

Multiplicity and *Welt*

Yogi Hale Hendlin

Department of Medicine
University of California, San Francisco
530 Parnassus Ave., Suite 366
San Francisco, CA, 94143–1390
USA
e-mail: yhh@yogihendlin.com

Abstract. This article interprets Jakob von Uexküll’s understanding of different beings’ *Innenwelt*, *Gegenwelt*, and *umwelt* through Deleuzian insights of multiplicity, context, and particularity. This Deleuzian interpolation into Uexküll’s insights acknowledges the absence of a unitary ‘human’ view of nature, recognizing instead that plural viewpoints of cultures, subgroups and individuals understand and interpret natural signs variously not just because of ideology but because of physiology and contrastive fundamental ways of accessing the world. Recent formative research in comparative neurobiology suggests that universal anthropological claims of cross-cultural semiotic similarity are incorrect.

Interpreting biosemiotics as the investigation of apprehending the *Innenwelt* of radically different others (species), such semiotic understandings themselves are not necessarily generalizable between different members of the same species in a group, same-species groups in different natural cultural contexts, or even (as with humans) the same animal at different points of time (based on new understandings, patterns, or events of meaning altering interpretations of self and events). Conjoining Deleuze’s insights of the complexity of multiplicity with Uexküll’s scientific-imaginative system of comprehending other creatures’ ways of understanding their world offers an increased self-reflexivity regarding the simultaneous levels of actual semiotic activity for biosemiotic inquiry.

Keywords: biosemiotics; Gilles Deleuze; Jakob von Uexküll; functional circle; different levels of semiosis

In *Darwin without Malthus*, chronicling the non-individualistic reception of Darwin’s theory in Russia, Daniel Todes (1989: 33) recalls scientist P. A. Bibikov’s observation that evolutionary competition occurs along three distinct but concurrent faultlines: “struggle within a species, struggle with other species, and struggle with the physical conditions of life”. All living organisms spread without limit, according to Malthus;

but they must also reckon with inhibitory limits converging from these three sources. The pressures of conspecifics, other species, and environmental factors occur simultaneously *but not separately*, diffracting the particular influence of each into an enmeshed impression for the organism. To assign primacy or ultimate cause to any of the given interacting forces composing the pattern of struggle would be to miss the important contributions, as well as the cross-interference, of the other vectors.

Analogously, I will suggest here that the functional cycle (*Funktionskreis*, *sensu* Uexküll) of each organism does not just emerge along a single communication channel (such as pheromonal or aural), but that it is the diffracted result of multiple coincident interpenetrating layers of semiosis. This biosemiotic question of recognizing and accounting for the multiple colliding modes of semiosis – that, depending on how one looks at it – occur serially and integrally, has seldom been considered.¹ Yet, at any given instant, the sum combination of signals humans and other organisms encounter, internally and externally, is multiple and these interact/interfere with one another yielding a unique synthesis of cohesiveness constituting the organism's lived experience. The interactivity of semiotic phenomena produce a sensorially overdetermined experience for the organism (i.e., more is going on than can be perceived, consciously or otherwise), and an underdetermined individuated sign accessible to reified analysis (i.e., analysis of any sign cannot possibly take into account the total influencing/interceding diffractions resulting from sign interactions, both in parallel and across channel levels).

This article takes up Jakob von Uexküll's functional cycle model of biosemiotic processes, and fractalizes it à la Deleuze and Guattari. As a preliminary investigation of the biosemiotic implications of complex systems theory and allied philosophies of complexity, it necessarily emphasizes the plurality of processes that willy-nilly join forces to create what we perceive to be the *Weltbild*: reality-as-it-shows-up-to-us as a collision of the *Umgebung* (unconstricted reality) with our perceptual-sensorial and categorical-judgmental primed frontiers. These processes contain both stochastic yet never *merely* random (reactive) as well as purposeful (intentional) elements. While my intent is to raise the question rather than offer a set solution describing how to make sense of the multiplicity of intersecting semiotic channels that together form the functional circle for each organism, these observations can perhaps inform future biosemiotic analyses.

¹ Perhaps, this oversight is because of the difficulty of cataloguing and then extricating one communicative channel from another, which I do not suggest can be finally accomplished.

