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Two Concepts of Possible Worlds

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A s recently as ten years ago, it was not uncommon to hear philosophers sneer at the newfangled notion of a possible world. Today the sneers have died away, and possible worlds are recognized as a respectable philosophical tool. But what *are* they?

I

Let us approach this question by considering a famous—or notorious—passage from David Lewis's book *Counterfactuals*.

> I believe that there are possible worlds other than the one we happen to inhabit. If an argument is wanted, it is this. It is uncontroversially true that things might have been otherwise than they are. I believe, and so do you, that things could have been different in countless ways. But what does this mean? Ordinary language permits the paraphrase: there are many ways things could have been besides the way they actually are. On the face of it, this sentence is an existential quantification. It says that there exist many entities of a certain description, to wit 'ways things could have been'. I believe that things could have been different in countless ways; I believe permissible paraphrases of what I believe; taking the paraphrase at its face value, I therefore believe in the existence of entities that might be called 'ways things could have been'. I prefer to call them 'possible worlds'.[1]

The notoriety of this passage derives not so much from its content—which I think is pretty unexceptionable—as from its setting. For Lewis did not content himself with saying that there were entities properly called 'ways things could have been'; nor did he content himself with implying that 'possible world' was a heuristically useful stylistic variant on 'way things could have been'. He went on to say that what most of us would call "the universe," the mereological sum of all the furniture of earth and all the choir of heaven, is one among others of these "possible worlds" or "ways things

could have been,'' and that the others differ from it ''not in kind but only in what goes on in them'' (p. 85). And to suppose that the existence of a plurality of universes or cosmoi could be established by so casual an application of Quine's criterion of ontological commitment has been regarded by most of Lewis's readers as very exceptionable indeed.

Whether or not the existence of a plurality of universes can be so easily established, the thesis that possible worlds are universes is one of the two ''concepts of possible worlds'' that I mean to discuss. Peter Unger employs a similar concept of possible worlds.[2] The other concept I shall discuss is that employed by various philosophers who would probably regard themselves as constituting the Sensible Party: Saul Kripke, Robert Stalnaker, Robert Adams, R. M. Chisholm, John Pollock, and Alvin Plantinga.[3] These philosophers regard possible worlds as abstract objects of some sort: possible histories of *the* world, for example, or perhaps properties, propositions, or states of affairs.

I shall call these two groups of philosophers Concretists and Abstractionists, respectively.

There are only a few points of agreement between the two parties. Each would accept the words of the passage I have quoted from Lewis: except that it bears the unmistakable stamp of Lewis's prose style, it might have been written by any of the philosophers I have named. And each party would agree that ''worlds'' are objects that are in some sense ''maximal.'' For example, those Abstractionists who hold that worlds are states of affairs would identify worlds with (possible) states of affairs that are maximal with respect to the inclusion (or entailment) of other possible states of affairs: A world is a possible state of affairs W such that the conjunction of W and any state of affairs not entailed by W is *not* a possible state of affairs. And Lewis, who holds that worlds are objects spread out in space and time, identifies worlds with spatiotemporal objects that are maximal with respect to spatiotemporal interrelatedness: A world is a spatiotemporal object W such that the mereological sum of W and any object not a part of W is *not* a spatiotemporal object. Both Abstractionists and Concretists evidently regard the word 'world' as appropriate to the extension they give it. (It could be argued that each party is availing itself of one of the two main historical semantic branches of this word.[4]) This is no doubt at least partly because, whatever else a ''world'' may be, it is certainly something maximal.

Let us introduce the term 'A-world' as a term whose meaning or intension is just that description that Abstractionists give of the objects they say are ''what possible worlds are''; and let us do the same, *mutatis mutandis*, for 'C-world' and the Concretists. (Note that it does not follow that Abstractionists *mean* 'A-world' by 'world', or that Concretists *mean* 'C-world' by 'world'—any more than it follows from the fact that dualists and materialists give different descriptions of the items in the extensions of 'person' or 'sensation' that these two groups of philosophers therefore differ about the *meaning* of 'person' or 'sensation'. We shall return to this point presently.)

It will be useful to define these two terms formally. Let us begin with 'A-world'. We take as undefined 'state of affairs' (e.g., Reagan's having been elected president in 1984), 'obtains' (Mondale's having been elected in 1984 does not obtain; Reagan's having been elected in 1984 does obtain), and 'conjunction' (the conjunction of two

states of affairs is the state of affairs that consists in their both obtaining). A state of affairs x is said to *include* a state of affairs y if it is impossible ''in the broadly logical sense'' for x to obtain without y's also obtaining. Then:

x is an A-world $= df$	x is a possible state of affairs (one that possibly obtains), and the conjunction of x and any state of affairs that x does not include is not a possible state of affairs.

Now 'C-world'. We take as primitive—more for convenience than anything else, since it would be possible to make this notion more precise—the notion of two objects being spatiotemporally related. (Cf. n. 2.) An object will be said to be *spatiotemporal* if, for any x and y, if x and y are parts of that object, then x and y are spatiotemporally related. Then:

x is a C-world $= df$	x is a spatiotemporal object, and the mereological sum of x and any object that is not a part of x is not a spatiotemporal object.

We may note that although ''A-world'' is obviously a modal concept, ''C-world'' is a nonmodal concept—at least in the sense that it can be defined using only paradigmatically nonmodal concepts.

I have given the definitions in these forms in order to stress their structural similarity, a similarity that is rooted in the fact that they are both ''maximality'' definitions. But I might have given (equivalent) definientia that reproduce more closely the forms of Plantinga's and Lewis's official accounts of what a ''possible world'' is:

> x is a possible state of affairs, and, for any state of affairs, x includes either that state of affairs or its negation (the negation of a state of affairs y being the state of affairs that consists in y's not obtaining)

> Each of x's parts is spatiotemporally related to all of x's parts, and anything spatiotemporally related to any of x's parts is one of x's parts.[5]

This second way of defining 'C-world' makes it clear that there are two ways in which an object that is a sum of spatiotemporal parts could fail to be a C-world: (i) it could be spatiotemporally related to something not one of its parts, as, e.g., the Eiffel Tower is, or (ii) it could have spatiotemporally unrelated parts; this second possibility is realized by the mereological sum of the Eiffel Tower and any spatiotemporal object—assuming that there are such—that is spatiotemporally unrelated to that structure.

Perhaps this is as good a time as any at which to call attention to a puzzling—and to the Abstractionist rather annoying—asymmetry between Abstractionism and Concretism: The difference between Abstractionism and Concretism is thought to be

much clearer and more important by Abstractionists than by Concretists. Let the Concretist speak. "You Abstractionists say that a 'world' is a possible state of affairs that is maximal with respect to the inclusion of states of affairs. But *I* say that a 'state of affairs' is a set of worlds and that a state of affairs *x* 'includes' a state of affairs *y* if and only if *x* is a subset of *y*. Hence, such a 'maximal' state of affairs is just a set whose sole member is an object that is maximal with respect to spatiotemporal interrelatedness. If we ignore the distinction between a set whose sole member is an individual (non-set) and that individual (and Quine has shown us how to dispense with that distinction altogether, if we want to), then *A*-worlds *are C*-worlds and *vice versa*—even if you Abstractionists don't realize it."

The Abstractionist will find this fantastic. He will protest that he is *called* an Abstractionist because he holds that possible worlds are abstract objects; he will protest that it is incredible to suppose that any state of affairs, even a "maximal" one, is a concrete object. The Concretist will reply (at least he will if he is David Lewis) that *he* did not choose the name 'Concretism' for his position, and that, in fact, he is far from being clear about the (alleged) distinction between abstract and concrete objects. This reply raises large issues.[6] For the moment, let us simply stipulate that it is a part of the Abstractionist's position that states of affairs, whatever they may be, are neither spatiotemporal objects nor mereological sums of spatiotemporal objects nor set-theoretical constructs on mereological sums of spatiotemporal objects.

Those who use the term 'possible world', whether they are Abstractionists or Concretists, use this term in conjunction with certain other closely related terms that, taken together, may be said to constitute "possible-worlds talk." Possible-worlds talk comprises, at a minimum, besides 'possible world' itself, the terms 'actual' and 'in' (or sometimes 'at'). (Various other terms like 'accessible from' and 'closer to' may count as items in possible-worlds talk, but I shall not consider them.)

Abstractionists and Concretists, owing to the fact that they assign very different objects to the extension of 'possible world', see 'actual' and 'in' as marking out very different attributes and relations. Let us do for 'actual' and 'in' what we did for 'world'. We begin with 'actual'. Let us give to the terms '*A*-actual' and '*C*-actual' senses derived, respectively, from the Abstractionists' and the Concretists' accounts of "actuality."

For the Abstractionist (if he thinks of worlds as states of affairs), actuality is just obtaining: the actual world is the one world—the one among possible states of affairs maximal with respect to the inclusion of other states of affairs—that obtains. (Or if the Abstractionist thinks of worlds as propositions—possible propositions maximal with respect to entailment—he will say that actuality is just truth.) Let us, therefore, define '*A*-actual' to mean 'obtaining'. The Concretist, on the other hand, will say that 'actual' is an indexical term. For the Concretist, to call a world actual is to say that one is a part of it. Let us, therefore, define '*x* is *C*-actual' to mean 'I am a part of *x*' (or, in manifestos and such, 'we are parts of *x*'). In this connection, some rather delicate ontological points need to be made.

