

NATURALIZING PHENOMENOLOGY

ISSUES IN CONTEMPORARY PHENOMENOLOGY
AND COGNITIVE SCIENCE

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CHAPTER TEN

Truth and the Visual Field

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In this study I use the tools of mereotopology (the theory of parts, wholes, and boundaries) to work out the implications of certain analogies between the “ecological psychology” of J. J. Gibson and the phenomenology of Edmund Husserl. I present an ontological theory of spatial boundaries and spatially extended entities. By reference to examples from geography I show that both boundaries and extended entities fall into two broad categories: those which exist independently of our cognitive acts (for example, the planet Earth, its exterior surface); and those which exist only by virtue of such acts (for example: the International Date Line, the state of Wyoming). The visual field, too, can be conceived as an example of an extended entity that is dependent in the sense at issue. I here argue that we can extend this analogy by postulating entities that would stand to true judgments as the visual field stands to acts of visual perception. Such a “judgment field” can then be defined as that complex extended entity which comprehends all entities that are relevant to the truth of a given (true) judgment. The work of cognitive linguists such as Leonard Talmy and Ronald Langacker, when properly interpreted, can be shown to yield a detailed account of the structures of the judgment fields corresponding to sentences of different sorts. Such an account can serve as the basis for a new sort of correspondence-theoretic definition of truth for sentences in a natural language.

PREAMBLE: GIBSON AND PHENOMENOLOGY

This study is part of a larger project designed to exploit the ecological psychology of J. J. Gibson to yield a new, naturalized interpretation of Husserlian phenomenology. The world, as Gibson points out, is a complex hierarchy of internested levels: molecules are nested within cells, cells are nested within leaves, leaves are nested within trees, trees are nested within forests (Gibson 1979: 101). Each type of organism is tuned in its behavior to entities on a specific level of granularity within this complex hierarchy, to entities which together form what Gibson calls an “ecological niche.” A niche is

that into which an animal fits; it is that in relation to which the animal is habituated in its behavior (Gibson 1979: 129). A niche embraces not only objects of different sorts, but also shapes, colors, textures, tendencies, and boundaries (surfaces, edges, and contours), all of which are organized in such a way that they enjoy affordance-character for the animal in question. That is, the given features of the entities in the niche motivate the organism; they intrude upon its life; they stimulate it in a wide range of different though characteristically understandable and familiar ways. The niche shared by all human beings—called by Husserl the “life-world”—is thus such that its basic organizing features are intrinsically comprehensible to the human organism (yielding what Husserl calls the “a priori of the life-world”). These basic organizing features include simple geometrical and topological relations and relations of identity, part, and whole, as well as relations between qualities of different sorts (B. Smith and Varzi, in press [a]).

According to Gibson, human beings, like other animals, are integrated into the world order via their perceptions and actions in virtue of the fact that these perceptions and actions are pre-tuned to the characteristic shapes and qualities and patterns of behavior of the respective environments. In the case of human beings this mutual embranglement is extended further through cultural phenomena, above all through language and its associated institutions. To learn a language is in part also to extend the range of objects in relation to which we are able spontaneously to adjust our behavior. Just as our experiences of objects of perception in our everyday environment are characteristically and for the most part not subject to deliberation, so our experience of the words of a language we thoroughly understand is spontaneously bound together completely with our grasping of the associated meanings and thereby also with our being spontaneously directed toward corresponding objects in the world.

The concept of niche can be extended and generalized beyond the basic level of the life-world of common sense in other ways as well. A humanly extended niche might include, for example, the interior of a cockpit, the floor of a stock exchange, or the environment of a keyboard and computer screen; it might include a library or a highway system, or it might include the world of a scientific theory or of some other specialist activity (for example, of measuring or legislating) in which a human being feels at home. For as Gibson himself intimated, and as Husserl argued in detail in the second book of his *Ideas* (see also the extremely provocative Katz 1987), the activity of scientific theorizing on the part of different specialist sciences can be compared in important respects to the behavior of animals and humans in their respective natural environments. There is a deep-rooted analogy between the relationship of animal or human behavior to niche or life-world on the one

hand, and the relationship of the scientist (or a specialist community of scientists) to the corresponding scientific subject matter on the other.

