WHY IS THERE ANYTHING AT ALL?

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I—Peter van Inwagen

The question that is my title is supposed to be the most profound and difficult of all questions. Some, indeed, have said that it is a dangerous question, a question that can tear the mind asunder. But I think we can make some progress with it if we do not panic.

Let us begin by asking what would count as an answer to it. One sort of answer, the best if we could get it, would consist in a demonstration that it was impossible for there to be nothing.[1] Or so I would suppose: if showing that it is impossible for a certain state of affairs to obtain doesn't count as answering the question why that state of affairs does not obtain, I don't know what would count.

How would one go about proving that it was impossible for there to be nothing? One way would be to prove the existence of a necessary being. By a 'being' I mean a concrete object—whatever *that* may mean—and, therefore, by a necessary being I mean a necessarily existent concrete object. I will assume that at least some abstract objects—numbers, pure sets, 'purely qualitative' properties and relations, possibilities, possible worlds themselves —exist in all possible worlds. I do not think that the question that people have actually intended to ask when they ask why anything at all should exist could be answered by pointing out—I will take

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1. Most of the arguments of this paper will be modal arguments of one sort or another. In presenting these arguments, I am going to assume that David Lewis's metaphysics of modality—'Genuine Modal Realism'—is wrong, and that the 'abstractionist' modal metaphysic of Kripke and Plantinga and Stalnaker is right. Problems about the validity and cogency of modal reasoning are normally not particularly sensitive to how one answers the question whether possible worlds are what Lewis says they are or what his opponents say they are. The arguments we shall be considering, however, are exceptions to this generalization. The question 'Why should there be anything at all?' looks very different when viewed from the perspective provided by Lewis and from the perspective provided by Kripke *et al.* I am sorry to have to begin this paper by simply assuming without argument that Lewis is wrong about the metaphysics of modality, but I can't address every question in one paper. I discuss Lewis's 'Genuine Modal Realism' in 'Two Concepts of Possible Worlds', *Midwest Studies in Philosophy* 11 (1986) pp. 185–213.

this statement to be true for the sake of the illustration; *I* certainly think it's true—that the number 510 would exist no matter what. If the notion of an abstract object makes sense at all, it seems evident that if *everything* were an abstract object, if the *only* objects were abstract objects, there is an obvious and perfectly good sense in which there would be nothing at all, for there would be no physical things, no stuffs, no events, no space, no time, no Cartesian egos, no God....[2] When people want to know why there is anything at all, they want to know why *that* bleak state of affairs does not obtain.

It is by no means a trivial assertion that a demonstration of the impossibility of there being nothing must take the form of a demonstration that there is a necessary being. If one could do it, it would certainly suffice to show that it was a necessary truth that there were some beings, and that proposition does not formally entail the proposition that there is a necessary being. (It might be that there is at least one being in every possible world, even if there is no being that exists in every possible world.) I can say only that it seems to me hopeless to try to devise any argument for the conclusion that it is a necessary truth that there are beings that is not also an argument for the conclusion that there is a necessary being. I simply have no idea of how one might even attempt that. It is at any rate true that showing that there is a necessary being would do the trick: if there is a necessary being then it is impossible for there to be nothing.

But can it be done? Is it possible to show that there is a necessary being? The friends of the ontological argument (if there are any) will no doubt remind us that showing that there is a necessary being is just what their argument claims to be particularly good at. Let us see whether the ontological argument can help us with our question. Of all the versions of the ontological argument, the

2. Suppose there were *pure stuffs*: stuffs whose presence in a region of space did not require any being to be wholly or partly present in that region. (Butter would be a pure stuff if butter existed but, (i) nothing was made of butter, and (ii) some regions of space were filled with butter without there being any quarks, electrons, atoms, or other concrete things in those regions.) Then it would be possible for there to be no beings—and yet not *nothing*. Or suppose that there were *pure events*: events whose occurrence did not consist in a change in the intrinsic properties of any being or a change in the external relations that held among two or more beings. Then, again, it would be possible for there to be no beings—and yet not *nothing*. In my view, however, pure stuffs and events are metaphysically impossible. If I were to be convinced otherwise, certain aspects of the language of this paper would have to be revised, but not, I think, in any way that affected any of its central theses.

