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RESEARCH

A Foray into *Welt* and *Umwelt*: Rereading the Onto-Ethological Discussion between Heidegger and Uexküll

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Abstract
Our article debates the issues at stake in the Heideggerian examination of the *Umwelt* theory in his *Fundamental Concepts of Metaphysics*. This discussion sheds light on the links and differences between the lifeworld that is constituted as a set of meanings and interactions, and the world that opens up to Being, by providing a definition of the world as what is experienced through "the accessibility of beings" (Heidegger, 1983/1995, p. 196, § 47), i.e. the lived relationship to the subjective world itself. As Heidegger (1983/1995, p. 192, § 46) theorizes the idea of the animal "poor in world" (based on the Uexküllian (1934/2010, p. 51) concept of "poverty"), he implies that both humans and animals perceive the fundamental nature of the world, albeit in different ways.
Therefore, the article contends that the distinct treatment of human beings helps avoid confusion between the ontology of beings and their ontic biological structure. As Uexküll also makes the human being the exception in the harmonics of nature, we demonstrate that Uexküll's statement of the human imperfection in fact prevents a biological reductionism. This article thus highlights the challenge, for biosemiotics, to provide a clear distinction between the ontology of living beings and their biological disposition.

Keywords Being · Poor-in-world · *Umwelt* · *Welt* · Heidegger · Uexküll

It is seldom mentioned that Heidegger revisited Uexküll's work, and developed one of his most complex concepts over this reading. Yet in his *Fundamental Concepts of Metaphysics*, Heidegger extensively debates Uexküll's ideas, praising the relevance of his ethological approach and his rethinking of the lived adaptation of the organism. As

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such, an important connection between biosemiotics and phenomenology exists, not only as mere presence, but as an explicit influence. This discussion is a major stake for biosemiotics and philosophy as, moving beyond the mechanistic theories of their time, Heidegger agrees with Uexküll in stating that both humans and animals have a relation to signs, to *semiology*, and to something or, as he puts it, to "whatever" (Heidegger, 1983/1995, p. 193, § 46) living beings encounter in the world.

Based on those elements, our article debates the issues at stake in the Heideggerian re-reading of the *Umwelt* theory, first by recontextualizing the methodology of Uexküll's biosemiotics, then by engaging in a dialogue with the Heideggerian phenomenology on two crucial points. First, what does it mean to be poor in world or world-forming, and what does it entail for the human being to conclude that, besides human involvement, other beings develop a subjective world of experience? Indeed, Uexküll's work significantly inspired Heidegger to conceptualize the idea of animal "poor in world" (Heidegger, 1983/1995, p. 192, § 46). Heidegger famously discusses the Uexküllian ethology to develop a phenomenological perspective on the essence of human *Dasein*, the essence of animality and the essence of non-living entities. He shows that the pre-Uexküllian mechanistic theory (Hyppolite Taine, Jacques Loeb…) of the environment needs to be revitalized, by highlighting *what* the animal does meet and experience ontologically in its lifeworld. In this regard, Heidegger's proposition is to counter the reductionist and mechanistic approaches. He suggests that instead of confining the organism (both human and animal) to their respective lifeworld, considered as an ontic space that exposes individuals to phenomena and sets of meanings (stimulus-interpretation-behaviour), we should open up the essence of animal to its *Umwelt*. Instead of relegating animals to mechanistic behaviours, Heidegger implies that both human beings and animals have access to the essence of the world, even if differently. In doing so, he also tries to reconnect with the ontological path of *Dasein*, which can question the essence of animality and its own by being world-forming.

This important debate introduces a major phenomenological development: the fact that the world is experienced through "the accessibility of beings" (Heidegger, 1983/1995, p. 196, § 47), i.e. the lived relationship to the subjective world itself. This discussion sheds light on the links and differences between the lifeworld that is constituted as a set of meanings and interactions, and the world that opens up to Being. This leads us to the second stake of this dialogue; if *Dasein* dwells in the world, what does it mean for the human being to live as an organism in an *Umwelt*, and why is it rarely considered that the animal dwells in its own world? What does it entail for *Dasein* not to be the only being with a connection to the world, in the Heideggerian phenomenology, and how should we understand the interplay between *Welt*, *Umwelt*, and Being? As such, Uexküll's *Umwelt* theory provides Heidegger with a starting point to account in more detail for the singularity of the human lifeworld, by distinguishing between the human *Welt* and the animal *Umwelt*. The major dialogue between Uexküll and Heidegger implies a distinctly phenomenological approach to the question of the individual's lived experience. As he considers the use of the *Umwelt* theory for the human being to be ontologically untenable, it

becomes necessary for Heidegger to differentiate between *Dasein* and animal, no longer on biological but on ontological grounds.

Consequently, this article seeks to deepen the understanding of the ontology of humans and animals in the light of their accesses to signs and references, from a phenomenological point of view, and to consider the impact of this discussion on biosemiotics and its broader implications. More so, as we underline that Uexküll also makes the human being the exception in the harmonics of nature (as he believes the human being to be imperfect[1]), we strongly argue that Uexküll's statement of the human imperfection in fact prevents a biological reductionism. As such, we show that to make the human being the exception in nature, per his imperfection, helps Uexküll avoid a form of biological reductionism that would boil down the human existence to a mere biological fact. By highlighting an imperfect bias in human nature, Uexküll already provides insights into the risk of conflating the question of the essence of an individual and the question of its ontic structure. In doing so, we highlight the challenge for biosemiotics to provide a clear distinction, not between the human being and animals, but between the ontology of living beings and their ontic and biological disposition.

The Lifeworld Harmony and Human Interference

A Debate On Behaviour and Perception

The "theory on environments[2]" is part of a paradigm of representations that shaped knowledge during the 19th century. It originates from the idea that the environment plays a determining role in shaping the characteristics of the individuals within it. The idea that environments influence individuals is not confined to evolutionary biology, physiology, and geography; it also impacts the metaphysical conception of the world and the phenomenological understanding of beings. According to Canguilhem (1992, p. 134), there is "an originally strictly mechanistic meaning to this term [environment]. […] First the world, then the human being; going from the world to the human being". However, according to the ethologist Jacob von Uexküll, this mechanistic stance is inadequate for two main reasons. Firstly, it indeed overly emphasizes the environment's (unilateral) pro-motor role on the organism. Secondly, it fails to differentiate between different environments themselves. Uexküll strongly criticizes the work of Hippolyte Taine, who introduced the term "environment" ("milieu" in

[1] We will see that Uexküll famously mentions that "we have built bridges between ourselves and Nature with all of our use-objects, but [we] have not thereby come closer to Nature, but rather, have-detached ourselves from it." (von Uexküll, 1934/2010, p. 191).

[2] Based on the work of the French philosopher Hippolyte Taine, the "théorie des milieux" is defined as "the science that studies, on the one hand, the complex whole represented by the objects that surround organized bodies; then, on the other hand, these bodies themselves; and that has as its goal or purpose the knowledge of the conditions of relation of the former to the latter." (Kremer-Marietti, 1981, p. 24; Nysten, 1855, p. 811).

French). Taine posits that every organism lacks purpose and content, merely responding to the causal influence of their environment. Uexküll, on the other hand, considers that this approach only analyses (animal) behaviour in a supposedly objective manner, which overlooks the role of the organism in selecting stimuli from its environment. In this regard, actions are determined by a causality that restricts them as *re*actions. Uexküll argues that the behaviours of organisms are indeed reactions to received stimuli, but these stimuli are constituted as such by the perceptual apparatus of the individual. Uexküll thus aims for a significant reform in the analysis of environmental factors affecting living organisms and lay the basis for major steps in biosemiotics; "sign systems embrace all living systems" (Kull, 2001, p. 1).

Uexküll coins the concept of *Umwelt* to overcome the issues of the concept of environment itself – even if this concept was sometimes mistaken as the basis for another mechanistic theory on environments (Feuerhahn, 2009, p. 428; Kull, 2001, p. 11; Uexküll, 1912, p. 352). In English, *Umwelt* is generally translated as "lifeworld", "experience world" or even "environment". But even so, the *Umwelt* differs from the proper idea of "environment" as "surroundings" (*Umgebung*), in the sense of that mechanistic environment that surrounds the organism. According to Uexküll, different *Umwelten* exist within the same *Umgebung* since each species or even individual selects different meaning tones within it. As such, the *Umwelt* is used "to refer to the world that is the product of the organism" (Feuerhahn, 2009, p. 428) not to describe the world that produces the organism. The *Umwelt* is constructed by the individual, who organizes their own lifeworld around significant elements issued from their general surroundings. According to Uexküll's *Umwelt* theory, all organisms are subjects that interpret their *Umwelt*, and are not objects that react mechanically to external forces: "All conscious animals obviously have phenomena […] in so far as they have holistic, coherent (rather than non-centralized, distributed) subjective experience" (Tønnessen et al., 2018, p. 324). The terms "individual" and "organism" are used interchangeably, because they both apply to all living beings, including human beings.