This characterization of '*C*-actual' accurately reflects David Lewis's account of actuality. But Lewis is a Quinean as regards existence: he believes that everything ex-

ists, that existence is what is expressed by the existential quantifier, that the idea of a non-existent object is self-contradictory.[7] Suppose there were a Concretist who was not a Quinean but a Meinongian (or, better, a Parsonian), that is, someone who believed that there were objects that did not exist. Such a philosopher might well want to say that actuality is just existence; that just as a nonactual horse is a nonexistent horse, a nonactual *C*-world is just a nonexistent *C*-world. I do not know of any philosopher who has explicitly endorsed this sort of Concretism in print, but I believe it to be widespread.[8]

Meinongian Concretism is an interesting view. I think that it faces no very grave problems beyond those that it inherits from Meinongianism *simpliciter* (but those are considerable). I will not, however, discuss it in this paper. I mention it only to distinguish it from Lewis's version of Concretism.[9] (I pointed out above that "*C*-world," which is based on Lewis's account of worlds, is not a modal concept. We should note that a Meinongian account of concrete worlds would have the consequence that "concrete world" *was* a modal concept, owing to the fact that Meinongians believe that some objects are impossible, and, therefore, would have to define 'concrete world' in some such way as this: 'object that is maximal with respect to spatiotemporal interrelatedness and is also possibly existent'.[10])

Abstractionists apply the words 'actual' and 'nonactual' only to certain abstract objects. That is, they do *not* apply them to concrete objects. If you asked an Abstractionist to defend this practice, he would reply along these lines: "It is reasonably clear what it means to say of a state of affairs, which is an abstract object, that it is 'actual': that it obtains. Possible states of affairs are, or represent, ways things could be and are, therefore, the sort of thing that can fail to 'come off'. In a way somewhat analogous to pictures and declarative sentences, they represent things as being arranged in a certain way, and they may represent incorrectly. If they do, we call them 'nonactual'. But what could it mean to say of a concrete object like a horse that it was 'actual'? Horses and other concrete objects do not represent things as being a certain way; they cannot 'fail to come off'—they're just *there*. If we examine the way in which, e.g., 'nonactual horse' has in fact been used, we see that this phrase almost always means, in the mouths of its habitual employers, 'nonexistent horse'. (We must, of course, except David Lewis from this generalization.) And, indeed, it is difficult to see what else it might mean. But we Abstractionists are Quineans (about existence). In this sense of 'actual', we say that there are not, and could not possibly be, nonactual horses. Like 'round square', 'nonactual horse' is a contradiction in terms. Some of us Abstractionists have described themselves as 'actualists', or have said that they were unwilling to countenance nonactual objects. This is what they meant. (Note that even David Lewis is an "actualist" in *this* sense. Note also that when Abstractionists call a state of affairs 'nonactual', they don't mean that it does not exist, only that it does not obtain. 'Nonexistent state of affairs' is as much a contradiction in terms as 'nonexistent horse'.)"

Now, as is well-known, the standard formal semantics for quantified modal logic (in conjunction with plausible assumptions about what is possible) strongly suggests a metaphysic of modality according to which there are "objects that exist only in

other possible worlds.'' Sometimes the words 'actual' and 'nonactual' have been introduced this way: an actual object is one that exists in the actual world, and a nonactual object is one that exists only in nonactual worlds.[11] But this way of introducing 'actual' (as an adjective that applies to objects in general, and not only to worlds) depends on the remaining item in the vocabulary of possible-worlds talk, 'in', to which we must turn before we can evaluate this way of introducing 'actual'.

I shall continue with the policy I have followed above and define two terms, one modeled on the Abstractionists' explanation of 'in', and the other modeled on the Concretists' explanation. Since 'A -in' and 'C -in' are awkward, I shall use 'at' for the "Abstractionist sense" and 'in' for the "Concretist sense" of 'in'.

The Abstractionist uses 'at' or 'in' in two contexts: in ascribing truth or falsity to propositions, and in ascribing existence, or the possession of a property, to objects. Our definitions are:

p is true [false] at the A -world w = df w is an A -world, and if w were A -actual, p would be true [false];

x exists [has P] at the A -world w = df w is an A -world, and if w were A - actual, x would exist [have P].[12]

No such neat definitions of 'in' are possible. The Concretist, in fact, will probably claim to be using 'in' in more or less its ordinary English sense, the sense exemplified in such adverbial phrases as 'in Australia' or 'in Chicago'. In some sentences, this sense would seem to be closely connected with parthood. If we think of Chicago as a large physical object, the mereological sum of certain people and buildings and so on, we can say that 'In Chicago there is an F ' means 'An F is a part of Chicago'. And it might seem that, by analogy, we could write the following definition:

x exists in the C - world w = df w is a C -world, and x is a part of w.

And, if p is a sentence (rather than a proposition):

p is true in the C -world w = df w is a C -world and p true if the range of the variables of p is restricted to parts of w.

But this account of truth-in-a-world runs into trouble with certain existential quantifications that would normally be taken to express necessary truths—and, therefore, presumably, to be true in all worlds—such as '$\exists x\, 2 + x = 4$' and '$\exists x\, x$ is a possible world in which all men are blind'. No part of the C -actual C -world (i.e., the universe) is such that when added to 2 it yields 4; nor is any part of the C -actual C -world a C -world having no sighted men as parts. Moreover, there are apparently necessary truths, such as '$2 + 2 = 4$', that contain no variables. These problems can be solved if we assume that although 'in w' *usually* acts so as to restrict our domain of quantification to the parts of w, it sometimes means something we might express by the words 'from the point of view afforded by w'. And these words mean something like, 'people in w who believe that . . . are right'; but, of course, *that* isn't quite right because (at least if C -worlds are as numerous and diverse as the Concretist presumably thinks) some C -worlds are unpopulated.[13] Let us take 'from the point of view afforded by w' as

requiring no further explanation. It seems reasonable to read the occurrences of 'in w' in 'in w, $\exists x\, 2 + x = 4$' and 'in w, $\exists x\, x$ is a world in which all men are blind' as meaning 'from the point of view afforded by w'. It could be argued that we are here following the natural semantic bent of the English word 'in'. If I say (perhaps making a point about the economic policies of Mongolia) ''Even in Mongolia, $2 + 2 = 4$,'' presumably I mean that the principles of arithmetic are valid from the point of view afforded by Mongolia, and not just that these principles apply to all the objects in Mongolia: I mean that people doing arithmetic in Mongolia must apply these principles to whatever they reason about arithmetically—even nonspatial objects and spatial objects outside Mongolia. (But one would not say, ''In Mongolia, some European countries are democracies,''[14] despite the fact that anyone in Mongolia who believes that some European countries are democracies is right.)

Having defined the Abstractionist 'at' and the Concretist 'in', we may now return to the proposal to introduce 'actual' (as a predicate applying to horses and such) as 'exists in (at) the actual world'. The proposal bifurcates. The Abstractionist will point out that 'x exists at the A -actual A -world' is easily seen to be equivalent to 'x exists', reducing the proposal to one already considered and rejected. The Concretist, however, will find the proposal useful and acceptable: he will point out that 'x exists in the C -actual C -world' is satisfied by many objects that are not worlds. Moreover, he will tell us, there are objects that *fail* to satisfy this open sentence. Or at least he will tell us this if he believes, as he presumably does, that there are any C -worlds besides the one that is C -actual. Furthermore, if he believes, as he presumably does, that there are C -nonacutal C -worlds that have proper parts, he will tell us that there are objects that fail to satisfy this sentence and which are not themselves C -worlds. Suppose we use 'OC - actual' as an actuality-predicate that is applicable to concrete objects in general, and not to C -worlds alone:

x is OC -actual = df   x exists in the C -actual C -world.

Inspection of the definitions of 'C -actual' and 'C -world' shows that 'x exists in the C -actual C -world' is equivalent to

Every part of x is spatiotemporally related to me.

We may note that this open sentence is equivalent to the definiens of 'C -actual' in the domain of C -worlds: a C -world is C -actual if and only if it is OC -actual. There is no point, therefore, in our retaining both terms. Let us drop the term 'OC -actual' and redefine 'C -actual':

x is C -actual = df   Every part of x is spatiotemporally related to me.

And, of course, a C -nonactual object will be one that has at least some parts that are spatiotemporally unrelated to me. Thus, if the Concretist believes, as presumably he does, that there might have been other horses than those that there are, he will believe that there are C -nonactual horses. Nevertheless, he remains a good Quinean, for he believes that all these C -nonactual horses *exist*. For a Quinean, to say, ''F s exist'' is simply to say, ''The number of F s is greater than 0''; and Concretists believe that the number of C -nonactual horses is greater than 0.

But, someone may object, suppose that there are no hairless horses, although there might have been some, and that the Concretist believes that there might have been hairless horses. In possible-worlds talk, his modal belief reads thus: hairless horses exist in some possible world. Or, in explicitly Concretist possible-worlds talk: hairless horses exist in some *C*-world. And if he accepts this, then, by the argument of the preceding paragraph, he should agree that hairless horses exist—which is false. The Concretist will reply that, *strictly speaking*, hairless horses do exist. But if we say, "Hairless horses exist" in any ordinary context, that context will enforce a tacit domain of quantification on us, the domain of *C*-actual objects, and what we say will be false. In our present extraordinary context, however—a discussion of the metaphysics of modality—this restricted domain is not forced upon us, and we may say truly that there are hairless horses, or that hairless horses exist. In this context, our quantifiers are, as it were, wide open. Restricted quantification is, of course, common in everyday life, as may be seen by reflecting on everyday utterances like 'There's no beer' or 'Everyone was at the party'.

II

If Abstractionists and Concretists are talking about such very different things when they talk about possible worlds, how can they be talking about the *same* thing? How can an Abstractionist and a Concretist who are discussing a philosophical problem couched in possible-worlds talk be doing anything but equivocating? Well, it would certainly seem that Abstractionists and Concretists *do* have fruitful discussions that are couched in possible-worlds talk. For example, in an autobiographical essay in *Alvin Plantinga*,[15] Plantinga reproduces an elegant simplification of an argument (couched in possible-worlds talk) that he had presented in *The Nature of Necessity*, a simplification communicated to him by David Lewis. But how is such communication possible? What is going on when this happens?

