



Four Ontologies

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FOUR ONTOLOGIES

IN this paper I wish to describe four ontologies, all of which are derivable from one basic principle. I shall suggest that ordinarily we employ, in somewhat mixed fashion, terms that designate entities recognized by each of these ontologies. I shall further suggest that one must therefore realize that the ontology presupposed, or implied, by one group of ordinarily used terms may be very different from the ontology presupposed, or implied, by another group of such terms. Yet my thesis is not essentially concerned with ordinary-language analysis. My main claim is that each one of these ontologies is complete and self-sufficient and that it *need* not be used in conjunction with any other. Our reason for ordinarily using all of these ontologies (though some of them are used *much* more frequently than others) is not that any of them is, in itself, deficient or faulty. The reasons are pragmatic and historical, and have to do with naturalness, ease and simplicity of expression rather than with essential adequacy.

All the ontologies here to be considered can be called, roughly, "nominalistic," since none of them is capable of handling such non-spatiotemporal entities as classes, numbers, universals, or gods. If this is a deficiency, then these ontologies are indeed all of them deficient. I believe, however, although I shall not go into this matter in the present paper, that no ontology *should* be able to accommodate such Platonic entities. At any rate, in what follows I shall assume that all the entities an ontology should ever accommodate are spatiotemporal. The point is, however, that recognizing that the domain of ontology should be the spatiotemporal world, is *not* tantamount to having an ontology. A spatiotemporal world can be "cut" into separate entities in several *radically* different ways.

The four ontologies I shall discuss result from the possibility of referring to spatiotemporal entities qua spatiotemporal, that is, as

extended in time and in space. An ontology may construe its entities as either *bound* or *continuous* in time and in space. An entity that is continuous in a certain dimension is an entity that is not considered to have *parts* in the dimension in which it is continuous. It can be said to *change* or *not to change* in this dimension, but what is to be found further along in this dimension is the *whole* entity *as changed* (or unchanged) and not a certain part thereof. The opposite is true of an entity's being bound. If an entity is bound in a certain dimension, then the various locations along this dimension contain its parts, not the whole entity *again*. It is possible that two locations on this (bound) dimension will contain, each of them, the *whole* entity only if there also is between these two locations a distance in a dimension in which the said entity is continuous. Thus, if a certain entity which is an *F* is found at a certain spatiotemporal location *i* and if another spatiotemporal location *j* is also *F*-ly filled, then one may say that it is the same entity, *x*, which inhabits, all of it, both *i* and *j* iff there is between *i* and *j* a distance in a dimension in which *F*s are not bound. If, however, there is no distance between *i* and *j* in a dimension in which *F*s are continuous, then we must say *either* that *i* and *j* contain *different parts* of the same *F* *or else* (e.g., in case the concept of being an *F* precludes having two such parts as are contained in *i* and in *j*) contain *two different F*s.

In order to define 'continuous with respect to a certain dimension', let us refer to the entire spatiotemporal area occupied by a given entity *a* ("throughout its life," so to speak) as *A*. Now,

- I. If *a* is continuous with respect to a certain dimension *x*, then there are several cross sections of *A*, perpendicular to *x*, such that each of them contains *a* as a whole.

Let us refer to each such section of *A* as *B*. We may now proceed to define 'bound with respect to a certain dimension' as follows:

- II. If *a* is bound with respect to a certain dimension *y*, then there are several cross sections of *B* perpendicular to *y* such that each of them contains a part of *a*.

If an entity has no dimension with respect to which it is continuous, then $A=B$. This entity can be given the following simple definition (which is stronger than what can be derived from I and II only):

- III. If *a* is bound with respect to all its dimensions, then each section of *A* contains a part of *a*.

One would probably like to have the reverse of this simple definition as a definition of an entity continuous with respect to all its dimensions, i.e., something like

IV'. If a is continuous with respect to all its dimensions, then each section of A contains a as a whole.

However, as we would see in section IV, this definition is too narrow. Therefore we shall go back to a strict conjunction of I and II to get

IV. If a is continuous with respect to all its dimensions, then there are several cross sections of A perpendicular to some of a 's dimensions (x, y, \dots) such that there are several cross sections of *those* cross sections, perpendicular to x 's *other* dimensions (z, u, \dots) such that each of them contains a as a whole.

An ontology carves its entities as either bound or continuous in time and space. Hence, four kinds of ontology: an ontology whose entities are bound in space and in time, an ontology whose entities are bound in space and continuous in time, an ontology whose entities are bound in time and continuous in space, and an ontology whose entities are continuous in space and in time.