The basic axiom of Husserl's constitutive phenomenology is this: that all objects refer back to corresponding acts in which they are (or can be) given. All entities, on whatever level, are correlates of corresponding acts, and each subject is directed in its acts toward a corresponding world of correlates: “As person I am what I am (and each other person is what he is) as subject of a surrounding world. The concepts of ego and surrounding world are related to one another inseparably” (*Ideen* II, §50). The world of common sense is the accomplishment of a community of persons recognizing one another (or better: taking one another for granted) as being in agreement. The things of the commonsense world are direct correlates not of abstract, theoretical experiences, but of intuitive experiences; they are “things we see, grasp, and touch, just as we, and other people, see them, grasp them, etc.” (*Ideen* II §62; see also B. Smith 1995).

From the basic axiom it follows that physical things, too, can be nothing other than the correlates of certain acts, namely of the theoretical acts of physicists. Physical nature is then for Husserl the common “surrounding world” of physicists, precisely as they know of it in their theories and conceived as infinitely extended in perfect regularity. Other such special “surrounding worlds” can be distinguished also. Thus, for example, there are the worlds of mathematical or legal objects, of financial instruments, of chess, and so on. Each such realm of objects is, from Husserl's point of view, an interpersonal, cultural accomplishment, presupposing a certain association of human beings. It is a product of “constitution.”

The Gibsonian perspective has obvious implications for our understanding of the theories of the life-world (or of *Umwelt* or “bodily space”) put forward, not only by Husserl, but also by Scheler, Heidegger, Merleau-Ponty, and other phenomenologists in their various writings. This same perspective yields also, however, a radically new, realist interpretation of Husserl's “constitutive phenomenology”: for constitution is not, from the Gibsonian point of view, the creation of a new domain of entities in some spurious “transcendent” realm: rather, it is the carving out of a new sort of niche from within the already existing surrounding world of the relevant subject or specialist community (B. Smith, forthcoming).

The Gibsonian perspective has implications also for our understanding of the relation of individual acts to their corresponding objective correlates. Thus consider once again the analogy between the relationship of animal or human behavior to niche on the one hand, and the relationship of the specialist community of scientists to its corresponding scientific subject matter on the other. This same analogy can be applied not merely to global behav-

ior-patterns but also to specific acts: an act of visual perception stands to a visual field as an act of (true) judgment stands to a fact or state of affairs. I devote the bulk of what follows to working out some of the implications of this latter analogy.

1. TYPES OF BOUNDARIES

We most commonly demarcate reality along what we might call natural or bona fide boundaries. The most prominent (and most salient) examples of such natural boundaries are the outer boundaries of objects in space and processes in time. Such natural boundaries are boundaries in the things themselves. They would exist even in the absence of all articulating activity on our part. The natural boundary of you is (roughly speaking) the surface of your skin.

We can also recognize internal natural boundaries—for example, the boundaries around your heart, lungs, and other organs. But we can recognize unnatural boundaries as well, that is to say, boundaries, both internal and external, which correspond to no genuine heterogeneity (natural articulations) on the side of the bounded entities themselves. The boundary of Utah corresponds to no local physical discontinuity, and to no qualitative heterogeneity (of material constitution, color, texture, etc.) in the world itself.

Let us call inner and outer boundaries of this second sort fiat boundaries, a terminology that is designed to draw attention to the sense in which the latter owe their existence to acts of human decision or fiat or to cognitive phenomena of associated sorts (B. Smith 1994; B. Smith and Varzi, in press [b]). The plausibility of extending our ontology by acknowledging fiat boundaries in this way lies first of all in the fact that all of the standard distinctions we can make between types of natural boundaries can be straightforwardly applied to their fiat counterparts as well. Thus we can distinguish between natural and fiat boundaries of different numbers of dimensions: the equator, like the edge of this table, is a one-dimensional boundary; the North Pole, like the corner of this table, is a zero-dimensional boundary. We can distinguish between complete and incomplete boundaries, whether natural or fiat: the Western Front (anno 1916) and the boundary between France and Germany are examples of incomplete fiat boundaries, in the sense that they do not of themselves serve to demarcate any object in the way in which this is done, for example, by the equator (which demarcates the two hemispherical surfaces of the Earth) and by the boundary of my body (which demarcates the corporeal me). We can similarly distinguish between endur-