I think that this problem is difficult but not serious. I believe that its solution lies in recognizing that "possible world" is, in some sense, a functional concept: The concept "possible world" is the concept of a thing that plays a certain role. An analogy may give some content to this rather vague thesis. It is widely believed that many of the central concepts studied in philosophical psychology and cognitive science are functional concepts; and this (apparently) means that they are concepts of this form: 'thing that fills the following role . . .'. (For example, some say that the concept of a person is the concept of a thing that mediates in a certain way between sensation and action.) Functional concepts may be distinguished from *ontological* concepts, such as "physical body" or "immaterial substance," which are concepts of the form: 'thing of the following *kind* . . .'. It is, therefore, possible for dualists and materialists to talk to each other without equivocation about persons in the ordinary business of life; it is even possible for the two groups to dispute about what ontological concepts are coextensive with "person" (that is, to dispute about what persons *are*). In philosophical psychology, the "roles" that figure in functional concepts are generally causal roles. But disputes in the more abstract areas of philosophy, disputes about what (say)

numbers or propositions or universals are, have the same sort of "feel" as disputes in philosophical psychology about persons. This suggests that "number," "proposition," and "universal" are functional concepts, though, of course, the appropriate roles in these cases cannot be causal roles. Perhaps the concept of a proposition is the concept "bearer of truth-value," for example, and philosophers who argue about "what propositions are" are arguing about what sorts of object (sentence tokens; sentence types; purely abstract objects directly graspable by the mind . . .) fill this role. (This is all very crude, of course. A more sophisticated approach to the idea of a functional concept might be based on the notion that the functional/ontological opposition is context- or level-relative: perhaps "sentence-token" is an ontological concept relative to "proposition"; but perhaps it is a functional concept on another level of analysis, the concept of an object that plays a certain role in linguistic behavior. In the philosophy of mind, "person" may be a functional concept and "physical body" an ontological concept, while in the philosophy of physics, "physical body" may be a functional concept.)

I would suggest that the concept of a possible world is the concept of an object that can fill a certain role in philosophical discourse about modality, essence, counterfactuality, truth-theories for natural languages, and so on, and that a dispute between Plantinga and Lewis about what possible worlds are should be understood on the model of a dispute between Plantinga (a dualist) and Lewis (a materialist) about what persons are. I am not under the illusion that I have said enough to give this idea much content; to do so in any adequate way would be impossible without a fundamental discussion of roles and functional concepts. But perhaps I have said enough to make the question raised at the beginning of this section a bit less worrisome. In terms of the functional/ontological distinction introduced above, we can describe the dispute between the Abstractionists and the Concretists in this way: It is a dispute about which of two ontological concepts ("*A*-world" or "*C*-world") is coextensive with the functional concept "possible world," and about what ontological concepts are coextensive with the functional concepts "actual" and "in/at." This explains in what sense the present paper is about "two concepts of possible worlds" and explains the reservations expressed in the previous section about saying that Abstractionists *mean* '*A*-world' by 'world' and that Concretists *mean* '*C*-world' by 'world'. As to the question, 'How can they be talking about the same thing when they are talking about such different things?', the answer is that they are not talking about different things at all. Unless the Abstractionist and the Concretist are somehow *both* wrong, they are both talking about *A*-worlds or both talking about *C*-worlds; one of them, of course, is profoundly mistaken about the nature of the things he is talking about (as is either the dualist or the materialist).

III

What can be said for and against Abstractionism and Concretism? It is not surprising that opinions differ about this. What the Abstractionist says is an awkward or unfortunate feature of Concretism, the Concretist will very likely say is not a feature of Concretism at all—or is a positively desirable one. And of course the same goes for the

defects the Concretist claims to find in Abstractionism. We may outline the principal claims made on behalf of, and charges brought against, the two theories of possible worlds in the following table.[16]

Concretism

pro
—Provides a reductive analysis of modality [Lewis].
—Can actually do the work for which it is designed [Lewis].

contra
—Has the consequence that modal statements are equivalent to nonmodal statements, ones having (in general) different truth-values from the modal statements they are supposedly equivalent to [some Abstractionists].
—Evokes incredulous stares [Lewis].
—Is incredible [all Abstractionists].
—Requires a counterpart-theoretical analysis of modal statements about individuals, thus misrepresenting the modal facts [most, if not all, Abstractionists].

Abstractionism

pro
—Is credible; presupposes the existence of nothing beyond what is already needed for other philosophical purposes, such as states of affairs or propositions [all Abstractionists].

contra
—Cannot provide a reductive analysis of modality [Lewis].
—Cannot do the work for which it is designed [Lewis].

In the remainder of this paper, I shall attempt to evaluate these pros and cons. With one exception: I shall say nothing about counterpart theory and the analysis of modal statements *de re*. This is an important issue, but it has been extensively discussed elsewhere, and I have nothing new to say about it. The reader may have been surprised that I said nothing about counterpart theory in my exposition of Concretism. This is the explanation: we shall simply ignore the whole topic of *de re* modality, and an exposition of counterpart theory will, therefore, be unnecessary for our purposes. (One example—not of my own devising—will involve a particular individual, and the word 'counterpart' will appear two or three times in connection with this example; your program contains biographies of the principal players only, and not of the walk-ons.)

Up to this point, I have tried to preserve a strict neutrality between Abstractionism and Concretism. From now on, however, I shall write as an Abstractionist. My evaluations of the pros and cons listed above will be frankly partisan and, indeed, are intended to add up to an argument for Abstractionism and against Concretism.

I begin with an examination of Lewis's claim that Concretism provides a reductive analysis of modality,[17] and of the related charge of the Abstractionists that it is a

consequence of Concretism that modal statements are equivalent to nonmodal statements—ones that they are, in fact, *not* equivalent to.

An example will make clear what is at issue. Consider the modal statement

(1) There is no million-carat diamond, but there could have been one.

In possible-worlds talk, this becomes

(2) No million-carat diamond exists in the actual world, but a million-carat diamond exists in some possible world.

According to Concretism, (2) is equivalent[18] to

(3) No million-carat diamond exists in the *C*-actual *C*-world, but a million-carat diamond exists in some *C*-world.

If we assume, and this seems obviously true, that a diamond could not possibly have spatiotemporally unrelated parts, (3) can be reduced by elementary logical manipulations to

(4) No million-carat diamond is spatiotemporally related to me, and there is a million-carat diamond.

Obviously, (4) contains only paradigmatically nonmodal terms. Since Concretism allows us in a similar way to reduce any modal statement to one containing only paradigmatically nonmodal terms, we can see what David Lewis means when he boasts that Concretism provides a reductive analysis of modality. But let us not be hasty. That Owl can spell 'Tuesday' is no proof of his erudition—not unless he can spell it right; that Owen Glendower can call spirits from the vasty deep is no proof of his sorcerous powers—not unless the spirits do come when he calls for them. And it is no argument for Concretism that it provides a reductive analysis of modality—not unless that analysis is right.

Is it? Specifically, is (4) equivalent to (1)?

One obvious objection to the thesis that (4) and (1) are equivalent is that (4) is a first-person sentence, and (1) is not—or, at any rate, it certainly doesn't seem to be. (That (4) is a first-person sentence is, of course, a consequence of the Concretist's indexical theory of actuality.) This is an interesting point, but I shall not pursue it, since I wish to concentrate on features of (4) unrelated to this one.[19]

A second obvious objection takes as its point of departure the fact that 'There is no million-carat diamond' is a conjunct of (1) and that, moreover, 'There is a million-carat diamond' is a conjunct of (4). This might be thought to be a bad omen for those who hope that (1) and (4) will turn out to be equivalent. I will not develop this objection in detail, since there is a satisfactory reply to it, and this reply does not turn on any matters of detail. The essentials of the reply are found in the closing paragraph of part I. If someone were to utter (1) in any very normal context, that context would restrict his domain of quantification to actual objects. (In general, this will be true of any sentence that employs modal operators—as opposed to quantification over possible but nonactual objects—to convey modal information.) In sentence (4), however, the quantifiers are meant to be unrestricted. In sum, the Concretist's thesis is that the

proposition expressed by (4), if the quantifiers in that sentence are unrestricted, is equivalent to the proposition expressed by (1) when its quantifier is restricted to C-actual objects. (Might someone protest that if there are mere *possibilia*, then an unrestricted quantifier is a modal term? Not, I think, unless he was willing to say that an unrestricted quantifier was an astronomical, a geographical, and every other sort of term.)

Keeping the Concretist's point about restricted and unrestricted quantification in mind, let us return to the question whether (4) is equivalent to (1) . *I* certainly don't think so. The following two theses seem to me to be true.

—Though there indeed could have been a million-carat diamond, there simply *is* [absolutely unrestricted quantifier] none. (At any rate, there is an *n* such that there could have been an *n*-carat diamond and there is none.) At least, this may well be true. I believe it, and I see no reason to feel uneasy about believing it, though I can't prove it.

—Nothing [absolutely unrestricted quantifier] is spatiotemporally unrelated to me (unless, like a number or a proposition, it is not spatiotemporally related to anything). At least, this may well be true. I believe it, and I see no reason to feel uneasy about believing it, though I can't prove it.

The former thesis is, by itself, sufficient for the truth of (1) and the falsity of (4). The latter thesis is sufficient for the falsity of (4).

Abstractionists find these two theses pretty obvious, and that, I think, is the reason, or a part of the reason, for those incredulous stares with which, on Lewis's testimony, he finds himself continually transfixed. Another part of the explanation, of course, is the fact that not only do Concretists believe in million-carat diamonds spatiotemporally unrelated to us, but they believe that fairly mundane modal facts (at least most of us would take them to be facts), expressible in ordinary English by the use of modal operators, are the very same facts as certain facts about objects spatiotemporally unrelated to us. For example, the Concretist must accept the proposition expressed by his utterance of the sentence

> The fact that there is no million-carat diamond but could have been one is the
> same fact as the fact that although no million-carat diamond is spatiotemporally
> related to me, some million-carat diamond is spatiotemporally unrelated to me.

