

Social Objects⁽¹⁾

Barry Smith

Department of Philosophy, Center for Cognitive Science,
and National Center for Geographic Information and Analysis

University at Buffalo

phismith@acsu.buffalo.edu

1. Introduction

1.1 Two Dogmas of Reductionism

Two persistent tendencies have made themselves felt in the course of philosophical history. On the one hand is the Ockhamite tendency, the tendency to embrace one or other of a small repertoire of simplified ontologies, for example atomism or monism, together with a view according to which more complicated entities are to be ‘reduced’ by one or other means to the favoured class of simples. On the other hand is Cartesianism, the tendency to embrace one or other foundationalist doctrine in epistemology, or in other words to prize *episteme* at the expense of *doxa*. The two tendencies reinforce each other mutually. Thus foundationalism tilts the attention of philosophers in the direction of ontological simples, for it is held that in relation to the latter knowledge secure against doubt is more easily attainable. Philosophers are thus shielded from any concern with the complex mesoscopic (medium-sized, middle-range, human-scale) objects of our everyday environment and of the social world, since the latter is, after all, a realm of mere opinion, not worthy of the attention of those striving after rigour.

Austrian philosophers have been marked no less than philosophers in other traditions by both of these tendencies. Brentano, especially, was an avowed foundationalist, a proponent of psychological immanentism, and in his later philosophizing he embraced an ontology according to which all objects must belong to the single category of thing or substance. Husserl, similarly, argued that if knowledge of objects is to be possible at all, then objects and knowing subjects must be made, in the end, of the same (mind) stuff. Mach, familiarly, embraced an atomistic (‘neutral’) monism of ‘elements’, and both he and Brentano are strongly influenced by the sceptical legacy of corpuscularism which led them to conceive the common-sense world – of tables and beer, weddings and battles, orchestras and armies – as a chimera, a product of *Falschnehmung* or of the lazy workings of the ‘economy of thought’. Both have serious difficulties in comprehending holistic structures – and it is in this respect noteworthy that the Gestalt movement, initiated by Christian von Ehrenfels with his classic paper “On ‘Gestalt-Qualities’” of 1890, began as an attempt to craft out of Mach’s and Brentano’s theories of sensation a workable account of our perception of melodies and of other complex objects of experience.

1.2 The Psychological Environment

Our topic here is social wholes, including very complex social wholes such as the

Sovereign Military Hospitaller Order of St. John, the War of the Spanish Succession, the O. J. Simpson trial. Austrian philosophers such as Mach, Wittgenstein, and Gustav Bergmann, who sought to reconstruct the world out of simples – simple sense-data, simple substances, bare particulars, basic universal properties – via a gluing together of objectives, facts, sets, classes, circumstances, actualities, possibilities, and what one will – were doomed to fail in the attempt to nail down theoretically the sort of integrity that such wholes represent, since the wholes in question are not the results of any logical (or physical, or psychological) compounding. But they are real nonetheless, or so I shall argue. The tradition of philosophizing inspired by Brentano, in contrast, included a number of holistically inclined thinkers not wedded to logical or ontological reductionism, and the present essay is in part a tale of the gradual rediscovery of social objects, and of common-sense objects in general (complex objects in the realm of non-apodictic experience), by philosophers in the wake of Brentano, Ehrenfels and Husserl. Ehrenfels' confrontation with the problem of complex wholes was continued by Meinong and his student Fritz Heider, by Ehrenfels' student Max Wertheimer, by Bühler and Brunswik in Vienna, and then by the great Gestalt theorists who gathered around Carl Stumpf in Berlin, including not only Wertheimer but also Wolfgang Köhler, Kurt Koffka, and Kurt Lewin. On becoming transplanted to America, Heider, Koffka and Lewin in their turn influenced the ecological psychologists J. J. Gibson and Roger Barker,⁽²⁾ and it is in the works of the latter that the beginnings of a correct framework for the ontology social objects are finally to be found.

In light of the then still forceful influence of atomistic and immanentistic philosophies, Stumpf, the early Husserl, Meinong and their contemporaries had seen their task as being that of explaining how the *appearance* of complexity can arise on the basis of mental simples. The external environment of the psychological subject is for these philosophers a matter of mere construction. The later Gestaltists turned their attentions more resolutely out into the world, which they understood also in physical terms and in terms which recognized a genuine, autonomous complexity of structure on the side of physical reality. When moving to consider the environment of human behaviour and perception, however, they fell victim to a view according to which this 'behavioural' or 'psychological environment' would exist as a mere aspect of a relational whole encompassing also the behaviour by which it is formed.

To see the problem at issue it will be useful to quote the passage from Koffka in which the Gestaltist distinction between the 'behavioural' (or mental) and 'geographic' (or physical) 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.

In what environment, then, did the behaviour 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

[... For the latter] will have to say: 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.)

What we experience, according to Gestaltists such as Koffka, are not objects in physical reality (objects in the geographic environment). Rather, we experience, precisely, *Gestalten*, created objects, which differ from objects in physical reality *inter alia* because they arise through the application of special Gestalt ‘laws of organization’.

Like their Brentanist predecessors, therefore, the Gestaltists did not conceive the psychological environment in realist terms, and they were consequently not able to come to a coherent account of the relationship between this environment and the world of physical things.⁽³⁾ Psychologists such as Lewin, Heider and Brunswik, with their theories of the ‘psychological environment’, also stopped short of full realism: the psychological environment is for them, too, something that is dependent upon the ego, something that is present even in dreams.⁽⁴⁾

Similar confusions can be found also in the later Husserl, whose *Ideas II* and *Crisis of European Sciences* otherwise contain a series of masterly descriptions of the features of the common-sense world.⁽⁵⁾ And the same confusions are present in Scheler, too, whose theory of the ‘milieu’ of practical life influenced Heidegger’s writings on ‘being-in-the-world’:

The “things” which are relevant to our acting, what we always refer to when, for example, we trace certain deeds of human beings (or dispositions towards such deeds) to their “*milieu*”, 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. ... There is much that “effects” me objectively – for instance, electrical and magnetic currents, rays of many sorts that I do not sense, etc., – which certainly does not belong to my “milieu” ... *Only that which I effectively experience belongs thereto.* (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. The sun that is experienced at the North Pole is most certainly the same sun as the sun that is experienced at the Equator. It cannot, therefore, be the case that the things in our practical, commonsensical environment have ‘not the slightest’ to do with the objects conceived by science. But Scheler goes on:

These things are, rather, in some sense intermediate between persons and the reality that is studied by physics: The “sun of the milieu” has as little to do with the sun of astronomy as it has to do with the “representation” and the “perception of the sun”. A “milieu-thing” belongs to an “*intermediate realm*” lying between our perceptual content and its objects

on the one hand and those objectively thought objects on the other. (Scheler 1954, p. 159, Eng. trans. p. 140)

1.3 Uexküll's Constructivist Biology

Scheler's talk of intermediate realms recalls the constructivist biology of Jakob von Uexküll, of which Scheler was aware. Uexküll, too, embraced an ontology of *milieux* or 'environments' (*Umwelten*) as intermediary entities which would somehow exist in a realm between the animal and the exterior realm of physics. Every animal, Uexküll held, is the *creator* of its own 'external reality', of an *Umwelt*, that is constructed by the organism for its own needs. The 'first principle of *Umwelt* theory' 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. (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'⁽⁶⁾). On the other hand, however, they are held to be capable of interacting, though the explanation we are offered of this interaction is difficult to understand. The eye, we are told '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 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 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 flavour 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 [*Anschauungsraum*]' of the animal environment and the 'space of representations' [*Vorstellungsraum*] of science. The latter, Uexküll holds, forfeits any claim on reality. 'Intuitive space alone is real.'⁽⁷⁾

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. ...

... I am afraid that if I publicly proclaim this perspective, that they will treat me à la Galileo, and either lock me up in a madhouse or else ridicule me as an arch-reactionary.