Welt and the functional cycle

Biosemiotics resists the simplifications sometimes found in Anglo-American analytic frames of nature that reduce the multiplicity of meaning-bearing semiotic forms to a specialized linguisticism (cf. Davidson 1984). Philosophies espousing logocentric models of communication eschew specialized (sub)cultural discourses and communicative modes. The effect, as Derrida (2008) indicates regarding his cat, is that, following anthropocentric models of regard, we incorrectly refer to animals (and other groupings) merely qua representatives of a species or members of a category, rather than addressing the interspecies other in its irreducible particularity and context. In treating the other like a token of a type instead of a semiotically-capable being, we miss the relational aspect of the interactive event, as well as the opportunity to learn the nuances of meaning for the other more thoroughly. The task of biosemiotics involves reworking semiotics itself to cultivate sensitivity to the various unexpected semiotic channels at work.² Biology already is attentive to these semiotic channels; and biosemiotics cannot only diagram how signs affect agents, and how and under what circumstances agents effect what signs, but also offer plausible models for how one might go about communicating with nonhuman others according to their particular ways of knowing the world.

Jakob von Uexküll's (1909; 1928) understanding of different beings' *Innenwelt* (the physiological self-guidance system), *Gegenwelt* (the "counter-world" in the animal's nervous system that mirrors external impressions), and *Umwelt* (the external world as it shows up to a given organism) gave biosemiotics a preliminary model for understanding how signs emerge through the assemblage of semiotic events forging the multiplicity, context, and particularity of each sign-milieu.³ One of Uexküll's essential findings was that not just humans, but all animals – and extending his realization, all organisms – necessarily engage in categorization. Organisms take the infinite variations of stimuli and chunk them into schemata of characteristics that allow for appropriately responding to signs *as if* they were members of a category (tokens of a type), rather than purely as unique instances. Uexküll's interest in worlds (*Welten*) – inner worlds, mirror worlds, and external worlds, as well as the more general but never perceptible *Umgebung* (surrounding, reality-as-it-is) – accords to realizing the individualized moment of experience as the convergence of the different perceived worlds. The interaction of various sign systems, internally and in conjunct outside the organism's body, composes the resulting impression known as experience.

² Thus, playing on their homophony, Derrida articulates the need to be self-reflexive about what we call *animaux* (animals) being really but *animots* (human words for the entities we name animals).

³ On this point, Uexküll (1928: 100) writes: "It is not possible to write an animal's biology unless one has first studied its function circle from every side".

Uexküll (2010) named those signs perceived by the organism (the input) perception signs (*Merkzeichen*), and those signs which the organism emanates affecting the world (the output) action signs (*Wirkzeichen*). He even composed a schema, the functional cycle, to describe the relationship between receptive perception and responsive action. Yet Uexküll (1928) tends to paint perception signs to be a product of the organism responding to external stimulus (or set of stimuli) that have surpassed a given perceptual threshold, rather than positioning stimuli recognition as a type of fluid categorization. Though some organisms have a broader range of improvisation and spontaneity in modulating responses in reaction to shifting waves of internal and external semiotic movements, Uexküll for the most part concentrates on more rigid forms of perceptual funnelling and the predictability of the functional circle.

While Uexküll (1909: 76) does refer to the inner world of the sea anemone as not a “unity, but at least a trinity,”⁴ due to the lack of a synthesis of its three separate non-coordinated nervous systems, this is the exception in his work rather than the rule. In his discussion of the various “tones” or states of a sea anemone for the crab interacting with it – its “protective tone” as it provides defence against squids, its “dwelling tone” when the crab regards it as potential shelter, and its “feeding tone” as the crab feeds on it – Uexküll (2010: 93) shows how the crab regards the anemone as a different armature of its environment according to the precise search or effect “image” motivating its interaction. Here, the anemone shows up differentially to the crab according to the mode or mood predominant for the crab at that time. This situational specificity marks outside subjects and objects in one’s *umwelt* as taking on valences or colourations according to the states of the acting organism.

In the musical terms Uexküll employs, the metaphor would be: to identify a tone on the outside, one has to be attuned to its resonance. And such tuning, like a string on a lute, goes in and out of pitch according to usage, weather, and other (not always controllable or predictable) conditions. That is, the threshold of perceiving and taking stimuli as particular instances of stimuli (having the stimuli surpass some minimal threshold) sways in tandem according to the current conditions of the sum of preceptors making up the threshold in the first place. The same stimuli will show up (be catalogued) differently for different organisms, and even the same organism at different points in time. All of this depends on the confluence of states which respond to the different signals received, within and out.