version I have called the Minimal Modal Ontological Argument is the one that can be most profitably studied by the philosopher who wants an argument whose conclusion is the existence of a necessary being. (The argument is indisputably logically valid; it has just the desired conclusion; every other version of the ontological argument that is indisputably logically valid will have a premise or premises that it would be harder to defend than the premise of the Minimal Modal Argument.) The argument is easy to state:

> Consider the two properties, necessity (that is, necessary existence or existence in all possible worlds) and entity or concrescence (the property of being a being or concrete object). These two properties are compatible—it is not absolutely or metaphysically or intrinsically impossible for something to have both of them. Therefore, there *is* something that has both of them; that is, there is a necessary being.[3]

But why should we accept the premise of the argument—that necessity and entity are compatible? I know of only one argument for the compatibility of these two properties that is even superficially plausible. This argument is a version of the cosmological argument. It has three premises:

Every fact has an explanation;

If a property F has, as a matter of contingent fact, a non-empty extension, then any explanation of this fact must somehow involve beings (concrete things) that do *not* have F;

Contingency (the property of being a contingent being) has, as a matter of contingent fact, a non-empty extension.

It obviously follows from these three premises that if there are, as a matter of contingent fact, contingent beings, there are also non-contingent beings—that is, necessary beings. But we know by observation that there are beings, and every being is either contingent or necessary. If, therefore, this version of the cosmological argument is sound, the observed fact that there are

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3. For a discussion of the Minimal Modal Ontological Argument, a discussion that includes a demonstration of its validity, see my 'Ontological Arguments', *Noûs* 11 (1977) pp. 375–395. This essay is reprinted in Peter van Inwagen, *God, Knowledge, and Mystery: Essays in Philosophical Theology* (Ithaca, N.Y.: Cornell University Press, 1995).

beings entails that there is at least one necessary being, and hence entails that it is impossible for there to be nothing. (This conclusion depends on our assumption that if there are contingent beings this state of affairs obtains only as a matter of contingent fact. But if there were contingent beings of necessity, it would also follow that it was impossible for there to be nothing.)

We can, in fact, reach this conclusion without any appeal to observation. We can show that it is impossible for there to be nothing without using any observed fact as a premise, even the fact that there are some beings. If the first two premises of our argument are true at all, then, surely, they are necessarily true, and the argument is therefore sound in any world in which it is a contingent truth that there are contingent beings. Therefore, if our first two premises are true, and if the existence of beings, any beings at all, beings of any sort, is a possible state of affairs, then it is possible for there to be a necessary being—that is to say, necessity and entity are compatible properties. And, as we have learned from our examination of the Minimal Modal Ontological Argument, if necessity and entity are compatible properties, there is a necessary being. Therefore, if the first two premises of our version of the cosmological argument are true, it is a necessary truth that there are beings if there could be beings. In other words, given that the first two premises of our version of the cosmological argument are true, it is *possible* for there *not* to be anything only if it is *impossible* for there to *be* anything. And one could hardly be expected to do better with the question 'Why is there anything at all?' than to establish this conclusion. Unfortunately, however, we have *not* established this conclusion. We have failed to establish it because the first premise of our cosmological argument—a variant on the Principle of Sufficient Reason: that every fact has an explanation—is wholly unbelievable. It is unbelievable because it has an absurd consequence: that all truths are necessary truths. Or so, at least, it seems to me, and so I have argued elsewhere. The general form of my argument was this: Suppose 'Alpha' is a proper name of the actual world; if every fact has an explanation, the fact that Alpha is actual has an explanation; but if this fact has an explanation, then every truth is a necessary truth.[4]

4. For a demonstration, see my *Metaphysics* (London: Oxford University Press, 1993), pp. 104–107.

In my judgment, there is no known argument that can plausibly be said to show that there is a necessary being, and there is therefore no known argument that can plausibly be said to show that it is impossible for there to be nothing.

