in allopatric speciation.

A promising direction for continuing this research may be the search for “reserves of interpretation”, as well as the introduction of the concept of “biosemiotic stability of an organism”, which is the limiting factor of speciation in allopatric speciation.

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F. W. J. Schelling on Organism and Autopoiesis

Jana Švorcová

Department of Philosophy and History of Science, Faculty of Science, Charles University, Prague, Czech Republic

jana.svorcova@natur.cuni.cz

Martin Vrabec
Department of Philosophy, Faculty of Humanities, Charles University, Prague, Czech Republic

The Biosemiotics book series is set to release a book on *Organismal Agency* by Jana Švorcová and multiple contributors in June 2024 (Švorcová forthcoming). I will not attempt a comprehensive overview of the entire book in this presentation: my intention is to highlight how several philosophers have anticipated concepts integral to the biosemiotic philosophy of the living, especially concepts related to the attributes of agency. I will focus on F. W. J. Schelling, who, in alignment with preceding philosophical tradition (e.g. Kant), opposed the idea that organisms and their actions are entirely determined by external influences. Schelling wanted to arrive at a naturalist explanation of life that would steer clear of reductionism, mechanistic perspectives, or pre-formative frameworks. At the same time, though, he also wanted to avoid any recourse to the concept of a vital force. According to Schelling, organisms have the capacity to meaningfully alter the influence exerted upon them by external forces. He emphasised that living entities persist by actively and continuously maintaining the distinction between Self and the external world. They do so among other things by engaging in metabolic activities, which involve assimilating everything within their sphere of activity for self-sustenance. Living beings exhibit self-constitution and their identity is not derived from the material composition of their bodies but rather from the configuration and specific manner of interacting with themselves and with the external world. They actively ensure their existence through ongoing activity. One can trace a noteworthy resemblance between Schelling's philosophy and the autopoietic approach of Maturana and Varela, which emerged nearly 130 years after Schelling's death, and which is a crucial concept not only in biosemiotics. These two perspectives are strikingly similar, particularly in their emphasis on the self-sustainability of organisms, the implications of dealing with disequilibrium (thermodynamics as a discipline emerged towards the end of Schelling's life), the continual maintenance of organismal boundaries, and the consequent concept of identity. Both approaches also highlight the productivity of organisms in generating products and the cyclical nature inherent in organismal processes. The aim of our contribution is to show the extent to which Schelling's natural philosophy anticipated not only the concepts of autopoiesis but also the biosemiotic concept of agency.

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A canine bio-semiotic history of the city of Harare, 1950s-1970s

Innocent Dande
University of the Free State

This survey focuses on the bio-semiotic history of Harare, the capital city of Zimbabwe between the 1950s and the 1970s. The 1950s were watershed years in which the city's growing white population imported purebred dogs on a large scale as they followed canine fashion trends in Europe. However, dogs that moved out of fashion were frequently dumped into the streets and consequently had to make lifestyle adjustments. Therefore, this study examines the ways in which some stray dogs of Salisbury befriended new humans, understood and reacted to the regulatory authorities such as the police and the pound master. Indeed, both owned dogs and strays were reportedly capable of reading road signs and acting in a manner that avoided congested parts of the city. The paper also examines the influence of domestic African servant on white-owned dogs as some narratives averred that some dogs became multilingual as they responded to commands in English, Shona and Kitchen Kaffir. The 1960s to the 1970s political disturbances affected dogs greatly due to the relocation of many white people to other countries. This contributed to the growing population of stray and street-living dogs in the city. This paper uses cartoons and letters to newspapers to analyse arguments that some abandoned dogs or socially neglected dogs formed their own street-level communities that disturbed human society by their choregraphed barking choirs. I use these examples of dogs' agency to make inference regarding how dogs read signs on road, in the city and the actions police, the SPCA and the pound masters who sometimes detained them. That dogs read and understood sign systems also meant that they communicated with each other and with their humans in the city.

The paper tracks its historical data through the lens of Jaros' three categories of ecological interaction between humans and animals in urban settings, namely zoosemiotic interactions between humans and animals, institutional procedures that mediate the interaction, and cultural representations of these interactions (Jaros, 2018, p. 375).