While I do not wish to exaggerate the incompleteness of Uexküll’s diagnosis of the complexity of signs operating at intersecting levels of the functional circle (e.g., Uexküll 1928: 100–104), the interplay between interior and exterior stimuli or states seems to be elided in his model. As Kull (2002: 332) writes on the endosemiotic

⁴ “*Es ist die Innenwelt einer Aktinie keine Einheit, sondern mindestens eine Dreiheit.*”

functional circle: “Due to the complex inner structure of organism[s], consisting in a large number of cells and many tissues, all being in a communicative relationship, there can be perception–operation cycles that are entirely embedded in the body”. What this all amounts to, is that the functional circle (or cycle) occurs not just along a single dimension, entailing a definite parameter unintegrated into a larger system. Rather, simultaneous sign-cycles (*Funktionskreise*) operate in parallel, informing and interfering with the semiotic processes of each ‘cycle.’⁵

Endo- and exosemiosis

One of the basic distinctions biosemiotics makes is between *endosemiosis* (all semiotic interactions occurring within the organism) and *exosemiosis* (the totality of semiotic interactions that take place between the organism and its environment, the traditional domain of the functional cycle). While both of these types of interactions are prevalent as contrasting types of interactions for all organisms, each of them is always embedded in processes influenced by the other. Many, if not all endosemiotic interactions also have subtle or direct exosemiotic effects (*Wirkmale*). Likewise, a sign received by an organism (*Merkmale*) will necessarily have endosemiotic consequences. Even single-cell organisms undergo both endo- and exosemiosis (Hoffmeyer 2008). Of course, due to enzymatic activity, the distinction between endo- and exosemiosis itself is not as cut-and-dried as this distinction *prima facie* sounds (Kull 2009). The porous semiotic-enzymatic activity that travels between cell barriers, although chemical in *content*, is not merely an automatic chemical signal “since it has to be remembered” and has a history as an enzymatic process which evolves and can dissipate (Kull 2009: 19). Thus, while allowing us a greater amount of analytic specificity to describe and observe the desired (endo- or exo-) phenomena at hand, the longer we attend to the “feed-forward” lifecycle of the sign processes (Kull *et al.* 2011: 73), the more inextricably Möbius-configured they become.

For more complex organisms, like fungi, plants and animals that are formed of differentiated cell-types (i.e. hepatocytes, red blood cells, neurons), we encounter yet another form of complexity. The fact that individual cells work together with their *causae finalis* yoked to the larger organism (e.g., the dog or the human) further complexifies the semiotic picture (cf. Juarrero 1999), because while we cannot ignore the individual (endo- and exo-) semiotic processes of particular cells making up the

⁵ These multiple simultaneous levels exist to the extent that we can meaningfully, say, separate out the individual semiotic processes of an animal’s cells amongst each other as a form of *micro* endosemiosis that is distinct from the more *macro* endosemiotic processes of that animal, such as digestion and alertness in responding to nearby prey.

larger organism (Uexküll *et al.* 1993), it would be equally erroneous to see (what I am calling) micro-endosemiosis as preeminent for the larger functional circle of the higher-level composed organism. Of course, in alignment with Heidegger's remarks on hammers – that we only deliberately notice the hammer (or other equipment) as separate objects when they malfunction, thus requiring our extra (displacing) attention (Heidegger 1962[1927]) – most of the intervening semiotic channels or steps that compose the final experience for the organism lie behind a veil of complexity and indeterminacy to which the organism itself has no direct voluntary access.

The promiscuity of signs

Signs are no more stable than the set of conjunctions that maintain them. Stjernfelt's (2014: 296–297) distillation of Peirce's dictum that signs evolve raises a fundamental question for semiotics: when is a sign different from its previous instantiation? What is the mark distinguishing its change? Does any sign exactly match a future or a previous sign? When does it function differently from a similar sign?

The question of what precisely is “a difference that makes a difference”, as Bateson (2000: 318) calls it, is explicated in Karen Barad's elaboration of Donna Haraway's notion of diffraction. Differences for Bateson are always immanent, ensconced in an environment that provides the soil for their appearance.⁶ The interpenetrating wills, acts, and events producing what we take to be the resultant reality, Haraway (1992: 318) presents as “diffraction, [...] the processing of small but consequential differences. The processing of differences, semiotic action, is about ways of life”. Barad (2007: 36) specifies: “Diffraction is not merely about differences, and certainly not differences in any absolute sense, but about the entangled nature of differences that matter”. Bateson's original formulation of differences as comingled events that produce changes in systems and behaviour presages Barad's notion of diffracted differences which formulates her viewing ethical, ontological, and epistemological dimensions of concrete practices as inextricably linked. Synthesizing these dimensions of events, one can relationally interpret the multiplicity-all-the-way-down thesis of emergent coherence of multiple enmeshed semiotic threads.