I

Entities bound both in space and in time can be called *events* or *non-continuants* (NCs). They are entities defined by their spatio-temporal extension. The entity whose boundaries are given in all four dimensions is an event. An event is an entity that exists, in its entirety, in the area defined by its spatiotemporal boundaries, and each part of this area contains a *part* of the whole event. There are obviously indefinitely many ways to carve the world into events, some of which are useful and interesting (e.g., for the physicist) and some of which—the vast majority—seem to us to create hodge-podge collections of no interest whatsoever. Any filled chunk of space-time is an event. Since the term 'continuous' has a special meaning in this paper I shall use the term 'contiguous' to stand for what 'continuous' normally means, i.e., being uninterrupted and unbroken. Events, then, although absolutely noncontinuous, can have either contiguous or noncontiguous parts. An event does not endure—it cannot be (all of it) either at many places or at many times.

When philosophers and physicists talk about spatiotemporal worms, about point-events, or about world-lines, when they describe material things as "lazy processes" and refer to spatial and temporal slices of entities, they are using the language of this first ontology. Their substances, i.e., the entities out of which they say the world is composed, are *events* (NCs). Events are the *only* substances of this

ontology. Only they can have genuine proper names and be the subjects of predication. A description of the world in the language of the first ontology is a description of events, their properties and relations.

The language of this ontology is relatively new. Although I am not sure about it I think it came into existence only with Minkowski and his space-time diagrams. There is no essential connection, however, between the ontology of events and Relativity Theory. Newton could have used it as well as Quine, Goodman, Williams, or Taylor. The concept of a thing, or a substance, as any chunk or chunks bound in space and time (and which, therefore, has spatiotemporal parts and can be sliced both spacewise and timewise) can be accommodated by various systems of thought. I have nothing to add to the various proofs that this ontology is adequate for describing the world, formulating laws of nature, etc., and since most contemporary philosophers do not doubt that the language of events is at least as adequate as any other language that might be used to categorize reality, I shall conclude that the possibility of the first ontology has already been granted.

II

The second ontology is the one we use most and that comes almost naturally to us. If it were not for the first ontology, which lately becomes more and more entrenched in our language, we would not have felt at all that this second ontology *is* just one particular ontology, based upon a certain way of handling the spatiotemporality of objects. The entities it recognizes are continuous in time and bound in space. We may call them *continuants in time* (CTs) or, simply, *things*. We normally regard almost every object we come across as a CT: this chair, my pencil, my friend Richard Roe, the tree around the corner, the fly that crawls on the page. This is not to say that all these cannot be re-categorized and regarded as events. They certainly can be. 'This chair', e.g., can be used to name an NC, and some philosophers do use it in this way: they say that they see a temporal slice of the chair and sit on another temporal slice of it. But this is not the most common way of using 'this chair' or 'Fido'. Normally we *do not* regard chairs and dogs as NCs. We consider them to be not events but a very different kind of entity, and the names we give them, in our language, obey a grammar which is fundamentally dissimilar to the grammar of names of events.

A thing, I said, is bound in space. My desk stretches from the window to the door. It has spatial parts, and can be sliced (in space) in two. With respect to time, however, a thing is a continuant. When

I look at my desk tomorrow, I will not say that I see a new part of the desk—a new temporal segment of it. No, what I would say (talking the language of the second ontology) would be that I now see the desk *again*. Note: what I see (according to this ontology) is not a *part* or a *slice* of the desk, but the *whole* desk. I saw the desk yesterday, and here it is, all over again, today. To say (in this language) that, strictly speaking, what I have today is only part of the desk, would be ridiculous and downright misleading; that would mean that I have lost part of the desk—its legs, maybe, or its top—so that now I do not have a complete desk, only a part of one. The concepts *chair, house, my friend Roe*, etc., which we normally use, are *not* concepts of events (although it has been granted that they could be *translated* into the event language). When you introduce me to Richard Roe, you say, “Please meet my friend Mr. Roe.” and both of us will tend to say that what we see is Mr. Roe *in his entirety*, and not a slice or a part of him.

The concept of a CT is the concept of something that is *defined* (bound) *with respect to* its location in space, but is *not defined with respect to* its location in time. The definition of a pin specifies that whatever is a pin must have a certain characteristic *spatial* shape, but it says nothing about the kind of career a pin should have—it can be momentary or eternal. We can regard two (identically) pin-shaped entities as one and the same *only* if there is a temporal distance between their respective locations. But if they co-exist, and there is no temporal distance between them, we say that these are two different pins. Difference in spatial location has, thus, an individuating role with respect to CTs, which difference in temporal location completely lacks. The fact that *a* and *b* are man-shaped and are simultaneously at different places is enough to decide that *a* and *b* are different men; but the fact that *a* and *b* are man-shaped and are at the same place at different times counts neither for nor against their being different men.

