

Husserlian Ecology

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The riddle of representation: two humans, a monkey, and a robot are looking at a piece of cheese; what is common to the representational processes in their visual systems?

Answer: The cheese, of course.¹

1 The Ride on Lake Constance

If mind is a creature of adaptation, then our standard theories of intentionality and of mental representation are in need of considerable revision. For such theories, deriving under Cartesian inspiration from the work of Brentano, Husserl and their followers, are context free. They conceive the subject of mental experience in isolation from any surrounding physico-biological environment.

Husserl sought in his later writings to find room for the surrounding world of human practical experience, and a similar expansion of concerns can be detected also in the writings of other later phenomenologists such as Heidegger, and Sartre, and Merleau-Ponty. But in none of these authors do we find sustained attempts to grapple with the intervolvements of the world of human thought, feeling and action with the environment of human behavior as this is described by physics and biology.

The tradition of philosophizing initiated by Brentano included also however a group of holistically inclined thinkers forming what is commonly referred to as the 'Berlin School' of Gestalt psychology. The members of this school, and most especially Max Wertheimer, Wolfgang Köhler, Kurt Koffka, and Kurt Lewin, sought to understand the relations between acts and objects as parts or moments of a larger relation of engagement between subjects and objects in a common physical and biological environment. They embraced, in other words, what one might call an ecological approach to psychological phenomena. Koffka and Lewin in their turn influenced two American psychologists J. J. Gibson and Roger Barker, both of whom (independently) conceived their work under the banner of 'ecological psychology.' It is against this background that the term 'Husserlian ecology' is to be understood in what follows.

Brentano and his early disciples were still working under the influence of immanentistic or representationalist philosophies.² External objects and external environments they conceived as a matter of appearance (sometimes of 'projection' or 'construction' or 'constitution') and they saw themselves as facing the task of deriving proofs, Cartesian style, for the existence of an external reality from the data of immanent experience. The Gestalt psychologists, in contrast, had no qualms in accepting the reality of the world

¹ From: Shimon Edelman, "The World of Shapes as its Own Representation," <http://eris.wisdom.weizmann.ac.il/~edelman/Magritte/>.

² Immanentistic philosophies conceive reality as being confined entirely to the realm of experience or consciousness. On immanentism in the Brentano school see my *Austrian Philosophy: The Legacy of Franz Brentano* (1994), especially chapters 2 and 4.

described in physical theories and they were indeed among the first to investigate the relations between mental experiences and associated processes in the brain. They still, however, when turning to the external environment of human behavior and perception saw the latter as something like a manifest image constructed by the human subject. Hence they were left with the task - which we might think of as an externalized counterpart of the mind-body problem - of explaining the relation between this constructed environment and the world of physics.

To see the nature of this problem, it will be useful to quote the passage from Koffka's *Principles of Gestalt Psychology* in which a fateful distinction between the psychological (or 'behavioral') and physical (or 'geographic') environments is introduced:

On a winter evening amidst a driving snowstorm a man on horseback arrived at an inn, happy to have reached shelter after hours of riding over the wind-swept plain on which the blanket of snow had covered all paths and landmarks. The landlord who came to the door viewed the stranger with surprise and asked him whence he came. The man pointed in the direction straight away from the inn, whereupon the landlord, in a tone of awe and wonder, said: 'Do you know that you have ridden across the Lake of Constance?' At which the rider dropped stone dead at his feet.

2 The Problem of the 'Two Worlds'

In what environment, Koffka asks, did the behavior of the stranger take place? 'The Lake of Constance. Certainly [... and it is] interesting for the geographer that this behaviour took place in this particular locality. But not for the psychologist as the student of behaviour.' The latter, Koffka insists, will have to say that there is a second sense to the word 'environment,' according to which 'our horseman did not ride across the lake at all, but across an ordinary snow-swept plain. His behaviour was a riding-over-a-plain, but not a riding-over-a-lake.' (Koffka 1935, pp. 27f.)

How, then, are we to understand the relationship between the physical and the psychological environment? The tale of the ride across Lake Constance tells us that we cannot conceive these two environments as identical in every case. If we say that they are always distinct (and thus embrace a 'two-world' hypothesis), then we gain the advantage of a uniform domain for psychological science, but we face the problem of explaining how this psychological domain (and our psychological life) might ever come into contact with the domain of physics. Perhaps we can solve this latter problem by asserting an identity of psychological and geographic environment in those standard or default cases where there is a match between experience and objects, and affirm the existence of a special psychological environment only in cases of mismatch of the sort described by Koffka. This, however, would imply a peculiar ontological heterogeneity of psychological experience (which from the perspective of the experiencing subject would yet *appear* homogeneous). For it would imply that we would bounce back and forth between genuine interaction with physical reality and quasi-solipsistic concern with our own psychological creations, in a way which would imply also a corresponding disunity of the domain of psychological science.

