

Of Animals and Men: A Study of *Umwelt* in Uexküll, Cassirer, and Heidegger¹

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Abstract

The term *Umwelt* (literally “around-world” or “surrounding-world”), which emerged as an important philosophical and biological term in the early twentieth century, has been defined in various ways. This paper first looks at the German biologist Jakob von Uexküll’s revolutionary notion of the animal’s *Umwelt*. It then explores the responses to, and critiques of, Uexküll’s notion of *Umwelt*: that of Ernst Cassirer, the German philosopher of *Symbolische Formen* (“symbolic forms”), and that of Martin Heidegger, the originator of *Dasein* (“being-there,” human being). It will be suggested here that, viewed on the synchronic axis of philosophical methods, their perspectives, though different, are fundamentally reinterpretations of the Kantian philosophy of logical form, the Kantian open-and-closed epistemological model. But it will also be suggested that Heidegger, with his hermeneutic circle of “understanding” and “interpretation,” comes closer than Cassirer to a view of the animal’s “around-world” that is congruent with Uexküll’s view of *Umwelt*.

Keywords

Uexküll, Cassirer, Heidegger, animals and men, *Welt*, *Umwelt*, *Schema*,
Symbolische Formen, *Dasein*, hermeneutic circle

¹ Unless otherwise indicated, all translations from German to English in this paper are made by the author.

The Historical Context and Value of *Umweltforschung*

Umweltforschung (“environmental research”) emerged for a brief period in Germany before it was replaced by *Umweltwissenschaft* (“environmental science”). However, “environmental research” is a misleading translation. Jakob von Uexküll, who established the *Institut für Umweltforschung* at the University of Hamburg in 1926 (it was closed in 1960),² based his research on the anatomy of neurons, on the planting and transplanting of cells, and on the observation of and experimentation with, animal behavior. Whereas other zoologists and physiologists were content with looking at their “specimens” as non-living objects of study, Uexküll began to promote the notion of *Umweltforschung* as a method of inquiry, which required researchers to shift their focus from lifeless objects to living subjects. He considered an approach to animal life in terms of the *Umwelt*, seen in the form of a functional cycle (*Funktionskreis*), to be the best way of understanding the nature and meaning of an animal as living subject. For Uexküll this minimal model was also the “safest”:

We cannot grasp the sense of a strange subject directly, but we can approach his body by taking a detour to investigate into his meaning carrier. This is certainly the safest method. When I look from the position of a subject, be it man or animal, I can say that these things in his environment, but not the others, are the meaning-carrier for him. Therefore, I have defined his being in a more accurate and better way by not getting involved with the discussion of his soul. This has been the way followed by *Umwelt* research. (“*Die Bedeutung*” 272)

From Figure 1 below we can see that the subject is defined by his organs for attention and action (*Merkorgan, Wirkorgan*), while the object is redefined in terms of organically-based perceptual and enactive carriers (*Merkmalträger*,

² Uexküll was born in Keblaste (now Mihkli), Estonia, in 1864, and passed away in Capri, Italy, in 1944. After his death, his disciples still maintained his institute until 1959. In 1960, the institute was closed due to two major setbacks: first, Uexküll’s disciple and successor Friedrich Brock (1898-1958) passed away, which deprived the institute of its only full professor; second, the university authorities found it not economical to sustain two institutes with similar functions, one for zoology and the other for *Umweltforschung*. In 1964, Uexküll’s professorship at the institute was terminated once and for all. Since the shutdown of the institute in the 1960s, the Uexküllian legacy was claimed by both Estonia and Germany. It was not until 1993 that the first archive center was established in Tartu, Estonia; a second was established ten years later in Hamburg, Germany. This brief historical retrospect is based on the author’s July 2003 interview with Dr. Torsten Rütting, in the Archive Center of Jakob von Uexküll at the University of Hamburg.

Wirkmalträger). These four fundamental elements constitute a cycle that does not recognize the conventional opposition between subject and object, but rather only one between the sense (*Sinn*) and meaning (*Bedeutung*) of “life” (*Leben*). Uexküll believes, then, that a researcher can acquire some knowledge (*Erkenntnis*) of the subject by taking an objective look into this cycle. The genuine nature or meaning of the animal-subject’s life will become manifest only once the researcher has entered, in his own thinking, into this circle; he will be trapped in the false knowledge imposed by his human judgment, or by the superimposition of human

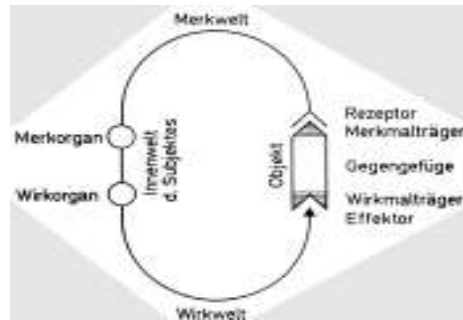


Fig. 1. The functional cycle (Uexküll, “*Die Bedeutung*” 264)

values. As a method for acquiring the most objective meaning of the most subjective lives, the *Umwelt* is in effect an abstraction from the subject’s own appearances, experiences, and behavior. Therefore, *Umweltforschung* may be more comprehensively translated as “research into self-world or subjective universe” rather than as “environmental research.”

