

Uexküll and Whitehead on meaning, process and life

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Abstract. The paper approximates Jakob von Uexküll's theory of meaning and the process-thought in Alfred Whitehead's philosophy. As the main idea, the paper points at the compatibility of *meaning* and *process* according to the perspectives of Uexküll and Whitehead. It suggests that Uexküll's common meaning rule can describe the processes of novelty in the world as does Whitehead's principle of creativity. It is also suggested that Uexküll and Whitehead abandon a substantialist view of the organism – the organism means much more process, activity and creation than anything thing-like. In approaching Uexküll's theory of meaning, a semiotic interpretation of Whitehead's principle of creativity is proposed in which the concept of the threshold is fundamental to defining the boundary between the semiotic and the non-semiotic areas corresponding to the living (animate) and the non-living (inanimate). In conclusion, the paper suggests that the activity of meaning distinguishes animate entities from inanimate ones in the sense that meaning and life overlap – meaning could not have existed prior to life (and to the contrary).

Key words: Jakob von Uexküll; Alfred Whitehead; meaning; process; life

1. Introduction

This paper is the result of research on the work of Jakob von Uexküll. In particular, it is intended to advance the approximation of Uexküll's theory of meaning and the process-thought in Alfred N. Whitehead's philosophy. In order to do this, I will approximate the notions of *meaning* and *process* as seen from the perspectives of Uexküll and Whitehead, respectively. I will explore meaning according to what Uexküll refers to as the 'common meaning rule' – Uexküll's theory of meaning corresponds to the second part of his theory of umwelt (Uexküll 1982[1934]: 53).

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A philosophical virtue of Uexküll's theory of *umwelt* is that life can only be understood regarding the importance of meaning. Since biology is defined as the theory of life, investigating life determines its changes of meaning. Stressing the importance of meaning as "the guiding star", Uexküll has opened a new perspective for theoretical biology and contemporary ethology and has seeded the field for biosemiotics to germinate and grow up (Sebeok, Danesi 2001).

I stress the epistemological continuity of Uexküll's *Theoretical Biology* (Uexküll 1926) and his theory of meaning (Uexküll 1982[1934]). In combining the notions of 'web of life' and 'common meaning rule', I attempt to show how life can be described as sign process or semiosis. I also endeavour to show that the epistemological continuity between *Theoretical Biology* and Uexküll's theory of meaning expounds the original way in which he has opened the door for an alternative interpretation of evolution and life by stressing the relevance of meaning in nature. In *Theoretical Biology*, Uexküll employs the expression 'web of life' in the sense that the living world is a web, which contrasts with the Darwinian view of the 'tree of life'.

The core of this paper consists in combining Uexküll's *common meaning rule* and the principle of *creativity* as it appears in Whitehead's process metaphysics. As a corner-stone of Whitehead's philosophy of the organism, creativity is a principle of novelty in the world. As the notion underlying the nature of things, 'creativity' means novelty in the world. I will argue that Uexküll's common meaning rule can also account for creativity and novelty in the world in the sense that it frames the web of life. In addition, in approaching Uexküll's theory of meaning I will put forward a semiotic interpretation of Whitehead's principle of creativity. Assuming that Uexküll's common meaning rule lies in parallel with Whitehead's process metaphysics, I argue that both abandon the substantialist conception of the organism: organism means much more action, activity and creation than anything thing-like.

Thus, the premise of this paper can be stated in the following terms: *where there is meaning, there is life* (– *no meaning, no life!*)². This premise was inspired

² I recently reviewed Evan Thompson's *Mind in Life* (2007). I am very close to his understanding of continuity between mind and life when he says: "The theme of this book is the deep continuity of life and mind. *Where there is life there is mind* [my italic, A. A.] and mind in its most articulated forms belongs to life [...]. From this perspective, mental life is also bodily life and is situated in the world. The roots of mental life lie not simply in the brain, but ramify through the body and environment. Our mental life [...] cannot be reduced simply to brain processes inside the brain" (Thompson 2007: ix). Even though it is very close to Thompson's, I have developed my hypothesis independently. Replacing 'mind' by 'meaning' would be perfectly in accordance with my hypothesis ("where there is meaning, there is life"). What

by William James's radical empiricism: "[...] the relations that connect experiences must themselves be experienced relations" (James 1977[1909]: 195). The result is that experience forms a web of relations. James describes such a web using the picture of a 'mosaic'. Moreover, James adds that (pure) experience is "the immediate of life". The result is that life forms a web of relations in which every part is an experienced relation. So it is fair to state that *where there is experience, there is life – no experience, no life!*

My premise is also quite close to Thomas Sebeok's view of semiosis as co-extensive with life in terms of "no sign without life" and to the contrary (Sebeok 1999; Deely 2009). In following the same direction, it still must be understood that I am not concerned with the issue of the origin and meaning of life. In claiming that where there is meaning, there is life, I seek to propose the idea that meaning and life are overlapping and co-extensive processes. From a philosophical point of view, admittedly, the idea acquires the status of a cosmological thesis.

Here, a concept to make clear the boundary between the living and the non-living would prove helpful, and I think such a concept could be the 'semiotic threshold' that defines "a boundary between semiotic and non-semiotic areas" (Rodríguez Higuera, Kull 2017: 109). The idea points at a correspondence between living entities and the semiotic and non-living entities and the non-semiotic. It is here that the relevance of Uexküll's common meaning rule can be highlighted: it traces the boundaries between the animate world and the inanimate. Of course, I am not claiming that the inanimate has no meaning at all – it has a meaning in transition and in continuity with the animate whose process is depicted by Uexküll's common meaning rule. In accordance with Whitehead's process metaphysics, life appears as a process of continuity and transition of entities in which creativity plays a fundamental role. As I am arguing, this process of continuity and transition can be described by Uexküll's common meaning rule.

I agree with Whitehead that creativity extends itself into the entire universe. However, insofar as creativity accounts for meaning creation, it is a phenomenon that depends on the 'threshold'. (This idea follows the concept of 'semiotic threshold'. In comparison with Aristotle's *ψυχή* (or the *'anima'*), if we understand meaning as activity of animate entities, it indicates nothing more than the possible semiotic threshold that defines the boundary between living and non-living. In this sense, what Sebeok and Hoffmeyer call 'semiosphere' I call 'animate world'. That is why Uexküll's common meaning rule is fundamental here as an operative

seems to be a point of divergence from Thompson's understanding of continuity between life and mind is my regarding of the continuity of meaning and life as extending in the universe as a whole and not being restricted to Earth.

tool for setting a ‘threshold zone’ of transition between non-semiotic and semiotic – that is to say: a transition between non-living and living.

First proposed by Umberto Eco in 1976, the concept of the ‘semiotic threshold’ has at least two variables: the upper and the lower threshold. As noted by Rodríguez Higuera and Kull (2017: 110), the split between the semiotic and the non-semiotic can be a productive tool in revisiting the role of meaning in biology (*pace* Uexküll). Following the premise of this paper (or *no meaning, no life* and conversely) and taking into account the semiotic interpretation of Whitehead’s principle of creativity, the concept of the lower semiotic threshold can be applied to differentiate the semiotic from the non-semiotic, corresponding to the living and the non-living, respectively. However, I think that the issue is where sign action or semiosis comes into existence insofar as it stands for meaning creation in the world. I am arguing that at some point in nature there is an inflection zone in which the living is differentiated from the non-living and meaning emerges.

Again, following Uexküll’s common meaning rule that stresses the role of meaning in biology, I argue that the concept of the threshold is an important epistemological tool for our understanding of the transition from the non-living to the living as well as “an operative tool for defining both the epistemological and ontological boundaries of sign action at levels of low organismic complexity” (Rodríguez Higuera, Kull 2017: 124). In conclusion, taking into account the epistemological and operative sense of threshold, I assume that the activity of meaning distinguishes animate entities from inanimate ones and that meaning could not have existed prior to life: meaning and life are overlapping processes – once again, *where there is meaning, there is life (no meaning, no life!)*. The idea that I have in mind is not simply to reaffirm here that meaning consists in a distinctive trait of life – above all, it is to regard meaning as a core part of process thought – that is, to grant meaning the ontological status of a process.

It is important to add that although the paper explores the convergence of meaning and process, it is not methodologically restricted to an inquiry on language and metaphysics insofar as it also comprises epistemology, mind and philosophy of biology. The paper revolves around the following questions: (1) in what must a process consist in order to reach the threshold for meaning activity? (2) how is meaning introduced into undifferentiated matter? The main idea that I am putting forward is that, depending on the functional organization, a process reaches the threshold zone and so it is able to perform meaning activity (meaning-making). In the case of rudimentary functional organization, for instance, no threshold zone can be reached – this is the case of non-living processes.

Thus, meaning activity results from transition processes between the non-living and the living. I will illustrate such a process with Uexküll’s common

meaning rule together with Whitehead's conception of creativity. Additionally, once I assume that meaning overlaps with life (and conversely – *where there is life, there is meaning*), meaning activity emerges from a transition threshold which can vary in multiple contexts throughout the world.