Like their Brentanist predecessors, the Berlin Gestaltists embraced the first of these two

alternatives. They were consequently not able to come to a coherent account of the relationship between the psychological environment (and psychologically experienced objects) and the transcendent world of physical things. This is true even of the most sophisticated theories of the psychological environment such as those advanced by Kurt Lewin and by Meinong's student Fritz Heider: the psychological environment is for them, too, something that is dependent upon the ego (something that is present even in dreams: Heider 1959a). And it is true, also, of mainstream psychology today, which characteristically adopts the standpoint of 'methodological solipsism' (Fodor 1980). The issue of the relationship between psychological and physical phenomena is hereby bracketed forever in order to ensure an ontologically uniform domain for psychological science within which both true and false beliefs and both veridical and non-veridical perceptual phenomena can enjoy equal civil rights.

3 Husserl's Phenomenology and Its Biological Problems

Fodor argues that if a genuine ('nomological') science of psychology is to be possible at all, then a hypothesis of representationalism must be adopted according to which mental processes are to be understood in terms of relations that organisms bear to immanent mental representations. The science of phenomenology, as Husserl tells us in similar vein, has as its subject-matter:

all the species of acts which the researcher of any kind of science accomplishes, all the species of meanings which in such acts mediate the relation to objectivities, all the modes of appearances in which these objectivities enter into the researcher's consciousness, all the modes of thoughtful grasping and noetical qualification which emerge therewith - all these become in phenomenology theoretical objects. Phenomenology does not investigate the objects investigated by the researcher in other sciences; on the contrary, it investigates the total system of possible acts of consciousness, of possible appearances and meanings related to precisely those objects. (Hua IV, p. 312)

Phenomenology is, then, the methodologically solipsistic investigation of acts in general, and of their meanings and directedness towards objects; and it ought, so conceived, to remain neutral in relation to metaphysical questions pertaining to the status of the external objects of different types towards which our acts are putatively directed. But Husserl does not remain neutral in this respect. If we examine the structure of consciousness, he tells us, 'then we see that all of nature, with space, time, causality, etc., is completely dissolved into a web of immanent motivations.' (Hua IV, p. 226) The stream of consciousness is a procession of positings. These positings are regulated by strict rules. But there is, as Husserl sees things, *nothingelse*, nothing beyond a certain harmonious play of immanent motivations among such acts.³

One notorious problem with all such representationalist views is the difficulty they face in accounting for the existence of harmony among the different worlds which arise when 'world' is relativized to your or my subjective appearances. Even if, with Husserl, we see 'world' as relativized to all human beings,⁴ there still remains the problem of accounting

³ See also *Crisis*, p. 152, Hua VII, p. 155.

⁴ Hua IV, pp. 376f. *Crisis*, pp. 179, p. 220 (Hua VI, pp. 182f., 223f.).

for the interaction between this human world and the worlds of other biological species as also between all of these and the world of physical science.⁵ Husserl's attempts to resolve these problems, above all in the *Cartesian Meditations*, are brilliant indeed. Unfortunately, they remain rooted in considerations of the world as this is given in human experience and fall far short of what would be needed if the ontology of this intersubjective human world is to leave room for the possibility of interaction on the physical and biological plane.

4 Scheler's Doctrine of the Milieu

A similar quandary is faced also by Scheler, whose theory of the 'milieu' of practical life is of incidental interest in virtue of its influence on Heidegger's philosophizing. The things (*Sachen*) which are relevant to our acting, Scheler tells us, those things belonging to the *milieu* of our everyday practical life,

have of course not the slightest to do either with Kant's 'thing in itself' or with the objects conceived by science (through the supposition of which science 'explains' natural facts). The sun of the milieu of human beings is not the sun of astronomy. The meat that is stolen, bought, or what have you, is not a sum of cells and tissues with the chemicophysical processes which take place within them. The sun of the milieu is different at the North Pole, in moderate zones, and at the equator, and its beams are felt as different beams. (Scheler 1954, p. 158f., Eng. trans., p. 139)

The problem with this passage is clear. As schoolboys with microscopes know, meat that is stolen and bought does most certainly possess cells and tissues which undergo chemicophysical properties. It simply cannot be the case that the things in our practical, commonsensical environment have 'not the slightest' to do with the objects conceived by science.

Electrical and magnetic currents, Scheler wants to hold, may affect me 'objectively,' but they do not belong to my milieu, which comprehends 'only that which I effectively experience.' But is it really possible to mark out a 'world' of what is effectively experienced without at the same time letting in all manner of cells, tissues, fields, currents, and the chemicophysical properties relating thereto?

One option pursued by Scheler is to see milieu-things as being in some sense intermediate between persons and the 'objective' reality that is studied by physics, as belonging to an *intermediate realm* 'lying between our perceptual content and its objects on the one hand and those objectively thought objects on the other.'⁶ In the absence, however, of a satisfactory account of the relationship between such milieu-things and their physical counterparts, Scheler comes teeteringly close to the sort of idealist position which in other contexts he strenuously abjured.

An alternative view would conceive the milieu as in some sense a product of *selection*.

⁵ In a review of *Ideas II*, Alfred Schutz reports that Husserl held back from publishing this work precisely because of problems such as this. See Schutz 1953, p. 17 of reprint.

⁶ Scheler 1954, p. 159, Eng. trans. p. 140; compare also: 'What is otherwise called milieu is, in its temporal extension, *tradition*, i.e. history as living and effective in us' (*op. cit.*, p. 166n., Eng. trans. p. 147n.).

