

Commended to the kind attention of my scholarly opponents

CARRIERS OF MEANING

THE SIGHT OF FLITTING INSECTS, such as dragonflies, bees, and bumblebees, which cavort in a meadow full of flowers, always awakens in us the impression that the whole world would be open to these enviable creatures. Even earthbound animals such as frogs, mice, snails, and worms seem to move about freely in a free Nature. This impression is misleading. The truth is that every animal, no matter how free in its movements, is bound to a certain dwelling-world, and it is one task of ecologists to research its limits.

From the beginning, we have no doubt that an enclosing world is present, out of which each animal cuts its dwelling-world. As superficial appearance teaches us, each animal encounters in its dwelling-world certain objects with which it has a closer or more distant relationship. From this state of things, there results apparently automatically for every experimental biologist the task of placing different animals before the same object in order to research the relations between animal and object, a process in which the same object represents the constant measure in all animal experiments. In this way, American researchers have attempted tirelessly, in thousands of experiments, beginning with white rats, to study the most different kinds of animals in their relations to a maze.

The unsatisfying results of these labors, which were conducted with the most precise methods of measurement and the greatest skill in calculation, could have been predicted by anybody who had come to the realization that the tacit assumption that an animal could ever enter into a relationship with an object is false.

The proof of this surprising-sounding assertion can be provided by a simple example. The following case is treated as given: An angry dog barks at me on a country road. In order to get rid of him, I grab a paving stone and chase the attacker away with a skillful throw. In this case, nobody who observed what happened and picked up the stone afterward would doubt that this was the same object, "stone," which initially lay in the street and was then thrown at the dog.

Neither the shape, nor the weight, nor the other physical and chemical properties of the stone have changed. Its color, its hardness, its crystal formations have all stayed the same—and yet it has undergone a fundamental transformation: it has changed its *meaning*. As long as the stone was integrated into the country road, it served as a support for the hiker's foot. Its meaning was in its participation in the function of the path. It had, we could say, a "path tone." That changed fundamentally when I picked up the stone in order to throw it at the dog. The stone became a thrown projectile—a new meaning was impressed upon it. It received a "throwing tone."

The stone, which lies as a relationless object in the hand of the observer, becomes a carrier of meaning as soon as it enters into a relationship with a subject. Since no animal ever appears as an observer, one may assert that no animal ever enters into a relationship with an "object." Only through the relationship is the object transformed into the carrier of a meaning that is impressed upon it by a subject.

What influence the change in meaning exercises upon the properties of the object can be made clear to us by two further examples. I take a curved glass bowl, which can be considered a simple object, since it has entered into no relationship with a human activity. I then insert the glass bowl into the outer wall of my house and transform it thereby into a window, which lets sunlight in but blocks the gazes of passersby through its reflectivity. But I can also put the glass bowl on the table and fill it with water in order to use it as a flower vase.

The properties of the object are not changed thereby. But as soon as it has transformed itself into a carrier of meaning such as "window" or "vase," a distinction of properties according to their rank becomes apparent. For the window, transparency is the "leading" property, whereas curvature represents a supporting property. For the vase, on the contrary, curvature is the leading property and transparency the supporting property.

Through this example, we can gain some understanding of why the Scholastics divided the properties of objects into *essentia* and *accidentia*. They only ever had carriers of meaning in mind, whereas the properties of relationless objects have no gradations. Only the tighter or looser binding of the carrier of meaning to the subject allows for the separation of properties into leading (essential [*wesentliche*] = *essentia*) and supporting (nonessential [*unwesentliche*] = *accidentia*).

As a third example, let an object serve which consists of two long poles and multiple short poles which connect the two long poles to each other at regular intervals. I can confer the "climbing tone" of a ladder on this object if I lean the long poles diagonally against a wall. But I can also confer upon it the function [*Leistung*] tone of a fence if I attach one of the long poles horizontally to the ground. It soon becomes apparent that the distance of the cross poles from each other only plays an incidental role for the fence, but that they must be one step apart in the case of the ladder. In the case of the carrier of meaning "ladder," a simple spatial structure plan is already recognizable that enables the function of climbing.

In an imprecise manner of expression, we designate all our useful things (even though they are one and all carriers of human meaning) simply as objects, as if they were simple, relationless objects. Indeed, we treat a house along with all the things found in it as objectively existent, whereby we leave human beings as dwellers in the house and users of the things completely out of the picture.

How perverse this way of seeing things is becomes apparent immediately if we insert a dog instead of human beings as the dweller in the house and envisage its relation to the things in the house.