It will be superfluous, if not ridiculous, for me to try to “defend” here the ontology of things. Ordinary language and the languages of most sciences provide extant proof of its effectiveness and self-sufficiency. Moreover, it has been shown by several philosophers (most clearly, probably, by Wilfrid Sellars¹) that the ontology and the language of events can be defined by using the language of things only: in other words, that every fact that can be expressed by using

¹ Wilfrid Sellars, “Time and the World Order,” in Herbert Feigl and Grover Maxwell, eds., “*Minnesota Studies in the Philosophy of Science*, vol. III (Minneapolis: University of Minnesota Press, 1962), pp. 527–618.

names of NCs can in principle be expressed by using names of CTs only.

III

The third ontology is used very infrequently by us, and when it is used its terms are often confused with those of the first ontology. However, terms like 'this noise', 'the Industrial Revolution', 'the heat', 'the rain', 'the Roosevelt era', 'the Great Famine', etc. are not generally used as names of events (i.e., of NCs). Also, some of the more frequent uses of terms like 'the present inflation', 'this tide', or 'World War II' show that these terms sometimes serve as names of substances of the third variety, i.e., entities that are bound in time but continuous in space. We may artificially expropriate the term 'process' to designate those substances, the *continuants in space* (CSs).

The logic of processes constitutes a highly interesting mirror image of the logic of things. A partial description of this logic was given by Bernard Mayo,² who tried to show that what he calls "events" (i.e., in the terminology of the present essay, processes, or CSs) are ontologically the exact reverse, with respect to time and space, of material objects. However, Mayo's defense of the thesis of parallelism between space and time is, I think, nonsystematic, and it cannot get off the ground at all without making several para-mechanical hypotheses which are far from obvious and which, in the following discussion, I shall try to do without. What I try to do in the present section is *not* to prove the parallelism thesis, i.e., that whatever can be said about space can be said about time and vice versa. (It seems to me that, in this naive form, the thesis is so ambiguous as to be neither true nor false; it has no precise meaning at all.) I shall, rather, try to show that whatever *one* ontology can do with CTs as basic substances, *another* ontology can do with CSs, and do it in the same way. Hence these two ontologies will be formally (qua calculi) indistinguishable from each other.

Let us, then, take Fido as our example of a thing (CT) and the French Revolution as an example of a process (CS), and note the following two points of comparison between them:

(a) Fido cannot be at the same time in many places, but he can be in the same place at many times. In contrast, the revolution can be at the same time in many places, but it cannot be in the same place at many times.

This point, I think, is fairly clear. We say that the revolution, or

² Bernard Mayo, "Objects, Events and Complementarity," *Philosophical Review*, LXX, 3 (July 1961): 340-361.

the Great Famine, or this rain, or that noise, are in place x as much as they are in place y . Our language seems to establish here a logical pattern that is radically different from the pattern usually followed when it treats things. If we are told that Jack and John, who do not live in the same place, heard a certain explosion (or live under Nazi occupation) we would not normally say that Jack heard part of the explosion and John heard another (or that Jack lived under one part of the Nazi occupation while John lived under another part of it). To say that would mean something entirely different, e.g., that John heard the beginning of the noise whereas Jack heard only the end (and similarly with life under the occupation, its beginning and its end). Thus while Fido must be at any one time at one place only, a typical CS like the French Revolution can be, as a whole, at many places at the same time. On the other hand Fido can be, as a whole, at many times. He can be in London in 1969 and in New York the year after. He can even return to a place that he inhabited before and thus be, as a whole, at two times in the same place. All this is impossible for a CS. If the revolution is in Lyon between 1798 and 1812, then we would say that in 1798 Lyon witnessed the beginning of the revolution whereas in 1812 it experienced its end. Now if in 1848 there is another beginning of a revolution in Lyon, we would not normally say that it was the same French Revolution which returned to Lyon, but rather that another, new revolution is now ravishing the city. The individuating role that space plays with regard to CTs is played by time with regard to CSs.

(b) Fido need not have all his parts in every place he occupies, but must have all his parts at any time he occupies. In contrast, the revolution must have all its parts in every place it occupies, but need not have all its parts at any time it occupies.

This too, I think, is intuitively clear. We would not say that Fido existed at time t if it were not the case that all his parts (head, legs, heart, lungs, etc.) existed at time t , occupying, each of them, a different place in space. In contrast, the French revolution can very well exist at time t although at this time some of its parts (e.g., its last degeneration into an imperialistic dictatorship) does not exist at any place yet. Although it is possible that at a certain time the revolution shall have its different stages present in different cities, these segments of the revolution *need* not (although they may) be all present at different locations at any given time. Coming now to the second half of this comparison, it is true that Fido *may* behave in such a way that a certain place that was previously occupied by his left hind leg will be later occupied by his right front leg, and

then by his head, etc., such that this place will eventually have contained all of Fido's parts. But this kind of behavior is surely not necessary for Fido in order for him to be what he is and does not normally occur with respect to most of the places that contain one or other of Fido's parts. The revolution, on the other hand, must have each of its parts present at every place it occupies, or else we would not say that this particular revolution was really present at that place. If a city *a* underwent only two of the five stages that characterized this particular revolutionary process (or this particular plague, or this explosion, etc.) we would normally say that *a* had undergone only part of the revolution, not the revolution (the explosion, inflation, etc.) as a whole.