2. Uexküll and Whitehead on organism and process

What unites Uexküll and Whitehead philosophically is the fact that both reject 'substance ontology'³. According to Whitehead's metaphysics in *Process and Reality*, 'organism' does not correspond to a definite entity in space and time, although some types of entities are individual organisms⁴. Differently from the notion of self-sustaining substance that is externally related, valueless, passive, and without intrinsic principle of motion, 'organism' evokes much more action, activity and creation. For Whitehead (1978[1929]: 41), organism means process and as such it "is not describable in terms of stuff". In this sense, then, it is more accurate to say that organism consists in a functionally structured active process⁵. So, regarding the conception of process, Whitehead claims that it is the form which is permanent (and not the substance) in that 'forms suffer changing relations' (Whitehead 1978[1929]: 29). For Uexküll, in comparison, insofar as the organism is an active being, it cannot be described as something entity-like defined in space and time. Accordingly, it seems plausible that for Uexküll and Whitehead, the

³ "Substance ontology [...] views the world in terms of successive levels of organization: elementary particles, atoms, molecules, cells, organisms, and so on [...] the biological world [is] a structural hierarchy of things' [...] 'Ever since the Scientific Revolution, substance ontology has been associated with mechanicism, the view that nature – and everything in it – is a machine that operates in a regular and predictable manner and which can be fully explained in mechanical terms. Mechanicism is, of course, a natural expression of substance thought, as machines instantiate many of the properties traditionally attributed to substances; they are fixed material entities with clearly defined boundaries" (Nicholson, Dupré, 2018: 21, 22).

⁴ Indeed, as Bergson, Whitehead protests against spatialization of things as it is nothing but a high abstraction. The process is nothing else than the experiencing subject itself. In this explanation it is presumed that an experiencing subject is one occasion of a sensitive reaction to an actual world (Whitehead 1978[1929]: 16).

⁵ "Investigators concerned with the analysis of the logical structure of natural sciences have insisted that the transition from the concepts of 'substance' to the concepts of 'function' is characteristic of the historical development of science. [...] In this regard, Hayek's theory appears very modern indeed, since not even traces of 'thing-concepts' are left in it. For him, 'mind' has turned into a complex of relations; it is simply 'a particular order of a set of events taking place in some organism and in some manner related to, but not identical with, the physical order of events in the environment'" (Klüver 1952: xx).

organism can be morphologically described as an active form endowed with a certain degree of stability suffering changing relations. As a consequence, there is little reason for regarding an organism as an entity discrete from its environment. Whitehead sees organism as a unit of an emergent process, this is the point for connecting Whitehead's conception of value and Uexküll's theory of meaning. Differently from the traditional mechanistic explanations in biology, Uexküll and Whitehead believe that organisms are interdependent, internally and externally related, value-laden, and intrinsically active.

Interestingly, Uexküll (1926: 258) employs the expression the 'web of life' that contrasts with the Darwinian view of the 'tree of life'. The idea behind it is that the natural processes are best represented as a web of linked entities (Ricou, Pollock 2009). The concept of life expressed by the Darwinian image of a ladder is replaced by the understanding of evolution as modifications in a web of complex relations. In his theory of meaning, as the second part of the theory of *umwelt*, Uexküll introduces the notion of 'common meaning rule'. To the extent that the common meaning rule structures the web of life in replacing Darwin's view of nature as a ladder, it makes no sense to insist on expressing evolution according to the traditional categories of substance ontology: individuals, species, properties, and so on. Rather than resulting from a combination between a material base and efficient processes, evolution lies in structural modifications in a web of relations in nature. From a certain methodological perspective, the process interpretation of evolution closely resonates with a structuralist view: evolution is more like a relational hierarchy of processes than something thing-like with clearly defined boundaries⁶.

⁶ "A structuralist view, importantly, assumes a certain independent existence of structural laws from the material sphere of phenomena or objects. This also has several manifestations within semiotic approaches to biology" (Kull, Emmeche, Hoffmeyer 2011: 10). Although espousing a mathematical framework, for instance D'Arcy Thompson employed structuralist concepts in his critical evaluation of Darwinism. Methodologically, as pointed out by Robert Rosen (1999: 260), 'relational biology' echoes structuralism: "Relational biology can be thought of as the exact inverse of reductionistic ideas. The essence of reductionism is, in a sense, to keep the matter of which an organism is made and throw away the organization, believing that the latter can be effectively recaptured from the former [...] relational biology sought rather to keep the organization and throw away the matter; to treat the organization itself as a thing, and recapture specific material aspects through a process of realization. In this view, then, an organism is a material system that realizes a certain kind of relational structure, whatever the particular material basis of that realization may be. The trick, of course, is to find or posit that relational structure; this is not an empirical or experimental problem in any conventional sense."

Nevertheless, what seems to be difficult for biologists, biosemioticians, philosophers of science and biology to accept is that Whitehead does not let his philosophy of the organism try to answer the question “what is an organism?”. Instead, he states that the philosophy of the organism is “a recurrence to pre-Kantian modes of thought” (Whitehead 1978[1929]: xi). This may be frustrating and discouraging as the statement can be found on the very first page of the preface of *Process and Reality* ([1978]1929). In fact, Whitehead presents the philosophy of the organism in order to make explicit that he is espousing a mode of thought in which the ‘organism’ has nothing to do with the notions of things, entities or individuals. Far from what it may seem to be at first glance, Whitehead’s process metaphysics is closely related to biology and his influence on many different biologists is also notable (Woodger 1929; Waddington 1957; Miller 1978; Turner 2000; Delafield-Butt 2008). Interestingly, in the early decades of the 20th century, a group of biologists in England was concerned with an organic and holistic view of the world, and they were followers of Whitehead. In addition, Whitehead’s philosophy of the organism also seems to be philosophically in tune with organic views in biology ranging from names such as Driesch and to more recent ones such as Goldstein, Merleau-Ponty and Canguilhem.

Even though Whitehead’s terminology sounds physicalist, he accents the concept of organism against the mechanistic view in biology which had prevailed since the 17th century. In this sense, Whitehead agrees with Uexküll’s criticism of the mechanistic way of thinking in biology⁷. In fact, like Uexküll, Whitehead insists on notions such as subjectivity, autonomy, activity and creativity. In criticizing the mechanicism in biology, both Uexküll and Whitehead seem to agree that functionally the organism is a dynamic process and part of a web of relations rather than an entity fixed in nature. Taking into account Whitehead’s process metaphysics, every organism is an entity in process that cannot be morphologically described as

⁷ “The time is past when we could compare living organisms with machines [...] But even so, if the analogy with living organisms is to be complete, it would be necessary for the machines to be built up of individualised parts of the framework, converting only certain stimuli into indications, and then performing certain actions. But even all this would not suffice, for we should not be able to endow our machines with the internal constructor and director. These remain the lasting prerogative of the living organism” (Uexküll 1926: 349). It is opportune to point here that in *The Interpretation of Development and Heredity: A Study in Biological Method* (1930), E. S. Russell acknowledges the value of Whitehead’s *Science and the Modern World* to biology. In line with Uexküll’s criticism of mechanistic view, interestingly, Russell (1930: 169) asserts that “[t]he organism is not, like a machine, a static construction, but a constantly changing organization of functional activities”.

matter or something thing-like. In refusing a substantialist morphology, particularly, Uexküll and Whitehead adopt a process view of organisms.

Indeed, one main metaphysical claim of Whitehead's philosophy of the organism is that it breaks away from the conception of unchanging and self-sufficient substance. Such a conception derives from the old Aristotelian metaphysics of substance. Prior to *Process and Reality* (1929), in the Lowell Lectures (1925), that would be published as *Science and The Modern World*, Whitehead (1948: 98) states that if something endures and affects its environment, it is not self-sufficient. In the words of the Whiteheadian biologist Joseph Woodger (1919: 219): "an organism, whatever else it may be, is an event – something happening". In this sense, it is important to note in what the conception of the organism as a process ontologically consists as opposed to substance ontology.

According to a recent process-thought in philosophy of biology, processes are extended in time and have temporal parts (Nicholson, Dupré 2018: 8). While Whitehead understands organisms as dynamic forms subject to changing of relations in space and time, Uexküll (1926) describes organisms as 'communities'. Such conceptions of the organism deconstruct the image of living entities as building blocks separated from the environment – organisms are events that are temporally and spatially differentiated. I agree with Dupré and Nicholson (2018: 1) that "the living world is a hierarchy of processes, stabilised and actively maintained at different timescales [...]: molecules, cells, organs, organisms, populations, etc. [...] Although the members of this hierarchy are usually thought of as things, we contend that they are more appropriately understood as processes". There is, however, a critical point at which I disagree with Nicholson and Dupré. This is not because they introduce a non-Whiteheadian approach to process-thought in the philosophy of biology: in my view, they seem to embrace a physicalist interpretation of process-thought. As a consequence of such interpretation, they assume that organisms are physical happenings. In this sense, Nicholson and Dupré do not touch upon such important philosophical topics as agency, intentionality, consciousness or *qualia*.

Reconsidering what I understand to be Uexküll and Whitehead's anti-substantialist ontology, once organism is not morphologically identified with anything thing-like and it is part of dynamic relations in the environment, that can be called an 'epochal atomicity': each organism is temporal and individualized – 'epochal' means a unit of duration. In support of his epochal theory, Whitehead quotes William James. As temporality is given in experience, for instance, it is epochal. That is to say: each organism is temporal not in the sense of clear-cut fixity. Taking into account Uexküll and Whitehead's anti-substantialism, the organism consists in a functionally structured process without boundaries rigidly defined

with the *medium* and having periods of temporal stability⁸. The living world is much more of a hierarchy of processes than it is a structural hierarchy of matter.