I propose, therefore, to try another sort of approach to the question, 'Why is there anything at all?' In the sequel, I will not try to show that it is impossible for there to be nothing. Rather I will argue that if there being nothing is not impossible, it is at any rate *improbable*—as improbable as anything can be. If something is as improbable as anything can be, its probability is, of course, 0: I am going to argue that the probability of there being nothing is 0.[5]

I confess I am unhappy about the argument I am going to present. Like Descartes's ontological argument, with which it shares the virtue of simplicity, it seems a bit *too* simple. No doubt there is something wrong with it—it may share that defect with Descartes's argument—but I should like to be told what it is.[6]

The argument has four premises:

(1)　There are some beings;

(2)　If there is more than one possible world, there are infinitely many;

(3)　There is at most one possible world in which there are no beings;

(4)　For any two possible worlds, the probability of their being actual is equal.

5. The probability of any impossible event is 0, but not all events whose probability is 0 are impossible. (For example—at least if we allow ourselves a little harmless idealization—the probability of a dart's hitting any particular point on a dart board is 0.) Or, at any rate, this is true if probabilities are real numbers, which is what I shall assume in this paper. I am not going to defend my assumption that probabilities are real numbers. The primary reason is that if I were to reject this assumption and to assume that there were infinitesimal probabilities (probabilities greater than 0 but less than any real number greater than 0) the effect of this assumption on the argument would be mainly verbal: I'd have to word some of the things I say a bit differently.

6. Robin Collins has called my attention to the fact that a brief statement of the essence of the argument occurs in Robert Nozick's *Philosophical Explanations* (Cambridge, Mass.: Harvard University Press, 1981), pp. 127–128. I had read Nozick's book when it first appeared—in fact, I had taught a graduate seminar on it—but, as far as I can tell, I had entirely forgotten this feature of it. I do not recall having seen the argument elsewhere in the philosophical literature, but it is so simple that it can hardly be unobvious. (Jim Holt, a science writer, has a version of the argument in his article 'Nothing Ventured' in the November, 1994 *Harper's*; he seems to have got the argument from Nozick. Robin Collins has shown me a paper he wrote as a first-year graduate student that contains a version of the argument that is certainly independent of Nozick.)

Now let *Spinozism* be the thesis that there is just one possible world. We proceed by cases.

If Spinozism is true, then, by premise (1), it is a necessary truth that there are some beings, and the probability of there being no beings is 0.

If Spinozism is false, then, by premise (2), logical space comprises infinitely many possible worlds. If logical space comprises infinitely many possible worlds, and if any two worlds are equiprobable—premise (4)—then the probability of every world is 0. If a proposition is true in at most one world, and if the probability of every world is 0, then the probability of that proposition is 0. But then, by premise (3), the probability of there being no beings is 0.

Hence, the probability of there being no beings is 0.

It is important not to confuse the conclusion of this argument with various superficially similar propositions. The conclusion of the argument is consistent with the following proposition: the probability that God (or whatever factor produces physical universes) will produce a physical universe is much greater than 0—say, 0.8. The conclusion of the argument is not about the probability of there being no physical beings, but about the probability of there being no beings of any sort. If 'whatever factor produces physical universes' existed but had not produced a physical universe, it would still be true that there was at least one being. (If God had not produced a physical universe, and if God was a necessary being, then the probability of there being beings would be 1—as high as a probability gets.) At any rate, I do not see how a 'factor' that might (but in fact does not) produce a physical universe could exist if there were no beings. Such a factor—at least this seems evident to me—would have to be 'embodied' in the properties of one or more beings or in the relations that held among two or more beings. (John Leslie, I suppose, would disagree. I should be interested to know whether anyone else would.)

Let us examine the premises of the argument.

The truth of premise (1) seems a safe enough assumption.

In defence of premise (2), it may be pointed out that if there is more than one possible world, then things can vary; and it seems bizarre to suppose, given the kinds of properties had by the things

we observe, properties that *seem* to imply a myriad of dimensions along which these things could vary continuously, that there might be just two or just 17 or just 510 worlds.