ing and transient natural and fiat boundaries: the Western Front, again, is an example of a transient fiat boundary, the boundary of Iceland (modulo the movement of tides) is an example of a (relatively) enduring fiat boundary, and the boundaries of this cloud and of that stone are transient and enduring natural boundaries, respectively. We can distinguish equally between crisp and fuzzy natural and fiat boundaries: the equator is crisp and the product of fiat; the boundary of this cone of light is crisp but exists as part of the natural world; the boundary of Asia is fuzzy but it is still (we can suppose) a product of fiat; the boundary of the polar ice cap is likewise fuzzy but a product of nature. Deserts, valleys, dunes, and so on, are delineated not by crisp outer boundaries but rather by boundary-like regions that are to some degree indeterminate (Cohn and Gotts 1994). Most peninsular objects (including fingers, hands, arms) are characterized likewise by the possession of indeterminate boundaries in the area where they abut their larger hosts. (We leave to one side here the question whether, as quantum physics seems to suggest, there is an additional type of boundary indeterminacy that pertains to all material objects given in our normal experience.)

2. FIAT OBJECTS

Once fiat boundaries have been recognized, then it becomes clear that the opposition between bona fide and fiat can be drawn in relation to objects also (B. Smith 1994). Fiat objects are those objects which exist only by virtue of the fact that some corresponding (complete) fiat boundary has come to be drawn. Examples of genuine objects are you and me, the planet Earth. Examples of fiat objects are all geographical entities—Dade County, Florida, the United States, the Northern Hemisphere—which are demarcated in ways that do not, or do not everywhere, respect qualitative differentiations or spatiotemporal discontinuities in the underlying territory. And then, not the least important reason for admitting fiat objects into our general ontology turns on the fact that most of us live in one (or in what turns out to be a nested hierarchy of such objects).

Clearly, most geographical fiat objects will have boundaries that involve a combination of bona fide and fiat elements: the shores of the North Sea are bona fide boundaries, not, however, its boundaries at those points where it abuts the Atlantic. The Western Front was built out of bona fide stretches, where opposing armies faced off against each other in more or less linear fashion, knitted together by interspersed fiat stretches, generated algorithmically, by joining up the dots (roughly: a front line is the shortest distance transecting the region separating two neighboring but opposed infantry

companies). We might in light of this example distinguish between the following:

1. Fiat boundaries, every portion of which is laid down by explicit human fiat (for example, by treaty, or by drawing lines on a map)
2. Fiat boundaries, stretches of which are determined in whole or in part in relation to natural boundaries (or to preexisting fiat boundaries) on the basis of geometrical algorithms (most determinations effected by boundary commissions are of this sort, for example, when a boundary is specified as lying in the middle of a river bed)
3. Fiat boundaries determined algorithmically not in relation to boundaries but in relation to other, real properties of the underlying subject matter: the boundaries depicted in dialect and electoral atlases are of this sort, as are the transient boundaries depicted in weather maps

3. FIAT BOUNDARIES AS CREATED ENTITIES

What begins as a fiat geographical boundary may evolve over time into a natural boundary, reflecting not merely new features of the landscape but also differences in the language or dialect or trading habits of those who live on either side—all of which suggests that we develop a view of geographical boundaries as created entities, entities subject to the vagaries of history. Thus fiat boundaries seem to have a beginning in time, and geographical boundaries in general are such as to instantiate one of a number of characteristic patterns of boundary evolution (Prescott 1978).

Against this, however, is an alternative view according to which spatial boundaries are merely abstract mathematical constructions and are thus not the sorts of things that can be subject to historical change. Boundaries are not created, on the given view, but discovered or picked out from the infinite totality of all geometrically possible alternative ways of dividing up (say) the surface of the earth. Utah, on the given reading, existed long before its boundaries were first picked out by the responsible administrators, and it may similarly continue to exist for long after human beings have ceased to occupy this planet.