3. Meaning, process and rule

Meaning has traditionally been taken to be a property of human use of language that has culminated in what Floyd Merrell (1997: vii) calls ‘linguicism’. In philosophical terms, such a phenomenon is quite probably one of the many disastrous consequences of the so-called linguistic turn movement, which tries obsessively to relate meaning to the concepts of extension, denotation, reference, correspondence, and representation (Merrell 1997: viii)⁹. As a result of this philosophical obsession, meaning is understood as a static, discrete and context-independent relation between linguistic entities and objects that takes the form of a “pigeon-hole” (Merrell 1997: x). According to such a view, meaning is taken to be a kind of extra-entity co-existing with ideal or mental entities. In a word, meaning is supposed to be singularity, oneness and fixity.

According to Merrell (1997: ix), however, the problem is that meaning has much more to do with plurality, diversity and process than it resembles a pigeon-hole: it is nowhere and at the same time it is everywhere; meaning happens and consequently it is continuity rather than a discrete entity. In this sense, one can suppose that meaning does not exist or it does not exist in the way we usually think it does (Putnam 1975: 216). It seems to be fair to claim that meaning is much more than an exclusive property of human use of language¹⁰. What can make sense of meaning can be translated into ‘value’ insofar as it happens as plurality, diversity and process. Interestingly, in his theory of truth, which is also a theory of meaning, William James (1978[1907]: 97) claims that truth happens. In fact, for meaning, James employs the term ‘cash-value’ that points at the objective of his pragmatism.

⁸ Incidentally, according to Whitehead (1938: 221) “[t]here is no definite boundary to determine where the body begins and the external nature ends”. Many philosophers and cognitive scientists use the boundary dissolution between the inner and the outer in order to affirm the conception of the extended mind/cognition.

⁹ In his criticism of traditional Anglo-American analytic philosophy of mind and language in which there is no mention of the body in relation to the sense of a sign, Mark Johnson (2017: 2) sees meaning as embodied: that is, it is grounded in sensory, motor, and affective capacities and organism-environment interactions.

¹⁰ “By the thirteenth century, Thomas Aquinas had concluded that animals make use of signs, both natural and those founded on second nature, or custom. Virtually every major thinker about semiotic issues since, from Peirce to Morris to Thom, and, above all, Jakob von Uexküll, have reaffirmed and generalized this fact to encompass the totality of life” (Sebeok 1999: 93).

If we abandon the traditional view of the pigeon-hole, we open up the possibility of understanding meaning as a reference to semiosis (Merrell 1997: x; Austin 1961: 29). In particular, in Charles Sanders Peirce's semiotics we can find the contemporary conception of semiosis as an action or process of meaning involving an irreducible relation between sign, object and interpretant (CP: 5.484). Meaning results from this triadic relationship and cannot be reduced to anything else. Indeed, if we consider Peirce's semiotic triad, it is the very essence of semiosis as "sign process that is responsible for meaning-making" (Kull 2015: 2). What should be emphasized is the fact that meaning *emerges* from and *flows* into the *continuum* of semiosis process.

From a traditional and historical point of view, metaphysics represents a narrative construction in opposition to the idea of *continuum*. Such a narrative revolves around the notion of permanent substance as the ultimate reality of being. As regards the notion of permanent substance, Whitehead (1948: 50, 53) includes the property of simple location in space and time:

[...] if a region is merely a way of indicating a certain set of relations to other entities, then this characteristic, which I call simple location, is that material can be said to have just these relations of position to the other entities without requiring for its explanation any reference to other regions constituted by analogous relations of position to the same entities. [...] There is an error; but it is merely the accidental error of mistaking the abstract for the concrete. It is an example of what I will call the 'Fallacy of Misplaced Concreteness'.

It is important to note that the 'Fallacy of Misplaced Concreteness' evinces that simple location results from the arbitrary abstraction of an entity from the context and relation with other entities – that is, an entity is essentially a discontinuity. In this sense, according to Whitehead, simple location has to do with the intellectual phenomenon of spatialization of things. However, for him, the morphology of an entity is not that of discontinuous matter having a simple location in space, but is determined by a vector space and non-linear relations which mean continuity and process¹¹. In denying simple location and in order to explain the correlations and

¹¹ "A process view of the world offers a complementary attitude. This is to treat "things" as abstractions from what are, in fact, processes. This attitude too has a long Western lineage, conventionally beginning with Heraclitus. More recent examples are Whitehead's organic metaphysics and C. S. Peirce's view of semiosis as a dynamic network which allows nature to develop habits" (Pickering 2012: 198). In recent cognitive science we can also find a Heraclitean view of organism. As noted by Stewart (2010: 2), we think of organism much more as process engendering itself than as thing. Organisms are not reified things, rather, they are a process of becoming.

simultaneity of entities, Whitehead introduces the notion of ‘duration’ in a sense closely related to Bergson’s ‘durée’ (Ford 1984: 60). However, the durations do not last so long and they are best understood as designating ‘specious present’¹².

In addition, as part of his criticism of the metaphysics of the permanent substance, Whitehead situates the pair subject–predicate (S–P) in language: an entity is a substance from which we predicate a quality – the qualities are traditionally divided into essential and accidental (or primary and secondary qualities). The pair ‘subject–predicate’ stands for a fundamental relation at the base of the objects (Whitehead 1948: 151–152). The meaning of an object is therefore determined by the subject–predicate relation that is ontologically equivalent to the substance–quality relation. It is important to note that such a subject–predicate relation is fundamentally objective and context-independent. If regarded Whitehead’s analysis, it is easy to see the reason for the traditional incorporation of substance metaphysics into the conception of meaning in language: just like the very notion of object, meaning has been traditionally understood as type of single and discrete relation having simple location between subject and predicate.

Indeed, as noted by Merrell (2013: 10), the form of predication S–P can be traced back to Parmenides in his famous statement “what is, is” – against the “what is, is not what is”. Then it gains the formalization of Aristotle: (1) what is, is what is (Principle of Identity); (2) it can be other than what is (Principle of Non-Contradiction); and (3) there is no alternative to bivalent is and is-not (Principle of the Excluded Middle). The logical structure of language is supposed to be tied to the structure of being. It is up to Heraclitus to deconstruct such a logical structure: what is, is the perpetual Becoming of Being. As Merrell (2013: 13) concludes: “There is no fixed is. What there is, is what it is not, for it is always becoming”.

From Heraclitus’s deconstruction of the logical structure of the being, Merrell (2013: 286) appears to endorse a process-thought on meaning:

I would suggest that forms of life [*pace* Wittgenstein] are not inflexibly guided by fixed laws and rules [...] They are in constant process of change, for sure; but this change emerges from a relatively stable background.

¹² The term ‘specious present’ evokes William James. In Chapter XV of *Principles of Psychology*, entitled “The Perception of Time”, James (1952[1890]: 398) makes explicit E. R. Clay’s notion of ‘specious present’: it describes the actual experience in contrast to the abstract conception of present. That is to say, the actual perception of time does not correspond to punctuated moments with zero duration. It cannot be abstractly described by a single point on a line separating the past from the future. The actual character of the perception of time seems to have duration. In this regard, James states that the perception of space is quite analogous to that of time. The notion of the specious present increases the importance of topology in order to describe the correlations and simultaneity of the actual entities in terms of prehensive forms.

Additionally, in quoting Wittgenstein's river metaphor from *On Certainty*, Merrell (2013: 213) states:

On the surface, the river is permanent flux, from flowing, gentle eddies, to white-water rushes. The river bed guides it along and gives it stability. But the river's rebelliousness never ceases to bring about changes in the river bed, depositing a little extra silt here, taking some away there to leave only bed rock [...] Everything is in relatively movement. The multiple lives flowing along within a human community make up the river; the community's form of life as a whole makes up the river bed. The background form of life holds the community's history; the lives within the community come and go, as the community's history unfolds.

With this respect, Whitehead also stresses Heraclitus' metaphor of the river and reverses the relation between being and becoming. Such a reversal is what Whitehead calls the 'principle of the process': the priority is the becoming and not the being. 'Process' is the word used by Whitehead for meaning the becoming. For him, the task of the philosophy of the organism is an elucidation of Heraclitus's maxim:

[...] in the sentence 'all things flow', there are three words – and we have started by isolating the last word of the three. We move backward to the next word 'things' and ask, What sort of things flow? Finally we reach the first word 'all' and ask, What is the meaning of the 'many' things engaged in this common flux, and in what sense, if any, can the word 'all' refer to a definitely indicated set of these many things? The elucidation of meaning involved in the phrase 'all things flow' is one chief task of metaphysics. (Whitehead 1978[1929]: 208)

Merrell discredits the incorporation of the logical structure of being into language, as does Whitehead¹³. In consequence, meaning is not dependent on a clear-cut fixity. As the metaphor of the river suggests, meaning is incompleteness and in becoming.