However I must just once say my piece. Perhaps no one will understand me. Nevertheless, it remains a fact: "*Eppur non si muove.*" 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. (Cited in Harrington 1996, pp. 46f. Translation corrected.)

Or 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 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)

1.4 Ecological Realism

The central problem with the work of Scheler, Uexküll and the Gestalists as an account of the animal-environment relation is that it seems to rule out the fact of an environment common to animals of different species (and thus to render inexplicable the fact of the fly's becoming eaten by the salamander). This problem is close to being resolved in the work of Gibson and Barker. Here we have a new phase in the treatment of our 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 psychological experience is to be understood not in terms of a succession of two-term relations between acts and more or less coherently integrated objects in some special "realm", but rather in terms of a *topological nesting*, whereby the sentient organism is housed or situated within (serves in a certain sense as the interior boundary of) a surrounding environment in such a way that its perceptions and actions are to be understood theoretically only as occurring within this surrounding framework. At the same time the latter is understood not in psychological terms but as something that falls squarely within the realm of physics. Moreover, our successive environments are seen as containing lakes, chairs, tables, salamanders, sandy beaches, and X-ray tomography machines even independently of specific beliefs about these environments which we might hold on given occasions.

In both perception and 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’. Perceptions, like actions, are achievements of purposeful creatures. Hence perception is not a matter of the processing of sensations. Rather it is a direct acquisition of complex information about objects in the environment, information which is acquired because the perceiver, in his active looking, touching, tasting, feeling, is bound up with those very objects – the crumpled shirt, the empty glass, the broken spear – which are relevant to his life and to his tasks of the moment.⁽⁸⁾

Gibson and Barker, as will become clear, embrace a radically externalistic view of mind and action. We have not a Cartesian mind or soul, with its interior theatre of ‘contents’ or ‘representations’ or ‘beliefs and desires’ and a consequent problem – which had plagued the work of Brentano and his first-generation followers – of explaining how this mind or soul 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.

Neither Gibson nor Barker, however, were able to attain the sort of ontological sophistication in their accounts of this embeddedness-relation of organism and niche that we find in the best ontological writings of Brentano, Husserl or Ingarden, and nor did they have at their disposal the modern formal-ontological tools which would seem to be most appropriate for dealing systematically with holistic phenomena of the sort in question. The present essay is thus a first step towards rectifying these inadequacies by bringing the ideas of the ecological psychologists into a form where we can apply some of the ontological lessons we have learned, above all from recent work on mereology and mereotopology in the spirit of Husserl’s third Logical Investigation.⁽⁹⁾

2. A Bicategorical Ontology

2.1 Continuants and Occurrents

How are we to do justice ontologically to the fact of complexity? How, more specifically, do separate persons, such as you and me, become joined together into social wholes of different types – committees, teams, battalions, meetings, conversations, jousts? To answer this question we need to distinguish, first of all, two categories of object – continuants and occurrents – which serve in a certain sense as the building blocks of common-sense reality. Continuants are such as to endure self-identically through time. They continue to exist from moment to moment and from day to day. Examples of continuants would include, in the first place: you and me, my pet rock, the planet Earth, and, from the instant of its formation to the instant it hits the ground: a raindrop. The family of continuants thus includes what are called ‘substances’ in the Aristotelian terminology (also sometimes called ‘things’ or ‘bodies’ or ‘extended spatial magnitudes’). But it includes also entities of other sorts: for instance media (bodies of air and water). Occurrents (which include ‘accidents’ in Aristotelian usage, and which include also what in more recent terminology are sometimes called events or processes or states) occur or happen *in* time.⁽¹⁰⁾ Examples of occurrents would include: whistles, blushes, speakings, runnings, my present headache, your knowledge of French.

Continuants take up space and have spatial parts. Occurrents such as blushes, funeral

marches, forest fires, too, may be spatially extended, but the spatial extendedness and spatial locatedness of occurrents in common-sense reality is in every case parasitic upon the extendedness and locatedness of the continuants which are their bearers.

A continuant is self-identical from the beginning to the end of its existence. John as child is identical to John as adult, even though he may have changed in many ways in the intervening years. A continuant accordingly has no temporal parts: the first ten years of my life are a part of my *life* (a large, complex, many-phased occurrent) and not a part of *me*. It is not continuants but occurrents that can have temporal parts: indeed it is as if the mode of existing of an occurrent is precisely to unfold itself in time. The parts of an occurrent include its successive phases. The parts of a continuant, in contrast, are its arms and legs, its organs and cells. In fact, there are a number of deep-rooted analogues between the part-whole structures of continuants in space and of occurrents in time.⁽¹¹⁾ Both continuants and occurrents often manifest a many-levelled hierarchical or assembly structure: a person is made of atoms which combine together to form cells which combine together to form organs which combine together to form the person himself. A tennis-match is made of volleys which combine together to form games which combine together to form sets which combine together to form the match itself.

Where continuants can exist on their own, occurrents require a support from continuants in order to exist. The latter are the *bearers* or *carriers* of the former. More precisely, continuants and occurrents are linked together via the formal tie of specific dependence, which is defined as follows:

x is specifically dependent on y =df. (1) x and y share no parts in common, and
(2) x is necessarily such that it cannot exist unless y exists.

My headache, for example, is specifically dependent on me. An occurrent stands to a continuant in the formal tie of one-sided specific dependence only. (Thus it is clear that I am not specifically dependent on my headache.) There are also, however, cases where objects are bound together via ties of *mutual* specific dependence; consider for example the relation between John the husband and Mary the wife, or between the north and south poles of a magnet, or between the pitch, timbre and loudness of a musical tone.⁽¹²⁾ Equally, there are cases where an object stands in a relation of specific dependence to more than one object simultaneously. Thus in particular there are relational occurrents – such as kisses and hits, handshakes and conversations – which join one continuant to another in more or less enduring fashion. Certain special types of relational occurrents, called by Husserl ‘moments of unity’ (1900/01, Eng. trans. p. 442), are responsible for uniting together pluralities of separate continuants into single unitary collectives (such as flocks of geese or shoals of fish).

Continuants and occurrents form two distinct orders of being which have, both separately and together, played a predominant role in the history of ontology. Some, such as Aristotle and Ingarden, embraced bicategorical ontologies in which a place is found for both. More commonly however, as in the case of Mach and Brentano, Whitehead and Kotarbinski, monocategorical ontologies were developed in which one or other of the two categories was eliminated or reduced in favour of the other. Here, in contrast, we shall demonstrate the necessity to develop an ontology in which room is allotted also to objects of other types, in addition to continuants, occurrents and their parts and collectives.

Above all, we argue, there are social wholes which transcend the boundary between the two.

2.2 Complex Occurrents

Both continuants and occurrents may form collectives. Teams, families, nations are examples of collective continuants; meetings, arguments, wars examples of collective occurrents. We note in passing that the problem of integrity arises in a different form in relation to collective occurrents, since occurrents may form collectives in two-fold fashion: via simultaneous compounding, as for example in the case of a musical chord or a pattern of colour, and via sequencing in time, as in the case of a melody or film sequence.