Premise (3) can be defended as follows: there is nothing in virtue of which two worlds that contained only abstract objects could be different. If two worlds are distinct, there must be some proposition that is true in one and false in the other. If, therefore, there are *two* worlds in which there are no beings, there must be some proposition such that both that proposition and its denial are consistent with there being no concrete beings. (It would, of course, have to be a contingent proposition, since a necessary proposition and its denial can't both be consistent with anything.) But it's very hard to see how there could be a proposition that met this condition—much less to come up with a (possible) example of one.

Premise (4) is the one that people are going to want to dispute. Why should the probability of any given world's being actual be equal to the probability of any other given world's being actual?

Well, this seems very plausible to me. I have an a posteriori argument for the conclusion that I find this premise plausible independently of its consequences for answering the question, Why should there be anything at all? In a forthcoming paper, I have outlined a way of looking at objective probabilities.[7] That is, in this paper I was concerned to outline a view of probability according to which every proposition has, as one of its essential features, a probability—according to which each proposition has a probability in much the same sense as that in which each proposition has a modal status—or each set a cardinality. (Well, that's an exaggeration. Those who know something about the philosophy of probability will know that when I say this I must be either confused or exaggerating. I hope only the second disjunct holds. It can't be true that *every* proposition has a probability, for reasons connected with the fact that it can't be true that every set of points on the line has a measure. What I was aiming at was a way of looking at probability such that a very large class of propositions had 'intrinsic' probabilities, a class I hoped would include all of those propositions we could single out or name.) My

7. 'Reflections on the Essays of Draper, Gale, and Russell' in Daniel Howard-Snyder (ed.), *The Evidential Problem of Evil*, forthcoming from Indiana University Press.

purposes were unconnected with ontological questions. I was concerned to try to show that the concept of subjective probability made sense only on the assumption that objective probabilities of the kind I was trying to describe existed—and that project was in its turn connected with an attempt to clarify the so-called probabilistic argument from evil. In constructing this philosophical picture of objective probability, I unhesitatingly built into the picture I was drawing the following feature: on the assumption that there are infinitely many possible worlds, the probability of any world's being actual is 0. I did not in that paper attempt to defend that aspect of my picture because it seemed to me to be so obvious as to need no defence. I suppose that the argument I'm now considering must have occurred to me when I reflected on the fact that it follows from this assumption (together with the assumption that there is at most one possible world in which there is nothing) that the probability of there being nothing is 0. But what had seemed trivial can come to seem less trivial after it has been seen to have important philosophical consequences. I must therefore raise the question: What argument can be given in support of the thesis that any two possible worlds are of equal probability? (My allegiance to this thesis rests on my interior manipulations of the mental picture of probabilities that I use. I find these manipulations hard to articulate and I find it hard to arrange the results of my attempts at articulation into an argument. The sequel is my best effort.)

Suppose we think of a fictitious object called Reality. Possible worlds are to be thought of as maximally specific (and hence mutually inconsistent) states of this Reality—logical space, or the set or class of all worlds, is the ensemble of all these maximally specific states that Reality could be in. If a Tractarian ontology were correct—if there were the same fundamental concrete objects in every possible world—and if the fundamental objects had the same mereological sum in every possible world, then Reality would not be a fictitious object: It would be the mereological sum of all the fundamental things, and a possible world would be any consistent and fully specific description of it. But I am not willing to grant any of these things, and I therefore call Reality a fictitious object. Still, I find it a useful fiction for reasons that will transpire.

When we think about an object or system of objects, it is hard to reason probabilistically about this object or system unless we are able to partition the possible states of the object or system into sets of states of equal probability—the partition being sufficiently fine-grained that each proposition we want to assign a probability to be identifiable with a particular set of these states. For example, we can reason probabilistically about dice to very good effect on the assumption that if a die is thrown, the probabilities that any two of its faces will come up are equal—provided that every proposition about the dice we want to assign a probability to is such that its truth-value is determined by which dice fall with which faces up.