A clear goal of Uexküll’s research was to challenge the long tradition of environmental determinism with his model of the functional cycle, configured *via* a generalization from the detailed anatomies of sensory and motor links within organic individuals. As this functional cycle was invested with increasingly formalistic and symbolic meanings and concerns in the philosophical environment of 1930s Germany, the *Umwelt* became detached from other notions like *Umgebung*, *Milieu*, and *Wohnwelt* and increasingly came to designate a composite of the inner world and the perceived outer world. Uexküll now rejected the idea, implied by the notion of *Milieu*, that human nature was to be transformed by a merciless, powerful environment (Uexküll, “*Biologie*” 213). From the perspective of *Umwelt*, Uexküll began to see that the human beings were not formed as one additional artifact by

his/her environment. Rather, human beings and animals, philosophers and scientists, had already actively transcribed their own environments. Thus Uexküll claimed that the *Umwelt* model, unlike those older models, elevated the role of the philosopher's active thinking power (*dieser Begriff offenbar die Leistungsfähigkeit der Denkökonomie übersteigt*, "Biologie" 214).

When Uexküll proposed the *Umwelt* as a bridge between the natural and cultural sciences ("Die neue Umweltlehre"), Eduard Spranger (1882-1963), who worked in the tradition of Dilthey's hermeneutics and whose philosophy was adopted by National Socialism, endorsed the greater educational value of Uexküll's *Umwelt* as compared with the tradition of milieu and evolution theories. Education (*Erziehung*), in his sense, must reflect upon the specific power of human thinking and will (*diese "eigentlich" menschlichen Kräfte des menschlichen "Denkens" wie des menschlichen Wollens*). Spranger summarizes his viewpoint as follows:

We can accordingly define our educational theory of *Milieu* only like this: to educate a man within his given *Umwelt* structure according to the human plan. The biological nature of man has been bound to its specific human world. This world is not omnipotent because it has been preformed according to humankind. It is therefore not subject to be changed as one wishes because it is once and for all preformed and given as a frame. In a biological sense, then, evolution theory and *Milieu* theory too narrowly confine human education. One half of the accessible development of the human *Gestalt* is determined by one's inherited genes; the other half by the biologically specific features of one's *Umwelt*. (Spranger 200)

For Spranger, writing two years before Hitler invaded Poland, the older milieu and evolution theories introduced the unwelcome idea of a changeable and formative human nature into the (post-Kantian) German conceptual system. Spranger agrees with Uexküll that the living subject has been given a frame (*ein Rahmen*) or shell (*ein Gehäuse*) from the beginning, which determines its proportionate relationship between its own life and its environment. While we might think that milieu and evolution theories could expand the possibilities of living subjects *via* the observation of multiple adaptations and manifestations, Spranger claims that, on the contrary, they have actually reduced the meaning of a pre-designated form of life (*die Bedeutung der Umweltgestaltung verkleinert*). He thinks that Uexküll's biological research, which is based on thorough case studies

of animals, not only questions and reinterprets the tradition of evolution theories from a critical point of view (*durch kritische Gesichtspunkte*), but also justifies German educational theory at a time when all human beings are united and circumscribed within a racial or national plan (*wir uns mit dem Bilde eines Rasseplanes oder Nationalcharakterplanes umschreiben*). This plan judges each human being by “the way he remains to be” (*Du bleibst doch immer, der du bist*).

Spranger’s review makes clear the glaring competition between the (originally French) *milieu* and (German) *Umwelt* models in the 1930s, a time when philosophers were torn between scientific traditions and socio-political doctrines. In addition to validating Uexküll’s theory of the *Gestalt* as a meaningful, genetic life-form, Spranger also saw Heidegger’s notion of “*Das Zuhandene*,” “things ready-to-hand” as corresponding to Uexküll’s *Umwelt* (Spranger 200). For Heidegger, those things ready-to-hand are already available for our immediate use, like the keyboard I strike with my fingertips, before we think about or objectify them; as such they typify our human being (*Dasein*) which is, in the first place, not a *subjective* being but (always already) a “being-in-the-world” (*in-der-Welt-sein*).

Cassirer’s Canonization and Criticism of Uexküll

Ernst Cassirer gave Jakob von Uexküll a canonical place in the history of biology when the former stayed in Sweden in 1940 (*Problem of Knowledge* 118-216). In upholding his historical perspective on the development of biology, Cassirer returns to Kant’s concept of purposiveness (*Zweckmäßigkeit*). Kant, in his first introduction to *Critique of the Power of Judgment*, takes it as the first rule that nature should be defined and “directed” by a philosopher’s understanding and cognition of its laws (14-15). The technique of the inquiring subject is in opposition to the mechanical rules of nature, but the former can, by combining the sensory manifolds, perceive a causal unity in the latter (22). Furthermore, this human ability to form a unity is *a priori* and autonomous, which legitimizes only the reflecting subject himself but not the real end in nature (27-28). Since the real end in nature “lies entirely outside the field of the power of judgment,” the subject relies on his most distinctive faculties, imagination, and understanding, to bring the objects in nature into a relationship with himself (34-35). By returning to the Kantian revision of teleology, which is more interested in showing “human understanding,” and by focusing on the logical form of what we know than in arguing over the “absolute truth” or “final end” of nature, Cassirer distinguishes Uexküll from his contemporaries. Indeed, he brings Uexküll into the orbit of Cuvier and Goethe:

[Jakob] Johannes von Uexküll chose another way of establishing vitalism.³ He thought himself wholly in agreement with Driesch, in his fundamental conviction, and regarded him as his most loyal ally and comrade in arms. Nevertheless a real difference obtained between the two in respect to their general methodology and philosophy. This is evident even in their respective points of departure and in their empirical foundations and it appears even more plainly in the general theoretical system of concepts that each one individually used in the interpretation of his empirical findings. Driesch started from physiology, which he had always considered the systematic center of biology. But Uexküll was above all an anatomist and upheld the ideal of his science in its classical purity, in this respect recalling Cuvier, whose modern successor he seemed to be. . . . [Here Goethe's lines on *Form, Urbild* and *Gestalt* in his *Die Metamorphose der Tier* are quoted.] It is remarkable to see how exactly the plan and development of Uexküll's biology conformed in every particular with this view of Goethe. (*Problem of Knowledge* 199; 204-05)