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Co-presence and Co-localization in the Umwelt: The Semiotic Window

Kalevi Kull
Department of Semiotics, University of Tartu, Estonia

kalevi.kull@ut.ee

Frederik Stjernfelt
Professor, Aalborg University Copenhagen
stjern@ikp.aau.dk

Eva Jablonka and Simona Ginsburg recently described cognition and experiencing through the feature of associative learning, at the symbolic level through unlimited associative learning, relating it to minimal consciousness or subjective experiencing (Jablonka, Ginsburg 2022). From the semiotic point of view, meaning making is the establishment of a sign relation as a precondition to associative learning.

Here we point out some important conditions for creating a semiotic relation. We observe that making an association requires a certain co-existence of the associates. On the one hand, it is co-localization, that is, the synthesizing cognition of co-localized subject and predicate is possible, occurring in a small spatio-temporal window (Stjernfelt 2020). This spatio-temporal window can also be termed the specious present, co-extensive with semiosis or meaning-making (Kull 2018). Such a window is, in other terms, a specification of the „momentary umwelt“ introduced by Jakob von Uexküll. Our hypothesis is that while cultural and biological semiotic systems may evolve and exist over very long periods, the event of concrete meaning-making, on the basis on such systems, occurs in such brief semiotic windows.

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Making sense of our place in the world: in conversation with Pierre Hadot and eco-phenomenology

Wiida Fourie-Basson
Department of Philosophy, Stellenbosch University
wiidabasson@sun.ac.za,
Louise du Toit
Department of Philosophy, Stellenbosch University
louisedt@sun.ac.za

Our contribution to this Gathering falls under the following themes as listed in the call: the implications of biosemiotics for philosophy and the humanities (and vice versa), the link between biosemiotics, Umwelt studies and phenomenology, and some cultural implications following from biosemiotics. We will illuminate core aspects of making sense of our human place in the larger, "natural", world, that emerge from a focused dialogue between phenomenology and biosemiotics.

Our paper consists of two parts. In the first part, we will show how the conversation between eco-phenomenology and biosemiotics leads to a decisive break with classical models of knowledge, including empiricism, idealism, and classical Newtonian models of natural scientific knowledge. The key to this break and overcoming, we argue, lies in a broader, richer, and more ambiguous understanding of the very nature of human (and more-than-human) embodied, intentionally directed, experience of the Umwelt. The "conversation" will briefly be delineated drawing on the work of Merleau-Ponty, Paul Valéry, Stuart Kauffman, and Gerald Edelman.

The second part of the paper introduces the provocative thought of French philosopher and philologist Pierre Hadot (1922-2010), well-known in the English-speaking world for his understanding of ancient philosophy as 'a way of life' and a way of 'seeing' the natural world. In *The Veil of Isis: An essay on the history of the idea of nature* (2006), Hadot expands on the idea of "seeing" nature by tracing the original meaning of the Greek word *phusis*, traditionally translated as "nature", back to the ancient Egyptian goddess Isis (circa 3500 BCE). In the process, Hadot identifies a more contemplative approach to nature in Western thought that stands in sharp contrast to the dominant western approach marked by exploitation and large-scale destruction of natural resources. To emphasise the ancient roots of these two approaches to nature, Hadot dedicates them respectively to Prometheus, who, according to Greek mythology, stole the secret of fire from Zeus to help humans; and Orpheus, the patron of the theogenic poems – i.e., poems about the origin and descent of the gods, the world and hence the birth (*phusis*) of things (Hadot 2006:96-97). The two approaches correspond to, and figuratively represent, humans' fundamentally and unescapably ambiguous relation to nature (2006:97).

In this paper, we will argue that *The Veil of Isis*, and specifically Hadot's understanding of the original meaning of *phusis* as the "unexplicable surging-forth of reality", has not yet received the critical attention it deserves, and we want to offer it as an example of what Kauffman and Gare call the "recovery of life and humanity" (2015). We will further argue that the original meaning of *phusis* can only be fully understood within the context of the Plotinic henology and Plotinus' doctrine of the three hypostases (that of the One, Consciousness, and Soul). In the context of Neoplatonism, this understanding of *phusis* reveals a deep-seated respect for nature which connects us to a larger universe through a cosmic conscience and awareness of the whole of nature of which humankind, and its special case of 'art', is an inseparable part. From this understanding flows insight into the legitimacy of an aesthetic (Orphic) experience and knowledge of (our place in) "nature". In Hadot's words at the end *The Veil of Isis*, what he attempts to revitalise from the Western ancients is "an experience that consists in becoming intensely aware of the fact that we are a part of nature, and that in this sense we ourselves are this infinite, ineffable nature that completely surrounds us" (2006:319). We suggest that this kind of experience of ourselves as part of the living whole holds normative implications for how we *should* relate to the whole, the kind of moral obligation the fragility and interdependence of the whole imposes upon us as fundamentally and inescapably natural-and-moral beings.