It is therefore crucial to distinguish between a theory of mechanistic environments, which implies passive and unidirectional adaptation of the organism to its environment, and the *Umwelt* theory, which suggests a reciprocal activity of the organism in shaping its internal and external lifeworld. A proper philosophical reading reveals here the epistemological links between the *Umwelt*'s biosemiotics and the phenomenological notion of lived experience; and the significant implications of deepening our understanding of their relationship and methodology.

Indeed, Uexküll's theory underlines that natural sciences cannot objectively describe the environment without considering the human subject who comprehends it. Scientific perspectives are profoundly reliant on the state of human knowledge and discoveries. Consequently, the purportedly comprehensive description of the environment or nature, incorrectly regarded as constituting the world (*Welt*), is actually limited to the human *Umwelt*.

We must therefore consider the strong methodological links between biosemiotics and phenomenology in the effort to recognize that human beings are constantly projecting themselves in their perception and apprehension of things – and that it impacts their understanding of phenomena. We find a clear echo of the basis of

Husserlian phenomenology, as understood by Heidegger and all subsequent phenomenologists. With the idea of returning to "things themselves" (*Sachen selbst*) (Husserl, 2001, p. 101), Husserl challenges the positivism of the second half of the 19th century. For positivism, metaphysical and theological propositions are ineffective, since all valid scientific knowledge is based on experimental facts. Husserl's disagreement with positivism lies in the definition of "fact" and how to reach the experience of a "fact". According to him, positivism assumes that the meaning of the world pre-exists our minds, and that we can "find" objective, neutral truths in it, without realizing that finding, formulating, constructing and stating facts presupposes an understanding. What is "given" to us by facts, according to positivism, actually entails a donation, an experience, a perception, and uncovering this "phenomenon" of perception is the basis of phenomenology. This is the reason why our understanding of the world takes the form of "sketches" (*Abschattungen*) (Husserl, 1982, p. 189), waiting to be verified and constituted – even for formal sciences like logic and mathematics. Returning to things themselves is not about finding facts, but about understanding the genesis of the meaning of things in human beings. By considering that there is not "a" fact or "a" truth, but sketches of truth that needs uncovering, phenomenology admits a form of plurality in the phenomenon of perception of living beings.

In the same methodological and epistemological effort, Uexküll's theory entails a distinction between the environment as a whole (*Umgebung*) and each individual's *Umwelt*. This distinction goes beyond mechanism, which tends to superimpose the human environment onto animals and reflects a clear anthropocentrism. The better example of the openness of the *Umwelt* theory can be find in Uexküll's criticism of Jacques Loeb's reflex arc theory. As von Uexküll (1934/2010, p. 46) illustrates, the reflex arc operates as a completely deterministic process: "the whole reflex arc works with the transfer of motion, just like any machine. No subjective factor, such as one or more machine operators, are apparent anywhere." In contrast to the mechanistic approach of his time, Uexküll aims to demonstrate that stimuli themselves result from selections, constitutions, and processes of signification carried out by the perceiving organism. As Chamois (2016, p. 177) underlines: "the debate essentially relies on the status that is granted to the 'stimulus': either – according to Loeb's model – it is an undifferentiated element of the environment, or – as Uexküll argues – it is the result of a process of constitution." While criticizing the reflex arc model, where receptors trigger sensory and motor cell activation that led to predetermined behaviours, Uexküll promotes the theory of a functional circle (*Funktionskreis*) as to what composes the animal "phenomenal experience" (Tønnessen et al., 2018, p. 324). The image of the circle emphasizes the selection of a set of perceptions and signs that speaks to the organism, and coincides with a sensorimotor loop. Uexküll notably explains the humble example of the tick (von Uexküll, 1934/2010, p. 45), where he identifies four elements that have a signification in the tick's *Umwelt*, and shows that these elements meet four meaningful attributes to which the tick can respond.

1. The tick's sense of smell is tuned to only one odour, that of butyric acid. As a counterpoint; all mammals share the common odour of butyric acid in their sweat.

2. A tactile organ allows the tick to orient itself among the hairs of its prey. As a counterpoint: all mammals have hair.
3. A thermometer organ signals heat sources to the tick. As a counterpoint: all mammals have warm skin (containing blood).
4. A rostrum allows the tick to pierce the skin of mammals and simultaneously serves to extract fluids. As a counterpoint: all mammals have soft skin with blood vessels.

The meaning shared in this interplay between the tick's sensory receptors and its *Umwelt* enables it to identify a prey, navigate, attack, and feed on its blood. The functional circle theory has a lot of interesting consequences and important subtilities. In a nutshell, it is meant to grasp how each organism interprets its perceptual environment instead of responding solely through automatic stimuli. Additionally, the broader the range of perceptions and interactions, the greater the uncertainty induced by the multitude of choices, reactions, and decisions. Uexküll concludes that the tick's *Umwelt* is less uncertain than that of human beings or numerous other animals, but that decoding a behaviour does not imply the existence of pure automatism in organisms: neither the tick nor the human being is compelled to unfailingly respond to any stimulus every time they encounter them. This would hinder their ability to act. Hence, every organism assumes an active role regarding the signs it perceives. In this context, the same object even takes on different "meaning tones" (von Uexküll, 1934/2010, p. 188) for the same individual based on the individual's state. For instance, von Uexküll (1934/2010, p. 93) demonstrates that a sea anemone holds different meaning tones for a crab: it can mean food, protection, or even habitat, depending on whether the crab is hungry, lacks protection on its shell, or has no shell at all.

Consequently, for Uexküll, each *Umwelt* is its own "bubble[3]". One of the criticisms generally addressed to Uexküll stems from the isolationism that his theory seems to imply. Given the enclosure of each organism in its *Umwelt*, Buchanan (2008, p. 6) underlines that "entities like the organism represent not life but life's imprisonment." Indeed, von Uexküll (1934/2010, p. 52) explicitly connects the *Umwelt* theory to Kantian doctrine[4]: "With this observation, biology has once and for all connected with Kant's philosophy, which biology will now utilize through the natural sciences by emphasizing the decisive role of the subject." Kant theorizes space and time as *a priori* forms of sensibility. Then, Uexküll empirically naturalizes this conception by using it in the context of ethology and pluralizes it by logical extension; since subjective space-time depends on physiological bases, different species live in heterogeneous space-times. Consequently, the characteristics of a subject's lifeworld derive from that subject, and each distinct subject perceives a distinct lifeworld. The transition from the Cartesian subject to the Kantian subject

[3] "The bubble represents each animal's environment and contains all the features accessible to the subject." (von Uexküll, 1934/2010, p. 43) It is important to remember that bubbles are not exclusive and can comprehend the bubble of another subject.

[4] More on this question can be found in the works of (Brentari, 2015; Esposito, 2019).

allows to avoid self-consciousness as the condition for subjectivity (Brentari, 2015, p. 157). Each individual then lives in their own *Umwelt*, essentially in their own perceptual bubble, making the conjunction of *Umwelten* unintelligible: two species may never encounter each other given the differences in their environments. However, where Uexküll strongly opens the fields of biosemiotics, is because he shows that the active role of the organism in its *Umwelt presupposes* the possibility of learning and assimilating signs and meanings from the lifeworlds (and other subjects). Therefore, each organism interprets the signs that they perceive, not raw objects, and the lifeworld isn't constructed as a closed and fixed being but rather as a fluctuating net where other organisms have their rightful place. According to Uexküll, every individual is shaped by structural relationships with other living beings, even if their *Umwelten* are different.

Take flies and spiders, for instance. The spider's web is designed to capture flying insects, even if the spider itself isn't a flying insect (nor even an insect, strictly speaking). Therefore, the spider's web has a meaning in the fly's *Umwelt* and was itself adapted from the "primal image [*Urbild*] of the fly" (von Uexküll, 1934/2010, p. 190). von Uexküll (1934/2010, p. 147) concludes that "in the perception organs, the corresponding perception signs are heard that, transposed outward as perception mark's, become properties of the carriers of meaning." As we observe from these analogies, *Umwelten* overlap and intersect with those of other organisms, but they never wholly belong to nor are limited to any single organism.