In the first place, we may find it strange to use the distinction between physiology and anatomy as an index, since both disciplines, working closely together, had played a role in Uexküll and Driesch's experiments on marine animals.⁴ Second, in explaining the phenomenon of life, Driesch is no less "metaphysical" than Uexküll. Nevertheless, Cassirer believes it is the application of geometry and statics that helps Uexküll to move beyond the purely physical and anatomical structure of an animal; he thinks such a mathematical-symbolic perspective has been largely ignored by evolutionary and materialist theories and approaches. For Cassirer thinks genuine biology should transcend the division of disciplines: an enquiring mind must treat "the immaterial relationships of material parts united in a body so as to reconstitute the structure in imagination" (*Problem of Knowledge* 200). In this sense Cassirer compares Uexküll with Cuvier and Goethe: all three are looking at primarily symbolic, rather than evolutionary, relationships

³ Johannes is Uexküll's middle name.

⁴ Hans Adolf Eduard Driesch (1867-1941) is a contemporary of Uexküll. His experiments on dividing and displacing the embryonic cells of a sea urchin were often quoted and disputed among the physiologists at the time. They questioned whether a divided cell would still grow the same complete life form or not.

among animals and between animals and their environments. In the context of Kantian purposiveness—nature may be defined and “determined” by human understanding of its laws—Cassirer agrees with Uexküll that a biologist should differentiate between two kinds of *Umwelt* cycles—the one formed and shared collectively by each given species in nature, the other “imagined” as subsisting between the human biologist and his observed species (*Problem of Knowledge* 201-02).

However, Cassirer later moved away from this earlier, more optimistic view—not really a view that Kant, who seldom talked about animals, would have sanctioned—that the philosopher-biologist can “imagine” (and thus be in sympathetic rapport with) an animal’s *Umwelt*. In his later writings and lectures, especially with regard to “The Object of the Science of Culture” and “Language and Art” given in the U.S. in 1942, he claims that the fundamental human-animal gap is the lack of “language” in animals. Although Cassirer acknowledges that Roman Jakobson’s structural linguistics may imply the possibility of a biological (trans-species) holism,⁵ in his last talk in New York in 1945 Cassirer extended the human-animal gap into the domain of the operational languages of linguists and biologists. He now criticizes Uexküll and, more generally, biology, as “a speechless being, an animal, lives in a reality widely divergent from the reality of man (Cassirer, *Symbol* 150). He continues:

By the observations of Uexküll and other investigators in the field of animal psychology we cannot attain a positive solution of our problem. But we may draw from the facts ascertained by them an important negative conclusion. When compared with our own human experience[,] the experience of an animal seems to be, so to speak, in a much less solidified state. It is, as it were, in a state of liquefaction. The animal, we are told, does not yet live in a sphere of fixed and determinate things, it lives in a sphere of complex or diffused qualities. It does not know of those definite and distinct, steadfast and permanent objects, which are the characteristic mark of our own

⁵ More precisely, while Cassirer quoted Jakobson in this speech and did recognize a certain methodological affinity between biological holism and Jakobson’s linguistic structuralism, he also admitted here that he could not go further into this topic. Rather, he went on to argue that biology and linguistics cannot be bridged, asking rhetorically: “Is language an organicism?” and “Is linguistics a natural science or is it a ‘*Geisteswissenschaft*’?” (“Structuralism” 109). Cassirer had met Jakobson in 1941 on what was to be, due to the war, the last ship from Europe to America.

human world. It is just this identification that seems to be missing in animal experience. (*Symbol* 168-69)

While the divide between animals and men is wide and deep, Cassirer takes language into consideration. He states in “Structuralism in Modern Linguistics”:

Language is neither a mechanism nor an organism, nor a dead living thing. It is no thing at all, if by this term we understand a physical object. It is—language, a very specific human activity, not describable in terms of physics, chemistry, or biology. . . . Every act of speech would be a sort of transubstantiation. . . . The term “*Geist*” is correct; but we must not use it as a name of a substance. . . . We should use it in a functional sense as a comprehensive name for all those functions, which constitute and build up the world of human culture. (110, 114)

In the first place, then, language is a uniquely human tool. In the second place, the practice of language serves to fixate, concretize, and cognize objects in the world in the ways they genuinely exist. But since language is itself a manifestation of conscious or mental activity, one through which a philosopher may also imagine or conceptualize a supra-human entity, we also come to see that it is this ideal spirit that governs all functions of human languages and activities. Animals, on the other hand, are fully outside of this conceptual and hierarchically stratified system and thus in effect live in another world, one that cannot be rationalized or “ordered” by human language. Cassirer now takes the physical *Umwelt* as one that can only refer to the disorganized or “disoriented” world of animals. Furthermore, he denies the biologist access to the world of the linguist: the former deals with physio-chemical substances that trigger animals’ behavior, while the latter is capable of entering the symbolic and spiritual universe of human beings (114-15). When interpreted in this negative sense, Uexküll’s imaginative *Umwelt* cannot be taken as a proper conception or product of human culture in the history of philosophy.