Relational theories of agency or cognition emphasize the embeddedness of semiotic events in physical situations created compositionally, rather than understood as heroic individualist acts (cf. Plumwood 2002 and Wilson 2002, respectively). Even the *event* itself, the phenomenon that we name as a thing that is separate from other things in

⁶ Or, as Stjernfelt (2014: 297) describes it: “The signs and minds of man, animals and other possible thinking beings must evolve in order to conform to the structure of thoughts. Such intrinsic structures of thoughts, however, are not conceived of in isolation from the world”.

the wave of space and time which is always already in the flux of becoming, cannot be analysed outside of the “background” or milieu from which it occurs. Deleuze and Guattari get to the gist of this illusion of total independence. On the one hand, everything arises from something; nothing is radically *sui generis* or autochthonous:

the *event* itself appears (or disappears) less as a singularity than as a separated aleatory point that is added to or subtracted from the site, within the transcendence of the void or *the* truth as void, without it being possible to decide on the adherence of the event to the situation in which it finds its site (the undecidable). (Deleuze, Guattari 1994: 152, emphasis original)

The analytical operation of calling out an instance of flux as an individual event, phenomenon, or being is to mark distinctions without this analytical carving of nature at its joints necessarily turning into a reified stringent separation of agencies.⁷

On the other hand, “Every creation is singular, and the concept as a specifically philosophical creation is always a singularity” (Deleuze, Guattari 1994: 7). That is, not only do we contend with the question of where nature’s joints actually are when we wish to extricate individuals from patterns, *mélanges*, or wholes (Varzi 2011), but we also contend with the fundamental incomparability of all phenomena. Aristotelian logics of identity (i.e., $A=A$) never completely hold – except ideationally. Material, non-abstract phenomena instead form identity approximations of $A\approx A'$. Deleuze and Guattari maintain, however, that not only do material forms take this singular shape, but conceptual groupings do as well. That is, in reworking the Uexküllian notion of thresholds of perception, we must confess that declaring stable categorizations of phenomena into classes as an automatic or given process is indeed a simplification.⁸ Real organisms, as intimated above, may react variably to the same objects at different points in time or at the same point in time dependent on other conditions mediating their classificatory capabilities.

In between the extremes of holism and isolationism, utter sameness and irreconcilable difference, the nuances of signs metamorphose static particles of essences into waves of becoming.

⁷ The quandary of whether nature has joints at all to be carved, whether there exist natural kinds, is perennial in philosophy (Varzi 2011; Hacking 2006; Dupré 1993), but ultimately would unconvincingly require access to some Platonic level of epistemic insight to solve. The question of natural kinds is one of the fundamental questions of science studies. I agree with Hacking’s (2006: 1) summary: “Some classifications are more natural than others, but *there is no such thing as a natural kind*”. [Hacking’s 2006 lecture *Natural Kinds: Rosy Dawn, Scholastic Twilight. Lecture at the Royal Institute of Philosophy* (London, pp.1-35) is available at: <http://www.ianhacking.com/PDFs/NK%20-%20Hacking%20with%20footnotes.pdf> (last access 3.03.2016).]

⁸ While Uexküll at times appears to have been savvy to how categorization too grows and moves with moods and states, contemporary biosemioticians have often (over)stressed his formalization of animal categorization according to a more stable and thus less improvisational architecture.

Beyond the 'encoding' metaphor

One of the virtues of the Peircean-Uexküllian semiotic model, as opposed to Saussure's, is the attention paid to *interpretation* as always at play in the process of meaning-making and intelligibility. Like hermeneutics, which Gadamer accents, assumes misunderstanding as the *prima facie* starting point rather than correct understanding, biosemiotics understands the role of interpretation as central to accurately assessing meaning, rather than assuming a dyadic relationship between object and subject.

The digital code metaphor of language that ascended with first- and second-wave cybernetics theory led to Chomsky's notion of a universal grammar, and, regarding animals and to some extent humans, it constructed a mechanomorphism – viewing living beings in the visage of the ordering and functioning of machines. Fodor's (1975: 109) linear model of communication, for example, relies on an digital code model, supposing that “we have communicated when you have told me what you have in mind and I have understood what you have told me”. Ferretti and Adornetti (2014: 30–32) call this the ‘code model of communication’, which, to generalize, supposes a *mentalese* converted into the medium of language translated back to mentalese in the other person (Pinker 2007). In this model of communication, one either receives or does not receive the signal, with understanding being a binary rather than a banded phenomenon. Cognitive pragmatics charges such literalist cybernetic models of communication as concentrating only on the semantic content rather than the context, the intention, or the meaning of communications (Ferretti, Adornetti 2014).