This thesis seems to the Abstractionist to be not only incredible in itself, but to entail a further incredible thesis: that if the set of "modal facts" is as rich as even the most conservative estimate makes it, then there is an enormous number and an inconceivable variety of concrete objects. (Well, perhaps the *most* conservative "estimate" is Spinozism, the thesis that if there are no objects of a given kind, it follows that it is a necessary truth that there are no objects of that kind. Few philosophers these days, I would suppose, are Spinozists. Let us say, "the most conservative estimate after Spinozism.") The reason is simply the inconceivable profusion of sorts of thing that might be but are not. There might have been not only million-carat diamonds but elves and trolls and unicorns (or, at any rate, creatures that looked and acted the way these

creatures are supposed to look and act), and French colonies in Australia, and two-hundred-year-old cats, and a falling asteroid that destroyed the Roman Empire. . . . And, if Concretism is true, there are possible worlds that contain all these things. In fact, if Concretism is true, then every possible configuration of matter and radiation in space-time ("physical configuration" for short) must be realized in some C-world. For if a possible physical configuration ϕ were realized in no C-world, then, according to the Concretist, 'It is possible that ϕ occurs' would express a falsehood; but, *ex hypotesi*, this sentence expresses a truth, since ϕ is a *possible* configuration.

It is mildly embarrassing to the Concretist that the requirement that every possible physical configuration be realized in some C-world is, according to *his* view, a trivial requirement, one that is, by definition, automatically satisfied. The triviality of this requirement is a consequence of the fact that, for the Concretist, a possible physical configuration just *is* a C-world (or a part of one). This requirement would be satisfied, in Lewis's words, "if there were only seventeen worlds, or one, or none" (*On the Plurality of Worlds*, p. 86). If it happens that there is no C-world having a million-carat diamond as a part, it is a consequence of this fact and Concretism that (whatever one might have *thought*) the idea of a million-carat diamond is *not* an idea of a possible configuration of matter.

So a problem is posed for the Concretist by the fact that the seemingly substantive requirement that every possible configuration of matter be realized in some C-world is, if Concretism is true, automatically satisfied no matter how small and miscellaneous a collection of C-worlds there is. Lewis calls this problem 'the problem of expressing the plenitude'. He solves it by stipulating, in essence, that the set of possible physical configurations (the set of C-worlds) is not miscellaneous but, in a certain sense, "complete." One way to give content to such a stipulation would be to match "possible physical configurations" one-to-one with some large class of mathematical objects, a class that is in no way arbitrarily restricted. For example, consider the "*Erstaz* worlds" invented by Quine, so named by Lewis, and described in *Counterfactuals*.[20] One might "express the plenitude" of C-worlds by saying that to every Ersatz world, there corresponds at least one C-world. (Call this the plenitude principle). In *On the Plurality of Worlds*, Lewis employs a more sophisticated device for the same purpose,[21] but the device of matching C-worlds to Ersatz worlds at least shows what a solution (even if it is not the best one) to the plenitude problem would look like. And it allows us to put a lower limit on the number of C-worlds: There are at least 2-to-the-*c* of them. A moment's reflection will show us that if Lewis is right, there must also be at least 2-to-the-*c* million-carat diamonds.

Lewis apparently thinks that the enormous number of concrete (albeit C-nonactual) objects whose existence is entailed by Concretism is the main source of the incredulous stares he meets when he expounds Concretism. He says:

> [Concretism] *does* disagree, to an extreme extent, with firm common sense
> opinion about what there is. (Or, in the case of some among the incredulous, it
> disagrees rather with firmly held agnosticism about what there is.) When [Concretism] tells you—as it does—that there are uncountable infinities of donkeys
> and protons and puddles and stars, and of planets very like Earth, and of people
> very like yourself, . . . small wonder if you are reluctant to believe it.[22]

This is not an accurate report of the sources of *my* incredulity. (I don't know about "common sense opinion," by the way. It seems to me that the office of common sense is to keep us from playing cards for high stakes with people we meet on trains, and not to endorse metaphysical opinions.) Most people think that the number of donkeys is finite. If Aristotle is right, the number of donkeys (past, present, and future) is aleph-zero. There are no doubt good reasons to reject the cosmological and biological theories on which this numbering is based, but the number itself doesn't seem to be any reason to reject these theories. And I don't see that the fact that Lewis's theory has the consequence that there are 2-to-the-c or more donkeys is a particularly good reason to reject it.

The good reasons have already been laid out: the theory asks us to believe that there are, e.g., naturally hairless donkeys. And there are none. It asks us to believe that there are donkeys spatiotemporally unrelated to us. And there are none. It's not so much that I object to the thesis that the number of donkeys is uncountably infinite; it's more that I object to the thesis that the number of donkeys spatiotemporally unrelated to us is other than 0—and there are no hairless ones either! (I must, however, concede that if there were uncountable infinities of donkeys, most of them would have to be spatiotemporally unrelated to us; otherwise, there'd be no room for them all. Therefore, I do find an uncountable infinity of donkeys objectionable—but only because of its consequences for the distribution of objects in space and time.)

I find one difficulty in Concretism that could be described as a difficulty about cardinality (one that is not a consequence of the difficulties I have with spatiotemporally unrelated objects). Suppose that there are some C-worlds other than the one we are all parts of. Why should I suppose that there are all the C-worlds that the plenitude principle generates? Now this difficulty is not best described as a difficulty about *cardinality*. The plenitude principle is designed to ensure a *variety* of C-worlds, to make logical space a plenum: it forces a minimum cardinality on the set of worlds only because the variety of worlds it ensures requires that there be at least a certain number of them. Nevertheless, let us consider only the question of cardinality. Suppose I have somehow discovered that the number of C-worlds other than this one is, contrary to my very strong expectations, greater than 0. But suppose that my source of information is absolutely silent about how many of these things there are. How many should I *think* there are? Suppose that I must guess, and you must guess, and lots of people must guess and that the one whose guess is furthest from the truth will suffer an eternity of torment. How shall I guess? No guess, it seems to me, would be much more rational than any other. I note in introspection some slight preference for a finite answer, and, among finite answers, a slight preference for those numbers commonly called "small." I like some infinite numbers a bit better as answers than others. I like aleph-zero best, and 2-to-the-c next best, whatever aleph it may be. Numbers beyond the reach of iterative set-theory are right out, though I am attracted to some small degree by the idea that the C-worlds form a proper class. Lewis doesn't see matters this way. He thinks that 2-to-the-c is a much better guess than six. One does see his point if C-worlds are the same as ways C-worlds could be. I would say that because 2-to-the-c is *not* a better guess than six, C-worlds are *not* the same as ways C-worlds could be.

And, really, how *could* they be? If we think of the universe, we may see some sense in saying that it is (i.e., is identical with) a way a universe could be. Some sense, but not enough. Stalnaker and I have independently contended that this assertion is not even grammatical.[23] What one should say, surely, is that the universe *represents* or *realizes* or *instantiates* a way a universe could be. But the case is worse if we think of unrealized possibilities. How *could* one suppose that the (unrealized) possibility that the universe be thus-and-so is a thing that has a mass of 3.4×10^{37} grams and is rapidly expanding? Or turn the point round: suppose there *is* an object (maximal with respect to spatiotemporal interrelatedness) that has these two features and which is spatiotemporally unrelated to us. What makes it an "unrealized possibility"? What is it besides an enormous physical object that has the feature, cosmologically fascinating but modally irrelevant, of being spatiotemporally unrelated to us? What would such things and their parts have to do with modality? Why should I call a horse that is a part of one of these things a "merely possible horse"? Why is that a good thing to call it? (In José A. Benardete's book *Infinity*,[24] Benardete considers the concept of a "pluri-verse" consisting of spatiotemporally unrelated universes in order to show that one can imagine a case in which the higher infinite cardinals would be needed to count physical objects. It never occurred to him that it would be appropriate to describe parts of other universes in the pluriverse as mere *possibilia*, and he still doesn't see it.)

I conclude that Concretism is incredible and, therefore, that the "reductive analysis of modality" that it provides is a *correct* analysis only on the assumption that the incredible is true. The charges against Concretism are thus vindicated, and one of the charges against Abstractionism, that it cannot provide a reductive analysis of modality, is disarmed: better no analysis than an incorrect one. The score in the reductive-analysis game is thus 0 to -1, in favor of the Abstractionist.

But what of the remaining charge against Abstractionism: that it just doesn't work, that it cannot do the job for which it was designed? If this charge is correct (and if Concretism *can* do the job), the tables are turned. It seems to be the practice of scientists (one we philosophers should adopt) not to reject the only workable theory simply because that theory is (or seems to be) incredible. It is incredible to suppose that something could be both a wave and a particle; it is incredible to suppose that the Galilean Law of the Addition of Velocities should fail; it is incredible to suppose that the geometry of physical space should be non-Euclidean; it is incredible to suppose that there should be a well-defined condition to which no set corresponds. But we have accepted all these incredible things. And if the remaining charge against Abstractionism is correct (and if there is nothing against Concretism other than its being incredible), then we shall have to accept Concretism after all. To that charge, which has been made by David Lewis, I now turn.

IV

What I call Concretism, Lewis calls Genuine Modal Realism. What I call Abstractionism, he calls Ersatz Modal Realism. I shall retain my own terms in my exposition of his argument.[25]

Lewis recognizes three varieties of Abstractionism: Linguistic, Pictorial, and Magical Abstractionism. He believes (i) that each of these varieties of Abstractionism can be refuted, (ii) that any very explicit version of Abstractionism must be of exactly one of these three types, and (iii) that the available writings of Abstractionists (other than those who explicitly espouse Linguistic Abstractionism) are insufficiently informative about the nature of states of affairs (or propositions or whatever A-worlds are supposed to be) to enable one to discover which variety of Abstractionism their authors adhere to. I believe that (ii) and (iii) are correct and that Lewis's refutations of Linguistic and Pictorial Abstractionism are valid. I shall, accordingly, briefly describe these two varieties and outline his objections to them. I shall devote the remainder of this paper to a defense of "Magical" Abstractionism.