As Scheler himself writes at one point, milieu-objects are 'cut out of the totality of world-facts' on the basis of the value-directions immanent to our acting as embodied beings. My milieu-world is rich or poor, on this account, in proportion to the fullness of the value repertoire which drives my actions.⁷ If what is selected is a *part* of the whole with which we begin, however, then all of its parts must be included in the selection also (this follows from the transitivity of the relation of part to whole). On a selectionist view, therefore, we are forced to embrace the conclusion that milieu-things do after all include all those cells and molecules and all of those chemico-physical processes which Scheler had sought to exclude from the environment of human action.

The milieu, for Scheler, is something holistic: it is not the *sum* of things I perceive or take an interest in or pay attention to; rather I can be intentionally related only to what already belongs to my milieu. The milieu is a fund of objects, a fund of all of that of which we have the ability to take account in our practical day-to-day dealings with the world. The milieu can include not only food, utensils, people, buildings, but also the laws which I obey or disobey, the value-qualities which make things attractive or repulsive, and other features outside the realm of material things. Thus a given territory presents different milieus to one who recognizes the authorities which prevail within it, to a criminal, and to one who is an enemy in time of war. The same forest is likewise a different milieu to a forester, a hunter, a hiker, as also to a deer or a lizard.⁸

5 Uexküll's Constructivist Biology

Scheler's ontology of milieus recalls the constructivist biology of his contemporary Jakob von Uexküll. Every animal, Uexküll held, is the *creator* of its own 'external reality', of an environment that is constructed by the organism to meet its own needs. The 'first principle' of Uexküll's theory of environments of *Umweltlehre* reads as follows:

all animals, from the simplest to the most complex, are fitted into their unique worlds with equal completeness. A simple world corresponds to a simple animal, a well-articulated world to a complex one. (Uexküll 1957, p. 10)

On the one hand, these created realities are seen as separated off from each other in the manner of Leibnizian monads (Uexküll himself refers to them as 'soap bubbles'⁹). On the other hand, the separate monads are held to be capable of interacting - though the explanations we are offered of this interaction by Uexküll and his followers are, to say the least, difficult to understand. The eye, we are told in one such explanation, 'throws' the picture that is produced on its retina out of itself into the visual space surrounding the animal. 'If the eye did not have this capacity, the dragonfly would not be able to

⁷ *Op. cit.*, p. 176, Eng. trans. p. 157.

⁸ *Op. cit.*, p. 161f., Eng. trans. p. 142f.

⁹ And also as pipes: If one represents the environment of an animal at a given moment as a circle, then one can add each successive moment as a new environment-circle. In this way one would obtain a pipe which would correspond in its length to the life of the animal. This pipe will be formed on all sides with characters which one can think of as being built up along and around the life's journey of the animal. This life's journey is thus similar to an environment-tunnel that is closed at both ends. The type of character which can appear in this environment-tunnel is fixed from the start, so that one can designate its breadth and its richness as predestined. But also the temporal length of the tunnel has a predetermined extent, which cannot be exceeded. (Uexküll 1928, p. 70)

catch a midge in flight. ... Sounds, smells, tastes, and touch are all transposed out of the body and into the subjective space of the animal.' (Jennings 1909, p. 333)

Uexküll is reported to have arrived at this projectivist doctrine when, on looking up at a beech tree in the Heidelberg woods, he came to the realization that:

This is not *a* beech tree, but rather *my* beech tree, something that I, with my sensations, have constructed in all its details. Everything that I see, hear, smell or feel are not qualities that exclusively belong to the beech, but rather are characteristics of my sense organs that I project outside of myself. (Schmidt 1980, p. 10, cited in Harrington 1996, p. 41)

As Uexküll formulated the matter in his *Theoretical Biology* (1928, p. 2): 'All reality is subjective appearance - this must serve as the fundamental insight of biology, too.'

The Kantian flavor of Uexküll's thinking becomes especially clear in a letter to Houston Stewart Chamberlain of 1923, on the opposition between what Uexküll calls the 'intuitive space' or *Anschauungsraum* of the animal environment and the 'space of representations' (the *Vorstellungsraum*) of science. The latter, Uexküll holds, forfeits any claim to reality. 'Intuitive space alone is real.'¹⁰

We are indeed capable of building a space of representations, in which the suns and stars move at incredible distances and in inconceivable time. But this space of representations is just a watering-down of our intuitive space, that we gain by allowing several important elements of this intuitive space to fall away.¹¹

Uexküll felt some hesitation in proclaiming this position, fearing (rightly) that he would either be misunderstood or considered mad. But nonetheless, he insisted, 'it remains a fact: "*Epur non si move.*" I do not move around the sun, but rather the sun rises and sets in my arch of the sky. It is always another sun, always a new space in which it moves.'¹² And in further Kantian vein: 'Space owes its existence to the inner organization of the human subject, who clothes the sense qualities in spatial form.' (Uexküll 1928, p. 4) Or again:

In the eye of the naive person only the one world of appearances is visible, which, surrounded by space and time, is full of sounding, smelling, coloured things. Scientific research seeks to influence this naive world view from two opposing sides. Physical theory seeks to convince the naive person that the world he sees is full of subjective illusions, and that the one real world is much poorer, since it consists merely in an immense and eternal swirling dance of atoms unfurling itself in purely causal fashion. Biological theory, in contrast, seeks to draw to the attention of the naive person the fact that he sees much too little, and that the real world is much richer than he suspects because there is spread out around every living thing its own world of appearance, which is like his world in its basic traits but which nonetheless manifests so many variations

¹⁰ Harrington 1996, p. 46. 'The world of the physicist counts for the biologist only as a conceptual world [*nur als eine gedachte Welt*], which corresponds to no reality but which is to be assessed as an aid valuable for computation.' (Uexküll 1928, p. 61)

¹¹ Cited in Harrington 1996, p. 46.