It would seem that we can sometimes find reasons for such assignments of equal probability. Suppose we think about dice, either dice in the abstract, or particular dice that have never been thrown (and thus have no 'track record'). If we want to know whether the above assumption is true, whether it is indeed true that the probabilities are equal that any two faces of a die will come up, it is obviously relevant to raise the question whether the die is of homogeneous density. I give this example simply to illustrate the fact that we can sometimes identify factors that are relevant to the question whether two possible states of a system of objects are of equal probability.[8] No doubt my confidence that the question whether a die is of homogeneous density is relevant to the question whether each of its faces is equally likely to come up when it is thrown is partly due to my knowledge of the existence of loaded dice and of how dice are loaded. But I think there is an a priori element in my confidence that this factor is relevant. We do seem to have some capacity for determining a priori that some states of some systems are of equal probability. Perhaps I am absurdly overconfident about the reliability of this capacity, but I am going to try to exercise it in application to a very abstract case indeed. I am going to propose a sufficient condition for the states belonging

8. But see Ian Hacking, *The Emergence of Probability* (Cambridge: Cambridge University Press, 1975), pp. 51–52. My answer: the intuitions operating in this case relate to (idealized) material objects—'mid-sized specimens of dry goods.' There *is* an unreliable intuition that tends to be at work when we think about partitions of the state-space of systems composed of small numbers of photons or small numbers of electrons, but it has nothing in particular to do with probability; it is that these systems can be thought about as if they were spatial ensembles of tiny material objects, objects that retain their identities under spatial translation.

to certain partitions of the states of a system being of equal probability. The condition I propose will, I argue, have the consequence that all possible worlds are of equal probability.

Let us consider some system of objects. We suppose that associated with the system are certain abstracta called 'states'. For each of these states the system is, without qualification, either 'in' that state or not 'in' that state. States behave logically very much like propositions. (They may even *be* propositions; propositions, perhaps, about the intrinsic properties of the objects that make up the system and the relations they bear to one another.) States, that is, can be conjoined or disjoined, and they have negations or complements, and so on. The conjunction of two states will not necessarily be a state, however, for I will take 'state' to mean the same as 'possible state'. We call a state x of a system *maximal* if, for every state y, either, necessarily, if the system is in x it is in y, or, necessarily, if the system is in x it is in the complement of y. Or, what is the same thing, a state x of a system is maximal if, for every state of the system y such that x is not the conjunction of y and some other state(s), the conjunction of x and y is not a state.

Let us say that a system of objects is *isolated* if no facts about objects external to the system could in any way influence the system. More exactly, a system is isolated *with respect to a certain set of its states* if no facts about objects external to the system could in any way have any influence on which of those states the system was in. In the sequel, I will mostly ignore this bit of fine-tuning and will speak of a system's being isolated *simpliciter*.

I propose: for any system of objects (that has maximal states) the maximal states of the system should be regarded as equally probable, provided that the system is isolated.

Consider my computer. Suppose we accept some programmer's definition, some software definition, of the states of this system (as opposed, say, to a definition based on the states of the elementary particles that physically compose it). It is no doubt false that the maximal states of my computer are equally probable. No doubt a state that includes a novel written in Urdu stored on the hard disk is less probable than the actual state of the computer. But we make this judgment because we know that the computer is not an isolated system. I, who am external to the computer, am to a certain degree responsible for its states, and we know that I am

unlikely put it into a state in which it contains a novel written in Urdu. But what should we expect of a computer that was an isolated system? How might we imagine something that at least approximated an 'isolated' computer?

Well, suppose that a computer like mine came flying out of an 'evaporating' black hole. (We have Stephen Hawking's word for it that an evaporating black hole might produce a grand piano.) We'd then expect a hard disc that contained novels written in English, French, Urdu, and Esperanto to be about equally probable.[9] (We'd expect the probabilities of each to be very close to 0, but not quite there, and very close to one another.) And, surely, we'd expect this because we think that in the space whose points are maximal software states, blobs of about equal volume represent hard discs containing novels in French and Urdu (simply because the number of the maximal states of the system is finite, and about the same number of states includes a disc that contains a novel in either language) and, we think, the black hole is equally likely to produce any of the maximal states. (Of course, we haven't really imagined an 'isolated' computer; but the black hole on which the computer depends for its existence cannot easily be supposed to 'prefer' any of the possible software states of the system to any of the others. Thus we have captured an important and relevant feature that an isolated computer would have. It should be noted, however, that what the black hole is really indifferent about is what possible *physical* state the computer it produces will be in. We have done nothing to rule out this epistemic possibility: some of the maximal software states of the computer correspond to blobs of significantly different volume in the space of possible physical states of the system. That would be a case in which the computer was not even 'for all practical purposes' isolated with respect to its software states; that would be a case in which we should be unable to ignore the fact that the software state of the computer is determined by its hardware state.)