***Umwelt* as a “Speechless Animal” Model**

What may seem a surprising or even paradoxical turn against biology in the 1940s had actually been well-formulated by Cassirer in the late 1920s. At this time he investigated, like Jakobson, the abnormal mental states (or brain states) of

aphasia, agnosia, and apraxia, which result in one's loss of the ability to express abstract ideas, name objects, and move one's body. From his 1925 letters to his cousin, Kurt Goldstein, a neurologist and advocator of organic holism, we know that Cassirer paid several visits to hospitals in Hamburg and Frankfurt to observe the patients. It seems he attempted to incorporate the study of brain lesions into his encompassing theory of "Symbolic Forms." Nevertheless, from his talks in 1927, his paper on "The Pathology of Symbolic Forms,"⁶ and particularly his unpublished notes in 1928, prepared for the concluding chapter of the fourth volume, we know that Cassirer's detailed survey of neurology does not, after all, really serve to validate biology as playing a role in the construction of human symbolic forms; rather, it reinforces the unbridgeable gap between biology and philosophy, between animals and human beings (Métraux 658). And Cassirer's fundamental bias against the appropriation of philosophical terms by biology is directed at Uexküll:

Uexküll's *Gegenwelt*—"schema." This theory is correct, but it suffers from one shortcoming: it conceives this schema all too narrowly as an "image," as a spatial schema. The schema must be expanded, from the sphere of pictorial *reppresentazione* [Italian spelling] to the larger sphere of representation in general. And it is the word that here truly carries the "representative function." Man is relieved by words of the need to make "pictures" of things. In this way mankind arrives at a relatively imageless "view" of the world. Animals do not possess such a view as a nonperceptual "representation." The thing as a mere X, as an ideal point of unity, is not accessible to immediate sensory awareness. It functions as such as an ideal point of unity, and this function goes back to the action of language. Uexküll has shown very well how every "surrounding world" and "shared world" depends upon such actions, not upon mere "reactions." . . . Pathological cases offer the negative instance of this. Where the linguistic web has become undone, the web of things also becomes undone. We have cases of agnosia where the fixed forms of objects and their meanings become obliterated. Along with the name disappears the expression of the object and it can no longer be recognized as what it "is." The "thing" loses its "stability." It assumes an unsteady state—a knife:

⁶ The paper was later published in the third volume of *The Philosophy of Symbolic Forms* in 1929. It was translated and published in French in the same year (Cassirer, "Étude").

“for cutting,” a fork: “for eating.” (*The Philosophy Vol. 4* 214-15; Heusden 283)

Thus Cassirer and Uexküll are different in defining and analyzing the functions of the *Schema*. Although Uexküll was probably not justified in using the Kantian “schematism” to theorize his “nervous schema” as a mirrored image of the object in *Umwelt und Innenwelt der Tiere* (1909), he later conceptualized the schema as a “summary” of the most important features of objects.⁷ As this revision shows, the function of the schema in the neuronal context is not to fully represent the world; rather, it now serves only as a “moderator” of the outer world, decoding and transforming objects into those “signs and signals” that can be truly useful inside the organism. In the meantime, Uexküll also became aware of the limitations of the schema in promoting a general method for acquiring meaning, and thus he shifted to his theory of the *Umwelt* in the second edition of *Theoretical Biologie* in 1928; now the *Umwelt* takes on both decoding and overcoding functions, generating the circular, ever-changing meanings for living organisms, animals, and biologists.⁸ For Cassirer, however, the schema is definitely not the image of an object; rather, Cassirer’s schema serves to “enlarge” the world in the human mind. Furthermore, in representing or imagining the world as a concept, Cassirer identifies the lingual schema as the most powerful among all sensual schemata in describing the objects in the world. Therefore, the reason an object becomes meaningful (or not) in the human world is ultimately due to the function that a human being gives it—that is, the way in which a human being uses his language to define the usefulness of the object in his life. If the human being suffers from a cognitive-linguistic breakdown, he will definitely lose the ability to define, and thus to act on, with or in relation to, objects in the world. Since animals fundamentally lack the lingual schema, they are thought by Cassirer to suffer the same fate as those patients whose sensual and categorical schemata have fallen apart. In a sense animals are sick because they can neither speak nor represent the world.

It seems then that the vicious “hermeneutic circle” of animals had haunted Cassirer’s metaphysical system for almost twenty years. In order to construct human symbolic forms, it is understandable that Cassirer started from an observation of actual sensual experiences and a description of the structural and

⁷ This appeared in the first edition of *Theoretische Biologie* in 1920.

⁸ For a detailed survey of the theoretical evolution of “schema” in Uexküll’s system, please refer to another paper by the author, “Schema as Both the Key to and the Puzzle of Life: Reflections on the Uexküllian Crux,” which has been edited for publication in *Sign Systems Studies* 32.1/2 (*forthcoming*).

functional relationships between brain and behavior. Cassirer, nevertheless, wanted to use the *Schema* as a third term that could mediate between daily empirical observations on the one hand and higher metaphysical systems on the other, as Uexküll did. But Cassirer overcodes his *Schema* on the “verbal” side, believing that metaphysics is higher than the physical sciences and that his ultimate goal of reaching the *Geist* transcends the entire world of daily phenomena. However, in extending his perfect hermeneutic circle to animals, the early Cassirer obviously was merely applying his common-sense knowledge to say what he thought the animal should be. He failed to use a technical language to articulate the anatomy and morphology of animals and the structural and functional relationships among their organs, yet he still attempted to transpose the animal world unto his human metaphysical system. In the metaphysical system of both the earlier and later Cassirer, indeed, there arguably remains a certain epistemological gap, one in which the “animal subject” remains concealed or lost, like a disfigured and functionless organ on the margin.