¹² Cited in Harrington 1996, p. 47. Translation amended.

that he could devote his whole life to the study of these worlds without there ever being an end in sight And when once we have made a beginning in showing in regard to a few animals what environments surround them like solid but invisible glass houses, then we will soon be able to people the world around us with numberless other shimmering worlds, which will intensify the riches of our world a further thousandfold. In this way biology offers to the naive man an unlimited enrichment of his world, while the physicist makes of him a beggar. (Uexküll 1928, p. 62)

6 Ecological Realism

Uexküll's expostulations are colorful indeed. But they do not even begin to answer the obvious objections to his monadological project when it comes to giving an account of the interaction between organisms of different species (a problem which for Uexküll himself, who rejected the theory of evolution, was not of pressing importance).

With the work of Gibson and Barker in the 1960s, however, we meet a new and more consequential phase in the treatment of this problem, a phase in which the external environment is at last given its due. To a much greater degree than is manifest in even the most radical Gestaltist writings, Gibson and Barker emphasize the fact that normal psychological experience is to be understood not in terms of a succession of relations between acts on the one hand and objects in some special 'realm,' but rather in terms of a *topological nesting*, whereby the sentient organism is housed or situated within a surrounding environment of which it serves as interior boundary.¹³ Its perceptions and actions are then mere partial moments, dependent features of the total subject-environment relation, and are capable of being properly understood only as occurring within this wider surrounding framework. At the same time the environment is itself to be conceived as something that falls within the realm of physics.

In perception, as in action, from the Gibson-Barker point of view, we are embrangled with the very things themselves in the surrounding world, and not, for example, with 'sense data' or 'representations' (or 'noemata' in Husserlian terminology). Perception is not a matter of the processing of sensations. Rather, it is part of that direct linkage between the perceiving organism and its environment which grows out of the fact that, in its active looking, touching, tasting, feeling, the organism as purposeful creature is bound up with those very objects - the ripened fruit, the crumpled shirt, the empty glass, the broken spear - which are relevant to its life and to its tasks of the moment.

Gibson and Barker thus embrace a radically externalistic view of mind and action. We have not a Cartesian mind or soul, with its interior theater of 'contents' or 'representations' or 'beliefs and desires' and the consequent problem of explaining how this mind or soul and its psychological environment can succeed, via intentionality, in grasping objects external to itself. Rather, we have a perceiving, acting organism, whose perceptions and actions are always already inextricably intertwined with the parts and moments, the things and surfaces, of its external environment.

¹³ On the formal ontology of this organism-environment relation, and on its Aristotelian roots, see Smith and Varzi 1999.

7 Roger Barker and the Theory of Physical-Behavioral Units

Now much of this is of course in keeping with what we read in phenomenological descriptions of the life world, the world of human projects, of the ready-to-hand, in Husserl, Scheler, or Heidegger, as also in Sartre or Merleau-Ponty (both of whom were influenced by Lewin and the other Gestaltists). Thus as Husserl tells us in *Ideas II*, the common-sense world is a world in which people work, converse, judge, evaluate; a world of animals, tables, clothes, food; of sweet and bitter, red and green, hot and cold. It is above all a world of *things* which we put to use for various practical purposes, things which exist always *in situ*, which is to say: in an environment of other real things.

In addition to things, this common-sense world comprehends also the media (for example air, smoke) in which we move (see Heider 1959b). Barker now goes on to point out that there are, within this extended array of things and media, certain discriminable areas of organization which cross-cut each other on a number of distinct dimensions. The world is organized not only into separate things or bodies, but also into overlapping personal, social and institutional zones or contexts - Barkerian counterparts of Scheler's *milieux* - within which human beings figure as participants. It is then not as if we have persons on one side and thingly contexts on the other, with a gulf between them that is bridged via intentionality. Rather, Barker insists, persons themselves, and things in the spatial environment, are both equally caught up within entities of a new, over-arching type, which he calls *behavior settings* or *physical-behavioral units*, entities which serve as the successive environments of persons and groups of persons as they go about their business from day to day.