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Exploring Predictive Processing from the Perspective of Semiosis

John H. Schumann
Prof. Emeritus, UCLA
schumann@UCLA.edu

In both neuroscience and cognitive science, there has been a strong interest in the concept of predictive processing. In biosemiotics, the processes of choice and the relevant next seem to have some qualities that are similar to those of predictive processing.

Keller at all. (2018) argue that in predictive processing, bottom-up sensory input produces a representation, with another part of the brain deciding how to act on that representation. In this way, a general model of the world is used to predict sensory input.

The authors suggest that predictive processing operates in many different regions and circuits in the brain, and that it may be a "basic computational primitive implemented in different variance throughout the brain." (431) They also suggest that predictive processing models promise to bring cognition, perception, action, and attention together within a common framework. (431)

In this presentation, I will discuss the work of Kalevi Kull on the semiosis of "choice," "interpretation," "decision-making," and "scaffolding" and the work of Donald Favareau on the "relevant next", "the adjacent possible", and "the wave function of possibility" in relation to the concepts of "predictive processing" and "free will". These two perspectives will also be discussed in relation to recent thinking on inherited biological biases that may affect our choices and predictive processing.

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The concept of Umwelt between Uexküll and Husserl: agreements and disagreements towards an ontology of life

Juan Alberto Bastard-Rico
Facultad de Filosofía y Letras, Benemérita Universidad Autónoma de Puebla (BUAP)
albertobastard.87@gmail.com

Undoubtedly, the Husserlian phenomenology formulated after the transcendental turn, more specifically as articulated in Husserl's later works, provides solid theoretical foundations for outlining an ontology. More specifically, we can find good grounds for the formulation of an ontology of life, considering that one of the ways to introduce his method of transcendental reduction is precisely ontological, which "starts with an analysis of the givenness of a specific ontological region" (Zahavi, 2003, p.50). According to this method, we could characterize the mode of being of the living based on how it constitutively appears to consciousness, *i.e.* as psychic nature: "It is in connection with what is material that the psychic is given to us. Among material things there are certain ones [...] which are soulless, "merely" material. On the other hand, there also are certain ones which have the rank of "Bodies," and as such display a connection with a new stratum of being, the psychic stratum" (*Hua* 92). These psychic "bodies" establish relationships with their environment that are not reducible to mere mechanical relationships; they are bodies around which meaningful worlds —*i.e.* surrounding worlds (*Umwelten*)— are constituted. In this sense, the concept of *Umwelt* is crucial in Husserlian phenomenology to account for these living, subjective bodies, although his reflections focus on the human body. Furthermore, although at various points in his work we encounter phenomenological reflections on non-human living bodies, his analyses are theoretically limited as they are only framed from a first-person perspective. In this sense, it can legitimately be argued that Uexküll's theory of *Umwelt* can assist in achieving an ontology of life in a deeper way, as Uexküll's reflections are more profound regarding living bodies —beyond human— around which a surrounding world is woven.

Even though Husserl and Uexküll were contemporaries, there do not seem to be direct theoretical influences between both thinkers. However, the use of the notion of *Umwelt* in their respective works and the parallels in understanding this very concept are noteworthy. If for Husserl the surrounding world is the world of which the personal self —human or non-human— is conscious, for Uexküll the surrounding world is the world of perception and action of every animal organism at least. In other words, Uexküll's doctrine of the surrounding world allows us to more successfully extend the scope of Husserlian phenomenology to non-human living bodies to deepen our understanding that these are also subjective bodies of experiences, in front of which phenomenal worlds also unfold. In this sense, this presentation aligns with Tønnessen's idea that "it makes sense to propagate a variant of phenomenology under the label 'Uexküllian'" (2015, p. 361). The bet of this presentation is that the concept of *Umwelt*, as long as it is coextensive with the works of both theorists, can serve as a bridge between Husserlian phenomenology and Uexküllian bio-philosophy to propose from them an ontology of life. The aim of the talk is therefore to analyze the points of agreement and disagreement between both proposals based on the concept of *Umwelt*, in order to begin to propose ideas that point towards an ontology that accounts for the living being as a type of entity which appears, in its phenomenality, as a subjective —psychic— and semiotic body that engages in meaningful relationships with its environment.