Uexküll’s Conception of Language in Animals

Cassirer’s notes in 1928 reveal that he had spotted the role of the “speech-act” in Uexküll’s concept of *Umwelt*: “Uexküll has shown very well how every ‘surrounding world’ and ‘shared world’ depends upon such actions, not upon mere ‘reactions’” (*The Philosophy Vol. 4*, 215). Nevertheless, because of Cassirer’s bias against animals, the role of “speech-act” was not really articulated from the perspective of animals, much less rationalized as a common function that might place human beings and animals on equal footing.⁹ To make up for the lack of a neuro-anatomy of vertebrates and invertebrates in Cassirer’s system, we might want to consider Uexküll’s reply to a letter from the philologist Heinrich Junker (*Kompositionslehre* 297-98; “Letter to Heinrich Junker” 445-46). In this letter, Uexküll informed Junker that he would interpret the sounds, objects and movements of animals in the light of *communication* (*Verständigung*).

⁹ As Cassirer reflects on the differences between human and animal behavior in his notes, he suddenly shifts to two French verbs, “connaître—co-naître” (to know—to be born together), in order to address the pattern of relations in Uexküll’s *Umwelt* model. Nevertheless, in the following sentences he again gives the priority to human beings by saying that the transformation from the “life complex” into a “knowledge complex” is uniquely human (*The Philosophy Vol. 4*, 213). This opens a way for an alternative interpretation of the *Umwelt* cycle in France—Jacques Lacan’s conceptualization of *méconnaissance* among animals and human beings.

First, Uexküll believes that animals have their own phonemes and morphemes, which are innate, but which can be observed from their reactions to the sound patterns produced by the same or other species in the same environment. Putting three kinds of birds together—pheasant chicks, turkey hens and chicken hens—Uexküll finds that the pheasant chicks react to the calls or warnings of the turkey hens but ignore those of the chicken hens. He concludes: “[T]he language [*Sprache*] of the turkey must be a dialect of the language of the pheasant. The language of the chicken must belong to a completely different stem.” Second, with regard to the lexical and semantic level, Uexküll criticizes the false premises in Pavlov’s experiments on dog salivation. He thinks Pavlov reduces the inner environment of a dog to the artificial bell sounds and commands made by human beings, but Uexküll does not believe that a dog really understands the designations of human utterances.¹⁰ Rather, the inner world of a dog has already composed the specific tones (*Töne*) that trigger its multiple possible actions.¹¹ Therefore, the objects seen from the perspective of human beings do not exist in the functional cycle of a dog. Several different objects or utterances, even in different languages, may simply evoke the same “tone” in the dog. Uexküll distinguishes his functional cycle from Pavlov’s conditioned reflex as follows:

The word “chair” for the dog is not the name of a thing [*einen bestimmten Gegenstand*] but of a performance [*eine Leistung*]: to sit. To me this seems a fundamental feature of language as a means of communication between human beings as well. The spoken word, a certain sequence of sounds as carrier of sense [or] meaning, relates primarily to [a] performance and not to [something] [*auf eine bestimmte Leistung und nicht auf einen bestimmten Gegenstand*]. (*Kompositionslehre* 298; “Letter to Heinrich Junker” 446)

¹⁰ Uexküll claims that the sounds made by the behaviorists in their experiments are like the disturbing background noise coming from a radio. In the preface to his 1934 book project he says: “The mechanists have pieced together the sensory and motor organs of animals, like so many parts of a machine, ignoring their real functions of perceiving and acting, and have even gone on to mechanize man himself. According to the behaviorists, man’s own sensations and will are mere appearances, to be considered, if at all, only as disturbing noises” (“A Stroll” 6; *Streifzüge* VIII).

¹¹ This may sound idealistic, but it has been proved empirically in the sound recordings of neuro-conductions. It shows that the tempo of neuro-conduction varies in different species. In the first edition of *Theoretische Biologie*, Uexküll describes the sounds made by the neurons as being like those made in the sending of telegrams or by typing.

We can gather from this that the concept of “object” (*Gegenstand*), which is highly valued by Cassirer as one of the cognitive goals of the expressive or representational power of human languages, is completely removed from Uexküll’s problematic in the 1930s. The sound received by the hearing organ of a dog can only be transformed and led to other sensory and motor organs of the dog itself. The animal does not distinguish the objects in the outer world because the links between its multiple sensory and motor organs have been structuralized according to its own needs. The degree of this structuralized network of relationships can be detected from the diverse actions that an animal can perform. A comparison of the actions that different species can perform in the same environment—for instance, a man, beaver, frog, fish, insect or water lily swimming in the same pond—can, then, reveal the densities, and the meanings, of their *Schemata* or *Gestalten*. In this sense, the schema in Uexküll’s view is not limited to either spatial or lingual aspect, the point for which Cassirer criticized. Rather, Uexküll’s schema involves the cooperation of all the sensory organs (*Sinnen*), themselves connected to motor organs which have the potential for meaning-expression (*Bedeutung*). While this schema does not carry a “representative function” in Cassirer’s sense, it combines sensual and functional aspects, embodying the tuned presentation and performance of all the given sensory and motor organs. The role of the Uexküllian *Schema* or *Gestalt* in human communication starts, in fact, from an erasure or ignorance of the proper names in different languages: the arbitrariness of the sign in Saussure now becomes its “betweenness” or “indeterminacy” with regard to two or more heterogeneous systems or languages. The homeostasis of or among speakers of the same language generates their typical speech-acts, which may look and sound strange to those in another language, even if the designated meanings of names, words or sentences in different languages are the same, the ways in which the speakers are “tuned” to pronounce them, to encode them into sequences and to “read” the perceived signals would still be much different.