The Disharmonious Composition of Human Nature

However, there is more to it than just this overlap. As *Umwelten* resonate with one another, Uexküll is led to consider nature as a semiotic whole in itself, where individuals' *Umwelten* intersect, blend, or even obscure each other. He uses the musical metaphor of harmony, where the concept of "tones" comes into play: "the flylikeness of the spider means that it has taken up certain *motifs* of the fly *melody* in its bodily *composition*" (von Uexküll, 1934/2010, p. 190-191). Of course, harmony in this context doesn't imply the harmonious coexistence of every natural element (after all, the spider eats the fly), but rather refers to the system of sign and meaning that takes place within different lifeworlds; in other words, a system of designation. While theories of evolution mostly emphasize the mismatch and competition between organisms in their environments, Uexküll (1934/2010, p. 5) "disparages" Darwin and underlines harmonious relationships that unites the usually stable (albeit not necessarily peaceful) interactions between an organism and its *Umwelt*.

The symphonic interplay of *Umwelten* entering into relations broadens the scope of Uexküll's analysis, which had been primarily physiological until this point, to an ontological and really bio-*semiotic* level. von Uexküll (1934/2010, p. 159) himself acknowledges this tendency with a sense of irony: "'Whoa there!' I can hear the mechanicists shout. 'The theory of environments is showing its true face here as metaphysics. For anybody who looks for effective factors beyond the physical world is a metaphysician.' All right. Then today's physics would be the purest metaphysics after theology." The scope of metaphysics in Uexküll's zoological studies, and the

impact it has on biosemiotics, seems to be the basis for the adamant question that Han-Liang Chang (2004, p. 116) engages while asking; is Uexküll "semiotician or hermeneutician"[5]? This mention anticipates the importance of understanding how Uexküllian ethology establishes a metaphysical discourse and where this discourse ultimately takes us, which brings us directly into the discussion between Heidegger and Uexküll.

Harmony is indeed a major metaphysical question in Uexküll's work. He strongly criticizes the deterministic causality of the mechanistic model and shows that the animal is no longer an automaton that reacts mechanically to stimuli but rather a complete being, so to speak; a being that lacks nothing within its *Umwelt*. However, by introducing the notion of natural harmony into his ethological approach, Uexküll promotes a holistic understanding of the organism-*Umwelt* relationship: the individual is always perfectly adapted to its *Umwelt*. This adaptation is not only perfect but is also a guarantee of perfection. Therefore, perfection is not a process tied to the progress of evolution; but a fundamental characteristic of the adaptation of living beings to their environment. "At least to me, no imperfection was apparent even in the simplest animals" (von Uexküll, 1934/2010, p. 195). According to Uexküll, any deviation from the norm seems justified by the principle of harmony, which underlies a theological aspect where the pre-established symphony of a nature, "whose score seems to have been written once and for all by a transcendent hand" (Pieron, 2010, p. 96), is performed. While Uexküll explicitly chooses to move away from any teleological determination (or "goal and plan" (vo nUexküll, 1934/2010, p. 86) in his references to nature and strives to emphasize the organism as the subject of free interactions, his theory of natural harmonic composition, which he refers to as "God-Nature" (von Uexküll, 1934/2010, p. 192), introduces a theological component into biosemiotics. In fact, Brentari (2015, p. 164-169) acknowledges that, although he seems ahead of his time regarding animal subjectivities, Uexküll remains stuck on certain positions on the verge of being scientifically refuted at his time (here in the opposition between his anti-Darwinism and a Platonic pre-established harmony).

However, Uexküll highlights a notable exception in natural harmonics. According to him, while animals are perfectly adapted to this composition, he posits that mankind excluded themselves from the harmonics of nature. Human beings are *imperfect*, as "much-lauded human technology has lost all sense of Nature; indeed, it boldly presumed to solve the deepest questions of life, such as the relation of human beings to God-Nature, with its wholly inadequate mathematics" (von Uexküll, 1934/2010, p. 192). Therefore, in contrast to the universalizing aspect of his epistemological discourse, Uexküll makes a distinction between humans and animals, even though both are organisms with their own *Umwelten*. As Uexküll considers the human being to be the exception in nature, for he shows the human being as imperfect and "detached[6]" from nature, we argue that this statement of human

[5] "Much as a biosemiotician claims Uexküll, a biohermeneutician like Sergey V. Chebanov can lay equally legitimate claim" (Chang, 2004, p. 116).

[6] As mentioned, von Uexküll (1934/2010, p. 191) explains that "we have built bridges between ourselves and Nature with all of our use-objects, but [we] have not thereby come closer to Nature, but rather, have-detached ourselves from it."

imperfection prevents a form of biological reductionism. If the human is imperfect, then he can't be defined as an animal with (or without) something else; he already is outside of the *Umwelt* theory; or seems to suggest that there is something else besides signs and meanings present at hand for organisms to grasp. This difficulty implies the necessity of a distinction not merely between human beings and animals, but more generally between the ontology of beings and their ontic biological structures. As such, the *Umwelt* theory shifts away from purely biological (and symbolic) stakes, in order to explore the broader openness of human and animal existence.

As such, the idea of boiling down the individual's existential condition solely to the biological question of *Umwelt*-organism interactions precisely introduces Heidegger's criticism of Uexküll. We must highlight the challenge, for biosemiotics, to provide a clear distinction between the ontology of living beings and their ontic and biological dispositions. The important dialogue between Uexküll and Heidegger entails a properly phenomenological approach to the question of the individual's lived experience and their relationship to other beings.

A World of Poverty and Riches

From Zoology to Metaphysics

Especially in hindsight, it is delicate to assert that an author has exclusively and directly drawn inspiration from another, given the multitude of inspirations and interconnections of each work. But it is important to discuss how Heidegger reread Uexküll's concepts, as he based an important discussion over this reading (Brentari, 2015, p. 198; Michelini, 2019). In his *Fundamental Concepts of Metaphysics*[7], Heidegger praises the relevance of Uexküll's ethological approach for the rethinking of the lived adaptation of organisms. Indeed, both of them share some common grounds. They are both opposed to the mechanistic conception of living beings and to Cartesian dualism, and this hostility encompasses the characterization of other life-forms as responding mechanically to their environments. In this regard, they both consider that Darwinism led to a flawed analysis of the environment and of adaptation[8]. As Dorion Sagan suggests, von Uexküll (1934/2010, p. 5) does not ponder if "natural selection can account for the character of life he considers most important: the interlinked purposeful harmonies of perceiving organisms." Whereas Heidegger (1983/1995, p. 263, § 61) highlights that Darwin

[7] The reader may notice that Heidegger, obviously, doesn't mention *A Foray into the Worlds of Animals and Humans* (1934/2010) and *Theory of Meaning* (1940/2010) in this work. Nevertheless, Uexküll theorized the *Umwelt* in the late 1900s and began to be read during the 1920s, especially with the publication of *Theoretical Biology* (1920/1926). It is mid 1920s that Heidegger's acquaintance with Uexküll probably starts (Buchanan, 2008, p. 92; Michelini, 2019, p. 125).

[8] The issue is also a cultural one for Uexküll, as Geoffrey Winthrop-Young (1934/2010, p. 210) mentions in the Afterword of a *Foray into the World of Animals and Humans*: "First, [Darwin] is to blame that the wider public's former veneration of nature has turned into contempt; second, the very close relationship established by Darwin between humans and apes has thrown the religious sentiments of the educated classes into [a] disarray" (Uexküll, 1943, p. 2).

worked upon "the fundamentally misconceived idea that the animal is present at hand, and then subsequently adapts itself to a world that is present at hand, that it then comports itself accordingly and that the fittest individual gets selected." This leads to a comparison between Darwin and Uexküll, not only based on their interest in biology, which amounts to a critique of the Darwinian mechanistic aspect of the adaptation of living beings to their environment, but also on their potential to translate or introduce a metaphysical conception of the essence of life. As Heidegger (1983/1995, p. 263, § 61) underlines; "biology has long been acquainted with the discipline called ecology. The word ecology derives from οἶκος, the Greek word for house. It signifies the investigation of where and how animals are at home in the world, of the way in which they live in relation to their environment."

The idea of a home from which the essence of animality has something to do with the essence of the world is reminiscent (albeit different) of the *Dasein* dwelling that Heidegger theorized in *Building Dwelling Thinking* (1952/1971). It strongly highlights how Heidegger's reading of Uexküll takes an uncommon approach. From the moment he introduces the notion of animal poor in world, he highlights a crucial issue both in terms of content and methodology. At first, Heidegger (1983/1995, p. 177, § 42) clarifies his object; he will suggest a "comparative examination" between the stone without a world (worldless), the animal poor in world, and the human as world-forming, and will consider the accessibility of the world the central point of his analysis. Because what he presents as the "accessibility" of the essence of life (Heidegger, 1983/1995, p. 178, § 43) is also the problem of the accessibility of the essence of the world. Indeed, he emphasizes that the investigation into the essence of animality and human *Dasein* is itself necessary for an inquiry into our relationship to the world and thus the metaphysical question of Being. Heidegger will not purport a biological examination of the animal, but a metaphysical one. As Calarco (2008, p. 18-19) already points out, Heidegger "addresses the complicated relationship between science and philosophy and the role philosophy might play in determining the essence of animal life – a task that is often solely for the sciences." By questioning the essence of animality, Heidegger admits, from § 43 onwards, the epistemological necessity for any philosophy that wants to explore the essence of living beings to enter what he calls a circle. That is to say, despite everything, philosophy must undertake a circular inquiry; it is on the basis of a certain preconception of the essence of life that we can arrive at the conception of life itself.