Are fiat boundaries, and the fiat objects they circumscribe, discovered or created? The former view has in its favor the virtue of ontological parsimony: only one sort of boundary needs to be admitted into our ontology, where on the latter view we should have to admit in addition to purely geometrical boundaries also certain historically determined boundaries that coincide with these. An argument in favor of the existence of historically created boundaries can however be formulated as follows. We note, first of all,

that “Hamburg” is an ambiguous term, standing on the one hand for a certain city (Hamburg-Stadt) and on the other hand for a certain administrative entity (Hamburg-Land), which is one of the constituent Länder (states, cantons) of the German Federal Republic. Hamburg-Stadt and Hamburg-Land are distinct entities, which happen to coincide spatially. On the geometrical account of boundaries (boundaries are discovered, not created) Hamburg-Stadt and Hamburg-Land have identical boundaries; on the alternative, historical reading, they have boundaries which are distinct from each other and from the underlying geometrical boundaries, even though all three sets of boundaries happen to coincide spatially.

Why on earth, now, should we not embrace the more parsimonious reading and save ourselves the embarrassment of, in this case, three complete sets of boundaries in the very same place? The answer to this question turns on the possibility of divergent histories. The boundary of Hamburg-Stadt might, after all, have lain elsewhere. Each geometrically determined boundary is, however, as a matter of necessity exactly where it is. If, therefore, the boundary *b* of Hamburg-Stadt were identical to (and not merely contingently such as to coincide with) a certain geometrical boundary, then we should have to swallow the simultaneous truth of (1) *b* could have lain elsewhere and (2) *b* is as a matter of necessity exactly where it is.

One must reject the temptation to suppose that we are confronted here with a mere verbal dispute, which could be resolved by some alternative choice of words. For consider the in-many-ways-analogous case of Bremen. “Bremen,” too, is ambiguous; it refers on the one hand to a certain city, and on the other to a certain Land. In this case, however, the boundaries of Bremen-Stadt and -Land do not coincide. And of course something analogous might hold in the case of Hamburg, too: it would be an administrative act of no great difficulty to bring it about that, as of tomorrow, the boundaries of Hamburg-Stadt and -Land should likewise be distinct or be, in however subtle a fashion, differently defined. This implies, however, that already today we are dealing with entities that could have distinct histories, and this is possible only if the entities themselves are already distinct.

4. FIAT OBJECTS IN PERCEPTION

Geographical boundaries such as those of Hamburg-Stadt and -Land are, if the argument above can be accepted, human creations that are subject to the vagaries of history. It is as if, through the evolution of our political and administrative and legal practices and through practices relating to property law, new boundaries come to be inscribed in reality in addition to the nat-

ural boundaries in relation to which these supernumerary fiat boundaries are constructed and in terms of which they are defined. As will already have become clear from some of the examples mentioned above, however, we are confronted in our everyday experience also with a great wealth of such supernumerary boundaries of a more transient sort, boundaries created by our acts of perception and by human cognitive processes of other sorts. Imagine, for example, that I am outdoors on a clear day looking out over the landscape. One prominent object in the visual field hereby determined is my present horizon, a transient and incomplete and roughly linear boundary between earth and sky, whose existence and nature are determined not by any simple act of decision or fiat on my part but by my very existence as a visually perceiving subject in a given location at a given time, as also by the perimetric properties of my visual system, by topographical features of the location, and by the laws of optics. Note, however, that even in this case there is a residual element of human decision at work, namely, the decision on my part to turn my head in a given direction at a given moment.

The horizon is a component object of the visual field, and the latter may be defined, with Ewald Hering, “as the totality of real objects imaged at a given moment on the retina of the right or left eye” (1964: 226). Let us assume that the eye sees in normal fashion, that it is not momentarily startled, and that there are no tricks, mirrors, or special equipment, and no clouds, fog, stained glass, or the like, in its way of seeing given objects. The depictions of the visual field provided by Ernst Mach (1959: 19; see Figure 10.1) and by Gibson (1979: 118f.) tell us that the objects making up the visual field according to Hering’s definition are primarily the surfaces of three-dimensional entities (the surfaces of walls, trousers, bookends, etc.). In fact we can distinguish three sorts of component object: (1) two-dimensional surfaces (with their own intrinsic curvature in three-dimensional space); (2) the boundaries of these two-dimensional surfaces (both one-dimensional edges and zero-dimensional vertices; both fiat and natural boundaries: the horizon is an example of a one-dimensional fiat boundary in the interior of the visual field); and (3) the one-dimensional psychologically induced fiat outer boundary of the visual field itself. The boundary of the visual field is a complex, subtle, ever-changing and gappy patchwork of physical surfaces and other components. The patchwork is “open,” topologically speaking: its external boundary is not a part of the visual field itself (as death is not an event in life). The patchwork is organized further in terms of an opposition between entities (“figures”) in the focus of attention, which characteristically manifest determinate boundaries, and entities which have indeterminate boundaries and which are experienced as running on (as “ground”) behind them.