Thus the paradoxical nature of Uexküll’s transsensual “knowledge” in animals, insofar as it goes “beyond” merely-human cognition or understanding, is tied to its being part of an invisible, static yet repetitive natural cycle, one which becomes the regulating principle for the observation of life activities of and between species. This principle is not tied, *via* the rule of resemblance, to the actual appearance of living creatures or of their fossil remains, something after all linear, incomplete, and digressive. Rather, Uexküll’s problematic of form (*Schema*, *Gestalt*, *Urform*) differentiates the subjective *Umwelten* into two kinds: one follows the rule of resemblance but produces variations, degradations, failures, and illusions; the other

obeys the rule of similitude and follows the same original circuit. The *Schema*, then, mediating between the inner and outer worlds of an animal, acquires its life within the rule of similitude, but it cannot merely recognize the outer world point-by-point, sound-by-sound, and color-by-color; the rule of resemblance allows for the integrated perception of this outer world. Thus Uexküll's epistemology cannot be taken as a mere continuation of Cuvier's and Goethe's. While Uexküll constructs and conceptualizes life by studying the anatomy of the functional circuits inside living beings; for Cuvier and Goethe, life cannot be more than the mere appearances of beings, dead or alive, the visible features of which are perceived by a human naturalist with no means of entering into the creatures' "subjective universe" (*Umwelt*).

Common Ground and Non-Ground of Heidegger and Uexküll

In attempting to come to grips with the notion of human (not animal) "world" in which every day men live and act, Heidegger wants to go beyond the notion of an objectified or a rationally, abstractly "known" world. He considers the human world as men immediately experience it. While being influenced by Husserl's phenomenological conception of "life-world" (*Lebenswelt*), Heidegger feels that the phenomenological perspective is still too rationalized, too abstract and too subject-oriented. (The later Husserl radicalizes the Cartesian and Kantian concept of a "transcendental ego.") Thus, in his groundbreaking work *Sein und Zeit* (*Being and Time*), Heidegger calls into question both the ontological tradition initiated by Descartes and the insufficient definition of *Umwelt* in the positive sciences including biology (*Being and Time* 84, 95). Here he suggests that notions like *Umwelt* and *Vorhanden* ("things present-at-hand") have been used in too broad and general (or abstract) a sense and thus cannot enter into his conception of *Dasein* and Being-in-the-world (*In-der-Welt-sein*) without some revision. The term "Being-present-at-hand" (*Vorhandensein*), calling to mind the whole tradition from Plato through Descartes and Kant to Husserl, means for Heidegger only the locations of things in their accompanying space. These beings (*Seiende*) are present in space independently of human presupposition, manipulation or use, and they cannot be inter-connected or expanded in such a way as to constitute a world, much less to form an entity that might be the proper counterpart of *Dasein* ("being-there," human being). Yet in comparison with this abstract notion of *Vorhandensein*, *Umwelt* with its prefix "Um" ("around") evokes in Heidegger a stronger sense of things within a limited space; therefore he takes the elaboration and modification of *Umwelt* as the

first step in his conceptual construction of *Dasein* and *Welt* (world) (*Being and Time* 94-95; *Sein und Zeit* 66).

Consequently, Heidegger shifts to another set of terms that can better catch the concrete and interactive nature of *Dasein*. The human “purpose” (*um zu*) is now located in entities within-the-environment (*des nächstbegegnenden inner-umweltlichen Seienden*) and thus much closer to *Dasein* than to *Umwelt* (*die nächste Welt des alltäglichen Daseins*). On a daily basis, *Nächstbegegnenden* beings (*Seienden*) are two things or people that meet up, bump into or come across each other. Heidegger suggests through his new language that *Dasein* has been (“without knowing it”) constantly addressing and using the things and people around it according to its changing and specialized demands. Therefore, the entities circumscribed in this on-going interaction can no longer be named *Vorhanden*; they should be called *Zuhanden*, that is, “things ready-to-hand,” like *Zeug* (tools, instruments, or equipment), things ready to serve our purposes which we interact with and use—and here the subject-object distinction is significantly blurred—without (or before) thinking about it (*Sein und Zeit* 97-98).

The continuum of space formed by *Dasein-Seiendes-Zuhanden* is then not so clearly three-dimensional (or any-dimensional) as the one filled with *Vorhanden* (*Sein und Zeit* 136; Cassirer, *The Philosophy Vol. 3* 149). For there is a lack of potential “viewing positions” (viewpoints, standpoints) in the space formed by *Dasein-Seiendes*, yet this structure still lets one project oneself onto his/her world, even to understand and interpret (*verstehen, bedeuten*) the meaning of this world (*Sein und Zeit* 120-21, 188). Heidegger explains the latent “hermeneutic circle” in his conceptualization of everyday *Dasein* as follows:

The projecting of the understanding has its own possibility—that of developing itself [*sich auszubilden*]. This development of the understanding we call interpretation [*Auslegung*]. In it the understanding appropriates understandingly that which is understood by it. In interpretation, understanding does not become something different. It becomes itself. Such interpretation is grounded existentially in understanding; the latter does not arise from the former. Nor is interpretation the acquiring of information about what is understood; it is rather the working-out of possibilities projected in understanding. In accordance with the trend of these preparatory analyses of everyday *Dasein*, we shall pursue the phenomenon of interpretation in understanding the world—that is, in authentic

understanding, and indeed in the mode of its genuineness. (*Being and Time* 188-89)

This notion of the self-development (*sich auszubilden*) of one's understanding (*Verstand*) thus plays a crucial role in Heidegger's hermeneutic project. Heidegger claims that the action of projecting from the parts to the whole, from *Dasein* to *Welt*, does not mean to draw in something new from the world; rather, it means to lay down, to display (*auslegen*) and to recycle what has already been given in *Dasein*.¹² Interpretation in this context is only the movement from the parts to the whole and *vice versa*, but the given knowledge or understanding in *Dasein* is not going to be changed in the course of this process. The meaning generated by these constant movements outward-inward-outward is always equal to the given structure of *Dasein-Seiend*. It seems, then, that Heidegger's method of inquiry here may have something in common with that of Uexküll's *Umweltforschung*, and even with the Spranger's biologically-based philosophy of human education (Spranger 200).