To sum up, then, we find ourselves moving in a circle when *we presuppose a certain fundamental conception concerning* both the *essence of life* and the *way in which it is to be interpreted* and then proceed on the basis of this presupposition to open up a path which will lead us to a fundamental conception of life. (Heidegger, 1983/1995, p. 180, § 43)

From this point onward, it is clear that Heidegger will propose a metaphysical analysis, as he introduces in § 45, which needs to be grounded in positive sciences, specifically zoology and biology. Consequently, Heidegger first provides clear details on his methodological stance; he uses a conception of life based on zoology *to introduce the essence of animal as poor in the world*. The thesis that Heidegger (1983/1995, p. 186, § 45a) sustains, of the animal being poor in world, is both as a statement of essence and a presupposition of zoology: "Where does the proposition

'the animal is poor in world' come from? We can answer once again that it derives from zoology, since this is the science that deals with animals." Then, he emphasizes that this proposition from zoology should not be considered as irrefutable proof (he points out that zoology is historical in its results (Heidegger, 1983/1995, p. 188, § 45b)) but should be the subject of philosophical thinking.

This epistemological approach is of great significance because it implies that Heidegger cannot concur that "the roots of semiotics lie in biology" (Kull, 2001, p. 1), even if it is thanks to zoology and biology that Heidegger introduces the idea of poverty. For him, semiology or the question regarding sign and meaning is strongly based on metaphysics and, more importantly, on the way in which the human language is "the house of Being" (Heidegger, 1977, p. 193). This will serve as the foundation for Heidegger's inability to transcend anthropocentrism, even if he tries to question the essence of animality independently from the essence of the human *Dasein*. However, as his starting point is a zoological examination, we posit that Uexküll, while perhaps not the sole influence on Heidegger in this matter given the inherent intertextuality of any work and concept, is one of his major influences. Indeed, after examining the methodology of resorting to zoology, Heidegger (1983/1995, p. 192, § 46) immediately mentions Uexküll, one of the few biologists with whom he discusses alongside Hans Driesch. In the introduction to Uexküll's book notes, Dorian Sagan (1934/2010, p. 4) also underlines that Uexküll is the scientist "most cited by Heidegger".

However, and this is a key point, Heidegger and Uexküll use differently the concept of poverty, and we argue that this difference is also to find in their different epistemological approach.

After establishing his emblematic example of the functional circle of the tick, von Uexküll (1934/2010, p. 51) underlines that "the whole rich world surrounding the tick is constricted and transformed into an impoverished structure […]. However, the poverty of this environment is needful for the certainty of action, and certainty is more important than riches." In short, for Uexküll, the richness of the environment of animals is not in question, as it is complete nonetheless. The concept of poverty indicates only the range or magnitude of a given *Umwelt*, a range that is relative to other *Umwelten*. The more complex an *Umwelt* is, i.e., allowing various meaningful relationships and signs to induce a large number of perceptions and reactions, the richer it is. Although that of the tick may be relatively poor, it is nevertheless complete; as it is a "bubble", its *Umwelt* is "optimal" (von Uexküll, 1934/2010, p. 250, note 5) for the tick. This poverty is an aspect of the incredible ability of the tick to negotiate its environment, even if this same environment seems harmful (or "pessimal" (von Uexküll, 1934/2010, p. 250, note 5)) to humans. In short, Uexküll considers that animals' *Umwelten* are complete, even if they are limited. They are pondered as poor because they can't allow beyond the perceptions of meaning tones, but this poverty is paradoxically a guarantee of completeness and, therefore, perfection.

Heidegger famously uses Uexküll's ethology and biosemiotics to develop a phenomenological perspective on animal life, by showing that the pre-Uexküllian mechanistic theory of the environment needs to be revitalized. It is based on Uexküll's work that Heidegger (1983/1995, p. 192, § 46) theorizes the idea of the animal "poor in world". However, it is obvious that Uexküll's and Heidegger's concepts of

poverty are not identical, and were not used as mere synonyms. Indeed, the ethological theory of the lifeworld is to be distinguished from a metaphysical interpretation of the world, as what is "there" for *Dasein* but also, and maybe more importantly, as what is ontologically encountered within their *Umwelten* for animals. Instead of relegating animals to mechanistic behaviours, Heidegger implies that both humans and animals have access to the essence of the world, even if differently. According to him, animals are acknowledged to have a relationship with the world that transcends mere responses to biological stimuli. Heidegger's point is to emphasize, and this is fundamental, that the metaphysical conception of the essence of animality and its relationship to the environment is not the subject of a zoological postulate but of a metaphysical one.

> Precisely because zoology deals with animals, this proposition [the animal is poor in world] cannot be a result of zoological investigation; rather, it must be its presupposition. For this presupposition ultimately involves an antecedent determination of *what belongs in general to the essence of the animal*, that is, a delimitation of the field within which any positive investigation of animals must move. (Heidegger, 1983/1995, p. 186, § 45)

Heidegger (1983/1995, p. 215, § 51) considers Uexküll as "one of the most perceptive of contemporary biologists", due to his zoological analysis of animals. But according to Heidegger, this zoological analysis is not a metaphysical analysis. Yet, von Uexküll (1934/2010, p. 159) himself considers that he enters the fields of metaphysics when overcoming a mechanistic zoology to orient it towards an early approach of biosemiotics.

To Each Their Own: The Bubble of Stones, Animals and Humans

As said before, it is notably based on Uexküll's theory that Heidegger (1983/1995, p. 192, § 46) questions the expression "poor in world" used to describe the animal, a concept that is still of major influence today. Although there is an evolution in Heidegger's attitude towards the human-animal distinction (Dastur, 2016), we discuss here the notion as he understands it when writing *The Fundamental Concepts of Metaphysics*, the work in which the main dialogue between Heidegger and Uexküll takes place.

First and foremost, this concept leads Heidegger to give a provisional and very important description of the world as the "accessibility of beings[9]". What does not intrinsically intertwine with its environment is not essentially open to beings; this pertains to the inorganic. The stone is literally "worldless" (*Weltlos*) (Heidegger, 1983/1995, p. 192, § 47) since the absence of world is constitutive of what is not alive. In other words, the world only occurs in access to beings. In this context, and most likely without direct reference to Heidegger, Blumenberg provides a remarkable analysis of *logos*, or its absence, in inorganic forms:

[9] "Wordlessness as not having access to beings. Provisional characterization of world as the accessibility of beings." (Heidegger, 1983/1995, p. 196, § 47).

There can be no geology: this essential proposition is metaphorically constructed from the silence of stones, and the silence to which it condemns the observer; they have no logos. […] The organic speaks, the inorganic is mute; this is why it is crucial to take literally the fact that there can be no geo*logy*. (Blumenberg, 2007, p. 235)

Stones (or inorganic objects in general) are "worldless" not only because they do not open up to the language of the world or to the world as language, but also because they have no field (even scientific) that can constitute them as a world/language, namely, no geology. An interesting parallel can be drawn here with Simondon's work, since technical objects are also inorganic. For instance, it has been argued (Lombard, 2023a) that the artificialization of bio-objects comes from the fact that they were living beings that no longer encounter a world in their *hypertelic* milieu. In-between, we must mention that in Uexküll's view, plants and fungi are not endowed with any *Umwelt*. But they "make use of signs in a way that constitute what [Uexküll] calls 'Wohnhüllen' […] a sort of quasi-subjective worlds where experienced (i.e. interpreted) meaning is distributed rather than centralized" (Tønnessen et al., 2018, p. 324).