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An ecosemiotic approach to translating animals into human thinking: a look at animal advocacy in the global South

Xany Jansen Van Vuuren
University of the Free State, South Africa

jansenvanvuurenx@ufs.ac.za

In many global South contexts, animal and human lives are often integrated, performing various roles together in transport, hunting, protection, herding, farming, and companionship. However, often the animals' subjective agency and experiences in these relationships only become a consideration if it directly affects human safety, welfare, wellbeing and health. This is made even more complex and, at times, problematic by the diversity of approaches to the place and purpose of animals within human thinking (Stibbe, 2001).

Furthermore, while research in animal advocacy and related fields such as veterinary science, behavioural science, ethology and biology continue to provide new findings on the health, wellbeing, welfare and agency of animals, anecdotal evidence points to a chasm between the acquisition, transmission and application of the knowledge produced by these findings, with serious impacts on the wellbeing of the abovementioned domesticated animals.

Against this background, this paper asks if approaching animal advocacy work (such as animal welfare, animal conservation, and animal activism, amongst many others) as a process of translation, and subsequently regarding animal advocates and animals as 'translators' can actively bridge the aforementioned chasm, thereby improving the wellbeing of domesticated animals. With reference to developments in fields such as ecotranslation (Cronin, 2017) and ecosemiotics (Maran, 2020) it will present data collected from a variety of South African animal advocacy organisations in order to answer the abovementioned question.

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Photography in the ecosemiosphere: Hermeneutic reflections on the non-verbal translation of the 'veld'

Helen-Mary Cawood
Department of Philosophy and Classics, University of the Free State, South Africa
cawoodh@ufs.ac.za

The focus of this paper is on hermeneutically analysing how photography, as a non-verbal translation of human experience, is able to translate complex and interconnected experiences of loss of the non-human other, namely the South African 'veld', within a conception of the ecosemiosphere, which is "… a semiotic system comprising all species and their umwelts, alongside the diverse semiotic relations (including humans with their culture) that they have in the given ecosystem, and also the material supporting structures that enable the ecosemiosphere to thrive." (Maran, 2021, p.524)

To go about this, Michael Cronin's (2017) framework of eco-translation (i.e. the process of capturing the particularity of the context and unique identities of different relationships, including the non-human other, but also being able to embed them and thus translate them within the constellation of ecological interconnectedness) must be laid out. Cronin also articulates the importance of developing a paradigm of political ecology (i.e. "the study of the social, cultural, political and economic factors affecting the interaction of humans with other humans, other organisms and the physical environment" [Cronin, 2017, p.2]). To develop a political ecology for the South African context, the work of Louise Green (2020) will be used, which arguably both complements and extends these arguments by Cronin, especially with regard to her own articulation of the need for a critical epistemology for translating, interrogating and critiquing differing knowledges. Aside from the context-specific inclusion of the unique characteristics of the South African postcolony, Green's framework of the 'constellation', as drawn from Walter Benjamin, has a number of similarities to eco-translation, specifically in relation to the crucial need to confront environmental and human distress in Anthropocene by "assembl[ing] research from different orders of knowledge to address a crisis that brings into proximity geophysics, history, habit, culture, and capital." (Green, 2020, p. 29)

From this integration of the theoretical frameworks of Maran, Cronin and Green, which could broadly be called a 'constellation of eco-translation', the potential for the non-verbal process of photography to translate differing experiences of the 'veld' (i.e. open rural and semi-rural South African environments such as farmland and grassland) must be considered. These differing experience refer to 1) the 'veld' as a an 'escape' from the pace of modern life, 2) the veld as a necessary dwelling space for homeless people in the city, and 3) the veld as habitat for the indigenous fauna and flora that flourish in these spaces.