Occurrents can manifest a complex unity of diverse constituents, as is clear already from our everyday perceptual experiences. As Ehrenfels points out:

Examples such as the presentation of wetness, in which both the senses of pressure and of temperature seem to be equally involved, or those total impressions which we imprecisely designate as the tastes of the respective dishes but which clearly involve also sensations of pressure, temperature and smell, as well as other, similar examples, indicate that if we are to recognize Gestalt qualities at all in these spheres, then, in virtue of the high degree of unity of the given presentational complexes, we must also accept the possibility of *Gestalt qualities comprehending complexes of elements of different categories*. (Ehrenfels 1890, Eng. trans. p. 97, emphasis added)

Some complex collectives of occurrents (for example a stage performance of a Wagner opera) are occurrents which depend on collectives of continuants. The performance of an opera is an immensely complex sequence of complex relational occurrents inhering, *inter alia*, in the singers and members of the orchestra as well as in the stage and its props. As Ehrenfels also saw, many of the most impressive achievements of human creativity consist in finding new ways or patterns in which simple occurrents can become compounded together to form complex occurrents – Ehrenfels called them ‘Gestalt qualities’ – which are then more than (or different from) the sums of their putative simple parts. Complex occurrents such as opera performances enjoy a complexity which embraces constituents drawn from widely diverse material domains. Already an act of promising manifests a complexity of this sort, embracing constituents of a linguistic, psychological, quasi-legal and quasi-ethical sort, as well as more narrowly physical constituents of different types (including vibrations in the air and ear and associated electrical and chemical events in the brain).

2.3 Complex Continuants

Non-collective continuants may enjoy a natural integrity, as in the case of animals, planets, raindrops. Each of these objects is such as to enjoy a certain completeness or rounded-offness, being neither too small nor too large, in contrast both to their undetached parts (my arms, your legs) and to arbitrary heaps or aggregates: they have complete, connected boundaries and are movable relative to other objects in the world.

Continuants may also, however, come to be joined together in such a way as to form more or less complex, more or less integrated wholes which are genuine constituents of

the furniture of the world. At one extreme we have artefactual assemblies such as Meinong's typewriter or Theseus's ship.⁽¹³⁾ In the middle range we have quasi-unitary collectives which fall short of both complete integrity (they are easily decomposed) and complete separateness (they are not easily translocated). Examples are: sandy beaches, river deltas, clumps of trees, mountain ranges. At the other extreme we have examples of the type with which we are here primarily concerned, namely *social wholes*, a richly variegated category which includes not only families and tribes, nations and empires, but also orchestras and chess clubs, battalions and football teams, as well as those more or less short-lived social groupings which arise when strangers are formally introduced, or pair up on the dance floor.⁽¹⁴⁾ These examples inherit some, if not all, of the ontological marks of their non-collective counterparts. They can undergo changes through time. They have a unity which is something like the unity of a living thing. They have no temporal parts (the parts of Poland are Silesia and Galicia, not: Poland under the reign of Sigismund III, Poland in the Era of Partition, and so on). They take up space; and as a thing may be cleaved into thingly parts, so – as Czechs and Slovaks know – a social whole can in certain cases come to be divided into separate sub-collectives. And while collective continuants are, like their non-collective counterparts, self-identical from the beginning to the end of their existence, this existence, as the examples of Israel and Poland show, may be intermittent. And as the case of Austria shows, social wholes may be merged for a time into, and subsequently cleaved apart from, other social collectives.

Social objects constitute a new dimension of being within the common-sense world, analogous to the level of persons proper. Institutions have their own lives, they endure through time, despite acquiring or losing members; they have their own qualities and states, and their own ways of functioning in collaboration or in interaction with each other. And like things on lower levels, they are through and through dependent on circumstances and are subject to more and less regular and intelligible patterns of change. The Hungarian nobility has existed for many centuries and it will continue to exist for some time in the future. Collective continuants are thus to be distinguished from *sets*, as the mathematician conceives them, as also from arbitrary aggregates or pluralities. They are examples of unities which are to a degree able to survive changes even in the stock of their members or participants.

2.4 Fiat Objects

Social objects such as juries, courts, contracts, lawsuits are, as judges know, parts of reality. But as was stressed by Brentano's student Anton Marty, they also manifest some features which are normally associated with objects in the domain of abstracta or irrealia.⁽¹⁵⁾ To be real, according to Marty, is to enter into causal relations. The existence in time of a real object typically involves continuous and manifold changes reflecting the manifold of causal relations in which it is involved. The existence in time of a social collective, in contrast, may for long periods involve no change at all, and even where a social collective is subject to change, this will typically consist merely in discrete changes (not least the coming into and then going out of existence) as a reflection of certain specific changes in the real (including changes in charters, covenants, treaties, contracts and the like). This feature of relative isolation from the concrete, causal-energetic sphere is manifested by dependent social objects such as claims, obligations, rights, debts, knighthoods, relations of ownership and authority, as well as by cultural artefacts such as

works of music and literature.

Each of the latter is ‘something which, when it comes into existence, is not brought about as an effect and when it goes out of existence does not do so directly in consequence of the ceasing of an effect.’ (Marty 1908, p. 321) Non-real objects, according to Marty, have no history of change in their own right; but nor do they stand outside history: the social collective which is the *natio hungarica* begins to exist with the creation of the first Magyar noble and ceases to exist when the last Magyar noble dies. The State of Montana begins to exist with a certain declaratory act in Washington in 1890, and ceases to exist with the dropping on America of the first cyclotomic bomb by the Belgian Empire in the year 2084. (One is reminded, here, of Leibniz’s conception of aggregates as non-real *phaenomena bene fundata* which belong neither among the substances nor among the accidents.) Social objects have realia as parts, but they are, as it were, relatively (causally) isolated from these parts, being affected only by those changes in the latter which are such as to bring about the destruction of the collective also.

One might now be tempted, with Marty, to impose a two-layer structure on the realm of continuants: on the lower layer would be real things, subject to continuous changes and causal interactions. On the upper (‘supervenient’) layer would be non-real collectives which float, as it were, above the level of the real.⁽¹⁶⁾ The problem with this view is that it leaves no room for the interactions between the two levels, for the ways in which our thingly, causal-energetic behaviour is constrained – in a manner to be described more closely below – through our participation in social collectives and other sorts of institutions. Certainly Marty is correct to draw our attention to the fact that many social objects are the products of fiat (this is one grain of truth in contractarian doctrines in political science as also in accounts of legal and political phenomena based on the theory of speech acts⁽¹⁷⁾). Thus many social objects come into being fully formed as the result of legal enactments, of handshakes, of contracts, of affirmations. But how are we to reconcile this aspect of objects in the social realm with their capacity to constrain behaviour?

2.5 Generic Dependence

Just as non-collective continuants may gain and lose parts (as Tibbles gains and loses molecules), so collective continuants may gain and lose members, and they may undergo other sorts of changes through time while still retaining their identity. Towns, cities, universities, and corporate bodies generally, manifest the ability to sustain themselves through time even though they are subject to a certain turnover of their constituent continuants. They can continue to exist even while some of their participants are removed and others take their places. In addition there are dependent objects which have continuants or collective wholes as their bearers or carriers but which may survive replacement of these bearers. Languages, religions, legal systems and many other sorts of institutions do not depend for their existence upon *specific* individuals or groups; rather, they depend generically on the existence of individuals or groups fulfilling certain necessary roles.

To capture the sense in which an institutional object is dependent upon a continuant, we need to introduce the notion of generic dependence, which can be defined, in first approximation, as follows:

x is generically dependent on objects of sort S =df. x is necessarily such that it cannot exist unless some object of sort S exists.

A dog owner is in this sense dependent upon a dog; a king is dependent upon his subjects – but not on any specific dog, or subjects. A language, religion or legal system is in the same sense generically dependent on the individuals and groups who serve, in their actions, to instantiate the corresponding rules, beliefs and customs. This sort of generic dependence is, as we shall see, characteristic of social objects of many different types.

3. The Ontology of the Common-Sense World

3.1 The Theory of Physical-Behavioural Units

Social objects exist in that mesoscopic stratum of reality which we call the common-sense world. They thus fall outside the purview of physics as narrowly understood. 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. The common-sense world 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, the common-sense world comprehends also holes, the gaps between things, and the media (for example water, smoke) in which things move,⁽¹⁸⁾ as well as shadows, rainbows, tides, and similar phenomena. But within this extended array of things and media there are also further discriminable areas of organization which cross-cut each other on a number of distinct dimensions. The world is organized into separate things or bodies, but it is also organized into overlapping social and institutional zones or contexts within which human beings figure as participants. It is 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, we can now assert, persons themselves, and things in the spatial environment, are both equally caught up within entities of a new, over-arching type, which the ecological psychologist Barker calls *physical-behavioural units*. It is these which serve as the successive environments of persons and groups of persons as they go about their various activities from day to day.