We know from [E. G.] Sarris's¹ experiments that a dog which has learned to sit on a chair when he hears the command "chair" will look for another seat, to wit, another dog seat, which needs not at all to be suitable for human use. Seats as carriers of meaning for sitting all have the same sitting tone, for they can be exchanged with one another arbitrarily, and the dog will still use them without distinction at the command "chair."

If we insert a dog as the dweller in the house, we will therefore be able to observe a lot of things which are given a sitting tone. Likewise, a lot of things will be present which exhibit a dog feeding tone or a dog drinking tone. The steps surely have a sort of climbing tone. But most of the furniture only has an obstacle tone for the dog—above all the doors and closets, whether these hold books or clothing. All the small household effects such as spoons, forks, matches, and so on, seem to the dog to be only junk.

No one would doubt that the impression left by the house with its only dog-related things is highly inadequate and hardly corresponds to its real meaning.

Should we not learn the lesson that, for example, the woods, which poets praise as the human being's loveliest abode, is hardly grasped in its true meaning if we relate it only to ourselves?

Before we pursue these thoughts any further, let me place a sentence from the chapter on environments in [Werner] Sombart's² book *On the Human Being* at this point: "There is no forest as a firmly objectively determined environment, but rather, there is only a forester-, hunter-, botanist-, stroller-, nature-lover-, lumberjack-, berry-collector-, and a fairy-tale-forest, in which Hänsel and Gretel get lost." The meaning of the forest is multiplied a thousandfold if one does not limit oneself to its relations to human subjects but also includes animals.

But there is no point in intoxicating oneself with the excessive number of environments contained in the forest. It is much more instructive to select a typical case in order to take a look at the tissue of relationships among the environments.

Let us examine, for instance, the stem of a blooming meadow flower and ask ourselves which roles are assigned to it in the following four environments: (1) in the environment of a flower-picking girl who is making a bouquet of colorful flowers and sticking it as a decoration on her bodice; (2) in the environment of an ant, which uses the regular pattern of the surface of the stem as the ideal paving to get to its feeding area in the flower's leaves; (3) in the environment of a cicada larva, which bores into the vascular system of the stem and uses it as a tap in order to build the liquid walls of its airy house; (4) in the environment of a cow, which grabs both stem and flower in order to shove them into her wide mouth and consume them as feed. The same flower stem plays the role of an ornament, a path, a spigot, and a clump of food.

This is quite amazing. The flower stem itself, as a part of the living plant, consists of components connected to one another according to a plan; they represent a more thoroughly formed mechanism than any man-made machine. The same components that are subjected to a sure construction plan in the flower stem are ripped apart in the four environments and are inserted into completely different construction plans with the same sureness. As soon as the object appears as a carrier of meaning on the stage of life of an animal subject, each component of an organic or inorganic object is brought into connection with, let us say, a "complement," in the body of the subject, which serves as a consumer of meaning.

This fact calls our attention to a seeming opposition in the fundamental features of living Nature. The planned quality of the bodily structure and the planned quality of the environmental structure stand opposed to and seem to contradict one another.

One should not give in to the illusion that the planned

quality of environmental structure could be less closed than that of the bodily structure.

Each environment forms a self-enclosed unit, which is governed in all its parts by its meaning for the subject. According to its meaning for the animal, the life stage includes a greater or smaller space, in which the places are completely dependent in number and size upon the capacity of the sense organs of respective subjects to draw distinctions. The girl's visual space is like ours; the visual space of the cow still reaches beyond its grazing area, while its diameter in the environment of the ant is no greater than half a meter and in the environment of the cicada no more than a few centimeters.

In each space, the distribution of places is different. The fine street surface which the ant feels in walking on the flower stem is not at all present for the girl's hands and certainly not so for the mouth of the cow.

The structural composition of the flower stem and its chemistry play no part on the life stages of the girl and the ant. On the other hand, the digestion of the stalks is essential for the cow. From the finely structured vascular system of the stem, the cicada taps the juice suited to it. Indeed, as [J. Henri] Fabre showed, it can produce from the poisonous Euphorbia sap a completely harmless juice for its house of foam.

Anything and everything that comes under the spell of an environment is either redirected and re-formed until it becomes a useful carrier of meaning or it is completely neglected. Thereby, the original components are often crudely torn apart without the slightest consideration for the structural plan which controlled them to that point.

As different as the carriers of meaning are in their respective environments according to their contents, they are just as completely similar in their structure. Part of their qualities serves the subject as carriers of perception marks, another part as carriers of effect marks.