The examples of physical-behavioral units favored by Barker - who was one of Lewin's first assistants at the Iowa Child Welfare Station - are: Wendy's Friday afternoon class, Jim's meeting with his teacher, your Thursday lunch, Frank's early morning swim. Such physical-behavioral units may repeat themselves (may exist in many copies). They

are common phenomenal entities, and they are natural units in no way imposed by an investigator. To laymen they are as objective as rivers and forests - *they are parts of the objective environment that are experienced directly as rain and sandy beaches are experienced.* (Barker 1968, p. 11, emphasis added)

Such physical-behavioral units are of inestimable importance for an understanding of human cognition and action since almost all human behavior occurs within them. All biographies are ordered in terms of them. All trials, all theatrical performances, all religious rituals, are composed out of behavior settings. Even our journeys from site to site, and our loungings in daydream mode between quests, even the contexts in which we reflect scientifically on problems of ecological psychology or carry out experiments in psychology laboratories, are recognizable as physical-behavioral units in Barker's terms. Even our more or less unsuccessful *attempts* to engage in standard activities can be understood for what they are only in terms of an independent prevalence of physical-behavioral units of the corresponding, full-fledged type - for it is only in relation to the latter that our attempts are determined as attempts and our successes distinguished from our failures.

Psychological factors are at work in determining which of the available repertoire of

behavior settings we are in fact occupying (in determining which *selection* from biophysical reality is our behavior setting of the moment). But such factors, trivially, do not in every case operate in transparent fashion. That is, we may (like the rider on Lake Constance) be mistaken in our beliefs about the behavior setting we are inhabiting. Such errors do not, contrary to the views of phenomenologists and methodological solipsists, generate special objects of their own.

8 Prehistory of Environment Settings

Serious investigations of environmental settings in the history of philosophy are sorely lacking. The theory of the life world set forth by Husserl in the *Crisis* is a first, informal approximation to an ontological theory of the requisite sort. But Husserl, too, stops short of any full realist commitment to what he calls the 'surrounding environment,' and the relation of the latter to physical things in space is hardly clarified in this work.

The neglect of environmental settings in the literature of philosophy turns first of all on the tendency among philosophers to prefer simplified ontologies - often, indeed, to embrace one or other form of ontological monism - where environmental settings transcend the boundaries between familiar ontological categories in radical fashion. Even those philosophers with the ambition to come to grips with the realm of common sense have shown a tendency to adopt philosophies which reduce this realm - on the pattern of the doctrine of 'logical constructions' - to objects of a suitably monistic flavor. The Wittgensteinian conception of the common-sense world in terms of 'language games' is an improvement on monistic theories. Unfortunately, however, it puts the cart before the horse. This is first of all because language, too, is a phenomenon which can be understood only within the framework of an ontological theory of environmental settings - where language gets used such usage itself is under all normal circumstances embedded within physical-behavioral units of one or other familiar sort (conversation, argument, warning, instruction, and so on). But it is also, and more importantly, because to seek an account of our human common-sense reality in terms of language, as some Wittgensteinians have been wont to do, is to attempt to explain the whole in terms of one relatively late-developed part. Thus it is to place obstacles in the path of accounting for those many features of human behavior which are shared also by non-human animals.

The neglect of environmental settings turns also on the dominance through the ages of foundationalist ideas in epistemology: for environmental settings - my evening soup, your Tuesday swim, the 5 o'clock train to Long Island - belong *par excellence* to the realm of mere 'appearance' in Plato's sense. Hence, erroneously, it has been concluded either that such objects are not amenable to rigorous treatment, whether philosophical or scientific, or that the given objects do not exist at all.

9 Ontological Properties of Environmental settings

Each physical-behavioral unit has two sorts of components: human beings behaving in certain ways (lecturing, sitting, listening, eating), and non-psychological objects with which behavior is transacted (keyboards, levers, scalpels, etc.). Each physical-behavioral unit has a boundary which separates an organized internal foreground pattern from an external background running on behind it. Each physical-behavioral unit is circumjacent

to its components, which means that the former surrounds (encloses, encompasses) the latter without a break: the pupils and equipment are *in* the class; the shop opens at 8 a.m. and closes at 6 p.m. The pertinent enclosing portion of reality may not be set apart physically from its neighbors. The line, or zone, of demarcation may be determined psychologically. (Consider, for example, the question whether some given action of the groom within the church is or is not a part of that physical-behavioral unit which is his wedding.) The *significance* of the resultant demarcated portion of reality, too, is a psychological matter. But the resultant demarcated portion *exists* as part of reality nonetheless. Environmental settings are thus in some ways analogous to geopolitical objects such as Poland or Dade County: such objects, too, are the products of more or less arbitrary demarcation on the part of human beings - they are 'fiat' or gerrymandered objects; but they exist as parts of physical reality nonetheless.¹⁴

Physical-behavioral units are characteristically self-regulating, and are such as to guide their components to characteristic states and to maintain those states within limited ranges in face of disturbances.¹⁵ Slight modifications within given dimensions of the unit can be sustained without detriment to its continued existence as a unit of this type, but the total behavior making up the unit - for example a Rotary Club meeting - cannot be greatly changed without its being destroyed. The meeting must contain an introduction; there must be a speech, there must be listening and discussion. Within the meeting, there are the subparts: chairman, speaker, discussant, audience (as within the sentence there are the subparts: subject, verb, noun, rising inflection, and so on).

