

§ 10 *Umwelt*

No animal can enter into relation with an object as such.

—Jakob von Uexküll

It is fortunate that the baron Jakob von Uexküll, today considered one of the greatest zoologists of the twentieth century and among the founders of ecology, was ruined by the First World War. To be sure, even before that, as an independent researcher first in Heidelberg and then at the Zoological Station in Naples, he had earned himself a fairly good scientific reputation for his studies of the physiology and nervous system of invertebrates. But once left without his familial inheritance, he was forced to abandon the southern sun (though he kept a villa on Capri, where he would die in 1944, and where Walter Benjamin would stay for several months in 1924) and integrate himself into the University of Hamburg, founding there the Institut für Umweltforschung, which would make him famous.

Uexküll's investigations into the animal environment are contemporary with both quantum physics and the artistic avant-gardes. And like them, they express the unreserved abandonment of every anthropocentric perspective in the life sciences and the radical dehumanization of the image of nature (and so it should come as no surprise that they strongly influenced both Heidegger, the philosopher of the twentieth century who more than any other strove to separate man from the living being, and Gilles Deleuze, who sought to think the animal in an absolutely nonanthropo-

morphic way). Where classical science saw a single world that comprised within it all living species hierarchically ordered from the most elementary forms up to the higher organisms, Uexküll instead supposes an infinite variety of perceptual worlds that, though they are uncommunicating and reciprocally exclusive, are all equally perfect and linked together as if in a gigantic musical score, at the center of which lie familiar and, at the same time, remote little beings called *Echinus esculentus*, *Amoeba terricola*, *Rhizostoma pulmo*, *Sipunculus*, *Anemonia sulcata*, *Ixodes ricinus*, and so on. Thus, Uexküll calls his reconstructions of the environments of the sea urchin, the amoeba, the jellyfish, the sea worm, the sea anemone, the tick (these being their common names), and the other tiny organisms of which he is particularly fond, “excursions in unknowable worlds,” because these creatures’ functional unity with the environment seems so apparently distant from that of man and of the so-called higher animals.

Too often, he affirms, we imagine that the relations a certain animal subject has to the things in its environment take place in the same space and in the same time as those which bind us to the objects in our human world. This illusion rests on the belief in a single world in which all living beings are situated. Uexküll shows that such a unitary world does not exist, just as a space and a time that are equal for all living things do not exist. The fly, the dragonfly, and the bee that we observe flying next to us on a sunny day do not move in the same world as the one in which we observe them, nor do they share with us—or with each other—the same time and the same space.

Uexküll begins by carefully distinguishing the *Umgebung*, the objective space in which we see a living being moving, from the *Umwelt*, the environment-world that is constituted by a more or less broad series of elements that he calls “carriers of significance” (*Bedeutungsträger*) or of “marks” (*Merkmalträger*), which are the only things that interest the animal. In reality, the *Umgebung* is our own *Umwelt*, to which Uexküll does not attribute any particular privilege and which, as such, can also vary according to the

point of view from which we observe it. There does not exist a forest as an objectively fixed environment: there exists a forest-for-the-park-ranger, a forest-for-the-hunter, a forest-for-the-botanist, a forest-for-the-wayfarer, a forest-for-the-nature-lover, a forest-for-the-carpenter, and finally a fable forest in which Little Red Riding Hood loses her way. Even a minimal detail—for example, the stem of a wildflower—when considered as a carrier of significance, constitutes a different element each time it is in a different environment, depending on whether, for example, it is observed in the environment of a girl picking flowers for a bouquet to pin to her corset, in that of an ant for whom it is an ideal way to reach its nourishment in the flower's calyx, in that of the larva of a cicada who pierces its medullary canal and uses it as a pump to construct the fluid parts of its elevated cocoon, or finally in that of the cow who simply chews and swallows it as food.

Every environment is a closed unity in itself, which results from the selective sampling of a series of elements or "marks" in the *Umgebung*, which, in turn, is nothing other than man's environment. The first task of the researcher observing an animal is to recognize the carriers of significance which constitute its environment. These are not, however, objectively and factually isolated, but rather constitute a close functional—or, as Uexküll prefers to say, musical—unity with the animal's receptive organs that are assigned to perceive the mark (*Merkorgan*) and to react to it (*Wirkorgan*). Everything happens as if the external carrier of significance and its receiver in the animal's body constituted two elements in a single musical score, almost like two notes of the "keyboard on which nature performs the supratemporal and extraspatial symphony of signification," though it is impossible to say how two such heterogeneous elements could ever have been so intimately connected.