The comparison between a CS and a CT will probably be clearer if we unpack the above points (a) and (b) into eight different propositions, arranged in two groups. Note that the negation of each of the propositions A_1 – A_4 is true of any CS, whereas the negation of each of the propositions B_1 – B_4 is true of any CT.

- A. 1. At one time a thing *cannot* be as a whole in different places.
- 2. At different times, a thing *can* be as a whole in one place.
- 3. At any time, a thing *must* have *all* its parts in different places.
- 4. At all times, a thing *need not* have *all* its parts in one place.
- B. 1. In one place, a process *cannot* be as a whole in different times.
- 2. In different places, a process *can* be as a whole in one time.
- 3. In any place, a process *must* have *all* its parts at different times.
- 4. In all places, a process *need not* have *all* its parts at one time.

The structure of propositions A_1 – A_4 is identical with that of propositions B_1 – B_4 . The only way in which they differ is that wherever we have 'time' in A_1 – A_4 there is 'place' in B_1 – B_4 , and vice versa. This, finally, leads to a general definition of an entity bound with respect to one dimension and continuous with respect to another:

- V. With respect to any entity *a* and any dimensions or groups of dimensions *x* and *y*, *a* is continuous with respect to *x* and bound with respect to *y* iff:
 - 1. At one *x*-location, *a* cannot be in many *y*-locations.
 - 2. At many *x*-locations, *a* can be in one *y*-location.
 - 3. At any *x*-location, *a* must have all its parts in many *y*-locations.
 - 4. At no *x*-location *a* must have all its parts in one *y*-location.

(where 'location' is to be understood as 'location occupied by *a*').
Symbolically, these conditions can be presented as follows:

- 1. $\square \sim (a, x, y_1 \dots y_n)$
- 2. $\sim \square \sim (a, x_1 \dots x_n, y)$

3. $\square (Pa_1 \dots Pa_n, x, y_1 \dots y_n)$
 4. $\sim \square (Pa_1 \dots Pa_n, x_1 \dots x_n, y)$

Unlike Cassirer, Whitehead, Bergson, or Schopenhauer, I do not claim that Process Ontology is *the* correct ontology. But I do claim that, if the world can be seen as the totality of things, it can also be seen as the totality of processes. A society that prefers the language of CSs will probably slice the world into chunks that differ greatly from the entities we now discern. However, to prove the self-sufficiency of the CS ontology there is no need actually to construct a language of processes. All we have to do is to realize that processes, like things, are nothing but dynamic slices of events. The self-sufficiency of ontologies I and II logically entails the self-sufficiency of ontology III: if ontologies I and II are self-sufficient, then every sentence in a language of completely bound entities can be translated into a language of partially bound entities. This translatability is due to purely formal considerations, and has nothing to do with either space or time. It makes no difference in which dimensions the partially bound entities are bound, and there is nothing that makes entities bound in any one dimension, or group of dimensions, intrinsically more self-sufficient than entities bound in other dimensions. The point is, rather, that a complete description of an occupant of a certain spatiotemporal area *can* be given in a language whose substantives denote dynamic slices of this occupant. Just as we can say that Kant has never left Koenigsburg, so we can remark that certain processes which together can be called 'Kanting' never occurred before 1724 or after 1804; as we say that Kant lived 80 years, so we can say that the processes of Kanting occurred in an area of about four square miles, the area of Koenigsburg. If it is true that Kant was fond of his cat, Max, then it also must be true that Kanting included being-fond-of* Maxing; if Max sometimes sat on the mat, then surely at some of the places where Maxing occurred it bore the relation of sitting* to a certain matting.³

IV

Last we come to the fourth ontology. The substances recognized by this ontology are bound neither in space nor in time. They are, hence, *pure continuants* (PCs) or *types*. Types have been, for a long time, the Cinderella of ontology. They were considered to be uni-

³ Terms from thing-languages are not automatically transferable into process- or event-languages. 'Being fond of' or 'sitting on' are relations that take place between two *things*, and one cannot expect them to obtain in an ontology of events or processes. Rather, the corresponding process-terms 'being-fond-of*' and 'sitting on*' may be learned, e.g., ostensively, at occasions similar to those at which 'being fond of' and 'sitting on' are learned in our society.

versals, abstract entities, forms, classes, or whatnot. For example, expressions like 'The common elm is a green tree' or '(The) Dog is man's best friend' were construed as containing not names of the entities The Common Elm, (The) Dog, Man, etc., but names of classes. This interpretation, I believe, is counterintuitive. The Common Elm, we said, is a green tree, and Man has a friend, Dog. But the class of elms neither is a tree nor is green, and the class of men cannot befriend the class of dogs. A class cannot be persistent or evasive, and yet we do say that The Enemy is both. The parrot can talk and the letter V has the shape of a wedge. But do classes talk, or have they shapes and forms?