It is here that one can trace the point of intersection between Whitehead's process metaphysics and Uexküll's theory of meaning. Although Uexküll does not seem to have had metaphysical concerns, his common meaning rule presents traces converging with Whitehead's process view. Since Uexküll's common meaning rule reveals a dynamic structure underlying the relation between organism and world,

¹³ Interestingly, Merrell (1997: 172) opens his Chapter 7, "Fabricated rather found", with a reference to Whitehead. And a few pages ahead, he says: "To reiterate Whitehead's conception, it is a question of our being surrounded by possibilities that are infinite, and the purpose of human life, or any life, or the 'life' of signs for that matter, is to grasp as much as we can out of that infinity" (Merrell 1997: 172).

it induces a conception of meaning that breaks away from the traditional metaphysics of permanent substance as well as endorses a process metaphysics.

In Whitehead's metaphysics, what is real is process and not what is assumed to be permanent entities in space and time such as buildings, mountains, trees, dogs, etc. According to the process view of reality, such things are ordinations of various and different types of 'actual entities' or 'actual occasions' that can extend themselves in space and time in the form of 'nexus' or 'societies' (Whitehead 1978[1929]: 34–35). If buildings, mountains, trees, dogs, etc. are not real entities, and reality is a process in the sense of a web of relations, nothing has an intrinsic meaning in the world. So, in what does the meaning of anything consist? The difficulty lies in making the meaning understandable once it is no longer supposed to be a type of a single and discrete relation having a simple location.

As we can find in Saussure's linguistics, however, a sign has no intrinsic meaning and it only has value in its transition in the stream of the *langue* – the meaning of a sign confuses itself with its value. Whitehead affirms that 'value' is a term that translates the meaning of an event into the process of relation and transition between actual entities in the world¹⁴. In this sense, 'value' is a fundamental notion for understanding the relation between meaning and process. The idea is that the actual entities never emerge in terms of stability and discontinuity. That is to say, once they are events, they have a relational nature. One can think of meaning in similar terms: it is not a stable and discontinuous entity and it suggests much more a relational nature. As 'value' is what translates an event and therefore nothing has an intrinsic meaning, the understanding of the very notion of 'meaning' has to do with value and process – using Whitehead's terms, 'value' is the term that stands for 'meaning'. As I see it, such a processualist view of meaning develops as a reference to semiosis and, consequently, meaning is plurality, diversity and process that has no simple location.

In asserting that meaning has no simple location, of course, I am not claiming that meaning cannot be spatially represented. The idea is rather that meaning cannot be confused with a type of a fixed entity such as a Platonic idea or a mental representation (Austin, 1961)¹⁵. Nor do I believe that meaning can be identified

¹⁴ "One all-pervasive fact, inherent in the very character of what is real is the transition of things, the passage one to another. This passage is not a mere linear procession of discrete entities [...] The name 'event' given to such a unity, draws attention to the inherent transitoriness, combined with the actual unity. 'Value' is the word I use for the intrinsic reality of an event" (Whitehead 1948[1925]: 95).

¹⁵ In *Foundations of the Theory of Signs*, Charles Morris (1938: 44), compares the nature of meaning with Whitehead's *fallacy of simple location*: meaning is not "a definite something definitely located somewhere". Like Austin, also Morris understands that we can only grasp meaning in the semiosis process.

with an objective content of thought regardless of the context. By “no simple location”, I understand that meaning indicates a reference to the process of semiosis in the sense that semiosis cannot be reduced to anything else. It is only proceeding from the process of semiosis that one can make sense of meaning. It is interesting to note that this conception of meaning is in tune with the enactivist approaches in philosophy of mind and cognitive sciences (see Cuffari, Di Paolo, De Jaegher 2015).

Additionally, regarding the idea of no simple location of meaning, I also take into account Deleuze’s famous criteria for recognizing structuralism (Deleuze 2000[1967]). According to Deleuze’s second criterion (local or position), elements of a structure have no extrinsic designation or intrinsic meaning, and meaning is necessarily and solely dependent on the element’s position in the structure. A structure is not a place in a real extension, but a place in a properly structural space, that is to say, topological space – in other words, structure is essentially a relational space¹⁶. In a topological and structural space, the places are defined by relations of production and consequently meaning is always in process. It is in this structural sense that I speak of meaning as having no simple location and being a concrete effect of a process in a relational space. In stressing the idea of no simple location, I attempt to make explicit how a conception of meaning can be a core part of a process metaphysics.

How can one make sense of meaning if plurality, diversity and process have no simple location? The first step is to abandon the representational conception of meaning as a fixed relation between a propositional symbol or mental state and an object. As semiosis is action, it indicates the process in which meaning is engendered and flows (Merrell 1997: 199; Kull, Emmeche, Hoffmeyer 2011: 2) – the idea of semiosis action discredits the dependence of meaning on representations. Given that semiosis action is dynamic and potentially unlimited, a semiotic conception of meaning would be in line with a process metaphysics: just like the apprehension of reality as a process, meaning results of dynamic and different

¹⁶ In introducing F. A Hayek’s *The Sensory Order* (1952), an extensive essay on psychology, Heinrich Klüver (1952: xix-xx) highlights several aspects that indicate a processualist approach to the mind and in particular the idea of a topological description of mental events as a complex structure of connections: “A wide range of mental phenomena, such as discrimination, equivalence of stimuli, generalization, transfer, abstraction, and conceptual thought, may all be interpreted as different forms of the same process of classification which is operative in creating the sensory order. The fact that this classification is determined by the position (in a topological, not a spatial, sense) of the individual impulse or group of impulses in a complex structure of connexions, extending through a hierarchy of levels, has important consequences when it comes to considering the effects of physiological or anatomical changes.”

levels of semiosis¹⁷. As result, it is fair to claim that meaning is to be metaphysically understood as being situated in the core of a process view of reality. From such a view, I think, one can infer Uexküll's common meaning rule.

For Uexküll, indeed, every organism plays a role in nature's symphony, and to describe this he uses the notions of 'duet', 'plan' and 'rule':

Here at last we see the action of life as such, working in conformity with plan. (Uexküll 1926: 258).

Instead of seeing in it merely a rule stretching across time and space, men have spoken of "purpose" and "purposefulness" in Nature; and this introduced the idea of Nature as a sort of human being [...] But just where conformity with plan is easiest to detect, we can find no trace of any such human-like being. It is advisable therefore to dismiss from biology [...] expressions such as "purpose" and "purposefulness". What remains uncontested is the presence of a rule in living Nature, which reveals itself even in the mechanical processes of the organism. (Uexküll 1926: 270)

Nothing is left to chance in nature. In every instance a very intimate meaning rule joins the [organism] and its medium; they are united in a duet, in which the two partners' properties are contrapuntally made for each other. (Uexküll 1982[1934]: 54).

The use of notions of 'plan', 'rule' and stating that "nothing is left to chance in nature" suggest that implicitly Uexküll accepts the teleological character of meaning. Of course, such a teleological commitment has nothing to do with traditional determinism, or else creativity, spontaneity and freedom would be ruled out from nature's symphony.

In order to illustrate the fact that nothing is left to chance in nature and to show in what the roles of 'meaning-receiver' and 'meaning-factor' consist, Uexküll describes the relation between the foliage of an oak tree and rain (Fig. 1):

¹⁷ "We have now to consider the theory of prehensions as a theory of the way in which actual entities become organised [...]. This is one aspect of what to Whitehead is the central problem of metaphysics; the relation between the permanent and fluent elements of the world in a philosophy of process" (Emmet 1932: 174).

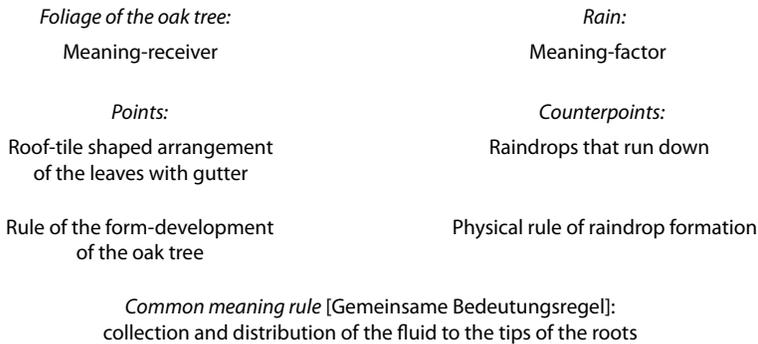


Figure 1. The common meaning rule (Uexküll 2001[1934]: 53).

The relation between the foliage of the oak tree and the rain is determined by the ‘common meaning rule’ – each component has its role in nature’s symphony. It is important to note that the common meaning rule is not identified with the physical and anatomical properties of the foliage of the oak tree or the rain. In fact, philosophically it is fair to say that Uexküll espouses a naturalistic non-reductionist view of meaning. No one who observes the rain can deny that it preserves its physico-chemical properties. For Uexküll, however, a fundamental transformation takes place: the rain’s meaning has changed and it is no longer a neutral event in the world (Uexküll [1934] 1982: 27) – interestingly, for Uexküll, the world is never a neutral place. In a particular use of *sense-making*, for instance, it is fair to assert that the transformations of rain’s physicochemical properties delineate an environment of meaning and value. In accordance with the common meaning rule, the rain is part of a meaning process in consonance with the foliage of the oak tree.