The color of the blossom serves as an optical perception

mark in the girl's environment and the grooved surface of the stem as a tactile perception mark in the environment of the ant. The drilling site announces itself, one supposes, as an olfactory perception mark of the cicada. And in the cow's environment, the juice of the stem is the taste perception sign. The effect marks are generally impressed by the subject on other properties of the carrier of meaning. The thinnest spot on the stem is torn through by the little girl in plucking the flower.

Besides producing the tactile perception mark of the ant's feelers, the grooves of the stem's surface serve the ant as a carrier of the effect mark of its feet. The suitable tap, which was made recognizable by its smell, is drilled out by the cicada, and the juice that flows out of it serves as the building material for its airy house. That taste material of the stem makes the grazing cow shove more and more stalks into its chewing mouth.

Since the effect mark imparted to the carrier of meaning cancels out the perception sign that gave rise to the action in every case, every action concludes in this way, no matter how different in kind it might otherwise be.

Plucking the flower transforms the flower into a decoration in the girl-world. Running along the stem transforms the stem into a path in the ant-world, and the cicada larva's sticking it transforms the stem into a source of building material. Being grazed by the cow transforms the flower stem into agreeable cattle feed. In this way, every action impresses its meaning on a meaningless object and makes it thereby into a subject-related carrier of meaning in each respective environment.

Since every action begins with the production of a perception mark and ends with the impression of an effect mark on the same carrier of meaning, one can speak of a functional cycle, which connects the carrier of meaning with the subject. The functional cycles that are most important according to their meaning and are found in most environments are the cycles of the medium, of nourishment, of the enemy, and of sex.

Thanks to its insertion in a functional cycle, every car-

rier of meaning becomes the complement of the animal subject. Thereby, some individual properties play a leading role as carriers of perception marks or of effect marks, while others only play a supporting role. Frequently, the greatest part of the body of a carrier of meaning only serves as an undifferentiated counterstructure, which is only there in order to hook up the perception sign-carrying parts with the effect sign-carrying ones (compare Figure 3).

ENVIRONMENT AND DWELLING-SHELL

ANIMALS AS WELL AS PLANTS build themselves living houses in their bodies with the help of which they carry on their existence. Both houses are built according to a plan through and through, yet they differ from each other in essential points. The animal's dwelling-house is surrounded by a greater or smaller space in which the subject's carriers of meaning cavort. Yet they are all bound to the subject that belongs to them by functional cycles.

The guide-rope of each functional cycle, insofar as it runs through the animal's body, is the nervous system, which, beginning with receptors (sense organs), guides the current of stimulation through the central perception and effect organs to the effectors. The plant's house does without the nervous system; it lacks the perception and effect organs. As a consequence, there are no carriers of meaning for the plant, no functional cycles, and no effect marks.

The animal's house is mobile and can move its receptors anywhere with the help of its muscles. The plant's house does without its own movement; since it possesses neither receptor nor effector organs with which it could construct and control its environment.

The plant possesses no special environment organs but is immediately immersed in its dwelling-world. The relations

of the plant to its dwelling-world are completely different than those of animals to their environment. Only in one point do the structural plans of animals and plants agree with one another: Both make a precise selection from among the effects of the outside world that press in upon them.

Only a fragment of these external effects is taken in by the sense organs of animals and treated as a stimulus. Stimuli are then transformed into nerve excitations in order to be conducted to the central perception organs. In the perception organs, the corresponding perception signs are heard that, transposed outward as perception marks, become properties of the carriers of meaning. The perception signs in the perception organ induce, one might say, the corresponding impulses in the central effector organ that become sources for the streams of excitations which flow to the effectors. If one can speak of an induction of perception signs to impulses, then it is not at all in the sense of an electrical induction between two parallel switched wires, but rather, the induction which is carried out in the sequence of a melody from note to note.

For plants, too, there are vitally important stimuli that set themselves apart as meaning factors from the effects which press in upon the plants from all sides. The plant encounters these external effects not with the help of receptor or effector organs but, rather, it is capable of making a selection of stimuli from its dwelling-shell thanks to a living layer of cells.

Since Johannes Müller, we know that the idea of the mechanical progression of life processes is not correct. Even the simple reflex of blinking at the approach of a foreign body to the eye is no mere progression of a chain of physical causes and effects, but rather, a simplified functional cycle, which begins with perception and ends with effect. That in this case the functional cycle does not go all the way through to the cerebrum but passes instead through lower centers changes nothing in its character. Even the simplest reflex is in its essence a perception-effect action, even when the reflex arc only represents a chain of individual cells.