Remember that we said earlier (in our explanation in part I of why Abstractionists refuse to apply the word 'actual' to concrete objects) that A-worlds belong to the class of things that can represent concrete objects as being a certain way. (Thus, an A-nonactual A-world is one that *misrepresents* the way concrete things are.) There are three varieties of Abstractionism, in Lewis's view, because there are three kinds of answer to the question 'How does that thing represent?' They are, roughly, 'It represents the way a sentence does'; 'It represents the way a picture does'; 'It just represents, and there's nothing more to be said'.

According to Linguistic Abstractionism, possible worlds represent the way sentences do. Sentences are structures built from a stock of basic elements—characters, we may call them. A sentence represents by convention: By convention, 'The cat is on the mat' represents the cat as being on the mat. Suppose an Abstractionist identified "worlds" with possible distributions of matter and radiation in space-time, and identified possible distributions in their turn with the Quine-Lewis "Ersatz worlds" mentioned in part III in connection with the problem of expressing the plenitude.[26] This philosopher would be a Linguistic Abstractionist, for it is a matter of convention how an Erstaz world represents physical stuff as being distributed—indeed, *whether* it does.

Lewis agrues that Linguistic Abstractionism is defective because it cannot coherently formulate the thesis that the actual world is impoverished in a way in which it probably *is* impoverished. If Linguistic Abstractionism is right, then all *possible* uninstantiated properties are ones that would be instantiated if objects of types that actually exist were sufficiently numerous and properly arranged. (For example, if the Ersatz-world variety of Linguistic Abstractionism is adopted, then any possible property—any property that is instantiated in some possible world—is one that would be instantiated if there were enough filled space-time points and these filled points were arranged in the right way.) We can imagine simple worlds having the following feature: Suppose their inhabitants adopted the view that any possible property would be instantiated if objects of existent types were sufficiently numerous and properly arranged; then their inhabitants would be wrong. Consider, for example, a world in which protons, or the objects that play the role of protons in the physical economy of that world, are not composed of more fundamental particles. Consider some property possessed in our world only by quarks: *having an R-G color-charge of − 1/2,* say.

This is a possible property, since it is instantiated in some world: the actual one. But it is not instantiated in *any* world that contains only things composed of things of kinds that exist in the simple world we have imagined.

Now if we can imagine a simple world in which Linguistic Abstractionism thus gives the wrong result, is there any reason to suppose that Linguistic Abstractionism gives the right result in the actual world? What warrant have we to suppose that there is in actuality such a rich variety of kinds that every possibility could be realized by some numerical augmentation or diminution and clever arrangement of the things there are? Even if one believed this, surely, one should regard it as a substantive metaphysical thesis (something having to do with God's bounty, perhaps, or with some other causally effective principle that is supposed to make actuality coincide with ontological richness), and not as something that could properly be forced on us by the most general and abstract features of our modal ontology. Is it even evident that there is *any* possible world that is not, in the sense described above, "impoverished"? Or even if there is a nonimpoverished world and it is the actual world, shouldn't we want our modal ontology to "work" in any world? Should we want to say that our modal ontology works only because of the lucky accident that a very rich world happens to be actual? These considerations seem to me to be cogent. Linguistic Abstractionism is defective.

Pictorial Abstractionism, a theory that no one in fact holds, asserts that worlds represent the way pictures or statues or models or maps do: by some sort of (relatively) nonconventional spatiotemporal isomorphism with the things represented and their spatiotemporal arrangement. But this seems impossible. The map is normally simpler than the territory. If something adequately represented (in the pictorial sense) the universe, it would have to be as detailed in its spatiotemporal structure as the universe. The point is tautological: if it left something out it would leave something out. And this point about pictures of the way things are applies to pictures of ways things might be but aren't. They would, of course, be different from, but some at least would have to be as detailed as, a fully accurate picture of the way things are. Suppose there were such detailed pictures of ways things might be. Wouldn't they just be C-worlds? Or would they be like C-worlds in being spread out in space and time, but, nevertheless, somehow "abstract"? There is no clear sense in this suggestion. Pictorial Abstractionism, like Linguistic Abstractionism, is defective.

The last refuge of the Abstractionist is Magical Abstractionism. (But I will not accept this dyslogistic name for the position I propose to defend. I will call it *Unsound* Abstractionism, which is an acronym for Unscientific Naive Superstitious Obscurantist Unenlightened Neanderthal Dogmatic Abstractionism.)

According to Abstractionists of all three factions, A-worlds are proposition-like entities. (The three factions may be said to differ just on the point of what, exactly, a "proposition-like entity" is.) In the previous sections, I have treated A-worlds as states of affairs, out of deference to Plantinga, who has done the most to make Abstractionism precise. In the sequel, however, it will simplify matters if we think of A-worlds as propositions pure and simple: An A-world is a possible proposition that, for any proposition p, entails either p or the denial of p; and actuality is simply truth.

Moreover, these "propositions" are not what David Lewis calls 'propositions'; they are not sets of C-worlds. More generally, as I said of states of affairs in part I, a proposition is not, for the Abstractionist, a spatiotemporally extended object, or a sum of extended objects, or a set-theoretical construct on sums of extended objects.[27] (In my view, there are only two of the things Lewis calls propositions—the false one, which is the empty set, and the true one, the set whose only member is the universe.)

A proposition is, of course, either true or false. A contingent proposition—and every A-world is a contingent proposition[28]—is *made true* or *made false* by the way things happen to be arranged. If we allow ourselves the distinction between intrinsic and relational (or extrinsic or "mere-Cambridge") properties, we may say that truth and falsity are relational properties of propositions. The proposition that there are cats is true (because there *are* cats); if things had been arranged differently, if cats had never come to be, it would have been false. But its intrinsic properties would have been just as they are. Thus, truth is like accuracy (said of a map). (This simile, however, is dangerous because an inaccurate map can be altered and can thereby become accurate without any change in the territory. But all of a proposition's intrinsic properties are essential to it; it cannot be "altered.") We might say that a contingent proposition is indifferent to its own truth-value: remove the cats and you change the truth-values of many propositions, but the propositions remain unchanged—just as a map becomes inaccurate, and yet is unchanged, when the territory changes.

There is, therefore, for the Abstractionist, only one C-world.[29] There is a certain relation borne by this C-world to propositions, which we may call the *makes-true* relation. It bears this relation to the proposition that there are cats because it (the C-world) has feline parts. It fails to bear this relation to the proposition that there are elves because it has no elvish parts. If it, the only C-world, had been at all different in its intrinsic properties, it would have borne the *makes-true* relation to a different set of propositions. Of necessity, it bears the *makes-true* relation to exactly one proposition that is maximal with respect to entailment (to exactly one A-world): if the one C-world bears *makes-true* to both p and q, then p and q are not both A-worlds. The one C-world, in virtue of the way its components are arranged, makes one and only one of the vast array of A-worlds actual. Any Abstractionist will say this much. The Unsound Abstractionist will add that a proposition's "truth-value dispositions"—dispositions like the one embodied in the conditional 'p would be made true by a C-world having elvish parts'—have nothing to do with human convention (or with divine decree, for that matter). For the Unsound Abstractionist, propositions are necessarily existent objects[30] that have their truth-value dispositions essentially. And, of course, the Unsound Abstractionist will deny that the truth-value dispositions of a proposition are in any way like the "accuracy dispositions" of a map: they are not grounded in the spatial or spatiotemporal structure of propositions—a kind of structure wholly alien to their nature.

Lewis's criticism of Unsound Abstractionism is, in a nutshell, that if things were as the Unsound Abstractionist claims, that philosopher could not understand or grasp the *makes-true* relation. Or put the matter this way: the Unsound Abstractionist, in claiming to grasp the *makes-true* relation, is claiming a magical power (hence the

epithet 'magical'[31]). Better still: (i) the Unsound Abstractionist has not really said what relation the *makes-true* relation is; (ii) he has made certain negative statements about the relation (it does not hold in virtue of convention or in virtue of spatiotemporal isomorphism between its *relata*), and he has made certain negative statements about the things it is borne to (they are neither spatiotemporal objects nor constructs on spatiotemporal objects), and he has made certain formal statements about it (it is borne by one thing to *some but not all* of the objects to which something might bear it); (iii) although there are doubtless uncountable infinities of relations satisfying the conditions laid down in (ii)—at least there are if there are nonspatiotemporal objects other than pure sets—no one could possibly grasp, or even refer to, any *one* relation satisfying these conditions.

Lewis's argument for this conclusion turns on a distinction between *internal* and *external* relations. Only dyadic relations figure in the argument, and I shall use 'relation' to mean 'dyadic relation'. An internal relation is one grounded in the intrinsic properties of its *relata:* A relation R is internal if, given two objects x and y that stand properties of its *relata:* A relation R is internal if, given two objects x and y that stand in R, any two objects having the same intrinsic properties as x and y must stand in R. A relation R is external if there could be a pair of objects that stand in R and could also be a pair of objects that have the same intrinsic properties but do not stand in R. Thus, *being the same shape as* is internal, and *being ten feet from* is external.

Now: *makes-true* is either internal or external.