Examples of physical-behavioural units of the type favoured 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-behavioural 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)

Barker insists that physical-behavioural units are *parts of reality*. They are of inestimable importance for an understanding of human cognition and action, since *almost all human behaviour occurs within one*. All roles are played within behaviour settings. All organizations are composed of them. All biographies are ordered in terms of them.

Human beings are determined through and through by the behaviour settings in which they participate, exactly as non-human-animals are determined through and through by the ecological niches into which they have evolved. Even our journeys from site to site, and our loungings in daydream mode between quests, are recognizable as physical-behavioural 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-behavioural 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. The behaviour settings in which we constantly find ourselves are, it must be admitted, to a degree porous, in virtue of the fact that we may sometimes switch effective context from moment to moment as our attention is distracted now by one thing or person, now by another. This does not, however, detract either from their reality or from their salience and their virtual all-pervasiveness in our lives as human beings. Only in rare moments of total disorientation do we seem to be set free of all behaviour settings, but this is just to imply that it is in relation to settings that we are in normal cases oriented.

3.2 Prehistory of Physical-Behavioural Units

Leaving aside Heidegger, and leaving aside the French existentialists such as Sartre and Merleau-Ponty (with their work on 'projects' and the like, work which was inspired by Lewin and other Gestaltists), serious investigations of physical-behavioural units by philosophers are almost unknown. Husserl's theory of the 'life world' 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 never clarified.

The neglect of physical-behavioural units in the literature of philosophy turns first of all on the already mentioned tendency among philosophers to sanction the dominance of simplified ontologies, above all ontologies based on continuants or occurrents as sole admissible categories, and on their tendency to embrace one or other form of ontological monism. For physical-behavioural units, as will by now be clear, are radically transcategorical: they transcend the boundary between the two categories of continuant and occurrent. And because they can be fitted neatly into neither of the two orders of being, they have been neglected in the tradition of ontology. Even those philosophers with the ambition to come to grips with the realm of common sense to end up with philosophies which reduce this realm – for example on the pattern of the Wittgensteinian doctrine of 'language games' – to objects of a suitably monistic flavour. In fact, however, language, too, is a phenomenon which can be coherently explained only within the framework of an ontological theory of physical-behavioural units, since where language gets used, under all normal circumstances, such usage is itself such as constitute a physical-behavioural unit. To explain human common-sense reality in terms of language is to explain the whole in terms of a relatively late-developed part. It is also to forestall any mutually beneficial interaction between our understanding of this reality and our knowledge of human beings as biological creatures.

The neglect of physical-behavioural units turns secondly on the fact that they are objects of a holistic nature, of a sort to be treated by instruments such as those of mereotopology, and thus they are, again, alien to the world-view of contemporary

philosophers who have been inspired by ideas based on predicate logic and set theory as instruments of ontology. The formal ontology of settings, niches, or physical behavioural units is thus far completely undeveloped, in spite of the degree to which recent work in analytic metaphysics has been marked by an increasing readiness to admit into its categorial systems objects – such as artefacts, actual and possible worlds, moments, tropes and individualized properties – which were for a long time out of favour.

But the neglect of physical-behavioural units turns finally on the dominance of foundationalist ideas among philosophers through the ages: for physical-behavioural units – my evening soup, your Tuesday swim – belong *par excellence* to the realm of mere opinion. Hence, erroneously, it has been concluded either that the given objects are not amenable to rigorous treatment, whether philosophical or scientific, or that the given objects do not exist (because all ‘opinion’ is false).

3.3 Ontological Properties of Physical-Behavioural Units

Each physical-behavioural unit has two sorts of components: human beings behaving in certain ways (lecturing, sitting, listening, eating), and non-psychological objects with which behaviour is transacted (chairs, walls, paper, forks, scalpels, etc.). Each physical-behavioural unit has a boundary which separates an organized internal (foreground) pattern from an external (background) pattern (Husserl’s ‘horizon’). This boundary, too, though it is far from simple, is an objective part of nature, though it may change according to the participants involved or according to the circumstances from moment to moment. Each 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 surrounding portion of reality is, to be sure, not distinguished physically from its neighbours. The *significance* of this demarcated portion of reality is exclusively psychological in nature (pertains, indeed, to the psychology of common sense); but it *exists* as part of physical reality nonetheless.

Units have their own behaviour, and their own laws which govern this behaviour – laws which are different from those that govern the behaviour of the persons involved (this, too, is a consequence of transcategoriality, and has done much to make physical-behavioural units resistant to scientific treatment). For Barker, the laws governing such units may best be understood in mechanical or at least artefactual terms (terms which will recall our discussion of Anton Marty’s theory of collective objects in the foregoing):

The model of an engine seems to be more appropriate to represent what occurs [in the realm of physical-behavioural units] than is the model of an organism or person. For example, this entity can be ‘turned off’ and disassembled at the will of the operator, the chairman. He can adjourn the meeting (for a coffee break) and call it to order again. While it is disassembled, some of the parts can be adjusted (a discussant replaced). Individuals have no psychological properties like these. (Barker 1978, pp. 34f)

The temporal histories of at least many of the physical-behavioural units by which our lives are structured thus have shapes distinct from the temporal histories of individual persons and their individual experiences. Physical-behavioural units often have sharp beginnings and endings (consider the beginning and ending of a race, or of a contractual agreement). Our pains, illnesses, regrets, in contrast, characteristically grow and fade in

intensity. Physical-behavioural units and their settings are also sometimes marked by spatial borders which are more crisp and more often rectilinear than are the spatial borders of naturally occurring phenomena such as epidemics or storms. The borders of behaviour settings need not be crisp in other respects, however. (Consider, for example, the question whether the groom's sneezing is or is not a part of that physical-behavioural unit which is his wedding.)

On the other hand, physical-behavioural units manifest a capacity for self-sustenance which is much more like what we find in the biological realm. They are characteristically self-regulating, and are such as to guide their components to characteristic states and to maintain those states within limited ranges of values in the face of disturbances.⁽¹⁹⁾ Slight modifications within given dimensions of the unit can be sustained without detriment to its continued existence as a unit of this type. The total behaviour making up the unit – for example a Rotary Club meeting – cannot be greatly changed, however, 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).

3.4 The Systematic Mutual Fittingness of Behaviour and Ecological Setting

A physical-behavioural unit is a unit: its parts are *unified together*, but not through any similarity or community of substance.

The behaviour and the physical objects that together constitute the totality of a given physical-behavioural unit are intertwined in such a way as to form a pattern that is by no means random: there is a relation of harmonious fit between the standard patterns of behaviour occurring within the unit and the pattern of its physical components. (The seats in the lecture hall face the speaker. The speaker addresses his remarks out towards the audience. The boundary of the football field is, leaving aside certain predetermined exceptions, the boundary of the game. The beginning and end of the school music period mark the limits of the pattern of music behaviour.) This mutual fittingness of behaviour and physical environment extends to the fine, interior structure of behaviour in a way which will imply a radical nontransposability of standing patterns of behaviour from one environment to another. The physical or historical or ceremonial conditions obtaining in particular settings are in addition as essential for some kinds of behaviour as are persons with the requisite authority, motives and skills.⁽²⁰⁾

There are various forces which help to bring about and to sustain this mutual fittingness and thus to constitute the unity of the physical-behavioural unit through time.⁽²¹⁾ Forces which flow in the direction from setting to behaviour include physical constraints exercised by hedges, walls or corridors or by persons with sticks; they include social forces manifested in the authority of the teacher, in threats, promises, warnings; they include the physiological effects of climate, the need for food and water; and they include the effects of perceived physiognomic features of the environment (open spaces seduce children, a businesslike atmosphere encourages businesslike behaviour). Mutual fittingness can be reinforced by learning, and also by a process of selection of the persons involved, whether this be one of self-selection (of children who remain in Sunday school class in light of their ability to conform to the corresponding standing patterns of behaviour), or of externally imposed mental or physical entrance tests. Influences which

flow in the contrary direction, which is to say from behaviour to setting, include all those ways in which a succession of separate and uncoordinated actions can have unintended consequences in the form of new types of actions and new, modified types of settings in the future (as the passage of many feet causes pathways to form in the hillside).⁽²²⁾ In the case, finally, of physical-behavioural units which involve a multiplicity of persons as participants there are influences which flow from the exercise of the controlling power which different members exercise to different degrees over the unit's functioning.