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Applied Umwelt theory in the context of descriptive phenomenology and phenomenological triangulation

Morten Tønnessen
Professor of philosophy, Department of social studies, University of Stavanger, Stavanger, Norway
morten.tonnessen@uis.no

In earlier work, I have argued that a genuine ´Uexküllian phenomenology´ can be derived from the Umwelt theory of Jakob von Uexküll and that such a phenomenology is capable of accounting for the subjective experience of both humans and animals. With its foundation in contemporary biosemiotics, such a modern, empirically informed phenomenology is particularly relevant for the study of human-animal relations and interaction in societal and ecological settings. In a recent chapter (Tønnessen 2023) I have outlined a scientific method for conducting qualitative studies of human and animal lifeworlds by introducing a semiotically informed descriptive phenomenology. While descriptive phenomenology in its current forms is typically only applicable to the study of human lifeworlds (Giorgi 2009), a reiteration of descriptive phenomenology that draws on Umwelt theory can be designed to be non-anthropocentric and pluralistic. In this paper I elaborate on a more-than-human descriptive phenomenology and explain how it can be applied within the humanities and social sciences as well as in a natural science context. Furthermore, I will discuss how Umwelt theory can be made use of as part of a methodology of phenomenological triangulation, in which 1st, 2nd and 3rd person perspectives are combined in studies of one and the same study object. This methodology draws on ideas developed in cognitive semiotics by Jordan Zlatev, Göran Sonesson, and others (e.g. Zlatev 2012). Overall, this paper aims to contribute to integrating biosemiotics and phenomenology and demonstrating the relevance of Umwelt theory for phenomenology, and vice versa.

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Natural contradictions

Kalevi Kull
Department of Semiotics, University of Tartu, Estonia
kalevi.kull@ut.ee

Building on previous work (Kull 2015), I am going to make some further generalizations.

It is widely accepted in physics that the law of non-contradiction applies universally in nature. This is equivalent to saying that paradoxes can appear in the language of description and not in nature itself. A reason to accept the law of non-contradiction is the principle of explosion, which states that anything follows from a contradiction. In terms of physics, a contradiction would destroy determinism and predictability.

Contradictions require propositions to exist. However, if natural propositions exist in natural living systems (as argued by Stjernfelt 2014), then it is obvious that they can at least sometimes be contradictory. This finding has extraordinary implications.

Principle of non-contradiction says that something is not what it is not. But this "is not" – is the definition of sign: sign is what it is not (otherwise it cannot mean anything). Thus the correct definition of sign should be contradictory. Semiosis is defined as the process or event of meaning-making, or synonymously, interpretation. There to be interpretation means there should be more than one way to interpret, the alternative (i.e., contradictory) possibilities, which means some freedom of choice between interpretations. Contradiction not only implies freedom, contradiction is its source.

We also observe that contradiction requires the simultaneity of incompatible propositions. This cannot happen in physical time, it requires the now, the present with some duration (which was not clearly noticed by Hegel – see Hahn 2007).

This means – physics is about non-contradiction and determinism, semiotics is about contradiction and freedom. The essence of sign is in its logically contradictory nature. Until the natural contradiction is not included into the model of semiosis, the nature of meaning cannot be solved. The entire world outside of meaning-making (i.e., the dead matter) follows precisely the law of non-contradiction. Physical world itself is both meaningless and non-contradictory – and accordingly non-free. Without paradoxicality there would be no freedom nor creativity in the world.

Commonly, the fundamental contradictions are hidden (or smoothed or untied). Disharmony has then turned into a kind of harmony, contradiction being somehow solved. The new has developed into a habit. But the emergence of cognitive harmony and behavioural habit always requires an earlier paradox. Cognition is fundamentally paradoxical – only the deep incompatibility allows it to be cognition. (The incompatibility semantics developed by Robert Brandom and Jaroslav Peregrin may be applicable here.)

Meaning-making begins with incompatibility, with a non-fit, and then finds its ways of fitting, towards a more perfect and multiple semiotic fitting through the choices that are possible due to plurality of meaning – this is the aesthetic process as such.

It is proposed to discuss the conditions of the natural paradox in living cell.