For Gibson, reality as a whole is a complex hierarchy of such inter-nested levels of parts and sub-parts: molecules are nested within cells, cells are nested within leaves, leaves are nested within trees, trees are nested within forests, forests are nested within Special Federal Forest Protection Zones, and so on.¹⁶ Each type of organism is then *tuned* in its perception and action to objects on a specific level within this complex hierarchy - to objects ('affordances') which are the environmental correlates of adapted traits on the side of the organism and which together form what Gibson calls the organism's 'ecological niche'.¹⁷ A niche is that into which an animal *fits* (as a hand fits into a well-fitting glove). The niche is that in relation to which the animal is habituated in its behavior.¹⁸ It embraces not only things of different sorts, but also shapes, textures, boundaries (surfaces, edges), all of which are organized in such a way as to enjoy affordance-character for the animal in question in the sense that they are relevant to its survival. The given features motivate the organism; they are such as to intrude upon its life, to stimulate the organism in a range of different ways.¹⁹

¹⁴ See my "On Drawing Lines on a Map" (Smith 1995a).

¹⁵ See Barker 1968, pp. 154f.

¹⁶ See Gibson 1986, p. 101.

¹⁷ Gibson's own account of this relationship of tuning - in terms of information pick-up - need not detain us here. We are concerned, rather, with the ontological underpinnings of the ecological theories of Gibson and Barker, a detailed formal treatment of which is to be found in Smith and Varzi 1999.

¹⁸ Gibson 1986, p. 129.

¹⁹ Compare the way in which each society is composed of families, communities, social classes, churches, political parties, and so on, in such a way that to each of these there corresponds in the life of each of us different, cross-cutting zones of salience and motivation, different strands of physical-behavioral units in which we are engaged. See Kolnai 1981, p. 319.

The perceptions and actions of human beings are likewise tuned to the characteristic shapes and qualities and patterns of behavior of our own respective (mesoscopic) environments. This mutual embranglement is however in our case extended further via artefacts such as microscopes and telescopes, and via cultural phenomena such as languages and institutions of law and politics. To learn a language is in part to extend the range of objects in relation to which we are able spontaneously to adjust our behavior and thus it is to extend radically the types of niche or setting into which we can spontaneously fit.

10 Transcategoriality of Physical-Behavioral Units

In Book II of his *Ideas* Husserl utilizes ideas very much like these in order to provide an account not only of the environment of our everyday practical concerns but also of the special disciplinary environments of, for example, historians, natural scientists, and mathematicians. What he does not resolve in any adequate way is the issue of the interrelations between these various environments.²⁰ He does not address, either, the various ways in which our environment of the moment may comprehend radically heterogeneous elements drawn from a variety of different domains. Physical-behavioral units are, we said, such as to transcend the boundaries between familiar ontological categories. Consider a physical-behavioral unit such as a religious meeting, a tennis championship or a sea battle. Each of these is an intricate complex of times, places, actions, and things. Its constituents can include both man-made elements (buildings, streets, cricket fields, books, pianos, libraries, the bridges and engine-rooms of battleships) and also natural features (hills, lakes, waves, particular climatic features, patterns of light and sound, the movements and gestures of other human beings, pheromones).

The physical-behavioral unit comprehends things and behavior, but it may, through these, comprehend also a variety of additional, non-physical components. Thus the unit may comprehend for example different types of linguistic, legal and institutional elements, all combined together in space and time in highly specific ways.²¹ Its constituent parts will in addition be diverse not only as concerns their material constitution but also as concerns their ontological form: thus each unit will comprehend continuants (substances), events, processes, actions, states and manifold relations between all of these.

As Barker puts it:

The conceptual incommensurability of phenomena which is such an obstacle to the unification of the sciences does not appear to trouble nature's units. - Within the larger units, things and events from conceptually more and more alien sciences are incorporated and regulated. (Barker 1968, p. 155)

As far as our behavior is concerned, even the most radical diversity of kinds and

²⁰ See Smith 1995 for further details of this aspect of Husserl's theory of environments.

²¹ Schoggen describes physical-behavioral settings as consisting of 'highly structured, improbable arrangements of objects and events that coerce behavior in accordance with their own dynamic patterning.' (1989, p. 4)

categories need not prevent integration. Moreover, if perception and action are, as we have argued, dependent features of the total subject-environment relation, then the transcategoriality of environments will imply also a transcategoriality of perception and action, of a sort which will add yet further weight to the obstacles standing in the way of a science of perception and action of any standardly recognizable sort (and pose problems, too, for any simple version of the identity-theoretic account of the relation between mind and brain).

11 Is Gibson a Realist?

Because human environments are, as we saw, radically transcategorial, it follows that a science of human environments will look very different from any science of the more standard sort. This, too, might lead us to suppose that environments, settings, physical-behavioral units are phenomena only - that they are subjective constructs, properly to be treated within the framework of a representationalist or methodologically solipsistic psychology. The challenge, as Gibson saw, is to develop a realist science of environmental settings which will be '*consistent* with physics, mechanics, optics, acoustics, and chemistry' by taking seriously the idea that ecological facts are 'facts of higher order that have never been made explicit by these sciences and have gone unrecognized.' (Gibson 1979, p. 17) He uses the term 'ecology' precisely in order to designate the discipline that should encompass these higher-order facts; it is 'a blend of physics, geology, biology, archeology, and anthropology, but with an attempt at unification' on the basis of the question: what can stimulate the organism? (Gibson 1966, p. 21)

Gibson thus stands out from the bulk of contemporary psychologists in rejecting all varieties of representationalism in favor of a position he calls 'direct realism' according to which (once again:) we are, as a result of adaptation, bound up directly and spontaneously in our normal psychological experience with the objects themselves in the physical world. We ourselves form part of the physical environment.