FIGURE 10.1. The visual field. (Mach 1959)

5. LANGUAGE-GENERATED FIAT OBJECTS

A further important class of transient fiat boundaries are those effected through our everyday use of natural language. As Talmy puts it, drawing attention to a hitherto insufficiently studied analogy between the articulations effected by the descriptive use of language and those effected by acts of visual perception: “Linguistic forms can direct the distribution of one’s attention over a referent scene in a certain type of pattern, the placement of one or more windows of greatest attention over the scene, in a process that can be termed the windowing of attention” (1996: 236). Common to all such processes is the determination of a boundary, which might be a sharp line or a gradient zone, and whose particular scope and contour—hence, the particular quantity and portions of material that it encloses—can be seen to vary from context to context.

The characteristics of such boundaries are described by Talmy as follows:

First, the material enclosed within the boundary is felt to constitute a unitary, coherent conceptual entity distinct from the material outside the boundary. Second, there seems to be some sense of connectivity throughout the material enclosed within the boundary and, contrariwise, some sense of discontinuity or disjuncture across the boundary between the enclosed and external material. Third, the various portions of the material within the boundary are felt to be co-relevant to each other, whereas the material outside the boundary is not relevant to that within. (Talmy 1996: 240; compare the characteristics of the ecological niche as set forth in B. Smith and Varzi, in press [b])

As Talmy and Langacker have shown in great detail, and as the phenomenologist Johannes Daubert emphasized in the “delineationist” ontology of states of affairs he developed in the early years of the twentieth century (Schuhmann and Smith 1987), the very same material can be subject to such windowing or profiling in different ways, amounting, in our terms, to the inscription within one and the same whole of internal fiat boundary-structures of different sorts. Thus to take one very simple example, the very same totality of objects and processes is windowed in different ways by “Blood flowed from his nose” and “He was bleeding from the nose.”

The thesis that the windowing effected through a complete linguistic act is a matter of the drawing of a topologically complete fiat boundary around a given portion of worldly material then allows us to develop a sort of topological grammar, a grammar that exploits the formal tools of the topologist (more precisely: of the mereotopologist; see Simons 1987, Varzi 1994, B. Smith 1996, and B. Smith and Varzi, in press [a]), in giving an account of the ways in which, through language, we effect systematically different sorts of windowing or profiling of reality (or fail in the attempt). Thus, for example, we can associate different sorts of incomplete or syncategorematic expressions (“John caused . . .,” “John closed . . .,” “John . . . quickly,” and so on) with different sorts of incompleteness on the side of the corresponding fiat boundaries. There are then incomplete boundaries, analogous to the geographical cases of incompleteness previously referred to, in the linguistic sphere as well.

A further type of articulation, in some sense complementary to the addition of fiat boundaries within the interiors of objects, arises where bona fide interior part-structure is as it were stripped away, as occurs, for example, when an extended entity with genuine interior boundaries is treated as if it were a homogeneous whole. One variety of this phenomenon in the linguistic sphere might be called fiat continuity, which occurs where natural language sanctions the use of mass terms (“water,” “sugar,” “luggage”) to re-

fer to entities that are in fact made up of discrete units in such a way that they come to be treated as continuous. It is here that we encounter the granularity that is characteristic of all phenomena of natural cognition: only those extended parts of objects and processes which enjoy a certain minimal extent come to be counted as parts within natural language fiat articulations. (See Ojeda 1993 and Habel 1994.)