The principle I have suggested seems, therefore, to have some plausibility: If a system is isolated, then any two of its maximal states are of equal probability. But then we have an argument for

9. I ignore Kripke-style questions about whether the novels would actually *be* in these languages.

the conclusion that any two possible worlds are of equal probability: 'Reality' is an isolated system, and possible worlds are maximal states of Reality.

There are, however, intuitions that oppose the thesis that the 'empty world' is no more probable than any other world, and we must examine them. Consider, for example, the famous passage in *Principles of Nature and Grace* in which Leibniz argues that it is necessary to search for an explanation of there being something rather than nothing, since 'nothing is simpler and more easy [*facile*] than something'. If 'nothing' is indeed simpler than 'something', might not the simplicity of 'nothing' at least suggest that 'nothing' is *more probable* than 'something'—or at least more probable than any *given* arrangement of 'somethings'?

In what sense is 'nothing' *simpler* than 'something'? The only sense I can make of this idea is contained in these two statements: 'There being nothing' is—provided it is indeed possible for there to be nothing—a complete specification of a way Reality could be (note that it settles the truth-value of every proposition), and it is a very simple specification indeed; any other complete specification of a way Reality could be would be of very great, perhaps of infinite, complexity.[10]

Does the fact that 'nothing' is in this sense simpler than 'something' give any support to the thesis that 'nothing' is more probable than 'something'—or to the thesis that 'nothing' is more probable than any given arrangement of 'somethings'? Suppose, *per impossibile*, that there are exactly two possible worlds, the empty world and ours. Consider the following two theses:

> The probability of the empty world's being actual is 2/3; the probability of ours being actual is 1/3. (So we're lucky in the way a man would be lucky if he survived his turn at Russian Roulette in a match played with four rounds in the six chambers of the revolver.)

> The probability of the empty world's being actual is 1/2; the probability of ours being actual is 1/2. (So we're lucky in the way a man would be lucky if he survived his turn at Russian

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10. Any other complete specification besides 'Things being as they actually are', that is. But this specification contains no information; one cannot deduce from it the truth-value of any contingent proposition.

Roulette in a match played with three rounds in the six chambers of the revolver.)

Suppose that we somehow knew that one of these two probability-assignments was true. Would the fact that the empty world is vastly, even infinitely, easier to describe than our world give us any reason to prefer the first probability assignment to the second? I have a hard time seeing why anyone should think that it did. It seems to me that one can find this plausible only if one is covertly thinking that there is something that is outside the 'Reality' of which possible worlds are maximal states, something by whose operations actuality is conferred on whatever world it is that enjoys that status. One might, for example believe that the greater simplicity of the empty world made it more probable than ours if one believed that there was a 'pre-cosmic selection machine', not a part of Reality, the operations of which select a maximal state for Reality to be in, and that something about the not-fully-deterministic workings of this machine made it more probable that it would select a state that could be simply described than one that required a very complicated description.

Leibniz believed something like this, although his selector was God, not a machine. But only something *like* this. Leibniz's 'possible worlds' are not possible worlds in the current sense of the term. They are rather possible Creations. They are not therefore maximal states of Reality but only of the created part of it. And, of course, simplicity might well be a factor that would recommend a particular possible Creation to a potential Creator contemplating the question, 'Which possible Creation shall I cause to be actual?'