The Frege-Russell approach to types is even less sympathetic than the previous one. On this view, expressions containing type names are completely analyzable into expressions that include bound variables and general terms only. Given this analysis, 'The African Lion is ferocious', e.g., is not a subject-predicate sentence of the form, 'S is P'. Rather, this sentence is an "unperspicuous" way of expressing the quantified statement, 'Whatever is an African Lion is Ferocious'. [In the jargon of *Principia*, $(x)(Ax \supset Fx)$.] Thus, quite paradoxically, the institutional 'the' (the expression is Langford's ⁴) was seen as a universal quantifier of sorts. The proponents of this view have not felt that what they offered under the innocuous title of 'analysis' was as a matter of fact a suggestion for linguistic revision, an attempt to force language into the straight-jacket of one and only one ontology. Since Frege, Russell, and their followers believed it impossible to construe this use of 'Woman', 'The Taxpayer', or 'The African Lion' as naming genuine individuals, they concluded that the singular form of predication (. . . is . . .) used with these terms must be a linguistic aberration!

There are many other difficulties with this reduction. (The) Chrysler is a good car, although not all Chryslers are good. The letter Q occurs twenty times in this page, but it is not true that all the tokens of Q occur twenty times on this page. *War and Peace* was concluded by Tolstoy in 1869, but it is not true that all the tokens of *War and Peace* were concluded by Tolstoy in 1869. The African Lion weighs no more than 500 pounds, but it is not true that all African lions (put together) weigh less than 500 pounds. The Enemy took hill 69, but it is not the case that, for every x , if x is an enemy, x took hill 69 (nor, for that matter, is it true that *part* of the enemy took hill 69). I shall not go into any of these examples

⁴ C. H. Langford, "The Institutional Use of *The*," *Philosophy and Phenomenological Research*, x, 1 (September 1949): 115-120.

in detail. I am sure that, with enough logical ingenuity, we could analyze away all these problematic expressions (although each of them would require a different kind of analysis), so that in the final re-writing we named only entities of the kind favored by the reductionist—most probably, either things or events. The question is, however, why should we do so? What's more, even if there is a good reason for the reduction, the reductionist should realize that what he is doing is not just clarifying the sense of an obscure expression; rather he is stamping out an ontology, a whole way of carving out reality, which can, on its own, classify, categorize, and account for the world we live in. True, The Taxpayer, The Lion and their ilk are not *things*; i.e., they are not CTs. Substances or objects, however, they are—since types, i.e., PCs, are objects. I contend, then, that types like The Letter A, or The American Woman, are material objects (*not* abstract entities) recurrent both in space and in time.⁵ They are every bit as material, or “primary,” entities as CTs are.

I have tried to argue that in everyday language we often use terms that name PCs and exhibit the peculiar kind of logic that is typical of these entities. My sole example has hitherto been the use of the institutional ‘the’, either explicitly (as in ‘The Union Jack’) or implicitly (as in ‘Man is mortal’). But this is by no means the only example of everyday use of type names. The most common example

⁵ The most detailed and meticulous examination of the logic of types I know of is to be found in John B. Bacon's unpublished dissertation (Yale University, 1965) *Being and Existence*. Bacon also investigates the view that types are genuine singular entities. However, after a long examination he finds the idea untenable, and reaches the conclusion that “Institutional phrases *cannot* be names; types *cannot* be objects” (p. 240). His main argument is the antinomy that, if Man is an object, “you would be I, since we both embody Man. In fact, each thing would be everything else, since all would betoken the Thing. In particular, X is \bar{X} ” (p. 239). This argument, however, is based upon a category mistake. ‘Zemach’ and ‘Bacon’ are names of *things*, and “Zemach is Bacon” is a *false* statement in the language of the ontology II. The closest one can get to this, in the language of types, is “Man is here, and Man is there.” Now it is true that Man is there blond (in the language of CTs, Bacon is blond) and here black (again, in the language of things, Zemach is black). But the fact that Man is blond here and is not blond there is no more contradictory, or puzzling, than the fact that Bacon is blond now, but may not be blond ten years from now. “Bacon is blond and is identical with something not blond” is puzzling only if one fails to recognize the language of things here used and misconstrues it as a statement about events. On this (mis-) interpretation, the statement made would be that X (Bacon's blond stage) is identical with \bar{X} (Bacon's nonblond stage), which is a flagrant contradiction. Bacon's mistake is, then, his failing to realize that the language of types is an *alternative* to, rather than an *extension* of, the language of things. The incongruities that can be discovered between the two languages do not discredit one or the other. They only demonstrate that terms of two different ontologies cannot always be simply juxtaposed without either of them being translated or reinterpreted in terms of the other ontology.