To the extent that the common meaning rule describes the relation between the foliage of the oak tree and the rain as an organically structured process, it can be generalized and employed as a model of a transitional threshold between the non-organic and organic processes from which meaning activity emerges and takes place in the world. In such a process, one can speak of creation and novelty in opposition to a merely physical automatism in the sense that something really new has been created – something that makes the difference encompass more than the physical matter as now the world is transformed into a meaningful environment¹⁸.

¹⁸ According to Evan Thompson (2007: 146–147), as a result of sense-making the transformations of the world’s physicochemical properties create an environment of meaning and value.

It is also important to note that the common meaning rule is not a rule of an individual or a species. If one traces a parallel between the rule and the web of life, the common meaning rule represents a third rule of nature (Uexküll 1926: 260) – it unites structurally ‘meaning-receiver’ and ‘meaning-factor’ as a type of ‘duet’ in nature¹⁹. From a philosophical point of view, the notion of ‘duet’ indicates the teleological character of meaning. In neo-teleological approaches, indeed, the notion of ‘telos’ is best understood as ‘final-state-directedness’ (Koutroufinis 2016: 415) – a process which appears to be very well instantiated in the relation between the foliage of the oak tree and the rain. If one accepts that the common meaning rule describes the structures underlying the web of life in the sense I think it does, the relation of the meaning-receiver and the meaning-factor sets up value and normativity at various degrees in nature. It is important to bear in mind that Uexküll’s use of ‘nature’ sometimes means ‘reality’. So, as a lesson from Uexküll’s theory of meaning, one can assume that the occurrence of value and normativity goes beyond the *conditio humana* and it can be found to varying degrees of reality.

A relevant aspect of Uexküll’s common meaning rule with regard to the notion of the web of life appears to be that it can also account for creativity and novelty in the world. Interestingly, as a pivotal aspect of Whitehead’s process metaphysics ‘creativity’ means novelty in the world. Whitehead assumes that creativity as a category of the nature of things is a formless activity that is neither mental nor physical. As highlighted by Whitehead’s former student Dorothy Emmet (1932: 72), creativity “is the notion of pure activity underlying the nature of things”. Without creativity in the world, things could not be or be different from each other, and at the same time the sense of creativity is how new things come into existence. For Whitehead, creativity cannot be understood in an abstract way. The very notion of creativity has to do with a concrete activity of creation as “there is no meaning to ‘creativity’ apart from its ‘creatures’” (Whitehead 1978[1929]: 225).

In speaking of a creation activity in the world, Whitehead rejects the idea that creativity could function as some external creator (Ford 1984: 127). For Whitehead, creativity means that things are one (that is the universe conjunctively created) and they are many (that is the universe disjunctively created). He takes up the old metaphysical quarrel about the one and the many and seeks to strike a fair balance between monism and pluralism: things are created as one *and* many (and *not* “the one or the many”). While ‘one’ means singularity of things, ‘many’ stands for diversity. Such a balance is particularly relevant if one

¹⁹ It is interesting to note here that Jesper Hoffmeyer (1996: 59) describes Uexküll’s ‘contrapuntal duets’ as a ‘semiotic network’ or ‘semiosphere’. Insofar as semiosphere imposes limitations on populations, a population occupies a semiotic niche.

has in mind that emergence of life depends on the singularity and diversity of events²⁰.

It is also important to point out that Whitehead explores the meaning of life as part of a non-mechanistic conception of nature. In accordance with his philosophy of the organism, he terms life as an aspect of process (Whitehead 1934: 59). Insofar as organisms are interdependent, internally and externally related, value-laden, and intrinsically active, they differ from senseless, valueless and purposeless matter. It is for this reason that he uses the word 'value' to mean "the intrinsic reality of an event" (Whitehead 1948: 95). Whitehead (1948: 107) adds that value is to be ascribed to "the underlying activity of the matter of fact events of the real world". In short, for him, the whole universe is intrinsically value-laden. As he regards organism as a unit of emergent value, at this point Whitehead's conception of value could be connected to Uexküll's theory of meaning.

Assuming that the pursuit of value creates the conditions for life, the problem remains in what sense it is fair to differentiate the non-living from the living processes. If for Whitehead, what distinguishes life is relative to the high intensity of feeling in the continual incorporation of novelty, I think it should be accepted that the pursuit of value creates life in the sense that it stands for "the evolution of the complex organisms from antecedent states of less complex organisms" (Whitehead 1948: 109–110) – that is, it evokes the differentiation between the non-living (senseless, valueless and purposeless matter) and the living (interdependent, internally and externally related, value-laden, active process). Like Whitehead's principle of creativity, Uexküll's common meaning rule can also account for creativity and novelty insofar as it describes the transitional threshold between the senseless, valueless and purposeless matter and the interdependent, internally and externally related, value-laden, active process from which meaning activity emerges and takes place in the world as sign of life. As can be seen in Fig. 1 above, something really new has been created due to the functioning of the common meaning rule.

As can be observed in Fig. 2, to the extent that Uexküll's common meaning rule is dynamically enlarged, it structures the web of life as a creation process from which meaning activity emerges, engendering novelty in the world.

²⁰ As noted by Isabelle Stengers (2002: 131–132) in *Penser avec Whitehead* [*Thinking with Whitehead* – my translation, A. A.] Whitehead assumes pragmatism as a method. For Stengers, Whitehead's assumption enriches Darwinism in that, according to Whitehead, the latter's verifiability is empirical instead of being theoretical. Taking into account the notion of biological evolution, Whitehead, for instance, seems to resist the adaptationist drift affirming a thought of creation in the sense that creation is correlated with novelty and value.

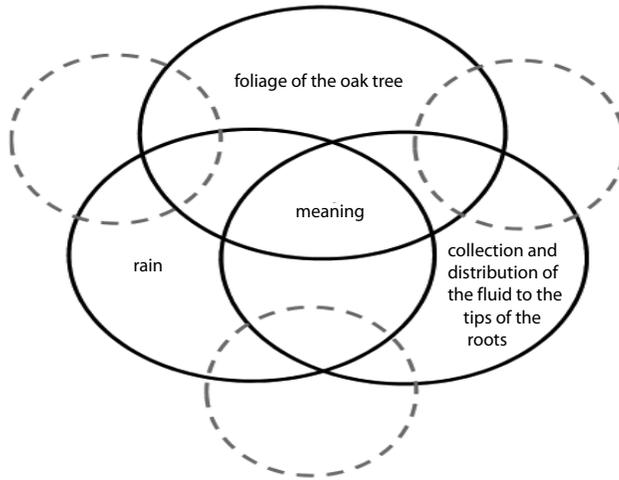


Figure 2. The web of life described by the common meaning rule that engenders novelty and creativity in the world. In *Theoretical Biology* Uexküll (1926: 125) employs the expression ‘rule of life’.

Fig. 2 helps us briefly summarize two topics developed above: (1) meaning has no simple location – once the common meaning rule represents a topological and structural space, meaning is a result or an effect of relational processes; (2) meaning is not dependent on the logical structure of being – from a Heraclitean point of view, meaning is incompleteness and in becoming. Both topics are in accordance with Whitehead’s process metaphysics as well as with Uexküll’s common meaning rule.

In addition, the common meaning rule reverses the image of life. It is evident that the concept of life expressed by the Darwinian image of a ladder or ‘tree of life’ is replaced by the understanding of evolution as consisting in modifications in a web of linked entities²¹:

[...] what happens with evolutionism when moving from Modern to Post-Modern, is that we leave behind the whole concept of life’s progress as expressed in the tree of life and instead understand the evolution as modifications in the web of life. (Kull 2004: 101)

²¹ ‘Web’ can be compared with Whitehead’s notion of ‘community’: “The community of actual things is an organism; but it is not a static organism. It is an incompleteness in process of production” (Whitehead [1929] 1978: 214–215).

This is a paradigm that can be best characterized by the metaphor of web, as used by Thomas A. Sebeok in the expression of “the semiotic web”, and as introduced by Jakob von Uexküll. (Kull 2004: 100)

The complex web of causal dependencies between the various levels means that we cannot fully specify the nature of an entity merely by listing the properties of its constituents and their spatial relations. It also means that we cannot pick out any level in the hierarchy as ontologically or causally primary. Whereas a substance ontology that presupposes a structural hierarchy of things only allows bottom-up causal influences, a process ontology has no trouble in recognising that causal influences can flow in different directions. (Nicholson, Dupré 2018: 21–22)

Accordingly, if we accept that the common meaning rule structures the web of life, the notion of ‘living things’ can be extended beyond “the organisms belonging to one of the five kingdoms (Monera, Protocista, Animalia, Plantae, and Fungi) including the cell” (Sebeok 2001: 28). Moreover, if one accepts that the common meaning rule represents a semiotic model, it can include “the cellular and tissue level of most groups of organisms” (Kull 2009: 15). The cell would play the role of meaning-receiver and the external medium would appear as the resource of a meaning-factor. Everything from the external environment that comes in contact with the cell will be a meaning-factor and will be transformed into something meaningful. The resulting transformation will be positive or negative, depending on how relevant the meaning-factor is to the cell’s own existence. In this case, one can speak of the relevance of meaning as a pragmatic criterion for life (existence, reproduction and survival)²².