3.5 Hierarchical Nesting

Many physical-behavioural units occur in assemblies, as a chick embryo, for example, is constructed as a nested hierarchy of organs, cells, nuclei, molecules, atoms, and subatomic particles. Both the stable patterns of behaviour on the part of the persons involved within the unit and the stable patterns of associated physical objects are standardly capable of being further divided into sub-units with more or less definite, salient boundaries of their own:

A unit in the middle range of a nesting structure is simultaneously both circumjacent and interjacent, both whole and part, both entity and environment. An organ – the liver, for example – is whole in relation to its own component pattern of cells, and is a part in relation to the circumjacent organism that it, with other organs, composes; it forms the environment of its cells, and is, itself, environed by the organism. (Barker 1968, p. 154)

There may be many physical-behavioural units of a lower-level kind within a given locality, and these are typically embedded within larger units. The drawing of the triangle on the blackboard is embedded within the geometry lesson, which is embedded within the school, which is embedded within the neighbourhood, and so on.⁽²³⁾

For Gibson, reality in general is a complex hierarchy of inter-nested levels: molecules are nested within cells, cells are nested within leaves, leaves are nested within trees, trees are nested within forests, and so on.⁽²⁴⁾ Each type of organism is *tuned* in its perception and actions to objects on a specific level within this complex hierarchy, to objects which together form what Gibson calls an 'ecological niche'. (Gibson's own account of this relationship of tuning – in terms of information pick-up – need not detain us here.) A niche is that into which an animal *fits*; it is that in relation to which the animal is habituated in its behaviour.⁽²⁵⁾ A niche embraces not only things of different sorts, but also shapes, textures, tendencies, boundaries (surfaces, edges), all of which are organized in such a way as to enjoy affordance-character for the animal in question: 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.

The perceptions and actions of human beings are likewise *tuned* to the characteristic shapes and qualities and patterns of behaviour of our own respective (mesoscopic) environments.⁽²⁶⁾ This mutual embrangement is however in our case extended further via artefacts, and via cultural phenomena such as language and its associated institutions, including institutions of law, administration and politics. 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 behaviour and thus to extend radically the types of niche or setting into which we can spontaneously fit.

In addition to the nesting of physical-behavioural units we can distinguish also a range of cases where behaviour influence each other even in the absence of any circumjacent higher-level setting within which they would be jointly housed. Thus neighbouring countries (especially countries at war, or countries subject to border-disputes), and competing businesses or street gangs, influence each other mutually. In some cases this mutual influence can give rise to, and can be monitored (and influenced and to a degree steered from afar) by, new sorts of physical-behavioural units such as (sittings of) boundary commissions, trade associations, multinational treaty organizations, and the like. Reciprocal co-determination of physical-behavioural units is illustrated also in cases where different laboratories across the globe effect a cross-checking of each other's results.⁽²⁷⁾ Through administrative delegation, through sub-contracting, and through the institutions of representative government the scope of effective operation of physical-behavioural units can in principle become extended without limit, which is to say: extended even far beyond the compass of what can be achieved through the actions and perceptions of individuals in direct interaction. As the experience of central planning in communist Europe demonstrates, however, there are limits to such extension.⁽²⁸⁾

3.6 Transcategoriality and Generic Dependence of Physical-Behavioural Units

A physical-behavioural unit such as a religious meeting, a tennis championship or a sea battle 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). These features and elements may be further restricted to a highly specific combination of, say, a particular room in a particular building at a particular time with particular persons and particular objects distributed in a particular pattern. In general, however, it is a form of generic dependence which prevails in the realm of physical-behavioural units; a judge must hear and decide the case, but it need not be this judge; the capital city must be located somewhere, but it need not be located in this spot (and in time of war it may be relocated).

The physical-behavioural unit comprehends things and behaviour, 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. The phenomena involved are in addition diverse not only as concerns their material constitution but also as concerns their ontological form: thus they comprehend continuants, events, actions, states and manifold relations between all of these. As Barker puts it, echoing earlier remarks by Ehrenfels:⁽²⁹⁾

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 behaviour is concerned, therefore, even the most radical diversity of kinds and categories need not prevent integration.

3.7 Persons as Social Objects

The relation between participant and setting is to different degrees one of reciprocal co-determination. Each participant has two positions within the unit: first, he is a component, and thus contributes to forming the unit; second, he is an individual whose behaviour, and whose very nature as participant social object, is itself partly formed by the unit of which he is at any given moment a part, though not in such a way as to affect his continued existence as a human being. Schoggen describes physical-behavioural 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) The person is coloured and shaped, is determined through and through, by the behavioural context of the moment. And because this context is subject to change, it follows, as Schoggen points out, that

a person has many strengths, many intelligences, many social maturities, many speeds, many degrees of liberality and conservativeness, and many moralities, depending in large part on the particular contexts of the person's behavior. For example, the same person who displays marked obtusiveness when confronted with a mechanical problem may show impressive skill and adroitness in dealing with social situations. (Schoggen 1989, p. 7.)

And as the phenomenologist Aurel Kolnai puts it, a human society

is not only composed of various parts – it is composed of various parts in a multiplicity of ways; and consequently its component parts cannot but *overlap*. In other words, it consists ultimately of individuals, but only in the sense that it divides into a multitude of individuals across several social subdivisions, such that it comprehends the same individual over and over again in line with his various social affiliations, – some of them factual, natural and 'statistical', some of them largely or wholly a result of voluntary choice. (Kolnai 1981, p. 319)

Thus a society is composed of members of the community, of marriage and of the family, of the social class, of the union, of the borough, of the state, of the church, etc., and to each of these there corresponds in the life of each one of us different zones of salience and motivation, different strands of physical-behavioural units in which we are engaged.

As (undetached) parts of non-collective continuants (your arm, my leg) have special features, so also the participants in collective continuants (actors, admirals, astronomers, artists) have certain analogous special features. Human beings serve not as *parts* of social objects (in the unadorned mereological sense of part) but rather, and in virtue of the different *roles* they occupy, as *members* or *elements*. We can provide a tentative account of these features in terms of Brentano's account in his *Theory of Categories* of what he called the 'modal extensions' of common or garden substances. The latter, Brentano claimed, can become transformed in various ways into new types of objects, for example through their involvements in occurrents of different types. If John is running then *John the runner* is a (short-lived) modified continuant of this sort. If John is married then *John the husband* is likewise a (typically more enduring) modified continuant of a different (institutional) sort. Objects of this sort have been called by Kit Fine (in his 1982) 'qua

objects' (in reflection of earlier ontologists' talk of 'John qua runner', 'Bill qua President', 'Socrates qua philosopher' and the like).