of such use is the group of terms known as *mass nouns*, which, I contend, behave like names of PCs and should be regarded as such.⁶

Historically, masses have fared much better than (straightforward) types. Although the institutional 'the' has almost never gained recognition as a genuine singular-term functor, mass nouns ('water', 'sand', 'food', 'leather', 'grass', etc.) have had several advocates who refused to dismiss them as freak linguistic phenomena, as degenerate plural forms, or as class-names, recognizing their status as genuine singular terms. W. V. Quine, e.g., has tried several times⁷ to interpret mass nouns as full-fledged names of individuals. His attempt, however, failed (one of the strange results he gets is that Triangular may be, e.g., square), and the reason for this is that he misidentified the *kind* of object named by a mass noun. For Quine, mass nouns name scattered individuals; 'water' names the aqueous part of the universe; 'red' (or 'red-stuff') names the red-looking part of it. The main difference between water and mama is that mama is spatially contiguous while water is spatially scattered (*Word and Object*, p. 51). Now it is in keeping with Quine's general approach to view every object as a four-dimensional section of the world (i.e., in my terminology, as an event). But this approach cannot do justice to masses (i.e., to types). The distinctive feature of continuants is that, with respect to the dimension in which they are continuous (and in the case of Pure Continuants with respect of all dimensions) they are considered to be present in their entirety at all the places they occupy in this dimension.⁸ Herein lies a major difference between *the river Cayster* and *Water*, between *Mama* and *Red*. It is not only the case that Cayster and Mama are not scattered whereas Water and Red are. I agree with Quine that this is an inconsequential point. The crucial logical difference, however, is that, wherever water is present, *water* (and not a certain water-part) is present, and that whatever is red is *red* (and not a segment of red). This is not the case with the river Cayster, Mama, Fido, or London. Although we may say, when in Chelsea, "This is London," and then say again, "This is London," when we point to Piccadilly, we are ready to admit that what we mean is that London has many parts, so that

⁶ Again one may find in Bacon, *op. cit.*, a most helpful discussion of the relation between masses and types. Bacon's conclusion is that masses can, indeed, be regarded as types.

⁷ Most lately in *Word and Object* (Cambridge, Mass.: MIT press, 1960), pp. 90-110. Earlier in "Speaking of Objects," in J. A. Fodor and J. J. Katz, eds., *The Structure of Language* (Englewood Cliffs, N. J.: Prentice-Hall, 1964), pp. 446-459, and in his own *From a Logical Point of View* (New York: Harper & Row, 1963), pp. 65-79.

⁸ This formulation is not precise. It will be corrected and amplified later on.

we have first pointed to one part of London and then pointed to another part of the same city. This goes for Fido (pointing to his ears and then to his tail saying, on both occasions, "This is Fido"), for Mama, for Cayster, and for every other name of a CT or an NC. On the other hand, if the director of the Bronx Zoo says "I will now show you the polar bear, the african lion, the gorilla, . . .," he would not be ready to admit that what he shows us is not really the polar bear but only a part thereof. If Jones tells me that he heard Beethoven's *Missa Solemnis* last night, he would probably be very insulted if I responded, "You mean, of course, that you heard a *part* of the *Missa*—you could not have heard it all!" He would rightly protest that he did hear the whole *Missa* indeed (i.e., he did not leave in the middle). If I insisted that in order to hear the whole *Missa* one has to hear *all* its occurrences, including its past and future ones, he would probably believe that I had gone completely out of my mind. Now if 'red' is learned as a mass noun (i.e., 'red stuff') it also behaves in a similar manner, and so, of course, do 'water', 'wheat', 'paper', and all other mass nouns. If I want water and you bring me a cupful I cannot object saying, "You brought me only part of water, not water itself," but I am likely to make this objection if I want Fido and you bring me his ear. When the geologist says he has found gold in Alaska, we would not say that this is impossible since gold is found in California, too. *Gold* (not a part thereof) is found in California *and* in Alaska, just as the Fifth Symphony (not a part thereof) can be heard in California and in Alaska, too. Mass nouns in our language thus follow the grammar of types. "Milk is healthy" is, then, a genuine subject-predicate sentence, and so is "Man is mortal"; and what they refer to are Milk and Man, respectively.