Suppose it is external. We note that it is not an ordinary external relation, like *being ten feet from*, which a given pair of objects (you and I, say) might or might not stand in. *Makes-true* has modal implications: if the one C-world bears *makes-true* to p, that is no accident. Given the properties of the C-world, it could not have failed to bear *makes-true* to p. But if we suppose that *makes-true* is external, then, since the intrinsic properties of the C-world are obviously relevant to whether it bears *makes-true* to p, we must conclude that the intrinsic properties of p are *irrelevant* to whether it bears *makes-true* to p. In fact, we may as well assume for the sake of convenience that propositions all have the same intrinsic nature: they are individuated by those intrinsic properties of the C-world in virtue of which it bears or fails to bear *makes-true* to them. Thus, the proposition that some donkeys walk and the proposition that some donkeys talk have the same intrinsic properties; the identity of each resides in the fact that (in the former case) the C-world bears *makes-true* to it just in virtue of the fact that the C-world has walking donkeys as parts and (in the latter case) fails to bear *makes-true* to it just in virtue of the fact that the C-world has no talking donkeys as parts. But the modal implications of *makes-true* noted above would appear to be inconsistent with this thesis about the individuation of propositions. I quote Lewis (but where I write 'makes true', he wrote 'selects', and where I write 'proposition', he wrote 'element' or 'abstract simple'; *makes-true* is a special case of what he calls selection, and propositions are a special case of what he calls elements or abstract simples):

> The concrete world makes various propositions true. We are now supposing that this making true has nothing to do with the distinctive natures of the propositions—they haven't any—but it still has to do with what goes on in the concrete

world. Necessarily, if a donkey talks, then the concrete world makes these propositions true; if a cat philosophizes, it makes those true; and so on. I ask: how can these connections be necessary? It seems to be one fact that somewhere within the concrete world, a donkey talks; and an entirely independent fact that the concrete world enters into a certain external relation with this proposition and not with that. What stops it from going the other way? Why can't anything coexist with anything here: any pattern of goings-on within the concrete world, and any pattern of external relations of the concrete world to the propositions?[32]

The implication is that if *makes-true* were really an external relation, and if the intrinsic properties of all propositions were the same, then the following could be the case: though the C-world in fact bears *makes-true* to the proposition that there are cats, the C-world might have had the very same intrinsic properties and yet have failed to bear *makes-true* to that proposition; it might, in fact, have been just as it is and yet have borne *makes-true* to any set of propositions whatever. But this is clearly absurd, and we must conclude that *makes-true* is an internal relation: whether it holds between the C-world and *p* is determined partly by the intrinsic features of the C-world and partly by the intrinsic features of *p* and by nothing else. As a consequence, distinct propositions must have distinct intrinsic properties.

Suppose, therefore, that *makes-true* is internal and that propositions have distinct intrinsic natures in which *makes-true* is partly grounded. But how (Lewis asks the Unsound Abstractionist) did you ever manage to single out or grasp that relation? For a configuration of spatiotemporal objects (such as a C-world) to bear a graspable internal relation to a proposition must be for the structure of the proposition somehow to match the structure of the configuration of objects. But you say that propositions have neither spatiotemporal nor mereological nor set-theoretical structure. What other sort is there? If you reply that propositions have a *nature* even if they have no structure, I'll ask how you could ever learn the nature of any proposition when you can't observe or examine objects that are nonspatiotemporal and are, therefore, incapable of entering into causal relations. This *a priori* argument for your being unable to learn the intrinsic nature of propositions is underwritten by the observation that you can't individuate them without employing descriptions like 'the proposition that there are cats'. In other words, you can individuate them only by specifying what makes them true: 'the proposition that there are cats' is just a way of saying 'the proposition that is made true just by there being cats'. Note that *I* don't have this limitation. I can refer to the proposition containing all and only those C-worlds that have cats as parts. And I can then go on to say what makes it true: I am a part of one of its members. But if you can't discover the intrinsic nature of any proposition, how can you grasp the supposedly internal relation *makes-true*? To grasp an *internal* relation, surely, is to know when *x* bears it to *y*, given the intrinsic properties of *x* and *y*. (To grasp *is the same color as* is to understand what is meant by the color of a thing and to know that this relation is the one that *x* bears to *y* just in virtue of the color of *x* being the color of *y*.)

I will call the problem that Lewis has posed 'the Lewis-Heidegger problem'. Heidegger has pointed out certain difficulties that face the traditional correspondence theory of truth:

We speak of corresponding [*Übereinstimmen*] in various senses. For example, we say when considering two five-mark coins before us on the table: They are in correspondence with each other. The two coins agree [*Übereinkommen*] in appearance. Hence, they have this appearance in common and are in that respect the same. But we also speak of correspondence if we say, for example: The coin is round. Here the statement [*Aussage*] corresponds with the thing. The relation now holds not between thing and thing, but between statement and thing. But in what is the agreement of the thing and the statement supposed to consist, given that they present themselves to us in such manifestly different ways? The coin is made of metal. The statement is not material at all. The coin is round. The statement has no spatial features whatever. One can buy something with the coin. The statement about it is never legal tender. But, for all their dissimilarity, the statement, being true, corresponds with the coin. And this correspondence, according to the common concept of truth, is supposed to be a matching. How can the statement match the coin, to which it is completely dissimilar? It would have to become the coin and so wholly cease to be itself. The statement never succeeds in doing that. The moment it did succeed, it could no longer correspond with the thing in the way a statement does. In the act of matching, the statement must remain . . . what it is. In what does its essence, so completely different from that of a thing, consist? How does the statement have the power, just precisely by retaining its essence, to match something other than itself, the thing?[33]

Heidegger asks how a proposition could match or correspond structurally with a configuration of matter. Lewis asks this and goes on to ask how, if the supposed internal relation between matter and proposition, the *makes-true* relation, held in virtue of some nonstructural feature of the proposition, we could even *grasp* this relation, owing to the inaccessibility of any nonstructural features that noncausal, and hence imperceptible, objects like propositions might have.

It is evident that the Lewis-Heidegger problem can arise quite independently of any questions about the ontology of possible worlds. It is a problem for anyone who believes that the bearers of truth-value are anything other than constructions out of individuals and the empty set. (If you believe that sentences are the bearers of truth-value, you believe that the bearers of truth-value are such constructions.) It is equally evident that anyone who can solve the Lewis-Heidegger problem can be an Unsound Abstractionist with impunity—or at least he will have nothing to fear from Lewis's argument for the thesis that if *makes-true* is an internal relation, then it cannot be grasped. Let us look carefully at this argument. How does it work? I believe that its most important premise is a principle about language—a principle about terms that purport to name internal relations. Since I wish to have a careful statement of this principle, I will present it in the form of a rather lengthy speech.

Suppose someone makes a claim of the following general form:

There is a certain internal relation I call '*R*'. I cannot define the term '*R*'; it is one of my primitives. I know that each member of a certain set *A* bears *R* to some but not all members of a certain set *B*, that only members of *A*

bear R to anything, and that R is borne by things only to members of B. I am absolutely unable to make distinctions within B—except by using the term 'R'. I can sometimes refer to members or nonempty proper subsets of B by calling them things like 'the object that both a_1 and a_2 bear R to' or 'the set of all things a_3 bears R to'; but unless I use 'R', I can single out neither any member nor any nonempty proper subset of B.

This person, in claiming to understand his own relation-name, 'R', is claiming magical powers.

The defense of this principle, I think, is as follows. 'R' is supposed to be a name for an internal relation, a relation that holds between its *relata* wholly in virtue of their intrinsic features. But if R is borne only to members of B, and if I can distinguish among members of B only by considering which objects bear R to them, then I know of no intrinsic features of the members of B that differentiate them one from the other—that fit any of them for the office of having R borne to it by a given object. And to understand or grasp an *internal* relation borne by each of the a s to some but not all of the b s is to know how the intrinsic properties of an a must correspond with the intrinsic properties of a b if that relation is to hold between that a and that b.

This is a profoundly tricky argument. Let us try to orientate ourselves within its mazes by considering an example. Suppose I make the following claim.

There are exactly ten cherubim. There is a certain internal relation I call 'typosynthesis'. I cannot define the word 'typosynthesis'; it is one of my primitives. I know that each human being bears typosynthesis to some but not all cherubim, that only human beings bear typosynthesis to anything, and that typosynthesis is borne by things only to cherubim. I am absolutely unable to make distinctions among cherubim—except by using the term 'typosynthesis'. I can sometimes refer to individual cherubim or to nonempty proper subsets of the set of all cherubim by calling them things like 'the one cherub that all Greeks and all Tasmanians bear typosynthesis to' or 'the set of all cherubim that any Cartesian dualist bears typosynthesis to'; but unless I use the term 'typosynthesis', I can single out neither any one of the ten cherubim nor any one of the 1022 one-to-nine-membered sets of cherubim.

Then, according to Lewis, in claiming to understand the term 'typosynthesis', I am claiming a magical power. If typosynthesis is really an internal relation borne by human beings to cherubim, then to understand the word 'typosynthesis' must be to know when to apply this word, given the intrinsic properties of human beings, on the one hand, and the intrinsic properties of cherubim on the other. And, in the example, I know none of the intrinsic properties of cherubim; or, at least, I know of none that are properties of some but not all cherubim. Therefore, Lewis says, in the example I am claiming the magical power of being able to understand a name for an internal relation without knowing any relevant intrinsic features of the things it is borne to.

"And," Lewis will tell us Unsound Abstractionists, "you are claiming magical powers when you claim to understand the relational term '*makes-true*'. You say that

the one C-world bears the internal relation *makes-true* to some but not all members of a certain class of things. And yet you cannot differentiate among the things this supposedly internal relation is borne to, except by reference to that relation itself. You tell me that one of those things is the proposition that there are cats, but that's just another way of saying 'the object that a C-world bears *makes-true* to just in virtue of having feline parts'. (And don't tell me that you can differentiate among propositions by means of the English sentences that express them. Expression is an internal relation, and you will have the same problems with this relation that you have with *makes-true*.) It is instructive to compare what you call propositions with what I call propositions. For me, a proposition is a set of possible worlds—of what you call C-worlds. For example, the proposition that Heidegger's coin is round is just the set of all worlds that have round counterparts of that coin as parts. (Note that I picked this proposition out without saying anything about what makes it true.) A proposition is true if and only if it contains the actual world. For example, Heidegger's coin is round; it is a counterpart of itself; it is a worldmate of ours; and, hence, the set of worlds in which it has a round counterpart contains the actual world. Therefore, it is a *true* proposition. According to *my* theory, then, '*makes-true*' can be defined in terms of the relations *is spatiotemporally related to* (which is needed to define 'world'), *is a part of*, and *is a member of*, which we certainly understand.''