If the common meaning rule is structurally enlarged (see Fig. 2 above), it can describe the web of life as a dynamic process from which meaning activity emerges and flows²³. As a consequence, so I think, the common meaning rule can represent a model of threshold zone from which one can differentiate the non-living and the living as corresponding to what is inanimate and animate in the world. I will stress this point in the next item.

4. Animate and inanimate: the issue of threshold

In contrast with Whitehead who extends the capacity of creativity to lower levels including atomic particles, it is my contention here to affirm that meaning is a

²² I have endorsed Uexküll’s theory of meaning being a pragmatic one (see Araújo 2012).

²³ In this regard, it is interesting to note that Vincent Colapietro (1989) uses the expression ‘semiotic web’.

property of the world of animate entities. By ‘animate’, I mean Aristotle’s *psyche* (or ‘soul’) from the Latin *anima* that means ‘soul’. If a body lacks *anima*, it is inanimate (for example, crystals, atomic particles, stones, mountains, and so on) – I also include robots and the so-called Artificial Intelligence in the category of the inanimate. As I see it, being animate rather involves agency than movement²⁴. What an animate entity does is meaningful and cannot be reduced to simple happening or preordered behaviour – in the latter case, such behaviour would lack the capacity of agency²⁵.

I am not using ‘*anima*’ in the sense of mental faculty²⁶. The idea is much more that meaning is an active property of the world of animate entities. Incidentally, for William James (1909: 373), activity means the very sense of life:

[...] we are tempted to affirm activity wherever we find anything going on. Taken in the broadest sense, any apprehension of something doing, is an experience of activity. Were our world describable only by the words ‘nothing happening’, ‘nothing changing’, ‘nothing doing’, we should unquestionably call it an ‘inactive’ world. [...] The sense of activity is thus in the broadest and vaguest way synonymous with the sense of life.

In this regard, for Whitehead, nature is an active organism. He identifies grades of things or actual occasions (actual entities) that can be differentiated between the life-histories of enduring non-living objects (such as electrons) and the life-histories of enduring living objects (which may include conscious knowledge) endowed with the complexity of biological processes:

In the actual world, we discern four grades of actual occasions, grades which are not to be sharply distinguished from each other. First, and lowest, there are the actual occasions in so-called ‘empty space’; secondly, there are the actual occasions which are moments in the life-histories of enduring non-living objects,

²⁴ “[...] we are reminded of the old Aristotelian idea that animal soul and genuine animate motion is one and the same phenomenon” (Emmeche 2001: 683).

²⁵ “[...] let us use the example of a robot. For instance, the robot has an order: “There are two things, ‘green’, and ‘blue’; take (‘choose’) the ‘blue’ one”. The robot examines the first thing, finding it to be ‘green’; since it is not ‘blue’, it will examine the second thing, finding it to be ‘blue’; then the robot takes the second thing. We can say that the robot is not making a choice, rather it is selecting, because its behaviour was completely preordered and sequential [Note 17: The sequentiality in this sense can be seen as the reason why robots are not true agents; they behave as zombies, they lack intentionality].” (Kull 2015: 4) – I would like to add that robots are not animate and so they are not able to perform meaning activities.

²⁶ In *Mind and Nature – A Necessary Unity*, interestingly, Gregory Bateson (1979: 5) accentuates that “the very word ‘animal’ means ‘endowed with mind or spirit (*animus*)’”.

such as electrons or other primitive organisms; thirdly, there are the actual occasions which are moments in the life-histories of enduring living objects; fourthly, there are the actual occasions which are moments in the life-histories of enduring objects with conscious knowledge. (Whitehead 1978[1929]: 177)

Once Whitehead differentiates between types of entities, one can map a threshold zone, below which there are no degrees of animate activity in the life-histories of enduring living objects. It seems clear that *anima* is a property of enduring living objects and at this point we can turn to Uexküll: meaning is a property of the world of animate objects which enduring non-living objects lack. What an animate object does is meaningful in the sense of agency and cannot be reduced to simple happening, which is to say that the capacity of meaning differentiates what is animate from what is inanimate in the world.

As a central issue in contemporary biology with regard to the processes embodied by organisms, it is crucial that one differentiates between organic and inorganic processes. For Uexküll, such a differentiation has to do with what is meaningful and makes sense in nature. Using Whitehead's terminology, the life-histories of enduring non-living objects are not meaningful and they do not make sense in nature – they lack *anima*. Interestingly, Gregory Bateson includes Jung's distinction between 'Pleroma' and 'Creatura' that correspond to the non-living and the living, respectively:

[Jung] names them the pleroma and the creatura, these being Gnostic terms. The pleroma is the world in which events are caused by forces and impacts and in which there are no "distinctions." Or, as I would say, no "differences." In the creatura, effects are brought about precisely by difference. In fact, this is the same old dichotomy between mind and substance. (Bateson 1987[1972]: 322)

It is no less interesting that Jesper Hoffmeyer, even though it is not his main aim, indicates traits of a kind of process ontology in Bateson's view of the mind in *From Thing to Relation: On Bateson's Bioanthropology* (2008). Hoffmeyer (2008: 27) points out that for Bateson 'relations' are not dependent on things and the idea is more to "give primacy to process and relation over things" – this formulation is akin to Whitehead's principle of process metaphysics in the sense that nothing happens in isolation. As he explores Bateson's interface between the pleroma and the creatura, Hoffmeyer correctly states that it does not correspond to the traditional Cartesian mind-body dualism. While pleroma is the world of nonliving matter, creatura is among phenomena governed and determined by difference, distinction, and information: "[...] creatura exists within and through pleroma [and] pleroma exists only in creatura. We can meet the two only in combination,

never separately” (Bateson cited in Hoffmeyer 2008: 30–31). The idea resonates closely with Fechner’s principle of psychophysics which claims that the mental and the physical are aspects of a single reality. In order to make explicit the understanding that process and relation are ontologically primary in relation to things, Hoffmeyer introduces the notion of ‘relative being’. Instead of attributing to things the condition of being, Hoffmeyer rather suggests that the relation that persists for a certain period of time cannot be reduced to the individuals that substantiate the relation.

By stressing the notion of ‘relative being’, Hoffmeyer undermines an ontology of things. In the case of the mind–body relation, the existence of ‘relative beings’ is based on instances of combination between the pleroma and the creatura. As a result, proceeding from Bateson’s conception of ‘minded nature’, mind can be identified with functional relations on different and multiple levels of combination between the pleroma and the creatura. Again, in accordance with Fechner’s principle of psychophysics, the mind can be even identified with inorganic processes: “[...] by reasoning from analogy, plausibly Fechner assumes in a scientifically respectable way that there exists a psychical dimension other than the realm of inner human experience [...] His argument rested on the premise that the mental must not necessarily correlate to a nervous system; it could also be realized in other material systems” (Heidelberger 2004: 173).

In *Mind & Cosmos: Why the Materialist Neo-Darwinian Conception of Nature is Almost Certainly False*, Thomas Nagel (2012) splendidly reviews the materialist conception of nature in neo-Darwinism. In an attempt to be a “theory of everything”, as Nagel points out, Neo-Darwinism faces the difficulty of determining where exactly to place the mind in the world of natural phenomena in which everything results from a sequence of random physical events together with the mechanism of natural selection. Although no one denies that the existence of the mind depends on a physical constitution, the explanatory strategies of Neo-Darwinist materialism do not seem to understand that ingredients such as intention, meaning, values, *qualia*, reasons, beliefs, and so on are associated with the mind. When the materialist philosopher John J. C. Smart published *Our Place in the Universe* (1989) twenty years ago, the immediate question was who are ‘we’? ‘We’ cannot only mean ourselves, human beings, since mental life is not exclusively a human property²⁷. Since many organic forms also show clear signs of mental life, it does not seem likely that the ultimate explanation of the mind or

²⁷ “So if ‘we’ enact our world, perhaps some qualification may be needed to specify the ‘we’ being referred to. Both animals and humans may enact their worlds in order to perceive and engage with them. Only culturally shaped humans, however, have the ability to enact in ways that are creative and metaphorical” (Pickering 2016: 278).

mentality is the explanation of natural mechanisms and processes together with the action of natural selection. In fact, in Smart's view, which is largely related to Schrödinger's reductionism, biological processes may well be reduced to a sequence of physical behaviours and accidents – psychology as Smart understands it can also be ontologically reduced to physics. It is curious that in Smart's view, for example, the existence of the mind does not suppose schemes of intention, meaning, values, qualia, reasons, beliefs, etc. It is not surprising that explanations according to epistemological gaps, discontinuities or bifurcations between the mind and the brain or the mind and the world have emerged from this view. Nothing that Descartes had not anticipated when he said that the mind and the body could not be one single thing.