One of the most important works on the issue of mass nouns is to be found in Strawson's *Individuals*,⁹ where it is argued that an ontology of masses (PCs) that does not recognize the concept of a *thing*, is perfectly possible and in fact is absolutely sufficient for all our needs. Strawson argues that

All that is required is the admission that the concept of the naming-game is coherent, the admission that the ability to make identifying references to such things as balls and ducks includes the ability to recognize the corresponding features, whereas it is logically possible that one should recognize the features without possessing the conceptual resources for identifying reference to the corresponding particulars.

⁹ P. F. Strawson, *Individuals* (London: Methuen, 1959), pp. 202–213.

I believe this line of reasoning is absolutely sound. Strawson, however, insists on keeping the honorific term 'individuals' for those entities which fall under genuine sortal terms—i.e., for dogs, cats, houses, and men—and consistently refuses to acknowledge anything else, e.g., the entities referred to by mass nouns, as individuals. Mass nouns and other type-nouns are called by him 'feature universals' or 'feature concepts', and he evades the question of what the entities are which the "feature concepts" designate, by using only the formal mode of speech when discussing this level of language and reverting to the material mode of speech only when he reaches the level where the "conceptual innovation" of the introduction of *things* is finally made. One may answer that what type-names (Strawson's "feature-placing concepts") denote is simply *things*—cats, dogs, houses, etc. That is, that in using either the feature-placing statement 'cat here' or the sortal-using expression, 'this is a cat', we refer to this cat. This answer would be true, but it is not the whole truth. It elevates *one* of the ontologies to the pedestal of *the* ontology, in enjoining that whenever one wishes to discuss not modes of referring but the entities referred to themselves, one must use the terms of the one chosen ontology. Such a decision *can* be made, but it is clearly arbitrary. We could similarly say that by both 'cat here' and 'this is a cat' we refer to The Cat (the type entity). Strawson, then, has made a discovery but has explicitly turned his back on it. Instead of recognizing that, since we have several co-equal ontological languages, there must be a plurality of kinds of individuals, he cherished one kind (CTs), turning a deaf ear to the claims that he himself had so brilliantly formulated for some of their conceptual rivals (the PCs).

Strawson's discussion is also helpful in answering one of the objections that may be made against the thesis of the self-sufficiency of the language of types. The objection is that, although type names can be used with uniform masses such as water or wood, they cannot do the work of sortals like 'cat' or 'apple'. "For particulars such as heaps of snow could be physically lumped together to yield one particular mass of snow; but we could not lump particular cats together to yield one enormous cat" (*Individuals*, p. 205). But, as Strawson points out, as long as we use the language of types *only*, i.e., as long as we say "Snow—more snow" and "Cat—more cat," the analogy is preserved. The pile of snow is "much snow," the pile of cats, "much cat."

This point, however, needs some further elaboration. The difference between types and masses seems to be that, with blood, cotton, red-stuff, etc., we can point to *every* place the said stuff occupies and

truthfully say "This is blood," "This is cotton," etc., *without* having to qualify these statements by saying, "Strictly speaking, this is only a *part* of blood (cotton, etc.)" But type names like 'The Cat' (in Strawson's terminology, 'cat' as a feature-placing universal) behave somewhat differently. We can say "This is (The) Cat" only when we point to the whole area occupied by what is called in the language of ontology II a single cat. One cannot point to the head, saying "Cat" and then to the tail, saying "More cat." This might lead one to believe that type names are not independent of thing names. But this would be incorrect. In the case of 'dirt' 'blood', 'water', etc. we also put limitations on the size of the area that can qualify as containing the entity in question. A molecule of H₂O is not water, and a white corpuscle is not blood. That is, even the denotata of classical mass names are not present (as a whole) in *every* spatial location they occupy, if we put no restrictions on the term '*every* spatial location'. But if we do introduce those restrictions, the difference between 'water' and 'The Cat' vanishes. One can now say that the entities denoted by these terms are present, as a whole, in every place they occupy—where the term 'every place' carries the rider that this place must be of a certain minimal size, *determined by the type-name in question*. Thus the place where the gestalt *cat* may be found must be bigger than the place where the (simpler) property *barley* can be instantiated, which in turn is still bigger than the place where *water* can be. If only a cat's tail is here (The) Cat is not here, and if we ground up a heap of cats the resultant mess would not be the reference of the type-name '(The) Cat'. But then, if we took a heap of barley and ground it, we would not get anything that would be called 'barley' (it would be flour).