As Hoffmeyer (2011: 59) writes: “Digitality in the life sphere assures the sharing (objectifying) of functions (and, in the human case, ideas), and thereby also their conservation through time”. Digital signs are but a part of the larger semiotic story. The plural types of signs (digital and analogue) occur simultaneously at various levels of semiosis (DNA, cell, organism). While digital communication and analogue communication types can be applied to the same phenomena (from an external versus an internal or first-person view), digital codes pass on information but do away with the singularity of interpretation which gives rise to newness and evolution (Neuman 2011). The liveliness of signs in working on the interpretant for that interpretant to become a sign for *another* interpretant, hints at the reproductive rather than merely duplicatory power of signs. Biosemiotics does not merely deal with the copying or exact translation of codes, but brings the biological insight that the interpretive action in the forwarding of signs gives a trajectory to the evolution of signs indicative of life.

Extraction and abstraction

Recognizing the decentred nature of agency is inherent in ascertaining the complex nature of reality. Reductionism's great strides in applied science have come at great costs not only to respecting the life of beings, but also at the cost of knowledge of the nature of reality itself. In many ways, veridical truth has been sacrificed at the altar of productivity. Just as Deleuze and Guattari understand that each philosophical system speaks *past* rather than *in conversation* with other systems,⁹ the disciplinary boundaries of biology, chemistry, and physics that separate these fields from semiotics preclude acknowledging the lush flows of emergence coursing through the interstices. This almost fantastic notion of the decentralized self comes to the fore in Deleuze and Guattari's (1994: 183) claim that "the being of sensation is not the flesh but the compound of nonhuman forces of the cosmos, of man's nonhuman becomings, and of the ambiguous house that exchanges and adjusts them, makes them whirl around like winds".¹⁰ This is echoed in Kull (2011: 116): "The principal feature of semiotic reality is the multitude or plurality of any object in it".

Object-oriented ontologies (stemming from Bruno Latour's Actor-Network Theory) also aim to complicate the subject-object divide by imbuing nonhumans with agency. Bennett (2010: xvi) "emphasize[s], even overemphasize[s], the agentic contributions of nonhuman forces (operating in nature, in the human body, and in human artefacts) in an attempt to counter the narcissistic human reflex of human language and thought".¹¹ But what can this story of co-agentic self-making and experiencing say for nonhuman ontologies?

While Uexküll recognizes the interiority of nonhumans in a way that both joins imagination and science, he fails to attend to the specificity of each member of that species. He begins his analysis not of *this* bee, or *that* dog, but by generalizing the species' possibilities, its sense organs, its way of being in the world *qua* species – a good place to begin, to be sure, but perhaps not the final destination. What Deleuze

⁹ One could think of Niklas Luhmann's (1995) idea of subsystems unable to communicate directly with one another because they are running separate programs. Such subsystems can only influence each other through resonant events in one subsystem that happen to touch on relevant codes of another subsystem.

¹⁰ One can also find similar claims of shared agency, or the non-exclusive ownership of one's unified identity in Merleau-Ponty's phenomenology.

¹¹ Where object-oriented ontologies go wrong, however, is in their utter disregard for the difference between biota and abiota, or more importantly, what David Abram refers to as the distinction between the born and the built. Their lack of conversation with the natural sciences also unfortunately does not afford much of a possibility of an alliance between biosemiotics and the well-meaning but misdirected project of object-oriented ontology (misdirected, because of their metaphysical idealism – see Wolfendale 2014).

and Guattari give us, as well as the late Derrida of *The Animal that Therefore I Am*, is the specificity of the (ontologically decentered) individual. With attention to the specificities of description pertinent to individuals we interact with, nuances and colourations of character, habit, attitude, and comportment emerge that otherwise might remain submerged in our treating the individual organism we are confronted with as merely a token of a type.

Yet, for their own part, Deleuze and Guattari (as well as Derrida), can be accused of superficiality or lack of scientific rigour (see Phillips 2003 for this general critique). Bringing the relationship Uexküll holds to science and imagination together with the multiplicity of particular situated beings-in-milieu/as-milieu Deleuze and Guattari assert, provides us with the tools for looking at biosemiotics from multiple planes of immanence, from multiple scales, from multiple imaginings of what-it-is-like-to-be, so that we can craft a more complex and elegant picture of what for that being is.