This is Lewis's argument against Abstractionism. Let us briefly recapitulate its structure. Abstractionism must be of either the Linguistic, the Pictorial, or the Unsound variety. Linguistic and Pictorial Abstractionism are defective. If Unsound Abstractionism is correct, then the one C-world, in virtue of its intrinsic features, makes one among all the abstract, structureless A-worlds true. This *makes-true* relation is either external or internal. If it is external, then the C-world might have borne *makes-true* to a different set of propositions, even if that world had had exactly the same intrinsic properties; and this is absurd. If it is internal, on the other hand, then it cannot be grasped, and the Unsound Abstractionist does not understand his own theory.

I am convinced that Lewis's argument is defective, if only because, if it weren't, either Concretism or Linguistic Abstractionism or something even worse would have to be right. I will present an argument for the conclusion that there is something wrong with his argument. But I confess I am unable to say what is wrong with it. (I am inclined to think that the defect has something to do with the distinction between intrinsic and relational properties, a distinction that we may not understand as well as we think we do.) What is even more shameful to confess, I am unable to say what is right about it. And there is *something* right about it; the "cherubim" case is very convincing, and so is the argument for the thesis that *makes-true* is an internal relation. My argument is a *tu quoque:* by reasoning parallel to Lewis's, we can show that one could grasp set-theoretical membership only by magic; and Lewis's ontology requires at least some set-theoretical constructions.[34]

Suppose we have three individuals, X, Y, and Z. Assume we have no problem in picking out or identifying these individuals. Consider the objects we call '$\{X,Y\}$', '$\{X,Z\}$', and '$\{Y,Z\}$'. Do we understand what it is to bear *is a member of* to one of these objects? We should note that we are unable to individuate these objects except *via* the

membership relation: $\{X,Y\}$ is the object to which X and Y bear that relation and to which nothing else bears it, and so on. There is no way to pick out *any* set except by somehow specifying the things that bear membership to it. (Or, at least, this is true in the long run. We can refer to a set as 'Tom's favorite set', but we could not do this unless we—or Tom, or *someone*—could specify the membership of this set.[35]) Does it follow from this fact and from Lewis's principle about terms that purport to name internal relations that in claiming to understand 'is a member of ', we are claiming magical powers? Not unless membership is an internal relation.

And it would seem that it is not. Suppose that X, Y, and Z are three distinct individuals, and that X and Y have the same intrinsic properties. Then, although X is a member of $\{X,Z\}$, Y is not. (I owe this point to David Lewis, who attaches no importance to it.) But there is more to be said. Call the objects to which a (dyadic) relation is borne by something its *range*. (I realize that the distinction between "the objects that bear R to something" and "the objects to which R is borne by something" is, at best, rough and intuitive and, at worst, confuses features of two-place predicates with features of dyadic relations. But this is of no import. As long as our practice is consistent, it will make no difference to our argument whether we take, e.g., the fathers or the children to constitute the "range" of fatherhood.) Call a relation *range-internal* if, necessarily, whatever bears it to x bears it also to anything having the same intrinsic properties as x. Thus, the relation expressed by 'x is ten feet from something the same color as y' is range-internal, but not internal *simpliciter*.

Now if Lewis's principle about names for internal relations is right, it would seem that the corresponding principle about names for range-internal relations is right.

Consider "archetyposynthesis," a relation that human beings bear to seraphim. Its specification is similar to our earlier specification of typosynthesis; but two human beings with the same intrinsic properties may bear it to different seraphim. Nevertheless, if a human being bears it to a given seraph, he bears it to all seraphim having the same intrinsic properties as that seraph: it is range-internal. And let us suppose that we can individuate seraphim only *via* archetyposynthesis. It is clear that if a magical power is required to understand typosynthesis, a magical power would also be required to understand archetyposynthesis—if anything, archetyposynthesis would require even more impressive magical powers.

Well, is membership range-internal? If x bears it to y, must x also bear it to anything having the same intrinsic properties as y? That's hard to say. What, after all, *are* the intrinsic properties of a set? What (to focus our attention) are the intrinsic properties of $\{$the earth, the moon$\}$? It is not at all clear what the intrinsic properties of this object are—other than *being a set*, which is of no use to one who wishes to individuate sets. These would seem to be only two further types of properties that are even superficially plausible candidates for the office "intrinsic properties of a set": containing a given object or objects (type A), and containing various numbers of objects having certain intrinsic properties (type B). For example:

Type A *having the earth as a member*[36]
Type B *having at least one spherical member; having exactly two spherical members; having no nonspherical members.*

We may contrast these properties with such *clearly* extrinsic properties of sets as *having been used as an example by van Inwagen* or *having a member that has passed through the tail of a comet* or *being equinumerous with the set of Martian moons*.

If any property of type A is extrinsic, all are; if some property of type A is not extrinsic, none are. And the same goes for type B. There are, accordingly, four possibilities:

(1) All properties of types A and B that a set has are intrinsic properties of that set, and it has no intrinsic properties other than those entailed by a complete specification of its type-A and type-B properties.
(2) All properties of type A that a set has are intrinsic to it, and it has no intrinsic properties other than those entailed by a complete specification of its type-A properties.
(3) All properties of type B that a set has are intrinsic to it, and it has no intrinsic properties other than those entailed by a complete specification of its type-B properties.
(4) Neither properties of type A nor properties of type B are intrinsic; accordingly a set has no intrinsic properties, other than those it shares with all sets: those entailed by *being a set*.

We may distinguish two cases:

Case One

Either possibility (1) or possibility (2) is realized. In this case, membership is range-internal, since the only object that has all the same intrinsic properties as a given set is that set itself. And if membership is range-internal, then by reasoning parallel to Lewis's, and (apparently) valid if his reasoning is valid, we do not understand membership.

Case Two

Either possibility (3) or possibility (4) is realized. In this case, membership is not range-internal. It is, in fact, *purely external*: it is possible that x belong to y and z not belong to w and, at the same time, possible for either of both of the following conditions to hold: x and z have the same intrinsic properties; y and w have the same intrinsic properties. Suppose, for example, that three individuals, Tom, Tim, and Tam have the same intrinsic properties. Then $\{$Tom, Tim$\}$ and $\{$Tom, Tam$\}$ have the same intrinsic properties. And Tom is a member of $\{$Tom, Tim$\}$, while Tim is not a member of $\{$Tom, Tam$\}$.

Is it possible that membership is an external relation? Let us adopt the reasoning Lewis used to show that it is absurd to suppose that *makes-true* is external. We recall that in that piece of reasoning, Lewis stipulated that propositions were without distinctive intrinsic properties, justifying this convenient assumption with the observation that such distinctive intrinsic properties as propositions may have play no role in determining whether the C-world bears the external relation *makes-true* to them. Let us,

with the same justification, assume that sets have no distinctive intrinsic properties: x is a different set from y because and only because different objects bear the external relation of membership to them. Here is an adaptation of Lewis's argument against the externality of *makes-true* to the case of membership:

> Tom and Tim belong to various sets. We are now supposing that this belonging has nothing to do with the distinctive natures of the sets—they haven't any—but does have to do with Tom's and Tim's existence. Necessarily, if Tom and Tim exist, they belong to {Tom, Tim}. I ask: how can these connections be necessary? It seems to be one fact that Tom exists and another that he enters into a certain external relation with this set and not with that. What stops it from going the other way? Why can't anything coexist with anything here: any population of individuals and any pattern of external relations of these individuals to sets?

To take an example, if the intrinsic properties of {Tom, Tim} and {Tom, Tam} really are the same, and if membership really is an external relation, why *couldn't* Tim bear membership to {Tom, Tam} as easily as to {Tom, Tim}? What would prevent it? (Of course, if Tim were a member of {Tom, Tam}, it would presumably be incorrect to *call* that set '{Tom, Tam}'; but why couldn't Tim be a member of *it*?) But this is an absurd result: Tim *could not have* been a member of {Tom, Tam}, and there's an end on't.

Therefore, membership is not a purely external relation, or even a "range-external" relation. And, therefore, we do not understand membership—or we don't if Lewis has made no false step in his argument for the conclusion that the Unsound Abstractionist does not understand *makes-true*.

That we do not understand set-membership entails that we do not understand much of classical mathematics, a hard conclusion to accept. Moreover, as I have remarked, Lewis's own ontology seems to be committed to sets: A proposition is a set of C-worlds, and truth is having the C-actual C-world as a member; a property is a set of objects (C-actual or C-nonactual), and exemplification is membership.[37]

Propositions, perhaps, do not have to be sets of C-worlds. Lewis could as easily have said that a proposition was a mereological sum of C-worlds and that a proposition was true if the C-actual C-world was a part of it. Properties, however, could not survive the demise of set theory so handily. One cannot say that a property is a sum of objects and that an object exemplifies a property if it is a part of that property. If sphericality were the sum of all spheres (including the C-nonactual ones) and if exemplification were parthood, then the sum of two spheres would be spherical, as would a cubical part of a sphere. The problem of representing properties and exemplification in mereological terms has no obvious solution.

I conclude that Lewis's argument against Unsound Abstractionism is as damaging to his own ontology (and to classical mathematics, to boot) as it is to Unsound Abstractionism and that, given the strong *prima facie* case against Concretism, Abstractionism is to be preferred to Concretism.[38]

Notes

1. David Lewis, *Counterfactuals* (Cambridge, Mass., 1973), 84.
2. Lewis's current views can be found in his book *On the Plurality of Worlds* (Oxford, 1986). See also

Peter Unger, "Minimizing Arbitrariness: Toward a Metaphysics of Infinitely Many Isolated Concrete Worlds," *Midwest Studies in Philosophy* IX (1984):29–51.