Let us consider a spider's web from this perspective. The spider knows nothing about the fly, nor can it measure its client as a tailor does before sewing his suit. And yet it determines the length of the stitches in its web according to the dimensions of the fly's

body, and it adjusts the resistance of the threads in exact proportion to the force of impact of the fly's body in flight. Further, the radial threads are more solid than the circular ones, because the circular threads—which, unlike the radial threads, are coated in a viscous liquid—must be elastic enough to imprison the fly and keep it from flying away. As for the radial threads, they are smooth and dry because the spider uses them as a shortcut from which to drop onto its prey and wind it finally in its invisible prison. Indeed, the most surprising fact is that the threads of the web are exactly proportioned to the visual capacity of the eye of the fly, who cannot see them and therefore flies toward death unawares. The two perceptual worlds of the fly and the spider are absolutely uncommunicating, and yet so perfectly in tune that we might say that the original score of the fly, which we can also call its original image or archetype, acts on that of the spider in such a way that the web the spider weaves can be described as “fly-like.” Though the spider can in no way see the *Umwelt* of the fly (Uexküll affirms—and thus formulates a principle that would have some success—that “no animal can enter into relation with an object as such,” but only with its own carriers of significance), the web expresses the paradoxical coincidence of this reciprocal blindness.

The studies by the founder of ecology follow a few years after those by Paul Vidal de la Blache on the relationship between populations and their environment (the *Tableau de la géographie de la France* is from 1903), and those of Friedrich Ratzel on the *Lebensraum*, the “vital space” of peoples (the *Politische Geographie* is from 1897), which would profoundly revolutionize human geography of the twentieth century. And it is not impossible that the central thesis of *Sein und Zeit* on being-in-the-world (*in-der-Welt-sein*) as the fundamental human structure can be read in some ways as a response to this problematic field, which at the beginning of the century essentially modified the traditional relationship between the living being and its environment-world. As is well known, Ratzel's theses, according to which all peoples are intimately linked to their vital space as their essential dimension,

had a notable influence on Nazi geopolitics. This proximity is marked in a curious episode in Uexküll's intellectual biography. In 1928, five years before the advent of Nazism, this very sober scientist writes a preface to Houston Chamberlain's *Die Grundlagen des neunzehnten Jahrhunderts* {*Foundations of the Nineteenth Century*}, today considered one of the precursors of Nazism.

§ II Tick

The animal has memory, but no memories.

— Heymann Steintal

Uexküll's books sometimes contain illustrations that try to suggest how a segment of the human world would appear from the point of view of a hedgehog, a bee, a fly, or a dog. The experiment is useful for the disorienting effect it produces in the reader, who is suddenly obliged to look at the most familiar places with non-human eyes. But never did this disorientation attain the figurative force that Uexküll was able to give to his description of the environment of the *Ixodes ricinus*, more commonly known as the tick, which certainly constitutes a high point of modern antihumanism and should be read next to *Ubu roi* and *Monsieur Teste*.

The opening has the tones of an idyll:

Every country dweller who frequently roams the woods and bush with his dog has surely made the acquaintance of a tiny insect who, suspended from a bush's branch, waits for its prey, be it man or animal, so as to drop upon its victim and drink its blood. . . . Upon emerging from the egg it is not yet fully formed: it still lacks a pair of legs and the genital organs. But at this stage it is already able to attack cold-blooded animals, such as lizards, perching itself upon the tip of a blade of grass. After a few successive molts, it acquires the organs it lacked and can then set out on the hunt for warm-blooded animals.

After mating, the female clambers with all her eight legs up to the tip of the protruding branch of a bush so as to be at a sufficient height either to drop upon small passing mammals or to be bumped into by larger animals.¹

Following Uexküll's indications, let us try to imagine the tick suspended in her bush on a nice summer day, immersed in the sunlight and surrounded on all sides by the colors and smells of wildflowers, by the buzzing of the bees and other insects, by the birds' singing. But here, the idyll is already over, because the tick perceives absolutely none of it.