There is a puzzle, however. For Gibson's ecological perspective is in other respects however very close to the phenomenological theories of the life world referred to above, theories which have been held to dictate precisely a representationalist reading. In an important paper entitled "Is Gibson a Relativist?" Stuart Katz helps us to understand how this apparent conflict could have arisen by drawing attention to passages in Gibson's work which seem to negate the standard realist interpretation of his views and thus draw him closer to the phenomenologists. Katz points in particular to the following characteristic statements from Gibson's *Ecological Approach to Visual Perception*:

... animal and *environment* make an inseparable pair. Each term implies the other. No animal could exist without an environment surrounding it. Equally, although not so obvious, an environment implies an animal (or at least an organism) to be surrounded. (1979, p. 8)

The *affordances* of the environment are what it *offers* the animal, what it *provides* or *furnishes*, whether for good or ill. - I mean by [affordance] something that refers to both the environment and the animal in a way that no existing term does. It implies the complementarity of the animal and the environment. (1979, p. 127)

... an affordance is neither an objective property nor a subjective property; or it is both if you like. An affordance cuts across the dichotomy of subjective-objective. - It is both physical and psychological, yet neither (1979, p. 129).

These passages dictate, according to Katz, a reading of Gibson according to which (as according to Uexküll) different species *live in different worlds*. Water is for you and me a substance; for fish it is a medium which substances inhabit. Hence the question arises:

Do terrestrial animals perceive water correctly and aquatic species incorrectly, or vice versa? Gibson as relativist tells us no. Each lives in a different world and, complementarily, each perceives differently. Water is a substance in one world and a medium in another; it is not absolutely substance, nor is it absolutely medium. 'The animal and its environment, remember, are reciprocal terms.' One could never say what water is, without saying for whom it is, and conversely. (Katz 1987, p. 120)

12 Reasons for Representationalism

Whether valid or not, Katz's argument is significant. If it is valid, then this implies that Husserlians of an orthodox stripe can claim a hitherto unrecognized ally among experimental psychologists. If, on the other hand, the argument is flawed, then in coming to understand why this is so, we will discover which modifications of standard Husserlian views must be made if we are to bring them into harmony with Gibsonian realism and thus to generate a position properly deserving the name 'Husserlian ecology'.

To see which of these two alternatives is correct, we note that there are two principal motivations for representationalist views of perception: (1) the problem of *error*, and (2) the problem of seeming global incompatibilities between different systems of representations.

The existence of perceptual error, according to familiar arguments (involving bent sticks and like phenomena), reveals that perception itself cannot be solely a product of sensory inputs. It tells us that, on occasion at least, for example in cases of hallucination, perceptual objects are in some sense created or constituted by or with the help of the perceiver. A perceptual representationalist is one who holds that the objects that are given in perception are always constructed or constituted in this sense (hence they belong to a special world, a world of representations). The representationalist is thus able to do justice to the fact of perceptual error without abandoning the goal of a unified theory of perception, but only at the price of cutting off his theory from any roots in the real world of mind-independent objects. The realist solution to the problem of error, on the other hand, denies that what is phenomenologically experienced as the unitary phenomenon of perception is in fact a unitary matter at all. Rather, we must distinguish two types of perceptual setup, and correspondingly two distinct tasks for the theory of perception. On the one hand is the task of providing a theory of perception in the strict sense - a theory of successful, veridical, world-embranged perception of the normal sort. On the other hand is the quite different task of giving an account of perceptual error (of the different types of shortfall from this standard, veridical case).

The second motivation for representationalism might be formulated as follows: our

common-sense perceptual space has a Euclidean structure (or a structure closely related thereto); the space of the physicist has another, quite different structure; and it may well be that the perceptual spaces of mice, of spiders, of clams, have other structures again. Not all of these structures can be *true of space* as it is in itself. Hence, the argument proceeds, our (and the mouse's, and the spider's) perceptual spaces are mere 'representations'. And what goes for space holds for other features of the manifold environments of perception, too, so that, again, it is as if each species lives in its own special world.

It is a constructivist, relativist, projectivist, Kantianist conclusion of this sort which Katz attributes to Gibson. But, to remain with Katz's own preferred example, space (as we may here assume) is a continuum. Like all continua it can be partitioned in a range of mutually incompatible ways (as a cheese can be sliced in such a way as to produce either triangular or rectangular or disk-shaped segments but not all of these at once). All members of a family of mutually conflicting 'perceptual spaces', now, may very well turn out to be compatible after all, if they can be interpreted as expressing distinct *partitions*, for example partitions on different levels of granularity, of one and the same reality. In this way the second motive for representationalism may be resisted, too, and with it also the argument put forward by Katz for a representationalist reading of Gibson.