In the sequel, I am going to treat a "universe" or "cosmos" as a thing spread out in space and time—as a thing all of whose parts are related to one another in space *or* in time *or* in space-time. (Thus, even if a Cartesian ego has no position in *space*, it is still a part of the same universe as the one its body inhabits if the events occurring within it belong to the same temporal series as the events occurring within its body. 'Space-time' is used in its relativistic sense. We may note that even if the products of the Big Bang soon became separated into isolated domains—as one theory holds— the contents of one domain are parts of the same "universe" as the contents of another, since they are connected by a space-time path that skirts the Big Bang.) For short: all the parts of a "universe" are spatiotemporally related. In so treating a "universe," I follow Lewis—but with one simplification. Lewis wants to leave open the question whether there are relations that are not spatiotemporal but which are somehow *analogous* to spatiotemporal relations and which play the role in some possible universes that spatiotemporal relations play in ours (Lewis, *On the Plurality of Worlds*, 75–78). I will ignore this question, which is irrelevant to the problems I wish to discuss.

It might occur to someone to protest that *causally* related objects ought to count as parts of the same universe, even if they are spatiotemporally unrelated. Lewis would reply that spatiotemporally unrelated objects cannot be causally related (78–81). I am doubtful about this, but I will concede it for present purposes.

3. See Saul Kripke, *Naming and Necessity* (Cambridge, Mass., 1980), 15–20, 43–53; Robert C. Stalnaker, "Possible Worlds," *Nous* 10 (1976):65–75; Robert Merrihew Adams, "Theories of Actuality," *Nous* 8 (1974):211–31; Roderick M. Chisholm, *The First Person* (Minneapolis, 1981), appendix; John Pollock, *The Foundations of Philosophical Semantics* (Princeton, 1984), chap. III; Alvin Plantinga, "Actualism and Possible Worlds," *Theoria* 42 (1976):139–60. This concept has its roots in the Carnapian notion of a "state description," but its earliest indisputable appearance in print was probably in Pollock's "The Logic of Logical Necessity," *Logique et Analyse* 10 (1967):307–23.

4. There is a remarkable passage in the chapter on the word 'world' in C. S. Lewis's book *Studies in Words* (Cambridge, 1960). In the pages immediately preceding the passage I have in mind, Lewis has made a distinction between two senses, or families of senses, associated with the word 'world'; he calls them '*World A*' and '*World B*'. (The similarity between Lewis's term '*World A*' and my '*A*-world' in the text is an accident.) The passage is a description of one of the senses in the *A* family:

> Another way of putting it would be that, just as *World B* is the Region that includes all other regions, so *World A* in the sense we are now considering is the State of Affairs which includes all other states of affairs; the over-all human situation, hence the common lot, the way things go. *Things* or *life* would often translate it. (p. 222)

We may remark in connection with this passage that 'world' in most of its senses is used with varying degrees of inclusiveness. (The metaphysician, naturally enough, uses the word in the most inclusive way possible.) Thus, for *World B* we have the series: the *oikoumene*, the inhabited parts of the surface of the earth, the surface of the earth, the earth, the universe. The metaphysician who calls a possible state of affairs that is maximal with respect to the inclusion of states of affairs a 'world' is simply using 'world' in its *A* sense with a degree of inclusiveness that stands to that of 'the overall human situation' as that of 'the universe' stands to that of 'the inhabited parts of the surface of the earth'.

5. See Plantinga, "Actualism and Possible Worlds," 144, and Lewis, *On the Plurality of Worlds*, 2, 69, 70, 71. See the chapter from Pollock's *The Foundations of Philosophical Semantics* cited in note 3 for an important refinement of Abstractionism involving a distinction between "transient" and "nontransient" states of affairs.

6. Cf. Lewis, *On the Plurality of Worlds*, 81–86.

7. Cf. ibid., 98.

8. Kit Fine once described to me, and endorsed, an ontology of possible worlds that I would describe as Meinongian Concretism. But this endorsement would appear to be contradicted by his published work. (See, for example, his postscript to *Worlds, Times and Selves* [London, 1977], and "Plantinga on the Reduction of Possibilist Discourse," in *Alvin Plantinga* [Dordrecht, 1985], edited by James E. Tomberlin and Peter van Inwagen.) Perhaps the explanation is that Fine believes that, *strictly speaking*, there are no merely

possible worlds (or other "nonactual" objects) and that talk that is apparently about such things should be paraphrasable as talk about proposition-like entities—that is, as talk about the things that Abstractionists say *are* possible worlds. But (if I have Fine right) when we are talking as if there *were* possible worlds—a heuristically useful practice—we should talk about them as the Meinongian Concretist does.

Sometimes Jaakko Hintikka talks rather like a Meinongian Concretist. See, for example, section VIII of "Semantics for Propositional Attitudes," in *Reference and Modality*, edited by Leonard Linsky (Oxford, 1971), 145–67.

9. In "The Trouble with Possible Worlds," in *The Possible and the Actual*, edited by Michael J. Loux (Ithaca, 1979), William G. Lycan mistakenly supposes that Lewis is a Meinongian. See especially note 7, page 277. That such an acute philosopher as Lycan could make this mistake is a tribute to the power of the slippery word 'actual' to confuse people.

10. Lewis's ontology includes things he calls "impossible objects," although none of them is a world. But his notion of an impossible object can be spelled out in nonmodal terms: an object is impossible if it overlaps two or more worlds. Such objects are called impossible because (as will be evident from our discussion of the Concretist's use of 'exists in'), they exist in no world. Cf. Lewis, *On the Plurality of Worlds*, 211.

11. This procedure is the reverse of the procedure adopted by David Lewis in "Counterpart Theory and Quantified Modal Logic" (*The Journal of Philosophy* 65 [1968]:113–26), in which 'actual' as a predicate of objects-in-general is taken as primitive, and an actual *world* is defined as one that contains the actual objects.

12. See the works of Plantinga and Pollock cited in note 3. These definitions need not take a subjunctive form; we might have written, e.g., 'w includes the state of affairs: p's being true'. 'If w were actual, p would be true' is equivalent to 'necessarily, if w is actual, then p is true', since there is only one world, w itself, at which the antecedent of the subjunctive conditional holds. The second way of writing the definitions is theoretically preferable, since it allows a noncircular possible-worlds account of subjunctive conditionals. But the definitions in the text are more intuitive. We may also note that the definition of a proposition's having a truth-value at a world is redundant, since this is a special case of an object's having a property at a world.

13. And, of course, unless we call on divine aid, we must assume that in *no* world does anyone believe *all* necessary truths.

14. Or, at least, if one did, one would be describing the Mongolian official "line," or something like that.

15. The book is cited in note 8; 50–52.

16. Here I draw upon Lewis, *On the Plurality of Worlds*. See section 2.8 and chapter 3.

17. Ibid., sec. 1.2; see also ibid., 150–57, 167–70, 176.

18. Not equivalent in meaning, perhaps; but it follows from Concretism that (2) and (3) must have the same truth-value.

19. It is interesting to compare Concretism on this point with Intuitionism in the philosophy of mathematics, according to which seemingly impersonal theorems of mathematics are really of the form 'I have effected a construction, according to which . . . '.

20. Lewis, *Counterfactuals*, 89–91.

21. Lewis, *On the Plurality of Worlds*, 87–92.

22. Ibid., 133 (suspension points in original).

23. Stalnaker, "Possible Worlds," 68; Peter van Inwagen, "Indexicality and Actuality," *The Philosophical Review* 84 (1980): 403–26, especially 406–7.

24. José A. Benardete, *Infinity*, (Oxford, 1964), 143–54.

25. In the sequel, I shall sometimes attribute to Lewis long speeches that are by no means quotations. I believe that these speeches are fairly accurate representations of what Lewis would say in certain circumstances, though I do not, of course, claim that he would have chosen the words I have chosen to express these points. Lewis's own words on these topics can be found in *On the Plurality of Worlds*, chap. 3.

26. In *On the Plurality of Worlds*, Lewis uses "Ersatz world" in a broader sense than in *Counterfactuals*. (In the more recent book, 'Ersatz world' is used in more or less the sense of 'A-world'.) In the present paragraph, 'Ersatz world' is used in the narrow sense of *Counterfactuals*.

27. This stipulation does not rule out Linguistic Abstractionism, since the Linguistic Abstractionist's "worlds" could be (and may as well be) pure sets—which is what the Ersatz worlds of *Counterfactuals* are. It is hard to see whether it rules out Pictorial Abstractionism, since it is hard to see what kinds of things the "worlds" of that theory are supposed to be.

28. Provided there are any contingent propositions at all: an A-world is a contingent proposition unless all truths are necessary truths (in which case, it would be *the* A-world).

29. Or *maybe* there are more. But if there were, they would (according to the Abstractionist) be parts of the one universe. If there are two C-worlds, and the other one contains dragons, then (according to the Abstractionist) there *are* dragons, in the same sense as that in which there are donkeys.

30. Or, at any rate, "purely qualitative" propositions are. Some philosophers believe (*a*) that sentences containing proper names express propositions that are not purely qualitative, owing to the fact that these propositions somehow "involve" the individuals to which these names refer, and (*b*) that a proposition of this type would not have existed if one of the individuals it involved had not existed. We shall not consider this thesis.

31. The epithet 'magical' may also partly derive from the fact that the Unsound Abstractionist can give no answer to the question 'How do propositions represent?' beyond 'They just do'.

32. Lewis, *On the Plurality of Worlds*, 180.

33. "Vom Wesen der Wahrheit," *Wegmarken* (Frankfurt am Main, 1967), 78–79.

34. This strategy was suggested to me by Alvin Plantinga, who is, of course, not responsible for the quality of its execution.

35. "Specifying the membership" is a vague enough notion. 'The set that contains just 0 if Jack the Ripper was born in London, and just 1 otherwise' counts; 'the set having just the membership of Tom's favorite set' does not.

36. Let us classify *having no members* as belonging to type A: its possession by a set does, after all, determine with respect to each individual whether that individual is a member of that set.

37. See Lewis, *On the Plurality of Worlds*, sec. 1.5.

38. Parts of this paper were read as comments on a paper by David Lewis called "Possibilities: Concrete Worlds or Abstract Simples?" at the 1984 Chapel Hill Philosophy Colloquium. I have benefited from discussion and correspondence with Allen Hazen, David Lewis, Alvin Plantinga, and Peter Unger.