There is one important difference between the views of Daubert on the windowing of language, and those of Talmy and Langacker, however. Daubert very clearly saw the boundaries in question—by analogy with the geographical case—as boundaries in reality, although generated by human fiat. In this he was struggling against the “constitutive phenomenology” of his master Husserl (Schuhmann and Smith 1985). Talmy and Langacker, in contrast, with their talk of “conceptual boundaries,” of “boundaries in conceptual reality,” of boundaries in “our concept of reality,” and so on, seem unclear whether language-induced boundaries would be drawn within the mind or in exterior reality or in some other not clearly specified “conceptual realm.” The motivation for this unclarity is understandable: it derives from the desire to develop a theory of linguistic usage that would apply equally to all the myriad different sorts of objects to which our sentences relate. Thus as Langacker points out:

We are capable of constructing conceptual worlds of arbitrary complexity involving entities and phenomena that have no direct counterpart in peripherally connected experience. Such are the worlds of dreams, stories, mythology, mathematics, predictions about the future, flights of the imagination, and linguistic theories. All of us have constructed many conceptual worlds that differ in genre, complexity, conventionality, abstractness, degree of entrenchment, and so on. For many linguistic purposes all of these worlds are on a par with the one we distinguish as “reality.” (1987/1991, 1: 113)

Note, however, that constructing these worlds is not comparable to what some might argue is the most important of all linguistic purposes, namely that of giving an account of how, through language, human beings are able to become related to peripherally connected reality at all. Note, further, that if reality (or what Langacker calls “reality”) is regarded as a mere constructed world, then one runs the risk of flouting our normal distinction between objects and concepts (for example between rabbits and our concepts of rabbits), with much confusion as its consequence:

A person’s conception of reality is itself a conceptual world that is built up from peripherally connected experience through complex sequences of mental operations. We construct our conception of the “real world” bit by bit, stage by stage, from myriad and multifarious sensory and motor experiences. . . . It

is our conception of reality (not the real world per se) that is relevant to linguistic semantics. (1987/1991, I: 114)

In the eyes of the cognitive linguist, it would seem, our natural language sentences about rabbits are not about rabbits (per se) at all; rather they are about conceptual rabbits that we ourselves have constructed bit by bit. The whole thrust of cognitive grammar à la Talmy and Langacker is unfortunately to minimize in this fashion the ontologically crucial differences between human concepts and reality.

6. TRUTH

What I now want to claim is that the construction of transient sentence-generated fiat boundaries of the sort described by Daubert, boundaries *in reality*, is pervasively involved in all descriptive statement-making uses of language, that there are transient fiat boundaries in the judgmental sphere analogous to the transient boundaries of visual fields associated with acts of visual perception. In this connection it is important to bear in mind that truth for empirical sentences has classically been understood in terms of a correspondence relation (that is to say, of some sort of isomorphism) between a judgment or an assertion on the one hand and a certain portion of reality on the other. The central difficulty standing in the way of this classical theory turned always on the fact that reality evidently does not come ready-parceled into judgment-shaped portions of the sort that would be predisposed to stand in relations of correspondence of the suggested sort. The theory of language-induced fiat boundaries can, however, allow us to treat judgment itself as a way to draw fiat boundaries around entities in reality of the appropriate (truth-making) sort. In this fashion it yields a way of putting the world back into semantics, or of anchoring true judgment to a reality of exactly the sort required by the correspondence theory (Smith 1993).

Let us define the *judgment field* as a portion of reality, a fiat object, that is demarcated by the transient fiat boundary associated with a given true empirical judgment. A judgment field is then a certain region of reality through and around which the relevant judgmental fiat boundary is drawn. As such it exists in and of itself, regardless of our judging activity. The judgment field—called by Daubert the state of affairs or *Sachverhalt*—is, however, also in a certain sense dependent on our judgment. For in the absence of the judging activity, an entity of the given sort would in no way be demarcated from its surroundings, nor would it have the internal demarcation-structure which it comes to have by virtue of the sentence forms employed. In this way,

then, cognitive linguistics can replace its confused notion of conceptual reality with the geographer's notion of reality as subject to fiat articulations. It will then be in a position to exploit its remarkably sophisticated resources for the analysis of the grammatical structures at work in natural language in order to produce a truly adequate account of truth for natural language in correspondence-theoretic terms.