As such, if inorganic objects are wordless, what does it mean to consider animals as "poor in world"? This poverty is a predicative concept, as demonstrated by the title with factual value: "The beginning of the comparative examination, taking the intermediate thesis that the animal is poor in world (*Weltarm*) as our point of departure" (Heidegger, 1983/1995, p. 185, Chap. 3). However, what is here a modal reality does not "[represent] the definitive clarification of the essence of animality beyond which there is no need to ask any further for all time" (Heidegger, 1983/1995, p. 260, § 61), nor is it a judgment of value. It is indeed an ontological concept and not an ethical one. Paragraph 46 (Heidegger, 1983/1995, p. 192, § 46) of *The Fundamental Concepts of Metaphysics* is properly subtitled: "the relation between poverty in world and world-formation does *not* entail hierarchical assessment." But one can objectively question the validity of this non-hierarchical claim, given that Heidegger (1983/1995, p. 192, § 46) does consider poverty in world as a "deprivation" (and as a total privation for inorganic objects). This issue was also pointed out by many authors such as Adorno and Derrida. In his introduction to Uexküll's text *A Foray into the Worlds of Animals and Humans*, Dorion Sagan (1934/2010, p. 29) considers it nothing more than an "academic hairsplitting [which] is a common enough phenomenon to merit the derogatory idiom, but [which] is also simultaneously indicative of humanity's semiotic strength." We argue that the criticism directed at Heidegger is based precisely and fundamentally on the difference in methodology and epistemology between Uexküll and Heidegger. Heidegger's approach is by no means zoological but strictly metaphysical in the question of the accessibility to Being, and which he conceptualizes as a specific relationship to the world that humans maintain and, in a different way, animals. For Heidegger, it is not about conducting zoology, biology, or determining a hierarchy in living beings. We argue that it appears possible to think that Heidegger (1983/1995, p. 255, § 60) is sincere when he writes that his theory "does not mean that [nonhuman] life represents something inferior or some kind of lower level in comparison with human *Dasein*." But even if it were not, because the axiological point is not in question here, we concur with Dorion Sagan that the specific features of the ontological accessibility to Being lies precisely in

this semiotic strength, in this ability to access a set of links and references (*Verweisung*), as something that Heidegger seeks to elucidate.

That being said, poverty as a metaphysical deprivation may not be characterized as a defect for animals but rather as a property. For this reason, Heidegger does not proceed by starting from the relationship of *Dasein* to the world and then questioning the animal world; he tries to approach the essence of the relationship between the animal and the world without detour or reference to the "positive" norm of "world-formation" (Heidegger, 1983/1995, p. 192, § 46). Here, he assumes a distinction between to live and to exist, where the former qualifies living beings, and the latter only applies to *Dasein*. But if it seems that the animal does not exist as *Dasein* in the Heideggerian sense, it must be deduced that *Dasein* also suffers from a deprivation since it does not live like living beings. As Heidegger (1983/1995, p. 255, § 60) underlines, "life is a domain which possesses a wealth of openness with which the human world may have nothing to compare." Naturally, this interpretation by no means suggests that humans are not, biologically, living beings. At no point does Heidegger consider that humans are not biological animals, and that humans are not living beings. On the contrary, humans are part of the living in such a way that Uexküll's zoological analysis is rich and relevant in its relationship to our constitution of a world bursting with signs and meanings. But from a metaphysical perspective, Heidegger argues that, if we do *live as* living beings, we do not *exist like* living beings. And here, Heidegger concurs with a philosophical tradition that is still widely discussed to this day, by arguing that humans maintain a specific relationship to Being. But this does not imply that the animal lacks richness in other aspects, mainly life, which Heidegger also seeks to emphasize, by showing that animals do access something of the world. The overcoming of anthropocentrism may not be Heidegger's point neither. Although Calarco (2008) acknowledges that Heidegger challenged conventional human-animal hierarchies and tried to understand animals on their own terms, he also strongly demonstrates that Heidegger's priorities remained anthropocentric in that he never truly addressed animal experience as a primary interest, instead using it to highlight the singularity of the human experience and the kind of worldly relationships that only humans are capable of. In short, Heidegger criticizes with Uexküll the mechanistic reductionism of their time, by opening the animal environment to signs and meanings, but still considers that the essence of animality and human *Dasein* differs.

A First Step Towards the Essence of Animality

Unlike Uexküll, Heidegger ponders poverty neither as a quantitative relationship to the world, which implies that the tick's *Umwelt* is less "dense" than human's, nor as a qualitative one, since there is no basis to judge the quality of organisms' understanding of the world. For Heidegger, this concept is more of a phenomenological way that eventually helps us understand the animal lived experience. Since the disclosure of the world is not established on a biological but a phenomenological standpoint, then the lived experience of the tick, which is "limited" in its *Umwelt*, is responsible for its poverty. Therefore, the tick does not open up to the world but to its environment. It opens up to worldly entities

(whether ethologically rich or poor, i.e., simple or complex), whereas *Dasein* opens up to the essence of the world. Heidegger thus goes back to an ontological perspective through the idea that a lived experience entails an access to beings, and that isn't bounded by Uexküll's ontic interpretations of the poverty (or richness) of *Umwelten*. And as Romano (2009, p. 189) points out: "this 'ontologisation' [is] also a 'de-biologisation'." And this ontologisation precisely comes from the *Dasein*'s disposition of "world-formation". This suggests that both humans and animals are open to the world and have accessibility to beings, albeit distinct. In short, the mode of ontological openness to the world is here the criterion for distinguishing *Dasein*, animals, and inorganic things. This implies that *Dasein* opens up to the essence of things, while animals open up to the fluctuating and substantial meanings of their own lifeworld. And as such, with this "ontologisation" of the animal's *Umwelt* (not from an ethological perspective but in the proper metaphysical way that *Dasein* who dwells in the world), Heidegger must also conceptualize the essence of animals as ontologically opening up to *something*:

> The organism can adapt a particular environment into itself only insofar as openness for… [sic] *belongs to its essence*, and to the extent that, upon the basis of this openness for… [sic] which permeates its whole behaviour, a certain leeway is created within which *whatever is encountered can be encountered*. (Heidegger, 1983/1995, p. 264, § 61)

This "whatever" is an elusive concept that supports the idea that animals have a metaphysical relationship with the world. But because of the same anthropocentrism that compels us to speak, as humans, of animals; it is impossible to assert that the animal's metaphysical relationship and access to the world is identical to that of human beings. For animals, the disclosure of the world takes the form of what Heidegger (1983/1995, p. 254, 255, 264, § 60–61) calls "disinhibition", "disinhibiting ring" and "disinhibiting function" (*Enthemmung*). By elaborating this disinhibition ring that testifies to the mechanistic framework of his time, Heidegger's description seems today of very little relevance in approaching animal behaviours (Michelini, 2019, p. 127). Nevertheless, it is a major philosophical attempt to uncover the ontological phenomenon of animal disclosure. Just as the human being can be grasped by *Dasein*'s disclosure of the world (as being-in-the-world, being-toward-death, etc.), so too can the essence of the animal be grasped from its ontological way of disclosing to the world (disinhibiting ring, "captivation" (Heidegger, 1983/1995, p. 236, § 58), etc.) – even if for Heidegger this ontological relationship is relatively poor. In a nutshell, the animal encounters something of Being, be it in its sole *Umwelt*, as the openness belongs to its essence, and as the world precisely discloses the accessibility of Being. It is therefore in how they access beings and entities that humans and animals are ontologically distinguished, not in if they can (or not) access it. Their apprehension of the world is irreducible, so that the animal environment differs from the human world not based on an ethological difference, but on an ontological one. It is therefore impossible for Heidegger to think of the world solely as *Umwelten* that depend on interactions and meanings to take place.

Between world poverty and world-formation, the ontological openness to the world differs between humans and animals for Heidegger, given their difference of lived experience. It is this poverty (or richness) in the accessibility of Being that strengthen the human-animal distinction. But is it enough? Not only is the question of the animal's world a practical difficulty, but it is also an epistemological one

for phenomenology, and maybe where biosemiotics happens to play a key role, as Claude Romano underlines:

There, we had phenomena that were 'manifest' for *Dasein* and all that was needed was to interpret them. Here, we only have the biologist's observations as the phenomenologist's 'thing', so that the comparative, 'indirect' route is the only possible way of accessing phenomena: understanding the animal 'from itself' is in fact rigorously identical to understanding it in the light of empirical observations. (Romano, 2009, p. 189)

And indeed, Heidegger does not consider that the many functional circles of organisms that Uexküll theorizes are to be questioned. As previously mentioned, Heidegger doesn't completely reject theories stemming from biology and ethology; he regards Uexküll's work as fundamentally important, especially in rethinking the concept of environment. For him, the issue lies in the overlapping of the biological question of living beings and the ontological question of life; or the fact of covering, and thus veiling, the opening of the world that living beings encounter, based on an analysis of their organic evolution and adaptive processes. We see here that Heidegger seems to extend the idea of being-in-the-world to every organism. In essence, every organism is primarily in the world, in its own world more precisely, as Heidegger acknowledges the fecundity of Uexküll's theory of *Umwelten* for animals. The individual lives in a proper lived world, which is the essence of the phenomenological experience. And as Pieron (2010, p. 100, note 7) points out, the Heideggerian disinhibition "can be seen as the Heideggerian equivalent, philosophically purified, of Uexküll's concept of *Umwelt*."