Returning to Nagel, he claims that the mind (or mentality) does not result from miraculous anomalies in nature. Although Nagel does not use the term 'threshold', it does not appear to be alien to his explanatory strategy regarding the place of the mind in nature. From certain thresholds between natural processes, organisms with a mind emerge. In admitting the existence of thresholds, one is not committing to the existence of discontinuities or, in Whitehead's terms, bifurcations in nature. The methodological adoption of the threshold in explanatory strategies of placing the mind in nature only makes it clear that the mind is an aspect of nature itself. In fact, when Whitehead protests against the theories of bifurcation, he points out that the mind does not comprise a psychic addition to nature. In the line of Fechner, William James and Whitehead, in particular, 'mind' consists in an aspect of reality as it translates itself into a unity of psychophysical processes²⁸. Explaining 'mind' supposes to make explicit the dynamic structure of psychophysical processes since from such processes schemes of intention, meaning, values, qualia, reasons, beliefs, etc. emerge and they are present in countless organic forms of life. The idea is that we recognize that psychophysical processes assume values that reaching certain threshold engenders forms of mental life beyond ourselves on a plural scale of world. It is evident that Nagel endorses a

²⁸ The idea of reality exhibiting psychophysical unity, which descends from Fechner, gets expression in William James's neutral monism and Whitehead's conception that an actual entity is always dipolar. Also Bateson (1979) advocates a necessary unity for the relation between the mind and nature. Recently, Thomas Nagel has endorsed some form of neutral monism as an alternative to reductionism in the philosophy of the mind. Using Fechner's terminology, if, for instance, a psychophysical process reaches a certain threshold of functional organization, one can speak of mind or mentality. Indeed, instead of being a sort of panpsychism, the idea is rather that of an organic worldview as the mind or mentality is supposed to be found in multiple contexts in the world (or in the universe, since one assumes a cosmological view of the psychophysical thesis).

pluralist worldview as an alternative to the reductionism of Neo-Darwinism. Such a pluralistic worldview is more than clear in Uexküll's theory of meaning, once it reveals multiple schemes of intention, meaning, values, *qualia*, reasons, beliefs, etc. in the organic world.

In many aspects, indeed, a pluralistic view of the mind breaks away from the traditional physicalism in analytic philosophy in that it lies convergent with the so-called "4e's theories": 'mind' is an (1) embodied, (2) embedded, (3) enacted, and (4) extended process²⁹. The idea is that organism-environment interactions generate minded experience in the sense that 'mind' consists in "an emergent process of meaning-making, acting, and communicating among creatures capable of certain kinds of complex functions and communicative interactions" (Johnson 2017: 19). Even though most philosophers and cognitive scientists are concerned with trying to broaden the understanding of human cognitive capacities and experience in accordance with the "4e's theories" beyond an internalist view, this does not imply that 'mind' is solely to be understood as *conditio humana*. In this paper, I fundamentally endorse the view that the existence of the mind depends on meaning activity and that it stands for the distinctive trait of life – in short, I endorse the view of continuity between mind and life as it is mediated by meaning activity.

Returning to Uexküll, as the relation of the oak tree and the rain illustrates, if the common meaning rule is generalized, it can bridge the traditional bifurcation of fact and norm, describing increasing degrees of normativity in nature, including, for instance, primitive organic forms such as bacteria (Sebeok 2001)³⁰.

²⁹ "The new way of thinking about the mind is inspired by, and organized around, not the brain but some combination of the ideas that mental processes are (1) embodied, (2) embedded, (3) enacted, and (4) extended [...] The idea that mental processes are embodied is, very roughly, the idea that they are partly constituted by, partly made up of, wider (i.e., extraneural) bodily structures and processes. The idea that mental processes are embedded is, again roughly, the idea that mental processes have been designed to function only in tandem with a certain environment that lies outside the brain of the subject. In the absence of the right environmental scaffolding, mental processes cannot do what they are supposed to do, or can only do what they are supposed to do less than optimally. The idea that mental processes are enacted is the idea that they are made up not just of neural processes but also of things that the organism does more generally – that they are constituted in part by the ways in which an organism acts on the world and the ways in which world, as a result, acts back on that organism. The idea that mental processes are extended is the idea that they are not located exclusively inside an organism's head but extend out, in various ways, into the organism's environment" (Rowland 2010: 3).

³⁰ "Every actual entity has the capacity for knowledge, and there is graduation in the intensity of various items of knowledge" (Whitehead 1978[1929]: 161). From a certain philosophical point of view, the idea that "there is an intensity of graduation for actual entities" of knowledge suggests that one can find out degrees of normativity and meaning activity (or semiosis) in the organic nature.

For both Uexküll and Whitehead, again, the morphology of an organism is not that of matter having a simple location. It is a morphology determined by a vector space and non-linear relations. Additionally, in comparison with Whitehead's principle of creativity, Uexküll's common meaning rule can account for creativity and novelty insofar as it describes the web of life as activity of changes of meaning in nature (see Fig. 2).

Summarizing my approach on meaning, process and life in accordance with the perspectives of Uexküll and Whitehead, it can be translated into the following: *where there is meaning, there is life (no meaning, no life)*. To present this idea, I was inspired by William James's thesis on experience and life from his radical empiricism from 1904: the (pure) experience is the immediate flux of life or the radical eventfulness (*i.e.*, the asubstantialism); every feature of the world is either an 'experiencing' or an 'experienced' (Weber 2011: 96). Experience is what actually holds the world together. As the immediate flux of life, experience means 'sensation' or 'feeling' and therefore it is not exclusively *conditio humana* – for James, 'sensation' or 'feeling' corresponds to Bergson's *intuition*.

In comparison with James' empiricism, I am espousing that every life process has to do with production or interpretation of meaning as part of a mosaic experience in the sense of a web. As noted by Sebeok (2001), semiosis is the phenomenon that distinguishes life forms from what is inanimate and it could not have existed prior to the evolution of life (see also Hoffmeyer 2008). My view of meaning and life is quite close to Sebeok's view of semiosis in that it is co-extensive with life in terms of 'no sign without life' and conversely (Sebeok 1999; Deely 2009). The difference is that I stress the implication of Whitehead's idea of process on the sense of meaning. Moreover, one philosophical virtue of interpreting Whitehead's principle of creativity in semiotic terms is that it can stand for the creation of meaning. Taking into account the premise of this paper in that meaning and life coincide, the creation of meaning stands for creation of life and *vice versa*.

In principle, the relation between meaning and life can be based on sign-inference process or semiosis whose the logical form is '*since p, q*': the former, therefore the latter (Manetti 2002: 285). This conception of semiosis is historically credited to the Epicurean theory of inference that attracted Peirce's attention in 1865 (Manetti 2002: 282)³¹. Differently from the idea of semiosis as inference, it can be situated as *interpretation* and *make-decision* (Kull 2015: 4). In order to make a decision, there must be possibilities in the sense of simultaneous options. Taking

³¹ "Peirce adapted the designation 'semiosis' (in a variant transcription) from Philodemus's fragmentary Herculanean papyrus *On Signs*, where the Greek equivalent occurs at least thirty times to represent a type of reasoning or inference from signs" (Sebeok 1999: 86).

into account the understanding of semiosis as interpretation and make-decision, I think it matches with Whitehead's principle of creativity insofar as it stands for novelty in the world. In addition, for novelty to be created, the options must be simultaneously opened, otherwise creativity, spontaneity and freedom novelty makes no sense in nature. With respect to my premise '*no meaning, no life*', it indicates that life is based on processes of interpretation and meaning creation in the world. It is only due to a plurality of meaning processes that the creation of the web of life could have been engendered in the world³².

As I see this, meaning coincides with entities' *anima* in the sense of being enduring objects (which may include conscious entities). The issue is where the animate world begins: can one determine a threshold zone between the inanimate and the animate.³³ It is relevant here to highlight that the term 'threshold' has at least two senses. Firstly, as employed by Uexküll, 'threshold' indicates perceptual qualities and sensation intensity:

Threshold means the just perceptible difference between two intensities of a quality. It can be used in the same way, however, to mean the difference perceptible between two qualities. (Uexküll 1926: 63)

[...] with the inevitability of Nature, the distance between the thresholds and the regularity of the increase in this distance are determined for colours and for sounds, for smells and for flavours, just as for temperature and for sensations of touch. (Uexküll 1926: 77–78)

³² "Before the life process or semiosis (that has lasted and functioned uninterruptedly for about two billion years) started, there could have been an intermediate series of events, which brought together the necessary components of the entire semiotic machinery. This view is close to a contemporary common understanding of the beginning of life, according to which life did not take its origin through a single unique step, but through a multitude of steps (and possibly several branches, some of which were temporal and later disappeared entirely). As such, the border between life and non-life turns quite fuzzy in principle" (Kull 2009: 9).

³³ "[...] this typology ultimately goes back to the classical Aristotelian distinction between *anima vegetativa*, *anima sensitiva*, and *anima rationale* [...] the distinct levels of semiosis can be interpreted as differences in the logical capacity between the levels [...] which can be identified correspondingly as vegetative, animal, and cultural *umwelten*. The borders between the levels of semiosis are called semiotic thresholds. The thresholds themselves, however, may not be very strict; therefore, we describe these as the semiotic threshold zones" (Kull 2009: 15, 23).

Again, the question arises how to determine the threshold for such a type of perceptual and sensory experiences. For such a process of discrimination, arguably, there must be a minimum intensity for a stimulus to produce a qualitative and perceptual response³⁴.