From our present perspective *John qua runner* is, during the time when he exists, the mereological sum of John and the present phase of the occurrent running in which he is currently engaged. John qua husband, more complicatedly, is the mereological sum of John and some institutional occurrent; but the latter does not exist as separate element, tied only to John. Rather it is essentially a part of a much wider institutional whole which embraces, *inter alia*, legal, religious, social, fiscal, and biological elements tied to a succession of physical-behavioural units. Husband John, we may say, is the sum of John together with some (his) portion of that total institutional bond which (for the time period in question) ties him to his wife (and should John and Mary be cast asunder, then John the husband and Mary the wife will both, instantaneously, cease to exist).

3.7 From Ecological Psychology to International Law

Our theory of social objects can now be formulated as follows. There are physical-behavioural units, standing patterns of behaviour and physical environments, in which we are all involved in our daily activities. Such physical-behavioural units are as much a part of the furniture of reality as are garden-variety continuants and occurrents (such as you and me). This is, if one will, a pre-analytic datum of the theory. Physical-behavioural units have parts – including chairman John (at the lecture meeting) and golfer Jim (at the links). And they have consequences – including contracts signed, orders issued, judgments passed, medals awarded.

Some physical-behavioural units form extended chains, repeated instantiations of the same or of connected behaviour patterns in historical progression, so that the corresponding parts and consequences, too, enjoy a status which appears to transcend any particular instantiation. President Bill is President even when he sleeps. The borders of Luxemburg remain the borders of Luxemburg even though they are no longer policed or fenced.

Physical-behavioural units are part of reality: they have physical things and behaviour as parts. The physical setting of a physical-behavioural unit (the stock exchange building) can still exist even when no pertinent behaviour is occurring; but the unit itself (the stock market on each successive trading day) requires pertinent behaviour in order to exist. In the realm of animal behaviour, similarly, the setting of a physical-behavioural unit (the ecological niche) can still exist even when, because the geese have flown, no pertinent behaviour is occurring. But the unit itself (the nesting grounds in the nesting season) requires pertinent behaviour in order to exist.

To see how this theory would work, let us consider the case of *fiat objects* in the spatial realm, objects which arise as a result of the fact that spatial boundaries come to be drawn, for example dividing one parcel of land from another, through acts of human decision or fiat.⁽³⁰⁾ National borders, as well as county- and property-lines, provide examples of fiat boundaries in this sense, at least in those cases where, as in the case of Colorado, Wyoming or Utah, they lie skew to any qualitative discontinuities on the side of the underlying reality. Dade County, Florida, the United States, the Northern Hemisphere, etc., are fiat objects of the geographical sort.

Such fiat spatial objects, now, are determined through and through by the physical-behavioral units with which they are associated. A real estate parcel is what and where it

is (and is distinct in its nature from any underlying plot of virgin land) because of actions of specific sorts that occur in registry offices and as parts of geodetic surveys. A nation is what and where it is because of actions of specific sorts that occur in offices of state, in high chancelleries and in military outposts. A work of art is what and where it is because of actions of specific sorts that occur in offices of art historians, gallery directors and curators, and in restoration studios. Each of these processes of authentication can of course break down. Thus for example the activities of confidence tricksters in the field of real-estate transactions may create fake physical-behavioral units which are, to some lucky punters, indistinguishable from the genuine article. Jackson (1990) shows how the state system of international law, based on the principle of mutual recognition, may operate in such a way as to bestow statehood even upon 'quasi-states' whose putative governments are entirely lacking in internal control of the relevant territory. And rogue gallery directories have in similar fashion in recent decades lent spurious credence to whole genres of quasi-art. Once again, however, the very possibility of such breakdown presupposes the correct working of the corresponding system of physical-behavioural units in the normal case.

4. Is Gibson a Realist?

The closeness of Gibson's ecological perspective to the phenomenological theories of the life world (or of '*Umwelt*' or 'milieu' or 'bodily space') put forward not only by Husserl but also by his fellow phenomenologists and by constructivist biologists such as von Uexküll might lead us now to call into question the view thus far accepted according to which Gibson is to be understood in realist terms. Katz (1987) asks us to consider in this light 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)

[A]n 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 psychical, yet neither (1979, p. 129).

These passages dictate, according to Katz, a relativist reading according to which, as according to Uexküll, different species *live in different worlds*:

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)

There are two principal motivations for relativist and representationalist views of cognition: (1) the problem of *error*, and (2) the problem of seeming global incompatibilities between different systems of representations.

Perceptual error, according to standard conceptions, reveals that perception cannot be solely a product of inputs. It tells us that, on occasion at least, for example in cases of hallucination, perceptual objects are created or constituted by the perceiver. The relativist holds that the world that is given in perception is always in this sense a constructed or constituted world. The relativist is thus able to solve the problem of error without abandoning the goal of a unified theory of perception, but only at the heavy price of cutting off the roots of his theory in the one, real world that, from the common-sense perspective, serves as the environment of perception. The realist solution to the problem of error denies that what is phenomenologically experienced as the unitary phenomenon of ‘perception’ is in fact a unitary phenomenon at all from the ontological point of view. The task of providing a theory of perception (of successful, veridical, world-embrangled perception) is then to be distinguished from another, quite different task of giving an account of perceptual error (of the different types of shortfall from the standard, veridical case).

The second motivation for relativism might be formulated as follows: our common-sense perceptual space has, it seems, a Euclidean structure (or a structure closely related thereto); the space of the physicist have 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 spider’s) perceptual spaces are mere ‘representations’. It is a constructivist, relativist, projectionist, 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 are interpreted as expressing distinct *partitions*, for example partitions on different levels of granularity, of one and the same reality. The world (like a lump of cheese) can be sliced into pieces in more than one way. And one advantage of mereology as an instrument of ontology is that it shows us how this is so.

Every language, every theory, every system of animal behaviour, generates from this perspective its own global partition of reality. The various animal behaviour-systems generate corresponding partitions of reality into *ecological niches*. And human perception and action together generate that mesoscopic partition of reality we call the common-sense world.

A science of human environments will look very different from any science of the more standard sort. This has led some philosophers and cognitive scientists to suppose that environments, settings, physical-behavioural 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 demonstrate how a science of environmental settings can be ‘consistent with physics, mechanics, optics, acoustics, and chemistry’, being only a matter of ‘facts of higher order that have never been made explicit by these sciences and have gone unrecognized.’ (Gibson 1979, p. 17) To meet this challenge we need to develop a realist theory of the physical-behavioural units and of other types of fiat objects relevant to everyday human cognition in a manner which does not involve the rejection of standard quantitative physics.⁽³¹⁾ Gibson uses the term ‘ecology’ precisely in order to designate the discipline that should encompass these intermediate-level facts; it is presented as ‘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)

How this is to be done is by now, I hope, clear: physical behavioural units (and their animal counterparts), and the social objects which go hand in hand therewith, are parts of the spatio-temporal continuum of reality, the same reality that is described by physics. They are, from the perspective of physical science, eldritch parts of this reality indeed, parts which will never be capable of being understood as the products of any combination of physical building-blocks. But they are parts nonetheless.

References

- Barker, Roger G. 1968 *Ecological Psychology. Concepts and Methods for Studying the Environment of Human Behaviour*, Stanford: Stanford University Press.
- Barker, Roger G. and Associates 1978 *Habitats, Environments, and Human Behaviour. Studies in Ecological Psychology and Eco-Behavioural Science from the Midwest Psychological Field Station, 1947-1972*, San Francisco: Jossey-Bass Publishers.
- Brentano, Franz 1933, *Kategorienlehre*, edited by A. Kastil, Hamburg: Meiner, English translation by R. M. Chisholm and N. Guterman, *The Theory of Categories*, The Hague/Boston/London: Nijhoff, 1981.
- Brentano, F., 1976, *Philosophische Untersuchungen zu Raum, Zeit und Kontinuum*, edited by S. Körner and R. M. Chisholm, Hamburg: Meiner, English translation by Barry Smith, *Philosophical Investigations on Space, Time and the Continuum*, London: Croom Helm, 1988.
- Brunswik, Egon 1934 *Wahrnehmung und Gegenstandswelt. Grundlegung einer Psychologie vom Gegenstand her*, Leipzig and Vienna: Deuticke.
- Ehrenfels, Christian von 1890 “Über ‘Gestaltqualitäten’”, *Vierteljahrsschrift für wissenschaftliche Philosophie*, 14, 242-292, English translation as “On ‘Gestalt-Qualities’”, in Barry Smith (ed.), *Foundations of Gestalt Theory*, Munich and Vienna: Philosophia, 1988, 82-123.
- Fine, Kit 1982 “Acts, Events, and Things”, in W. Leinfellner, *et al.*, eds., *Language and Ontology*, Vienna: Hölder-Pichler-Tempsky, 97-105.
- Fine, Kit 1995 “Part-Whole”, in Smith and Smith, eds., 463-486.
- Fodor, Jerry and Pylyshyn, Zenon W. 1981 “How Direct is Visual Perception? Some Reflections on Gibson’s ‘Ecological Approach’”, *Cognition*, 9, 139-196.