Nevertheless, a closer look at Heidegger's shift of terminology between 1927 and 1930 reveals a certain incongruity between Heidegger's and Uexküll's metaphysical systems. After all, it was Heidegger's dissatisfaction with the insufficient definition of *Umwelt* in biology that led him to replace this term with such newly-invented terms as *Seiend* and *Zuhanden*. Furthermore, his abandonment of *Vorhanden* in favor of *Zuhanden* still suggests an absorption of our attention "inward" to the *Dasein-Seiend* structure and hermeneutic circle, and thus a certain anthropocentrism: this kind of "attention" most properly belongs to the human sphere of interactions, for example, occasions on which another person is addressed in the form of a letter or a speech (*zu Händen von jedem*), and "who" after all is using these ready-to-hand tools if it is not "man"? Indeed, in his Freiburg lectures of

¹² The philologist Leo Spitzer quotes the above paragraph from Heidegger and pays tribute to Schleiermacher when he discusses the interpretation and understanding of a literary style. Spitzer terms his heuristic tool is a "philological circle," in which "one must admit that a certain naïve insight, call it direct intelligence or intuition (as you please), is required for understanding any text" (*Linguistics* 34). Spitzer attempts to revise the traditional view of the "vicious" hermeneutic circle by stressing the positive effect brought about through the reader's intuition and intelligence as she/he looks into both a literary work and its author's biographical background. Nevertheless, Spitzer believes that such a self-contained circle must be opened by the force of "historical semantics." That is, the meaning of a word in its particular usage in a work must have been somehow colored by an intelligent shift of meaning in history. Spitzer's philological approach, glaringly at odds with the structural linguistics of his time, nonetheless displays the greatest methodological lucidity when set in the wider context of contemporary German philosophical and literary hermeneutics.

1929 and 1930, Heidegger expels both things and animals from his metaphysical system for the reason that the human *Dasein* cannot factually “go along with” (*Mitgang*), or perhaps “get along with,” either of them (*The Fundamental Concepts* 201-12).

Heidegger’s Animal and Man

Continuing his inquiry into the finitude and boredom of *Dasein* in his Freiburg lectures, Heidegger takes a different path by presenting three theses that he thinks may help us understand “world formation” (*Weltbildung*) in a metaphysical sense: first, the stone is worldless; second, the animal is poor in world (*Das Tier ist weltarm*); and third, man is world-forming. He declares that the thesis in the middle serves as a point of departure for his detoured investigation. However, he is not going to adopt the logic of linear progression but rather the circular movement (*die Kreisbewegung der Philosophie*) to reveal the truth of these theses. In this way, he feels, the ambiguity of the second thesis (for animals there both is and is not world) and the conflict between philosophy (which primarily concerns man) and empirical sciences (which, except for biology, concern things like stones, stars, and atoms) will not be eliminated in the process of inquiry (*The Fundamental Concepts* 187).¹³ But another reason why Heidegger chooses to start from the middle is to confront Uexküll’s *Umwelt*, within which the animal establishes its “specific set of relationships to its sources of nourishment, its prey, its enemies, its sexual mates, and so on” (192, 198). Discussing his terms “poor” and “poverty” (*Armut*), Heidegger asserts that animals possess less capacity than men to penetrate and extend the world: the beings which are accessible to animals are less in their sum total, range and depth than those accessible to the human *Dasein* (193). Nevertheless, the philosopher soon realizes that animals in certain cases, given their specialized organs, can perform better than men. This suggests that the idea of world formation cannot, after all, simply be measured in terms of “quantity” (how much is “possessed” or “lacked”), and thus the distinction between “higher” humans and “lower” animals can be questioned. In this way, Heidegger encounters the first paradox within his circle—that is, the animal has and does not have a world (199). Moving to “qualitative” distinctions, he shifts his attention to human beings and asks whether men can essentially transpose themselves (*sich versetzen*) into animals or not. In answering this question, Heidegger rejects the theory of empathy,

¹³ All page references in the two sections, “Heidegger’s Animal and Man” and “Heidegger’s Open Circle,” are based on *The Fundamental Concepts*.

which he thinks has misinterpreted man's relationship with other beings (203), but adopts the concepts of ego and consciousness in order to distinguish the ego-sphere from that of animality (206-09). These two spheres are mutually exclusive because the ego-sphere in the sense of *Dasein* is always isolated and existing for man only; the notion of the poverty of the animal world pops up again when Heidegger states that our pet dog does not "exist" but merely "lives with us" (210). He believes that the animal world is a sphere of "trivial concerns," in contrast with the "genuine actions" and "substantial existence" of human *Dasein*. Based on their fundamentally diverse qualities, Heidegger thus declares that transposition could only be possible between one human being and another (211).

Yet here Heidegger's anthropocentric standpoint is obviously naive. With any but a fully anthropocentric perspective, how could anyone possibly claim that *Dasein* is isolated and exists for himself/herself, whereas animals only "exist for men" and do not really "exist in themselves"? While trying to make a more radical break from Kant (and traditional, "logocentric" Western thinking, to use Derrida's term) than does Cassirer, Heidegger fails to take animals, as well as the biology that would try to interpret their existence, as seriously as he takes human existence and its proper *logos*.