But while Heidegger appreciates the relevance of Uexküll's ethological discourse on animals, extending this theory of *Umwelten* to humans seems ontologically untenable to him. The issue for Heidegger is now to understand how the animal's disinhibition (as a metaphysical fact of disclosure) differs ontologically from *Dasein*'s disclosure of the world. As Heidegger (1983/1995, p. 263, § 61) argues: "the whole approach does become philosophically problematic if we proceed to talk about the human world in the same manner." He addresses the issue of relegating the human to a biological being that only answers the (although selected) stimuli expressed by the functional circle of his *Umwelt*[10]. From an ontological perspective, Heidegger's concept of the animal "poor in world" raises a comparative question: poor in world compared to what, or who, that is considered *rich* in world?

The Accessibility of the Thing in Itself

The Lifeworld's Signs and the World's References

Heidegger questions the place of Uexküll's biosemiotics in the framework of phenomenology. If the *Umwelt* theory could be considered as an ontological theory and

[10] The concepts of *Mitwelt* and *Eigenwelt* are also used in *Being and Time* (Heidegger, 1962, p. 68, § 9) as what helps to uncover the analytic of *Dasein*. They describe respectively a world shared with others that pre-exists the individual and will continue after the death of the individual and the capacity of humans to reflect upon themselves or the person's relationship to the self.

not as an ethological one, or if we could derive the essence of life from a presupposition in zoology, there would be an issue in deriving the essence of organism from their biological and semiotical interactions with the world. "Philosophy [would have become] 'decentred'; it [would have lost] its 'transcendental' primacy" (Romano, 2009, p. 189). And indeed, if both humans and animals are open to the world, the distinction between them arises from the underlying question of the various ways of disclosure of Being, the various ontological forms of accessibility of the world.

But to kickstart this discussion, we must ask a fundamental question: if *Dasein* dwells in the world and is world-forming, what does it genuinely mean to live as an organism within an impoverished environment, and why can't we argue that animals, too, authentically inhabit their own world? Let us keep in mind the excellent remark of Pieron (2010, p. 101), that also echoes Uexküll's work (Michelini, 2019, p. 129; von Uexküll, 1920/1926, p. 130): "To be true to the idea of world poverty, one would have to cross out the word 'ontological', just as Heidegger argues that we would have to cross out the word 'rock' when speaking of 'the lizard's relation to the rock'." Indeed, the rock for the lizard is not a rock as *Dasein* discloses it, which doesn't mean that there is *nothing* in front of the lizard, but that there is no rock in itself or as such. Because there is always a being "as such" in the *Welt* when there can be "nothing as such" in the *Umwelt*, we need to provide a better understanding of the question of "accessibility of beings" (Heidegger, 1983/1995, p. 196, § 47) that is of paramount importance in the dialogue between Heidegger and Uexküll.

As said before, this debate had Heidegger introduce a major phenomenological development: the fact that the world is experienced through "the accessibility of beings", i.e. the lived relationship to the subjective world itself. This discussion now sheds light on the links and differences between an ethological milieu operating as a set of biological signs and interactions, and the subjective world of experience that opens up to Being. If *Dasein* dwells in the world, why animals are rarely considered to dwell in their own world? As such, Uexküll's *Umwelt* theory also provides us with a starting point to account in more detail for the singularity of the human life-world, by distinguishing between the human *Welt* and the animal *Umwelt*.

On one hand, Heidegger considers that the Cartesian transcendental reduction or "eidetic reduction[11]" cannot be conceived because *Dasein* is first and foremost in-the-world: therefore, human beings cannot extract themselves from this presence, even for a philosophical or imaginative variation. In this regard, his analysis also steams from the influence on Kant on Heidegger (that he shared with Uexküll) and that is especially linked to the refutation of Cartesian *épochè* and thus of the transcendence of *cogito*. As Rémi Brague (Destrée, 1989, p. 636) points out: "Presence has two inseparable facets: things are there, and we are there – we are the there of things."

On the other hand, the Uexküllian relationship between the *Umwelt* and their organism is inherently a-spatial. Any other ethological perspective could argue that the organism's perception originates from objective stimuli in the environment,

[11] We do not refer here to the *épochè* or phenomenological reduction (suspension of judgment) but to the proper transcendental-eidetic reduction by which one attempts to reduce a phenomenon into its necessary essences, and from which the essence of the world becomes the phenomenon of the world.

which, obviously, are highly identified. But for Uexküll, the numerous but distinct *Umwelten* induce a form of phenomenological a-spatiality. If the mole has poor eyesight, and the eagle has a comparatively better one, it's their entire *Umwelt* that changes, not just their vision. This theory acknowledges the "relative" nature of things and the phenomenological importance of beginning with the subject in the study of phenomena. Similarly, human vision is only limited in comparison to other organisms' eyesight, being superior to that of a mole but inferior to that of an eagle: and, based on his vision, his *Umwelt* is subjectively rich or poor. Consequently, its capacity for action, i.e., the ability to engage in relationships or responses to stimuli that arise from vision, varies in comparison to other living beings. It logically follows that the larger the perceptual field, the greater the capacity for action *relative to* the capabilities of other organisms. This is why there is no "objective" world according to Uexküll; what is perceived evolves as much as what perceives it. For instance, he underlines that the tone, odor, taste and shape spectrum of many animals are entirely different from those of human beings; but also that "the structure" (von Uexküll, 1934/2010, p. 197) of material properties change depending on those senses: "the oak plays an ever-changing role as object […]. Its wood is both hard and soft" (von Uexküll, 1934/2010, p. 132). If the *Umwelt* is based on the individual's own relationship to meaning tones, the existence of an objective environment that would gather them all is in question. Beyond the organism's interactions with its *Umwelt*, and even by leaning towards an important biosemiotics based on the *Umwelt*'s system of significances, references and meanings, Uexküll argues that no external reality exists – or rather that objective surroundings can't be accessed as a whole world, by definition. Objective surroundings can only be accessed as fragments, by becoming part of the *Umwelt* itself and, accurately from there, by not being an external reality anymore.

This is where we find a strong and significant tension between the Heideggerian *Welt* and the Uexküllian *Umwelt*. If for Heidegger, the eidetic reduction is impossible to conceive because we can't disregard the existence of things to highlight their essence; for Uexküll, it is because there is no objective world from which to disclose the essence of things above their existence. According to Heidegger, the world is always and already an open structure that entails the presence of Being and entities. Consequently, Heidegger's phenomenological approach shows the essence of the world as something that bears a form of exteriority. In essence, *there is*, and this metaphysical "there is" is the world. As *Dasein* appears in the world, the world unfolds far beyond the *Umwelten* that constitute the environment of each living organism.

This is precisely for Heidegger the turning point of this question: the notion of "world-formation" is connected to humans having not only an *Umwelt* or immediate surrounding environment, but is associated with language, or more essentially with the dense net of references that the world involves. Indeed, Heidegger famously questions the existence of an objective world only based on geometrical and mathematical data[12]. As he put forward the notion of dwelling in *Building Dwelling Thinking*, he also theorizes in *Being and Time* the crucial idea for biosemiotics, of a world characterized by systems of "references" and "involvements" (Heidegger, 1962, p. 107-114,

[12] See for instance (Heidegger, 1962, § 19–21, 1952/1971; Lombard, 2023b).

§ 17–18). According to which, *Dasein* is open to the system of assignment or reference (*Verweisung*) of things. In their translation of *Being and Time*, John Macquarrie and Edward Robinson (Heidegger, 1962, p. 97, note 2, § 16) translated it as that which goes towards, or points to something, "as when one 'refers' or 'commits' or 'relegates' or 'assigns' something to something else." This system of reference designates a set of significances and involvements (*Die Bewandtnis*) that announce themselves in entities. Wheeler (2011) defines involvement "[not as] a stand-alone structure, but rather [as] a link in a network of intelligibility that [Heidegger] calls a totality of involvements." Involvement is what allows Dasein to be open to signs (*Zeichen*), or the sign to appear to *Dasein*. In this regard, according to Heidegger (1983/1995, p. 237, § 58), "the specific manner in which man is we shall call *comportment* [*Verhalten*] and the specific manner in which the animal is we shall call behaviour [*Benehmen*]". However, the English translation of this quote can be deeply misleading, as we know in all languages the difficulty to properly translate Heidegger. *Verhalten* and *Benehmen* in German both mean behaviour/comportment but with a clear different meaning, although in English it is not clear at first sight what is really the fundamental difference between behaviour and comportment. In French, Daniel Panis (1929/1992, p. 347, § 58) translated *Verhalten* by "tenue de rapport", which leads directly to this very generic term that just describes how things relate to one another. As such, if it were not for the different epistemological approach we underlined, "involvement" could be the metaphysical equivalent, on another scale of reference, of Uexküll's meaning tones interpreted by biological organisms. For Heidegger, something of the essence of the world can be disclosed and encountered for *Dasein*, and even for animals in a "certain leeway [within which] whatever is encountered can be encountered […], i.e., is capable of exerting an effect upon the animal through its disinhibiting function" (Heidegger, 1983/1995, p. 264, § 61). This is were there is a true anthropological distinction; animals behaviours (*Benehmen)* depends on the signs and meaning tones of their *Umwelt*; whereas human beings comport themselves or make links and connections (*Verhalten)* of a set of involvements and references that appears in the world. Those two manners in which living beings are, both entails a relationship to the world, albeit different.