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On the “Humanisation” of Language in the Categories of Biosemiotics: Jan Niecisław Baudouin de Courtenay

Ekaterina Velmezova
University of Lausanne (Switzerland) – University of Tartu (Estonia)
ekaterina.velmezova@unil.ch

Jan Niecisław Baudouin de Courtenay (1845-1929) was one of the most famous and versatile linguists in Central and Eastern Europe in the late 19th and early 20th centuries. His scientific heritage is so diverse that it contains, at least in germ, almost all of the central topics dealt with by linguistics over the course of the last century and that they still often deal with today. One of these was the theme of the "humanisation" of the human language (in the sense of its origin and derivation from the “primitive” and "animal" state)—that is, the question of its “development” and “evolution” including attempts to predict its future state. Reasonings of this kind were no exception in the era of Baudouin de Courtenay. They were also present in the works of linguists working in various countries at the time: Otto Jespersen (1860-1943), Nikolai Marr (1864-1934), Hugo Schuchardt (1842-1927), Dmitry Ovsyaniko-Kulikovsky (1853-1920) and others. Analyzing the works of Baudouin de Courtenay devoted to the question of the “humanisation” and the future evolution of human language, in our paper we will try to answer the question of how much the topic of “humanisation” of language, which involves the question of boundaries between animal language-*langage* and human language-*langue* and which is of interest to modern biosemiotics (see the problematisation around the “linguistic threshold”), was developed by Baudouin de Courtenay in categories which today can be considered to be (bio)semiotic (sign, iconicity, arbitrariness, structure/system, intentionality, etc.). These topics seem interesting not only because one of the historical roots for biosemiotics comes from (general) linguistics, but also because, for several years (1883-1893), Baudouin de Courtenay worked in Tartu (which at that time was called Dorpat). Both during this period (when, in particular, Jakob von Uexküll studied at the university there) and later, Baudouin de Courtenay could therefore be familiar with the reflections of the “holistic orientation”, which gave rise to one of the trends in (bio)semiotics in the 20th century.

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Bio-semiotic-logic: meaning and order

Tim Ireland
Sheffield School of Architecture
The University of Sheffield, UK.

t.ireland@sheffield.ac.uk

The concept of order tends to refer to classification and taxonomy, whereby what a percipient observes is arranged into meaningful groups, assemblies or forms that congregate similar articles and in so doing distinguish differences between variety, so that one's view of things is optimised. Consequentially, phenomena are organised in series to form hierarchies, classified according to similarities to distinguish individuality. Objective criteria separate phenomena into classes and families. This distinguishing of criteria has informed human knowing driving not only how we perceive the natural world (for example the tree, or web, or life) but influencing cultural conceptions, and transferring to how we make our place in the world. The concept of compartmentation, that defines order, defines how we perceive the world spatially, extending even to how we see the world, and space (*viz*. Newton and Plato) as something contained, or containing. Indeed, logic is essentially concerned with creating order. As the study of the laws of thought or correct reasoning (understood in terms of inferences or arguments) to explain the world, through logic we seek to explain the world to understand it and though understanding know our place. Thus, logic is intrinsically concerned with order, for to define/answer fundamental questions of existence one seeks to "iron-out" uncertainty to achieve coherence between self and other.

In this paper I will look to Christopher Alexander's definition of "the nature of order" (Alexander 2002). A mathematician and architect, Alexander argues life, and architecture, is underpinned by order – that architects generate order (societal function), and that it is through order that beauty arises. This is somewhat akin to Uexküll's notion of perfection (Kull 2022 and Ireland 2022). He presents a broad notion of life, whereby all things have some degree of life and organisms (being wholes) are a special form of life. He argues it is the degree of wholeness that we perceive in something, and that this wholeness transfers to "beauty". Alexander claims a "new kind of objectivity", one which transcends the Cartesian distinction between objective and subjective, on the premise that how we feel is deeply rooted in perception of "living structure". Claiming his notion of *the nature of order* bridges the gap that Alfred North Whitehead called "the bifurcation of nature" he unites objective and subjective on the basis that beauty, and thereby order, is geometrical, which gives rise to structure. I counter Alexander's proposition that the essence of beauty, and thereby the nature of order, is geometrical. I will propose Biosemiotics offers fertile ground for a universal definition of order, and that such a definition would reinforce Alexander's claim, on the premise that Peirce's semiotic logic (being underpinned by feeling) recognises objective and subjective aspects of phenomena in perception, is fused in his triadic model. I will therefore propose, or question the potential of, a biosemiotic definition of order and map out what this might be.

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