While they concur to the plurality of worlds, rather than presuming a unified or objective perspective, Deleuze and Guattari in contradistinction to Uexküll call *milieus* what in Uexküll's terminology roughly calls *Welten* (*Innenwelten*, *Umwelten*, *Gegenwelten*), positing their notion of the territory as the shared space of worlds, or the terrain on which worlding occurs:

A territory borrows from all the milieus; it bites into them, seizes them bodily (although it remains vulnerable to intrusions). It is built from aspects or portions of milieus. It itself has an exterior milieu, an interior milieu, an intermediary milieu, and an annexed milieu. It has the interior zone of a residence or shelter, the exterior zone of its domain, more or less retractable limits or membranes, intermediary or even neutralized zones, and energy reserves or annexes. (Deleuze, Guattari 1987: 314)

So, even though Deleuze and Guattari depict territories that could be confused and reified as a possible known or objectified perspective, they fiercely defend its highly contingent emergence. They also animate the territory, interpreting it itself as vulnerable and reciprocally penetrating/-ed through its porosity.

One of Uexküll's incisive conclusions is that each being has a tendency to confuse its own perspective or *umwelt* – its spatial-temporal perceptual prehension of its immediately surrounding and biologically-sensorially constrained “world” – with its *Umgebung*, the hypothetical non-apprehensible reality-as-such. While all beings take their *umwelt* to be the *Umgebung*, humans uniquely have the opportunity to self-reflect on this and realize the misattribution. It is unsurprising that Uexküll's notion of an organism's *umwelt* is bound up with its adaptive milieu. An organism's own perceptual faculties and agentic abilities arise out of the need to get food, take care of basic processes such as reproduction, whatever socialization and ecological niche

adaptations are required, and attending to companions (*Kumpanen*, be they of the same or another species, such as bees and flowers). Companions form the quotidian interactions of an organism that it influences and must adjust to in order to get by in the world. It is companion organisms, I would argue, that serve as ballast for certain vectors of semiotic and physiological evolution. Environments (*umwelten*), which are always local and predicated on the vantage point, scale, and specificity of the organism experiencing that environment, serve as the “soap bubble” that organism experiences and composes as its (inter-)subjective known universe (Uexküll 2010).

Uexküll’s methodology of carefully examining nonhuman animals, ranging from birds to sea urchins, gives us an epistemic “in” to understanding that aids in achieving a “subject-subject science” that “is not a minor piece of conceptual technofix, [but] rather [...] involves a major cultural project with ramifications through many areas beyond science and epistemology” (Plumwood 2002: 50).¹² Moving beyond the false dualisms of representationalism or solipsism is the very work of biosemiotics.

But might it be too facile to relegate ourselves to seeing being as categorizable in simple taxa and phyla? Could it be that (non-)deliberate cooperation is something occurring not only from an organism’s membrane or skin-on-in, but also from the skin out, that is, between the organism and its environment? Might our understanding of self as human be more collectively decentred than previously thought? And if humans may be more dependent on our non-self others and environment than previously acknowledged,¹³ could this also mean in the same sweep, that the intrinsic multispeciality of all life, the view that each being derives its semiotic orientation (or sense of self) via the ecosystems of multispecies meaning in which it lives, is also plural in its assemblage? Like fractal mathematics, communication is taking place on multiple levels simultaneously, each dimension (micro-, endo-, exo-, etc.) influencing the others, each with its own threshold zones of receptors to register movements in other domains.¹⁴

Charles Darwin (2009[1859]: 52) wrote in *The Origin of Species*:

I look at the term species, as one arbitrarily given for the sake of convenience to a set of individuals closely resembling each other, and that it does not essentially

¹² Plumwood (2002: 51) elaborates: “The idea that we humans are completely immersed in a self-enclosed sphere of our own we can call ‘culture’ while non-humans are part of a non-ethical sphere of ‘nature’ is the leading assumption that corresponds to and structures these disciplinary exclusions”.

¹³ See Plumwood 2002 on unacknowledged dependencies as a form of domination.

¹⁴ Again, here, as inappropriate as Luhmann’s social systemic model is for living systems, one could say that even those effects (*Merkmale*) that do not directly register for other semiotic channels, can still be affected sometimes through resonant events that inadvertently perturb or encourage the interpretation of objects at remote semiotic levels.

differ from the term variety, which is given to less distinct and more fluctuating forms. The term variety, again, in comparison with mere individual differences, is also applied arbitrarily, and for mere convenience sake.

The “fluctuating forms” Darwin alludes to can just as well be applied to systems of meaning as they can to the variations in and among species.¹⁵ To speak of individuals and species is useful shorthand, but, ultimately, these designations are relative rather than absolute. So too, semioticians encounter similar abstractions and extractions for the sake of analysis, which are but one of a myriad ways of describing the phenomena.