- Gelder, Tim van (forthcoming) "Monism, Dualism, Pluralism", to appear in *Mind and Language*.
- Gibson, J. J. 1966 *The Senses Considered as Perceptual Systems*, London: George Allen and Unwin.
- Gibson, J. J. 1979 *The Ecological Approach to Visual Perception*, Boston: Houghton-Mifflin, repr. 1986, Hillsdale, NJ: Lawrence Erlbaum.
- Gilbert, Margaret 1989 *On Social Facts*, New York: Routledge, Chapman and Hall.
- Gilbert, Margaret 1993 "Group Membership and Political Obligation", *The Monist*, 76, 119-131.
- Grassl, Wolfgang and Smith, Barry (eds.) 1986 *Austrian Economics: Historical and Philosophical Background*, New York: New York University Press, London/Sydney: Croom Helm.
- Harrington, Anne 1996 *Reenchanted Science. Holism in German Culture from Wilhelm II to Hitler*, Princeton, NJ: Princeton University Press.
- Hayek, F. A. 1979 *Law, Legislation and Liberty: A New Statement of the Liberal Principles of Justice and Political Economy*, Chicago: University of Chicago Press, vol. III.
- Heider, Fritz 1959 *On Perception and Event Structure, and the Psychological Environment, Selected Papers (Psychological Issues, Vol. 1, No. 3)*, New York: International Universities Press.
- Husserl, Edmund 1900/01 *Logische Untersuchungen*, 2 vols., the 2nd in 2 parts, Halle a. d. S.: Max Niemeyer; 2nd edition 1913/21, *Logical Investigations*, 2 vols., translation of 2nd edition by J. N. Findlay, London: Routledge and Kegan Paul.
- Husserl, Edmund 1952 *Ideen zu einer reinen Phänomenologie und phänomenologischen Philosophie. Zweites Buch: Phänomenologische Untersuchungen zur Konstitution*, M. Biemel (ed.), *Ideas Pertaining to a Pure Phenomenology and to a Phenomenological Philosophy. Second Book: Studies in the Phenomenology of Constitution*, translated by R. Rojcewicz and A. Schuwer, Dordrecht: Kluwer, 1989.
- Husserl, Edmund 1954 *Die Krisis der europäischen Wissenschaften und die transzendente Phänomenologie. Eine Einleitung in die phänomenologische Philosophie*, W. Biemel (ed.), *The Crisis of European Sciences and Transcendental Phenomenology: An Introduction to Phenomenological Philosophy*, translated by David Carr, Evanston IL: Northwestern University Press, 1970.
- Ingarden, R. 1964/65 *Der Streit um die Existenz der Welt*, 2 vols. the second in 2 parts, Tübingen: Niemeyer. Partial Eng. trans. of vol. I as, Springfield: Thomas, 1964.
- Jackson, Robert H. 1990 *Quasi-States: Sovereignty, International Relations and the Third World*, Cambridge: Cambridge University Press.
- Jennings, Herbert Spencer 1909 "The Work of J. von Uexküll on the Physiology of Movements and Behaviour", *The Journal of Comparative Neurology and Physiology*, 19, 313-36.
- Johansson, Ingvar 1989 *Ontological Investigations. An Inquiry into the Categories of Nature, Man and Society*, London: Routledge.
- Johnson, W. E. 1921/24 *Logic*, 3 volumes, Cambridge: Cambridge University Press.

- Katz, Stuart 1987 "Is Gibson a Relativist?", in A. Costall and A. Still, *Cognitive Psychology in Question*, Brighton: Harvester, 115-127.
- Koffka, Kurt 1935 *Principles of Gestalt Psychology*, London: Routledge and Kegan Paul.
- Kolnai, Aurel 1981 "Identity and Division as a Fundamental Theme of Politics", in B. Smith, ed., *Structure and Gestalt. Philosophy and Literature in Austria-Hungary and Her Successor States*, Amsterdam: John Benjamins, 317-346.
- Marty, Anton 1908 *Untersuchung zur Grundlegung der allgemeinen Grammatik und Sprachphilosophie*, volume 1, Halle a. S.: Max Niemeyer, repr. Hildesheim: Olms, 1976.
- Michaels, Claire F. and Carello, Claudia 1981 *Direct Perception*, Englewood Cliffs: Prentice-Hall.
- Mulligan, Kevin 1995 "Perception", in Smith and Smith, eds., 168-238.
- Nenon, Thomas 1997 "Two Models of Foundation in the *Logical Investigations*", in: *Phenomenology of Values and Valuing*. Edited by James G. Hart and Lester Embree. Dordrecht/Boston/London: Kluwer Academic Publishers, 97-114.
- Petitot, J., Varela, F. J., Pachoud, B. and Roy, J.-M. (in press) *Naturalizing Phenomenology: Issues in Contemporary Phenomenology and Cognitive Science*, Stanford: Stanford University Press.
- Reed, Edward S. 1989 *James J. Gibson and the Psychology of Perception*, New Haven and London: Yale University Press.
- Reinach, Adolf 1913 "Die apriorischen Grundlagen des bürgerlich Rechtes", *Jahrbuch für Philosophie und phänomenologische Forschung*, 1, English translation as "The A Priori Foundations of Civil Law", by J. Crosby, in *Aletheia*, 3, 1983, 1-142.
- Scheler, Max 1954 *Der Formalismus in der Ethik und die materiale Wertethik*, 4th edition, Bern: Francke, English translation by M. S. Frings and Roger L. Funk as *Formalism in Ethics and Non-Formal Ethics of Value*, Evanston: Northwestern University Press, 1973.
- Schmidt, Jutta 1980 *Die Umwelthehre Jakob von Uexkülls in ihrer Bedeutung für die Entwicklung der Vergleichenden Verhaltensforschung*, Inaugural Dissertation, University of Marburg.
- Schoggen, P. 1989 *Behavior Settings. A Revision and Extension of Roger G. Barker's Ecological Psychology*, Stanford: Stanford University Press.
- Schotter, John and Newson, John 1982 "An Ecological Approach to Cognitive Development: Implicate Orders, Joint Action and Intentionality", in G. Butterworth and E. P. Light (eds.), *Social Cognition*, Hassocks: Harvester, 32-52.
- Searle, John R. 1995 *The Construction of Social Reality*, New York: The Free Press.
- Simons, Peter M. 1987 *Parts. An Essay in Ontology*, Oxford: Clarendon Press.
- Smith, Barry 1986 "Austrian Economics and Austrian Philosophy", in Grassl and Smith (eds.), 1-36.
- Smith, Barry 1994 *Austrian Philosophy. The Legacy of Franz Brentano*, Chicago/LaSalle: Open Court.
- Smith, Barry 1995 "On Drawing Lines on a Map", in Andrew U. Frank and Werner Kuhn (eds.), *Spatial Information Theory. A Theoretical Basis for GIS* (Lecture Notes in Computer Science 988), Berlin/Heidelberg/New York: Springer, 475-484.