Heidegger's Open Circle

In these same Freiburg lectures, Heidegger summarizes at length the experiments done by mechanists and vitalists in Germany. He thinks mechanism and vitalism are both dangerous trends, but praises Driesch and Uexküll for their holistic view in observing the growth of an organism in its developmental stages, and in observing how animals are bound to their environment (261). Yet while Heidegger pays tribute to Uexküll by stating that the latter's investigation is "one of the most fruitful things that philosophy can learn from," he still sees Uexküll's *Umwelt* as a deprived "open circle," unable to conceptualize world-formation. Based on his survey of Uexküll's early (pre-1910) publications, which are mostly about marine animals, Heidegger parts ways with the biologist:

Even the fact that Uexküll talks of an "environing world" [*Umwelt*], and indeed of the "inner world" [*Innenwelt*] of the animal, should not initially prevent us from simply pursuing what he means here. For in fact he means nothing other than what we have characterized as the disinhibiting ring [*Enthemmungsring*]. However, the whole approach

does become philosophically problematic if we proceed to talk about the human world in the same manner. It is true that among the biologists Uexküll is the one who has repeatedly pointed out with the greatest emphasis that what the animal stands in relation to is given for it in a different way than it is for the human being. Yet this is precisely the place where the decisive problem lies concealed and demands to be exposed. For it is *not* simply a question of *qualitative otherness* of the animal world as compared with the human world, and especially not a question of quantitative distinctions in range, depth and breath—not a question of whether or how the animal takes what is given to it in a different way, but rather of whether the animal can apprehend something *as* something [*etwas als etwas*], something *as* a being [*etwas als Seiendes*], at all. If it cannot, then the animal is separated from man by an abyss. (*The Fundamental Concepts* 263-64; *Die Grundbegriffe* 383-84; italics in the German original)

For Heidegger, then, Uexküll's *Umwelt* is a physical enclosure around the animal, within which it can be open to anything that arouses its instinctual drives. The behavior of the animal is then defined in terms of the way this outer circle forces the inner circle to open to external things and other beings. Yet the animal fails to distinguish clearly these things and beings, which thus tend to deceive and elude it; the animal lives in a confused manner based purely on its instincts (253-57). The paradox that Heidegger discovers here is the animal's lack of attention, permanence and even change, though Uexküll proclaims the *Umwelt* to be a self-sufficient circle that is well-defined by the animal itself. Thus for Heidegger, there can be no place for the animal within the hermeneutic circle of world-formation, that bounded two-dimensional structure of (human) *Dasein*, *Bedeutung*, *Verständnis* and *Mitgang*. Its inability to represent something as "something" or as a "being" (*Seinde*) means that the animal must be removed from this circle; in Heidegger's conception of *Welt* there could be no evasive, undistinguished things drawn toward the being in its center. In the same way Heidegger criticizes the Darwinian concept of adaptation, which he regards as being insufficient to pin down the animal in a fixated relation to its environment. Even though the animal can adapt to a new environment, its fluid openness to things and beings still governs its whole behavior (264). Nevertheless, in order to maintain the ambiguity of his second thesis ("animals are poor in world") and its implied paradox ("animals do and do not have a world"), so that he can move from the second to the third thesis,

Heidegger revises this paradox as follows: “we do not at all find in the animal a simultaneous having and not having of world, but rather a *not-having* of world in the having of openness for whatever disinhibits” (270, italics in the German original). Thus the final paradox of his inquiry into animality is that the animal “does not have world on the basis of a having.” Thus there remains a clear move beyond the level of the first thesis: the stone does not even have the basis of a having.

Uexküll, Cassirer, and Heidegger

It is usually assumed that a writer can represent (indeed understand) more accurately another writer who uses the same natural language, the same primary modeling system. However, this is not the case when it comes to the reception of Uexküll by Cassirer and Heidegger. As philosophers who are concerned with human beings and the construction of knowledge systems on the basis of human reasoning, Cassirer and Heidegger cannot possibly receive Uexküll’s biology as “philosophy” proper. Although they both praise Uexküll, the conflict between their knowledge systems and the latter’s remains threatening to them: thus Cassirer returns, in his later years, to his early critical view of Uexküll, and Heidegger chooses to bracket “animality” at an early stage of his philosophical career. Uexküll’s idea of an enclosed system that functions in a self-sufficient way tends to be misinterpreted as an open and unstable circle by both Cassirer and Heidegger. Their still-logocentric demand for an “objective” representation that “takes something as something” (*etwas als etwas*) fails to allow for the possible discovery of non-representationality in biology. Cassirer, Heidegger and Uexküll speak the same natural language (German), but they do not speak the same “metalanguage” in their inquiries.

Yet despite the conflict between their individual systems, Heidegger and Uexküll can somehow both still be placed within the German tradition of the hermeneutic circle of “understanding” and “interpretation.” With his move beyond the rigid subject-object distinction to the notion of a “circle” of intuition, intention, and attention that is not changed by time and space, it may seem that Heidegger makes more “biological sense” than Cassirer. Both Uexküll and Heidegger continually revise terms and coin new ones in order to catch the idea of a “space,” which lacks choices and viewing positions. Before Uexküll comes up with the term “meaning carrier” (*Bedeutungsträger*) to go with his *Umwelt* cycle (Uexküll, “Die Bedeutung,” *Bedeutungslehre*), he goes through the terms like *Objekt*, *Gegenstand*,

Ding and *Umweltding*, while Heidegger uses *Welt*, *Umwelt*, *Vorhanden* and *Zuhanden* before he settles down with *Seiend* to address the minimal entity (“being”) that is closest to *Dasein*. Fundamentally, it seems that both thinkers end up with a sort of two-dimensional, circular biological structure due to their common attempt to conceptualize a restricted being that will by nature generate the most meaning in/of/for its life.

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