This leads us to an important stake. Uexküll seems to reduce the metaphysical understanding of the world, as the presence to which living beings open themselves, to an ethological conception of the *Umwelt* as a sum of stimuli and meaning tones. He locates the *Umwelt* where starts the organism as an interpretive actor of a mechanistic but non-deterministic environment; where Heidegger no longer questions either the world or what discloses it, but solely the phenomenon of disclosure itself. In Heidegger's work, we come across a clarifying mention for the movement of this disclosure; the lighting by virtue of which the human being opens to the world and "pull himself together in order to speak" (Sloterdijk, 2009, p. 20), through involvements and references, to Being. Heidegger (1977, p. 204) explains that "such standing in the *lighting* of Being I call the ek-sistence of man." This lighting is precisely the reason why *Dasein* is the only being that can disclose light as such. This expression prompts Sloterdijk (2009, p. 18) to suggest the poetic mention of the "clearing of Being" in which *Dasein* discloses (to) the essence of the world.

To Unveil the Attendance of Light

According to Heidegger, the main issue of the *Umwelt* theory is that, even if it helps us understand ontical relations of meaning and sign between beings, it can never highlight *an ontology of the thing in itself*. This is why it becomes "philosophically problematic" (Heidegger, 1983/1995, p. 263, § 61) when applied to human beings, and this is why his methodological approach begins with a clarification of the place of zoology in the metaphysical question of the accessibility of the essence of the world.

As a clarifying example, Heidegger explains that if some animals, like crabs or moths, actively seek out light, and seem to engage with it and respond to the meaning tone of light, by moving toward or away from it; "it definitely does not imply that light as such is being sought out for its own sake […] Consequently, the light never has the opportunity to announce itself *as such* for the animal" (Heidegger, 1983/1995, p. 250-251, § 60). According to Heidegger, when an animal moves toward light, it grasps a categorical understanding of it; precisely what Uexküll calls its "meaning tone". This does not mean that stimuli are entirely deterministic for animals and that light only acts as a signal to which an effector automatically responds (as in Loeb's reflex arc). But this means that, even when a stimulus doesn't elicit a response, it remains *just* a stimulus for the animal. It carries meaning, towards which the animal can choose to act or not. But the stimulus is never perceived *as an entity in itself*. Light, for an animal, is never light per se.

Unquestionably, Uexküll shows that the *Umwelt* is not mechanistic but imbued with meaning. However, this theory also prevents any relationship with a form of *Welt*, where would the essence of the thing in itself appear, as it is disclosed as a presence. If the animal only encounters subjective data that it perceives, and if, for example, the moth does not see light as a being but rather as a motive of value, meaning, and message, it never reaches the phenomenon as a phenomenon. Consequently, it will never conceive light in itself, stripped of its meaning tone. This criticism is also revisited by Pieron (2010, p. 95), who suggests that Uexküll describes an animal that seems to evolve "like a sleepwalker or an automaton, which doesn't need to relate to entities *as such* [i.e. as being] to 'function' as it does."

To suggest that animals "does not *attend* to the light or grasp it as such in its light-seeking behaviour" (Heidegger, 1983/1995, p. 251, § 60) makes the *Umwelt* theory inapplicable to human beings, when for Heidegger *Dasein* is precisely the existing being that properly opens to Being. Even if for humans, light can be considered and used as a source of warmth, luminosity, or other meaningful significance, light also and simply gives onto light. The light that gives onto light, for *Dasein*, doesn't brighten more, warm more, or have greater utility or meaning. The fact that light inherently exists is precisely what *Dasein* discloses of the world. This is where Heidegger differentiates between humans and animals; as the former dwell in the world, they open themselves to the question regarding Being. According to Heidegger, light never occurs to or concerns animals in the sense of the thing that *Dasein attends* to. This doesn't mean that animals don't have an ontological relationship to their lifeworld, similar to how humans relate to theirs. But if animals live in a lifeworld (*Umwelt*), human

beings are open to a world (*Welt*). Uexküll's *Umwelt* differs from Heidegger's *Welt* in that the former is empirical in nature and describes the physiological movement of living beings in their environment; while the latter relates to the existence of *Dasein* (being-in-the-world, being-towards-death, etc.). Because of this, we argue that Heidegger doesn't only try to overcome the "anthropocentric framework" (Michelini, 2019, p. 123-124) of behavioural, mechanistic and empirical theories to find something of a metaphysical relationship between animals and the world – even if through *Dasein*'s standpoint – but also and more importantly that Heidegger doesn't "[advocate for] the abyssal distance between mankind and the rest of nature" (Michelini, 2019, p. 123-124). Heidegger advocates for considering that humans and animals have a different relationship towards the essence of the world, because their accessibility of Being differ; but he doesn't draw any distance between human and animal. On the contrary, he confronts the idea that animals are present at hand entities living mechanistic life that we can't grasp at all, and tries to overcome empirical distinctions to propose a metaphysical stance entirely based on the fact that *Dasein* is *in proximity* with Being, hence also with the essence of things, of animals and the world. It is precisely in its *presence* (*Das Anwesen*), in its relation not only to language but to signs, which is the fundamental and adamant interest of biosemiotics, that *Dasein* can relate to the essence of animality and understand that the being of animals can never be definitely "clarified" (Heidegger, 1983/1995, p. 260, § 61); even less from a mechanistic standpoint, nor can they be reduced to their biology or zoology.

Dasein, however, is 'in' the world in the sense that it deals with entities encountered within-the-world, and does so concernfully and with familiarity. […] When we speak of deseverance […], we do not understand by it any such thing as remoteness (or closeness) or even a distance. […] *Dasein* is essentially de-severant: it lets any entity be encountered close by as the entity which it is. De-severance discovers remoteness; and remoteness, like distance, is a determinate categorial characteristic of entities whose nature is not that of *Dasein*. (Heidegger, 1962, p. 138-139, § 23)

By disclosing distances, *Dasein* discloses the presence of Being. More so, we can argue that Heidegger fully agrees with the zoological take of the *Umwelt* theory in that it helps to explain why there is always something irreducible of the essence and being of animals. As Calarco (2008) also underlines, Heidegger engages in the *Fundamental Concepts of Metaphysics* with what it means to think about non-human beings without drawing at first a clear zoological conceptual distinction between human and animal, and does so even if he fails to abandon his anthropocentric views of the essence of animality. Indeed, if *Dasein*'s openness to the world is seen as a full and structuring ontological disposition, then this openness differs ontologically from the animal's openness to its *Umwelt*, even though both the animal and *Dasein* are open to "whatever" they encounter (world, environment, beings, etc.). This also means, crucially, that neither animals nor human beings live solely within an ontic, ethological and biological relationship to the world.

Conclusion

At first glance, the *Umwelt* theory might be seen as a "field[13]" ontology, implying an onto-theological confusion between Being and entities, by reducing living beings to mere biological behaviours instead of considering broader ontological dispositions. Uexküll essentially seems to bring the human back to the realm of living beings, as the *Umwelt* is considered as the place that opens the organism to a set of meanings. However, when Heidegger criticizes the application of the *Umwelt* theory to human beings in the *Fundamental Concepts of Metaphysics*, he avoids mentioning that Uexküll himself sets humans apart from the harmonics of what he calls God-Nature. The need to consider human behaviour as the tenant of a natural imperfection prevents the *Umwelt* theory from imposing a biological reductionism that would otherwise limit the metaphysical question of the human existence to a mere form of behaviourism. There would have been indeed a methodological risk, in subordinating the ontological question under the question regarding entities. Here, we observe a metaphysical movement in which Uexküll must distinguish human being from other animals. Of course, this doesn't mean that human beings are not animals, biologically, but that there seems to be something in living beings that resist solely ontic reductionism. This phenomenological approach emphasizes a critical methodological precaution for biosemiotics: the importance of not imposing biological and natural science models on schemes that introduce a metaphysical understanding of the world. Indeed, while Uexküll is a major author for providing the means to understand animal subjectivities through biosemiotics, and above mechanism, he also paves the way for a more ontological interpretation of the essence of animals and humans that emerges from Heidegger's readings.