The above liberal interpretation of the demand that a PC be wholly present at all the places it occupies has one immediate result. According to it, all proper names, which were hitherto considered to be names of CTs, can qualify as names of PCs too. Lyndon Baines Johnson could be a type, since, if we demand only that Lyndon Baines Johnson be wholly present at every place large enough to allow the instantiation of the complex property (or the disjunction of properties) *Being LBJ*, then the person LBJ can also qualify as the type The LBJ. The same goes for names of larger entities, e.g., 'Jerusalem' or 'Uruguay'. The only difference that might be detected between 'LBJ' as naming a PC and 'LBJ' as naming a CT is the singularity condition which limits the employment of the second use of 'LBJ'. That is, in the notorious puzzle case (made famous by B.O.A. Williams' story of the two brothers who "became Guy

Fawkes'') of, say, LBJ disappearing and two (or more) people, who qualify equally well for being, each of them, LBJ showing up, the grammar of 'LBJ' the type-name will part ways with 'LBJ' the thing-name. The type name would apply to both LBJs; that LBJ (i.e., The LBJ) is now present at two distinct places at the same time would be completely unproblematic; conceptually, it would be similar to discovering oil, or the Bubonic Plague, in a new location. However, if 'LBJ' is used as a thing name we would not be able to use it with respect to both contenders. As Williams suggests, we would probably refuse to use it with respect to either one, and declare LBJ lost or dead.

The same solution is applicable to similar philosophical problems. Many terms are successfully used in normal circumstances without our having to specify whether we mean them as type-names or as thing-names. However, in border-line cases, or in puzzle cases specifically manufactured by philosophers, we seem confused, because the term in question now tends to behave in two different ways, depending on whether we construe it as a PC name or not. These puzzles abound especially in the philosophy of mind and in aesthetics, where the ordinary use of a term does not give us any clue as to what ontology is presupposed by the use of this term. For example, does 'thought' name a PC, a CS, or a CT? Is 'mind' a type name, a thing-name, a process-name, or an event-name? Is *War and Peace* a type or a thing, and is the *Eroica* a type or a process? Ordinary language does not give us many clues, and often the clues it does give go in different directions. The philosopher, therefore, is often trapped in bogus problems when he does not realize what the ontology presupposed in a given locution is and what the precise logical structure is of that ontology. Take, e.g., the problem of the ontological status of works of art. Many philosophers have claimed that works of art *cannot* be material things, because when we discuss the aesthetic merits or demerits of a certain poem, painting, or musical composition, we are talking about a *type*, which is realizable (at least in principle) in many tokens. Thus the said philosophers conclude that the work of art must be a universal or a group of universals. On the other hand, those who find this solution too strange to adopt have tried to claim (no less strangely) that an exact reproduction of a work of art cannot (logically) ever be made, or, alternatively, that to talk about the merits of a work of art, e.g., Beethoven's Fifth, is just to talk imperspicuously about the merits of every performance of the said work. However, all these forced ontological revisions become redundant the minute we realize that types are perfectly legitimate material objects, and that pronounce-

ments about their properties need not be construed as presupposing Platonism or else reduced to statements about things.

Of course, the philosopher may refuse to accept our untidy ordinary language, which makes constant use of four different ontologies. He may, rather, adopt an ideal language, trying to use everywhere the ontology he favors most. In principle there is nothing wrong with this strategy, as long as the philosopher who adopts it realizes that the English phrases he "analyses" into the ontological framework of his choice can also be differently construed. That is, he should remember that the resolutions he offers for such philosophical puzzles can be matched by (at least three) other solutions, which, given the whole ontology they presuppose, can handle those problems equally well.

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COMMENTS AND CRITICISM

REPLY TO D. A. MARTIN

IN Donald A. Martin's review* of my *Set Theory and Its Logic* there are some wrong or questionable statements which, because of their authoritative tone and because of the mathematical nature of their subject matter, could easily pass unquestioned. It is this danger that prompts me to break, for once, my habit of not answering reviews (a habit which is shared, I understand, by the *Journal of Philosophy*).

An example is this:

Quine adopts the axiom of replacement applied to (von Neumann) ordinals. In the presence of the axiom of choice, this is equivalent to the axiom of replacement (111).

Presumably Martin's reasoning is that the axiom of choice implies the numeration theorem, and the numeration theorem together with my axiom schema of ordinal replacement gives the general axiom schema of replacement. But what he overlooks is that you can get the numeration theorem from the axiom of choice only with the help of various comprehension premisses which are not implied by my axioms. The comprehension premisses that I invoked for my own proof of the numeration theorem (p. 226) were quite substantial.

¹⁰ I wish to thank my friend Eric Walther for the many helpful comments he made on an earlier version of this paper.

* This JOURNAL, LXVII, 4 (Feb. 26, 1970): 111-114.