An ensemblist conception of agency

Protagoras observed, “Man is the measure of all things”; but the statement loses its orienting force the moment we ask, *which* human, precisely, do we make the measure? Depositing the conceit of monolithic normative concepts of the person expand the importance of plurality as the concept becomes not just a lens to apply to nonhuman nature, but also how we understand ourselves. Each human being is an ecology of scores of trillions of cells, the vast majority (by number) nonhuman bacteria, yet we still posit the ‘I’ of a unified identity deriving from this necessary multiplicity. And as animals, possessing discrete bodies with organs, we surely do have plausible cause to postulate an individual demarcated self, more than, say, plants, or fungi, where the distinct organism of analysis – the basic unit of being – is far more tangled.

Nonetheless, the ability to ground our species-specific ontology in sameness has encountered resistance from surprising corners. The most recent research in biological anthropology bears out Darwin’s scepticism against reifying the category ‘species.’ Henrich *et al.* (2010: 61) found that Western experimental subjects are ‘outliers’ compared to the rest of the human race – i.e., not representational samples to make gross generalizations for attributing anthropological universals to the rest of the world’s human beings. Regarding ways of being in the world as far-reaching as “visual perception, fairness, cooperation, spatial reasoning, categorization and inferential induction, moral reasoning, reasoning styles, self-concepts and related motivations, and the heritability of IQ” (Henrich *et al.* 2010: 61), the authors found that college undergraduate test-subjects from Western countries provided research results inapplicable to the vast majority of the human population, whether this was

¹⁵ Renowned primatologist Volker Sommer (2011) has (controversially) proposed that should humans and chimps mate, they could conceivably produce fertile offspring.

on a neurobiological level using fMRIs or in terms of psychological or sociological experiments. Generalizations from these populations to count for conclusions applicable to “humanity” simply do not hold up to scrutiny when applied to people tested elsewhere in the world, perhaps due to the fact that over 90% of such research stems from experiments only on WEIRD subjects (subjects from societies which are Western, Educated, Industrialized, Rich and Democratic). Even on a neurobiological level, non-WEIRD research subjects often did not conform to the neural pathway mappings previously assumed to be biologically universal, because research of American college student test-subject populations coalesced around certain regularities due to their common milieus.

Philippe Descola (2013: 2) has critically appraised this assumption of sameness, describing how “physical anthropology inherited the goal of establishing unity beyond variations, while social anthropology contented itself, most of the time, with accounting for variations against the background of a taken for granted unity”. According to Darwin’s principle of “divergence of character” there should be no reason why humans have evolved to share a single form of rationality or any other particular psychological trait identical between individuals. People are *different* – deeply, fundamentally different, culturally, genetically, epigenetically, environmentally – in ways that could not be predicted before the airing of anthropology’s dirty laundry of generalization and universalization became so well documented it could no longer be ignored.

Comparing Asian and Western research subjects, Markus and Kitayama (1991: 226; original emphasis) write: “it may not be unreasonable to suppose, as did numerous earlier anthropologists, that in some cultures, on certain occasions, the *individual*, in the sense of a set of significant inner attributes of the person, may cease to be the primary unit of consciousness. Instead, the sense of belongingness to a social relation may become so strong that it makes better sense to think of the *relationship* as the functional unit of conscious reflection”. The cult of individualism Westerners have often believed to be their ontological identity, may itself not be a universal. If this is so, it behoves us to acknowledge and investigate other forms of self-identity. And, perhaps, this uniqueness of plural forms of identity goes beyond humans, ebbing and flowing among different organisms, depending on state, phase, life stage, or awareness.

Conclusion

Such an analysis recasts biosemiotics not as a unitary discipline consisting of “the human” view of nature, but rather acknowledges the plural viewpoints of cultures and indeed subgroups and individuals within those disparate cultures’ understanding

of natural signs. The above moments of weakening the grip of certain concepts from having a monopoly on interpreting any given state of semiotic affairs brings awareness to the bright threads of singularity (otherness) and relationality (context) that run through semiotic operations. Realizing that our perspectives are multiple, and that the world shows up differently in our reading of it into our own (particular) signs and symbology, not only requires further work in deciphering what referents mean to particular peoples (with productive comparative research sensitive to differences), but it also permits us to loosen our grip on assigning temporally and cross-culturally fixed notions of meaning, permitting micro-histories and regionality to play a crucial role in biosemiotic analysis.

While many previous authors have been attentive to the fine-grained distinctions of various types of semiosis (e.g. Hoffmeyer 2008; Kull 2011), few have taken up the messy complexity of actual interacting semiotic systems always already at work within each semiotic event and experienced by each organism (for one example, see Bruni 2011). While taking multiplicity seriously may complicate the straightforward tales we tell ourselves regarding the causality of signs and their effects, it can surely bring us closer to the semiotic phenomena themselves.