By refusing to consider animals as present at hand entities and by putting forward a phenomenological analysis, Heidegger (1983/1995, p. 264, § 61) brings back the question of the essence of animality by arguing that animals are open to "whatever […] can be encountered" in their own lifeworld. This important step led him to consider animals as "poor-in-world" instead of "world-forming". We concur with the idea that Heidegger establishes a distinction between animals and humans that could be considered as the basis for anthropocentrism. As we have extensively discussed, Heidegger's analysis is grounded in metaphysics, not zoology. It not only accounts for the specific ways in which humans and animals interact with their environment, but also fundamentally aims to demonstrate that humans, due to their unique relationship with Being, can reveal aspects of the essence of animality, i.e. of the ontological way in which animals have whatever relationship they have to the world. This ontological "whatever" between animals and the essence of the world, and that human beings can't define, exists independently from human beings, even if *Dasein* unveils its presence. This reception of the *Umwelt* theory soundly clarifies, in the Heideggerian framework, the distinction between an ethological environment

[13] "The totality of entities can, in accordance with its various domains, become a field for laying bare and delimiting certain definite areas of subject-matter. These areas, on their part (for instance, history, Nature, space, life, *Dasein*, language, and the like), can serve as objects which corresponding scientific investigations may take as their respective themes." (Heidegger, 1962, p. 29, § 3).

that operates through a set of signs, meanings and biological interactions; and the presence of the world that discloses to living beings, and that *Dasein* attends to. It fundamentally shows the basis for an anthropological distinction between *Welt* and *Umwelt*, as both allow a different degree of accessibility to Being. Here, the dialogue between biosemiotics and the Heideggerian phenomenology avoids the methodological risk, for biosemiotics, of biologism, or the reduction of the living being to its ontic and mechanistic analysis, and highlights the interplay between a theory where living beings are rightly seen as organisms within their lifeworld, and at the same time as beings that disclose something of the world.

If the human being is considered a special case among living beings by both Heidegger and Uexküll, and even more so in the fields of philosophy and biosemiotics, it may be because we must also *learn to dwell* (Arjakovsky et al., 2013, p. 160) in the world that discloses to us. And this is precisely to prevent the confusion between the essence of entities and their meaning tones, to prevent us from confusing the being of light with a set of predicates (brightness, warmth, security, holiness, etc.) and to enable us to properly consider the essence of things themselves.

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References

Arjakovsky, P., Fédier, F., & France-Lanord, H. (2013). *Le Dictionnaire Martin Heidegger—Vocabulaire polyphonique de Sa pensée*. Les Éditions du Cerf.

Blumenberg, H. (2007). *La lisibilité Du Monde*. Les Éditions du Cerf. D. Trierweiler & P. Rusch

Brentari, C. (2015). *Jakob Von Uexküll: The Discovery of the Umwelt between Biosemiotics and Theoretical Biology*. Springer.

Buchanan, B. (2008). *Onto-Ethologies; the animal environments of Uexküll, Heidegger, Merleau-Ponty, and Deleuze*. State University of New York.

Calarco, M. (2008). *Zoographies: The question of the animal from Heidegger to Derrida*. Columbia University Press.

Canguilhem, G. (1992). *La Connaissance De La Vie*. Librairie philosophique J. Vrin.

Chamois, C. (2016). Les Enjeux épistémologiques de la notion d'Umwelt chez Jakob Von Uexküll. *Tétralogiques,n°21*, 171–194.

Chang, H. (2004). Semiotician or Hermeneutician? Jakob Von Uexküll Revisited. *Sign Systems Studies,32*(1/2), 116–138.

Dastur, F. (2016). VI. Pour une zoologie « privative » ou Comment ne pas parler de l'animal. In *Déconstruction et phénoménologie* (pp. 139–189). Hermann; Cairn.info. https://www.cairn.info/deconstruction-et-phenomenologie--9782705691639-p-139.htm

Destrée, P. (1989). Une mise à l'épreuve d'Aristote à partir de Heidegger. *Revue Philosophique De Louvain Quatrième série,87*, 629–639.
Esposito, M. (2019). Kantian ticks, Uexküllian melodies, and the transformation of transcendental philosophy. In F. Michelini & K. Köchy (Éds.), *Jakob von Uexküll and Philosophy: Life, Environments, Anthropology* (Routledge, pp. 36–51).
Feuerhahn, W. (2009). Du milieu à l'Umwelt: Enjeux d'un changement terminologique. *Revue philosophique de la France et de l'étranger*, *134*(4), 419–438. Cairn.info. https://doi.org/10.3917/rphi.094.0419
Heidegger, M. (1962). *Being and Time* (E. Robinson & J. Macquarrie, Trad.). Blackwell Publishers.
Heidegger, M. (1971). Building Dwelling Thinking. In A. Hofstadter (Trad.), *Poetry, Language, Thought* (pp. 141–162). Harper Colophon Books. (Original work published 1952).
Heidegger, M. (1977). Letter on Humanism. In D. F. Krell (Ed.), *Basic Writings* (pp. 189–242). Harper & Row
Heidegger, M. (1995). In W. McNeill, & N. Walker (Eds.), *The fundamental concepts of Metaphysics: World, Finitude, Solitude*. Trad.). Indiana University Press. (Original work published 1983).
Husserl, E. (2001). *Logical Investigations* (D. Moran, Éd.). Routledge. (Original work published 1900)
Husserl, E. (1982). *Idées directrices pour une phénoménologie et une philosophie phénoménologique pures: Recherches phénoménologiques pour la constitution* (Vol. 2). Presses Universitaires de France.
Kremer-Marietti, A. (1981). Sur l'esthétique De Taine. *Romantisme,11*(32), 23–29. https://doi.org/10.3406/roman.1981.4489
Kull, K. (2001). Jakob Von Uexküll: An introduction. *Semiotica,2001*(134), 1–59.
Lombard, J. (2023a). French philosophy of technology and technoscience: A study on the mode of existence of bio-objects. In *Canguilhem and the Continental Philosophy of Biology* (pp. 233–249). Springer. https://doi.org/10.1007/978-3-031-20529-3_13
Lombard, J. (2023b). De La chose sensible à La chose esthétique. Le passage de L'instrumentalisation à La configuration Du Monde. *Itinera, 25*, 401–417. https://doi.org/10.54103/2039-9251/20824
Michelini, F. (2019). The philosopher's boredom and the lizard's sun. Martin Heidegger's interpretation of Jakob von Uexküll's Umwelt theory. In F. Michelini & K. Köchy (Éds.), *Jakob von Uexküll and Philosophy: Life, Environments, Anthropology* (Routledge, pp. 122–140).
Nysten, P. H. (1855). Milieu. In *Dictionnaire de médecine. 10e édition, entièrement refondue par Littré et Robin* (p. 811). Baillière. http://ark.bnf.fr/ark:/12148/cb310292955. Accessed 03 Nov 2023.
Pieron, J. (2010). Monadologie et/ou constructivisme ? Heidegger, Deleuze, Uexküll. *Bulletin D'analyse phénoménologique VI,2*, 86–117.
Romano, C. (2009). Le Monde animal: Heidegger Et Von Uexküll. In C. Romano, & S. Jollivet (Eds.), *Heidegger en dialogue 1912–1930, Rencontres, affinités Et confrontations*. Librairie philosophique J. Vrin.
Sloterdijk, P. (2009). Rules for the human zoo: A response to the letter on Humanism (M. V. Rorty, Trad). *Environment and Planning D: Society and Space,27*, 12–28. https://doi.org/10.1068/dst3
Tønnessen, M., Maran, T., & Sharov, A. (2018). Phenomenology and Biosemiotics. *Biosemiotics,11*(3), 323–330. https://doi.org/10.1007/s12304-018-9345-8
von Uexküll, J. (1912). Die Merkwelten der Tiere. *Deutsche Revue, n° 37*, 349-355.
von Uexküll, J. (1926). *Theoretical Biology* (D. L. Mackinnon, Trad.; Kegan Paul, Trench, Trubner&Co). (Original work published 1920).
von Uexküll, J. (1943). Darwins Verschulden! *Deutsche Allgemeine Zeitung,82*(22/23), 1–2.
von Uexküll, J. (2010). *A foray into the worlds of animals and humans*. University of Minnesota. (Original work published 1934).
Wheeler, M. (2011). Martin Heidegger. In E. N. Zalta (Éd.), *Stanford Encyclopedia of Philosophy*. https://plato.stanford.edu/entries/heidegger/. Accessed 14 May 2024.