- Smith, Barry 1995a “Common Sense”, in Smith and Smith (eds.), 394-436.
- Smith, Barry 1996 “Mereotopology: A Theory of Parts and Boundaries”, *Data and Knowledge Engineering*, 20, 287-303.
- Smith, Barry and Smith, David Woodruff, eds. 1995 *The Cambridge Companion to Husserl*, Cambridge: Cambridge University Press eds., *The Cambridge Companion to Husserl*, Cambridge: Cambridge University Press.
- Smith, Barry and Varzi, Achille C. 1997 “Fiat and Bona Fide Boundaries: Towards an Ontology of Spatially Extended Objects”, *COSIT '97: Conference on Spatial Information Theory* (Springer Lecture Notes), Berlin/Heidelberg/New York: Springer Verlag.
- Steele, David Ramsay 1992 *From Marx to Mises. Post-Capitalist Society and the Challenge of Economic Calculation*, La Salle: Open Court.
- Uexküll, Jakob von 1928 *Theoretische Biologie*, Berlin: J. Springer.
- Uexküll, Jakob von 1957 “A Stroll Through the World of Animals and Men”, in C. H. Schiller (ed.), *Instinctive Behaviour*, London: Methuen.
- Varzi, Achille C. 1994 “On the Boundary between Mereology and Topology”, in R. Casati, B. Smith and G. White (eds.), *Philosophy and the Cognitive Sciences*, Vienna: Hölder-Pichler-Tempsky, 423-442.
- Zelaniec, Wojciech 1992 “Fathers, Kings, and Promises: Husserl and Reinach on the A Priori”, *Husserl Studies*, 9, 147-177.
- Zelaniec, Wojciech 1996 *The Recalcitrant Synthetic A Priori*, Lublin: Artom.
- Zemach, E. M. 1970 “Four Ontologies”, *Journal of Philosophy*, 76, 213-247.

Endnotes

1. Work on this paper was partly supported by a Research Grant from the National Center for Geographic Information and Analysis (Project Varenus, Grant Number SBR 96-00465). [It has been published in French as “[Les objets sociaux](#),” *Philosophiques*, 26/2 (1999), 315–347; portions of this paper were published in a condensed version as “[Objects and Their Environments: From Aristotle to Ecological Psychology](#)”, in Andrew Frank, Jonathan Raper and Jean-Paul Cheylan (eds.), *The Life and Motion of Socio-Economic Units* (GISDATA 8), London: Taylor and Francis, 2001, 79–97.]
2. Gibson and Koffka were for a time colleagues at Smith, and Gibson’s thesis supervisor Herbert S. Langfeld was himself a former student of Stumpf. On the associated influences on Gibson see Reed 1989, pp. 19ff., 38, 49f. On Barker and Lewin see Schoggen 1989, pp. 300, *et passim*.
3. See Mulligan 1995, pp. 189f.
4. See Heider’s essay on “The Description of the Psychological Environment in the Work of Marcel Proust” (1959 85-107), esp. pp. 95f.
5. See Smith 1995a for an overview of Husserl’s ontology of the common-sense world and of its problems.
6. 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)

7. 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)

8. This theory of direct perception has been the target of criticisms from Fodor and Pylyshyn (1981) which have done much to ensure that Gibson's work remains unappreciated among philosophers. These criticisms pertain to the question whether Gibson's ecological approach can lead to the discovery of genuine lawful relations in the psychological sphere. They do not address aspects of Gibson's work which are of relevance to what is argued here.

9. See for example Fine 1995, Johansson 1989, Simons 1987, Smith 1996, Varzi 1994.

10. The most valuable survey of the ontology of continuants and occurrents is to be found in Ingarden 1964/65. The terminology is derived from Johnson 1921/24.

11. These are explored in Zemach 1970.

12. As Nenon (1997, p. 102) emphasizes, Husserl himself would not run these different types of examples together. For him relations like that between husband and wife or between a king and his subjects are mere 'correlative relationships' governed by analytic laws. Zelaniec (1996) shows, however, that it is a far from trivial matter to draw a line between 'analytic' and 'synthetic' examples in this sphere. From our present perspective all of the given examples form a single continuum. (See also Zelaniec 1992.)

13. Examples of this sort, treated of in Simons 1987, will here be left aside; their integrity can be assumed to rest on simple physical factors such as gluing and nailing, and such problems as they raise (pertaining above all to the question of the principle of their identity through time) are not here at issue.

14. See Gilbert 1989, 1993 (especially pp. 122f. of the latter, on 'plural subjects').

15. For a discussion of Marty's views on collectives and other varieties of non-real objects, see Smith 1994, pp. 96ff.

16. A view along these lines is advanced in Searle 1995 (where the upper level of 'institutional facts' is seen as being constructed and sustained by beliefs, habits and customs on the part of those involved). Nenon (1997, p. 102) seems to impute a similar two-level view to Husserl, but he here draws inappropriate implications from Husserl's usage of the term 'abstract' as synonymous with 'dependent' in the third Logical Investigation, a usage which has nothing to do with standard interpretations of abstracta as entities belonging to special, higher-level realms divorced from the realm of concrete, changing, corporeal substances.

17. Reinach (1913) presents an 'ontology of social relations' on this basis which makes room in ingenious fashion not only for social-institutional fiats but also for features of social reality which are prior to all enactments and to all the positings of the positive law.

18. See Fritz Heider, “Thing and Medium” in Heider 1959, 1-35. See also Schoggen 1989.
19. Barker 1968, pp. 154f.
20. Barker 1968, pp. 32.
21. Barker 1968, pp. 30f.
22. The global system of pathways across the hillside arises as an *unintended consequence* of many actions carried out on a local scale. Friedrich von Hayek (1979) demonstrates the degree to which a range of cultural phenomena, including law, language, religion and the market, likewise owe their origin to an unplanned cumulation of the effects of individual decisions and actions over time. The ‘Austrian school of economics, of which Hayek, along with Carl Menger and Ludwig von Mises, is a leading member, seeks quite generally to understand large-scale social phenomena in terms of their small-scale constituent parts – or in other words in terms of the behaviour settings in which individual participants are involved. On the manifold interconnections between the ideas of the Austrian philosophers and those of the Austrian economists, see Grassl and Smith (eds.) 1986. The ideas here expounded, on behaviour settings, and on the ‘tuning’ of organism to environment, are related also to the economists’ notion of a ‘market niche’: see Smith 1986.
23. Barker 1968, pp. 11f., 16; 1978, p. 34.
24. Gibson 1986, p. 101.
25. Gibson 1986, p. 129.
26. Scheler, too, saw the need to come to terms with the fact that we are in a certain sense tuned to our environment, so that we can pick up information from our surroundings even in the absence of conscious, reflective calculation:
- There belongs to the momentary “milieu” not only the series of objects that I perceive ... while I am walking in the street or sitting in my room, but also everything with whose *existence or non-existence*, with whose being so or other than so, I practically “*reckon*”, e.g. the cars and people that I avoid (when I am lost in thought or when my gaze is fix on someone far away). A sailor, for example, is able to “reckon” with an oncoming storm from changes in his milieu without being able to say which *specific* change (e.g., in the formation of the clouds, in the temperature, etc.) serves as a sign. (Scheler 1954, p. 159, Eng. trans. p. 140)
27. In Book II of his *Ideas* Husserl utilizes ideas very much like these in order to provide an account of the special environments of, for example, historians, natural scientists, and mathematicians. (See Smith 1995a.)
28. See Steele 1992.
29. Ehrenfels 1890, English translation p. 110.
30. See Smith 1995, Smith and Varzi 1997.
31. This is not to say that phenomenological inquiries should be neglected; rather, these too need to be pursued in a way that is consistent with the natural sciences: see Petitot, *et al.* (in press).