This article has been an exercise in remembering the complexity composing signs, with the hopes that future biosemiotic analyses can attempt to take into consideration the interactions of these various layers of intersecting functional circles. Nietzsche's (2011[1886]: §9) wisdom that "[a]s soon as any philosophy begins to believe in itself, it always creates the world in its own image; it cannot do otherwise", affirms Deleuze and Guattari's scepticism of overly rigid conceptual systems as paying insufficient attention to the limits of human knowledge. It could very well be that the interceding factors of causation which remain asymptotically opaque to us contribute far more leverage than we give credence to.

I have identified points at which the multiplicity of semiotic forms impugn facile or linear readings of the functional circle. While Uexküll himself was quite sensitive to the ways in which the functional circles of different animals intersect and impact one another, to extend this between kingdoms, that is, to give a fair treatment in which the functional circles of the various animal, plant, fungi, and bacteria species all intersect and influence one another (while also attending to their respective forms of endosemiosis) would be a monumental (and in practice, impossible) task of theoretical biology. While we can never hope to create such a Borgesian map coextensive with the territory, it is worth keeping in mind these types of interactions as possible differences that make a difference, especially when we become convinced of a particular chain of semiotic conclusions.

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Множественность и *Welt*

В статье анализируется подход Якоба фон Юксюля к *Innenwelt*, *Gegenwelt* и умвельту разных существ, используя для этого точку зрения Жилия Делеза на множественность, контекст и партикулярность. Соединение подходов Делеза и Юксюля приводит к заключению, что отсутствует всеобщий «человеческий» взгляд на природу. Однако можно сказать, что с разных точек зрения (суб)культур и индивидов знаки природы понимаются и интерпретируются по-разному не только по идеологическим причинам, но и из-за различий в физиологии и фундаментальных возможностях доступа к миру. Недавние исследования по сравнительной нейробиологии показали, что универсальные антропологические утверждения о надкультурных семиотических подобиюх неверны.

Интерпретируя биосемиотику как изучение *Innenwelt* самых различных видов, эти семиотические понимания необязательно распространяются на всех членов одного вида, на группы одного вида в разных природно-культурных контекстах или даже (как в случае с человеком) на одно и то же животное в разное время (исходя из новых интерпетаций, паттернов или значимых событий, которые меняют понимание *self*). Связывание делезовского понимания комплексности множественности с предлагаемой Юксюлем системой понимания других существ позволяет включить в биосемиотическое исследование больше саморефлексии, учитывая одновременное присутствие разных уровней семиотической активности.

Paljusus ja *Welt*

Artiklis analüüsitakse Jakob von Uexkülli käsitlust erinevate olendite *Innenwelt*'ist, *Gegenwelt*'ist ja omailmast, kasutades deleuze'ilikke sissevaateid paljususe, konteksti ja partikulaarsuse küsimustesse. Deleuze'ilike seisukohtade lisamine Uexkülli vaadetele tunnistab, et puudub ühtne "inimlik" vaade loodusele, ja selle asemel tõdetakse, et kultuuride, subkultuuride ja üksikisikute mitmekesisest seisukohtadest mõistetakse ja tõlgendatakse looduse märke mitmeti ja seda mitte üksnes ideoloogilistel põhjustel, vaid ka füsioloogia ja erinevate fundamentaalsete maailmale ligipääsemise viiside tõttu. Hiljutised teedrajavad uurimused võrdleva neurobioloogia alal on näidanud, et universaalsed antropoloogilised väited kultuurideülese semiootilise sarnasuse kohta on väärad.

Tõlgendades biosemiootikat kui täiesti erinevate Teiste (liikide) *Innenwelt*'i mõistmise uurimist, pole need semiootilised arusaamad tingimata üldistatavad rühma moodustava sama liigi eri liikmetele, samaliigilistele gruppidele erinevates looduslikes-kultuurilistes kontekstides, või isegi (nagu inimese puhul) samale loomale eri aegadel (lähtuvalt uutest arusaamadest, mustritest või tähenduslikest sündmustest, mis muudavad Ise ja sündmuste tõlgendusi). Deleuze'i paljususe kompleksuse käsitluse sidumine Uexkülli pakutud teiste olendite maailmatõlgenduse teaduslik-kujutusliku mõistmissüsteemiga võimaldab biosemiootilises uurimistöös suuremat eneserefleksiivsust, pidades silmas tegeliku semiootilise aktiivsuse tasandite üheaegset kohalolu.