Secondly, the issue of the threshold can be historically and philosophically illustrated as follows:

The phenomena on the lower threshold should rather be isolated as indicating the point where semiotic phenomena arise from something non-semiotic, as a sort of ‘*missing link*’ [my emphasis, A. A.] between the universe of signals and the universe of signs. (Eco 1976: 21)

This is why we need to speak about threshold zones instead of just thresholds, which have been treated as univocal qualitative jumps by major tradition in semiotics up to now. (Kull 2009: 9–10)

It is thus an open and crucial issue of research to determine, empirically and conceptually, the different thresholds in this zone between such simple reproducing and evolving systems and contemporary terrestrial organisms that appear to depend unambiguously on semiotic processes. (Kull *et al.* 2011: 27–28)

One important question that divides people in semiotics is the question often referred to as the “semiotic threshold”, i.e., the problem of defining the simplest system capable of semiotic activity. (Hoffmeyer, Kull 2011: 282)

³⁴ Here, it is interesting to note William James’s use of threshold. Similarly to Uexküll’s conception of perceptible difference between two intensities of a quality and in reference to Gustav Fechner, James sees ‘threshold’ as the discrete character of sensible experience: “[...] Fechner’s term of the threshold, which has played such a part in the psychology of perception, is only one way of naming the quantitative discreteness in the change of all our sensible experiences. They come to us in drops” (James 1909: 231–232). Incidentally, ‘James’ considerations of Fechnerian philosophy occur primarily in the *Principles of Psychology* of 1890, in his *Lecture on Human Immortality* of 1898, and finally, in an article in the Hibbert Journal which became the fourth chapter of his *Pluralistic Universe* of 1909’ (Marshall 1974: 304). In *Human Immortality*, particularly, James gets forward the conception of ‘threshold’ from Fechner’s ‘*Psychophysik*’. As held by Fechner, James ([1898] 2010: 165) notes that the condition of consciousness corresponds to a kind of psychophysical movement in the sense of reaching a certain degree of activity which is called the ‘threshold’. In Fechner’s own words: “[...] more general and higher mental phenomena, such as the total consciousness of the people depending on sleeping and waking, the consciousness of individual thoughts, the attention in a given direction have a point of extinction and origination, we will use the term and expression the threshold [...] the conditional, the elevation of consciousness to the threshold or which they correspond, but it can raise the question whether we are not in favor of adopting a threshold value of the underlying psycho-physical movement” (Fechner 1966[1889]: 175–176).

Though subjective awareness is different from the simple functional responsiveness of organisms in general, both life and mind have crossed a threshold to a realm where more than just what is materially present matters. (Deacon 2012: 27)

As one can see, since Eco's formulation, the issue of the threshold has been to make clear whether there must actually have been "missing linking" in nature. It is indeed a very controversial topic which has been fuelling contemporary debates in science and philosophy:

The technical term for *missing links* is transitional morphologies, or forms, and is used by paleontologists to describe important evolutionary discoveries that contain the anatomical features of both older and more recent physiology. A good example is the latest discovery of hominid fossils in Africa, which are believed to be a possible immediate ancestor to the human lineage, but not a missing link. (livescience)³⁵

The fact that there are spontaneous inorganic processes that generate macroscopic order is seen by many as a missing link between living and non-living processes. (Deacon 2012: 264)

Since nature is a causal continuum, to impose arbitrary discontinuities is unhelpful. As David Bohm [1985] has suggested, semiosis occurs to a greater or lesser extent at all levels of the natural and human-made world, but "greater or lesser" means a quantitative difference, not a qualitative one. (Pickering 2012: 198)

I think that with regard to the issue of the missing link the notion of threshold is more an epistemological tool than an ontological commitment. As the belief in continuity in nature – Darwin's famous maxim *Natura non facit saltum* –, threshold is an important epistemological tool for our understanding of the transition from the non-living to the living, and the boundaries where meaning makes sense in the world. Additionally, insofar as Whitehead differentiates between types of entities, one can map a threshold zone to identify the transition from inanimate to animate entities – Uexküll can be considered here³⁶. Taking into account Whitehead's description of grades of entities, it is fair to claim that there

³⁵ See www.livescience.com/32530-what-is-the-missing-link.html.

³⁶ "David Bohm also put forward a view of the world comprising two ontological orders enfolded in each other without boundaries. These orders are the material or 'somatic' order and the order of meaning or 'signification'. The two orders are in a continual process of enfolded into and unfolding out from each other [...] Bohm's treatment of what he refers to as the 'unbroken wholeness of nature' is thus boundary free [...] The biologist Jakob von Uexküll too used semiosis as the means by which to understand the continuity of the pre-organic and organic orders of nature" (Pickering 2018: 190).

is no degree of animate activity below the life-histories of enduring living objects (Ford 1984: 3). In parallel with Uexküll's account of the threshold, Whitehead's description of grades of entities may shed light on the contentious issue of determining the *threshold* between the non-living and the living. As I see this, the threshold is a fuzzy boundary and there can be no sharp border between meaning and non-meaning, which is why it is better to say that there is a threshold zone instead of a threshold. In fact, according to Whitehead's description of grades of entities, I think the idea of the threshold zone can represent a fuzzy boundary between meaning and non-meaning in the sense of a progressive differentiation of entities. Besides, I also think there can hardly be a sharp border between meaning and non-meaning insofar as for Whitehead entities are in a constant process of becoming, and part of a *continuum* in nature.

Additionally, as a lesson that we can learn from Uexküll's description of the relation between the foliage of the oak tree and the rain, I stress that the non-living has meaning in transition and continuity with the living. In comparison with Sebeok (1979) and Hoffmeyer (2008) who regard life as being an emergence process and a threshold for the 'semiosphere', I assume that meaning activity distinguishes animate entities from inanimate ones as meaning could not have existed prior to life. According to the premise of this paper, finally, the idea is that *where there is meaning, there is life (no meaning, no life)* in the sense that 'semiosphere' stands for the 'animate world' where life does makes sense.

5. Final remarks

Perhaps the greatest challenge of this paper was to put together two theoretical perspectives that appear to be so disparate philosophically: on the one hand, Uexküll radicalizes the notion of meaning and holds that it is the guiding star of biology; on the other hand, Whitehead reaffirms the radicalism of Heraclitean thought and sees reality as a process and contingency. As a consequence, the paper faces the following question: how to make the notion of meaning intelligible in a worldview where nothing is fixed and stable? By abandoning the traditional view of meaning as entity-like and assuming that meaning is effect of process or semiosis process. Thus, meaning would be at the core of the process thought that unites the perspectives of Uexküll and Whitehead. In fact, in his metaphysics, Whitehead presents no conception of meaning. What I am trying to make explicit is how a conception of meaning can be the core part of a process metaphysics in that a door is opened to (bio)semiotics as an alternative to the traditional view of meaning in terms of a type of entity (mental or ideal).

Proceeding from such an approximation of the perspectives of Uexküll and Whitehead, the paper stresses that the meaning activity represents a threshold zone and marks the transition between the non-semiotic and the semiotic, corresponding to the non-living and the living as illustrated by Uexküll's common rule of meaning. Briefly, in accordance with the premise of this paper, the idea is that *where there is meaning, there is life – no meaning, no life!* (and *vice versa*). As a step towards future research, it could be suggested that what evolves after meaning emerges and flows in the semiosis process is a diversity of social and historical forms of life.³⁷

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Икскюль и Уайтхед о значении, процессе и жизни

Статья сближает теорию значения Якоба фон Икскюля с процессным мышлением (process-thought) в философии Альфреда Уайтхеда, указывая на совместимость значения и процесса, рассматриваемых с точек зрения Икскюля и Уайтхеда. Это предполагает, что правило общего значения Икскюля может описывать процессы рождения новизны в мире, как и принцип творчества Уайтхеда. Кроме того, автор статьи замечает, что Икскюль и Уайтхед отказываются от субстанционального взгляда на организм – организм означает скорее процесс, деятельность и творчество, чем что-либо похожее на вещь. При рассмотрении теории значения Икскюля предлагается семиотическая интерпретация принципа творчества Уайтхеда, в которой понятие порога является основополагающим для определения границы между семиотической и несемиотической областями, соответствующими живому (одушевленному) и неживому (неодушевленному). В заключении утверждается, что деятельность смысла отличает одушевленные сущности от неодушевленных, то есть значение и жизнь пересекаются – значение не могло существовать до жизни (и наоборот).

Uexküll ja Whitehead tähendusest, protsessist ja elust

Artiklis kõrvutatakse Jakob von Uexkülli tähendusteooriat protsessmõtlemisega Alfred Whiteheadi filosoofias, osutades tähenduse ja protsessi omavahelisele sobivusele Uexkülli ja Whiteheadi perspektiividest nähtuna. Osutatakse, et Uexkülli ühistähenduse reegel suudab maailma uudsusprotsesse kirjeldada samamoodi nagu Whiteheadi loovusprintsii. Samuti väidetakse, et Uexküll ja Whitehead loobuvad substantzialistlikust vaatest organismile – organism tähendab pigem protsessi, tegevust ja loomist kui midagi asja meenutavat. Uexkülli tähendusteooriale lähenedes pakutakse välja Whiteheadi loovusprintsii semiootiline tõlgendus, milles läve mõiste on aluseks piirile elusale ja elutule vastava semiootilise ja mittesemiootilise valdkonna vahel. Kokkuvõttes väidetakse, et tähendustegevus eristab elusaid entiteete elututest tähenduse ja elu kattuvuse mõttes – tähendus ei saanud eksisteerida enne elu (ja vastupidi).