This eyeless animal finds the way to her watchpost with the help of only her skin's general sensitivity to light. The approach of her prey becomes apparent to this blind and deaf bandit only through her sense of smell. The odor of butyric acid, which emanates from the sebaceous follicles of all mammals, works on the tick as a signal that causes her to abandon her post and fall blindly downward toward her prey. If she is fortunate enough to fall on something warm (which she perceives by means of an organ sensible to a precise temperature) then she has attained her prey, the warm-blooded animal, and thereafter needs only the help of her sense of touch to find the least hairy spot possible and embed herself up to her head in the cutaneous tissue of her prey. She can now slowly suck up a stream of warm blood.²

At this point, one might reasonably expect that the tick loves the taste of the blood, or that she at least possesses a sense to perceive its flavor. But it is not so. Uexküll informs us that laboratory experiments conducted using artificial membranes filled with all types of liquid show that the tick lacks absolutely all sense of taste; she eagerly absorbs any liquid that has the right temperature, that is, thirty-seven degrees centigrade, corresponding to the blood temperature of mammals. However that may be, the tick's feast of blood is also her funeral banquet, for now there is nothing left for her to do but fall to the ground, deposit her eggs and die.

The example of the tick clearly shows the general structure of the environment proper to all animals. In this particular case, the *Umwelt* is reduced to only three carriers of significance or *Merkmalträger*: (1) the odor of the butyric acid contained in the sweat of all mammals; (2) the temperature of thirty-seven degrees corresponding to that of the blood of mammals; (3) the typology of skin characteristic of mammals, generally having hair and being supplied with blood vessels. Yet the tick is immediately united to

these three elements in an intense and passionate relationship the likes of which we might never find in the relations that bind man to his apparently much richer world. The tick *is* this relationship; she lives only in it and for it.

However, at this point Uexküll informs us that in the laboratory in Rostock, a tick was kept alive for eighteen years without nourishment, that is, in a condition of absolute isolation from its environment. He gives no explanation of this peculiar fact, and limits himself to supposing that in that "period of waiting" the tick lies in "a sleep-like state similar to the one we experience every night." He then draws the sole conclusion that "without a living subject, time cannot exist."³ But what becomes of the tick and its world in this state of suspension that lasts eighteen years? How is it possible for a living being that consists entirely in its relationship with the environment to survive in absolute deprivation of that environment? And what sense does it make to speak of "waiting" without time and without world?

trans. Leonard Tancock (Harmondsworth: Penguin, 1966), 175–76; original in Diderot, *Le Rêve de d'Alembert*, ed. Jean Varloot and Georges Dulac, in *Œuvres complètes*, vol. 17, *Idées 4. Principes philosophiques sur la matière et le mouvement. Le Rêve de d'Alembert. Éléments de physiologie*, ed. Herbert Dieckmann and Jean Varloot (Paris: Hermann, 1987), 130.

Chapter 9

1. Ernst Haeckel, *The Riddle of the Universe*, trans. Joseph McCabe (New York and London: Harper and Brothers, 1900), 82; original in Haeckel, *Die Welträtsel. Gemeinverständliche Studien über monistische Philosophie* (Stuttgart: Kröner, 1899), 37.

2. *Ibid.*, 83–84; original, 37.

3. *Ibid.*, 87; original, 39.

4. Heymann Steinthal, *Abriss der Sprachwissenschaft, 1: Einleitung in die Psychologie und Sprachwissenschaft* (1871; Berlin: Dümmler, 1881), 355–56.

5. Heymann Steinthal, *Der Ursprung der Sprache im Zusammenhange mit den letzten Fragen alles Wissens. Eine Darstellung, Kritik und Fortentwicklung der vorzüglichsten Ansichten* (1851; Berlin: Dümmler, 1877), 303.

Chapter 11

1. Jakob von Uexküll and Georg Kriszat, *Streifzüge durch die Umwelten von Tieren und Menschen. Ein Bilderbuch unsichtbarer Welten* (1934; Hamburg: Rowohlt, 1956), 85–86.

2. *Ibid.*, 86–87.

3. *Ibid.*, 98.

Chapter 12

1. Martin Heidegger, *Being and Time*, trans. John Macquarrie and Edward Robinson (New York: Harper and Row, 1962), 75; original in Heidegger, *Sein und Zeit* (1927; Tübingen: Niemeyer, 1972), 87.

2. Martin Heidegger, *The Fundamental Concepts of Metaphysics: World, Finitude, Solitude*, trans. William McNeill and Nicholas Walker (Bloomington: Indiana University Press, 1995), 263; original in Heidegger, *Gesamtausgabe*, vol. 29–30, *Die Grundbegriffe der Metaphysik. Welt—Endlichkeit—Einsamkeit* (Frankfurt a. M.: Klostermann, 1983), 383.

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