13 The Big Cheese

Just as the world of physical-behavioral units is for Barker organized hierarchically in terms of circumjacent and subjacent components, so for Gibson, reality in general is a complex hierarchy of internested levels of parts and sub-parts. But neither Barker nor Gibson has at his disposal a theory of *parts* or *components* and of the wholes into which they are nested; neither has, in other words, a *mereology*,²² in terms of which it would be possible for them to formulate an overarching account of the ways parts can fit together within their respective environments and of how environments themselves can fit together in a larger, hierarchically organized order. It is for this reason, I want to argue, that the ecological approach appears to fall victim to the argument of Katz.

With the resources of a general mereology, however (of a sort sketched already by Husserl in the third of his *Logical Investigations*), we are in a position to comprehend within a single theoretical framework what is involved when one and the same reality is partitioned in distinct, cross-cutting ways by organisms or cognitive subjects approaching this reality each from its own particular perspective.

Mereology allows us to do justice to the ways in which, in the realm of environmental settings, entities of radically different sorts are able to become unified together into wholes: the unity in question is at least in part a unity of psychological demarcation (it is analogous, as we suggested above, to the unity involved in the geopolitical realm, where even spatially widely scattered entities such as Indonesia or the United States are able to enjoy the status of unitary wholes even in the absence of any physical unification of their parts).

²² See Smith 1996, 1999; Smith and Varzi 1999.

Mereology allows us finally to understand, in full conformity with the realist perspective, how different languages, different theories, and different systems of animal behavior and perception are able to generate their own precisely fitting partitions of one single reality. The various animal behavior-systems generate partitions of reality into *ecological niches*. Human perception and action together generate that mesoscopic partition of reality we call the common-sense world. And other sorts of partitioning of reality are generated, for example, by the acts of physicists, paleontologists, historians, and even mathematicians. (The mathematician, we might say, is tuned to form.) Each such group of disciplinary specialists lives in its own precisely tailored disciplinary world, its precisely fitting surrounding environment, exactly in the way described by Husserl in *Ideas II*. Now, however, we can understand how this multiplication of environments can be fully compatible with the realist perspective and with the hypothesis of a single, common world. The ultimate ontology will be scientific, but that it will have room not only for physics but also for mesoscopic structures built up on the basis of physics, e.g. structures of the type to which human behaviour and perception are tuned. The realistic science of organisms, biology, needs as its counterpart a realistic science of environments.

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フッサール主義的生態学

バリー・スミス (バッファロー)

表象の謎「二人の人と一匹の猿とロボットが一片のチーズを見ている。」「何が彼らの視覚システムの表象過程に共通しているのだろうか。」
 答え「もちろんチーズさ。」¹

1 コンスタンツ湖での馬乗り

もし心が外界へ適応する生き物であるなら、志向性と心的表象に関する我々の標準的な理論は大幅に再検討する必要がある。というのもそのような理論は、デカルトの影響を受けたブレンターノ、フッサールやその追随者の研究に端を發しており、コンテクストに依存しないものだからである。それらの理論は心的経験の主体を、いかなる物理-生物学的な周囲環境からも孤立したものとして捉えている。

フッサールは彼の後期の著作において、人間の実践的な経験にとっての周囲世界を論ずるための余地を見いだそうと努めており、同様の関心の展開は、ハイデッガー、サルトル、メルロ＝ポンティのような他の現象学者たちの著作の中にも見出すことができる。だが彼らのいずれも、人間の思考や感情、行為にとっての世界と物理学や生物学によって描かれた人間行動にとっての環境と間の緊密な関わりあいの問題に、十分取り組もうはしなかった。

ところでブレンターノによって着手された哲学的思惟の伝統には、一般にゲシュタルト心理学の「ベルリン学派」と呼ばれるものを形成した全体論的な傾向をもつ研究者の集団もまた含まれていた。この学派のメンバー、とりわけマックス・ヴェルトハイマー、ヴォルフガング・ケーラー、クルト・コフカ、クルト・レヴィンらは、作用と対象との関係を、共通の物理学-生物学的環境における主体-客体関係というより大きな関係の部分ないし契機として理解しようとした。言い換えれば、彼らは心的諸現象に対するいわゆる生態学的アプローチをとった。コフカとレヴィンは、更に二人のアメリカ心理学者、J.J.ギブソンとロジャー・バーカーに影響を与え、この両者は(それぞれ独立に)各自の研究を「生態学的心理学」という名のもとで理解している。以下で「フッサールの生態学」という用語が理解されるのも、この文脈においてである。

ブレンターノと彼の初期の弟子たちは、依然として内在主義的ないし表象主義的な哲学の影響下で研究していた²。彼らは外的客観および外的環境を現出(時には「投影」、「構築」ないし「構成」)の事柄と捉え、外的実在の存在を内的経験の与件からデカルト流に演繹的に証明するという課題に直面していた。ゲシュタルト心理学者たちの方はそれとは対照的に、物理学の理論において描かれた世

¹ シモン・エーデルマン著『自己表象としての形態の世界』より。

² 内在主義的な哲学は、実在を経験ないし意識の領域に完全に制約されたものとみなす。ブレンターノ学派の内在主義については拙論 *Austrian Philosophy: "The Legacy of Franz Brentano"* (1994) の特に第2,4章を見よ。