Something very similar can be said about ease. Suppose, for example, that it is *easier* for God to bring about the actuality of the state of affairs *There being nothing besides God* than the state of affairs *There being something besides God*—perhaps He has to do nothing to produce the former and something rather difficult to produce the latter; something that would require, say, six days of work and a day of recuperation afterwards—and if God, like most of us, preferred not to expend effort without good reason, then it might be more probable that there not be any created beings than that there be any.

Whatever merit these speculations may have, they are of no use to someone who wants to know about the probability of there being nothing at all: they are relevant only to a question of conditional probability: What is the probability of there being nothing created, given that there is an uncreated being capable of creation?

Let me suggest an example that may militate against the intuition that the simplicity of the empty world entails that that world is more probable than any other world. Recall, if you are old enough, those political rallies in China in the 1960s when thousands of people would produce an enormous portrait of Chairman Mao by holding up big sheets of cardboard. At some signal, everyone on one side of an arena would hold up either a red or a white sheet, and instantly a portrait of the Great Helmsman would appear, in red against a white background. We can look upon the participants in and paraphernalia of this system of portraiture (on a particular occasion of its use) as constituting a system of objects, a system each maximal state of which corresponds to an assignment of either 'red' or 'white' to the position of each participant. Such a system, of course, is not isolated and cannot be regarded as isolated even as an idealization, for each participant is given, along with his red or white cardboard sheet, a seat number, and is instructed to take great care to sit in the seat with that number. (I suppose that's how it's done.) Now suppose that on one of these occasions, counter-revolutionary saboteurs had garbled the assigned seat numbers—totally randomized them, in fact. What should we expect those present to see when the signal was given and they looked at the area in which a portrait was supposed to appear? No doubt what they would observe would be a pink expanse of pretty close to uniform saturation. The following argument has no force at all: pure white (or pure red) is the *simplest* of the maximal states of the system, so it's more probable that we'd see pure white (red) than pink or a portrait of Mao or a diagram of the structure of a paramecium. It is, in fact, false that 'pure white' is more probable than any other particular maximal state of the system: all are of exactly equal probability (now that the seating assignments have been randomized) and whichever one of them turns up will have had exactly the same chance of turning up as one of them that displays

a portrait of Chiang Kai-shek. (Any *one* of them; of course a portrait of Chiang would be billions of times more likely to turn up than 'pure white', since there are billions of maximal states that would count as portraits of Chiang.)

I conclude—tentatively—that the simplicity of the empty world provides us with no reason to regard it as more probable than any other possible world. One's feeling that the empty world must somehow be the most probable of all worlds—that it must have a greater-than-zero probability—seems to depend on one's smuggling into one's thinking the assumption that there is something that is somehow outside the 'Reality' of which possible worlds are maximal states, something that would be more likely to put Reality into the state *There being nothing*, or, it may be, something that determines that *There being nothing* is the 'default setting' on the control-board of Reality. But there could be no such thing, for nothing is outside Reality.

So I conclude. But have I really said anything that supports this conclusion? Whether I have depends on the answers to two questions:

> Is the principle 'The maximal states of an isolated system are of equal probability' true in the cases in which it applies?

> Is the case in which I have applied it really one of the cases in which it applies?

As to the latter question, perhaps one might argue that the principle is applicable only to 'Tractarian' systems, systems in which the same 'fundamental objects' are present no matter what state the system is in—the maximal states of the system being defined by the various possible arrangements of the fundamental objects. It could be argued that the 'Chinese Arena' case—which I used to argue against the thesis that the simplest maximal state of a system should be regarded as its most probable maximal state— is convincing only in application to Tractarian systems. (The Chinese Arena is, of course, a Tractarian system.) And, it could be argued, no conclusion that applies only to Tractarian systems supports the conclusion I have been arguing for, since *There being nothing* is not a possible state of a Tractarian system. A Tractarian system may have states that are in a sense counterfeits of *There being nothing*. For example, the state of the Chinese Arena in

which only white sheets are showing is a sort of counterfeit 'nothing'. Perhaps my use of the (acknowledged) fiction of a Reality of which possible worlds are maximal states shows that on some level I am thinking of logical space as a space of states of a Tractarian system; perhaps on some level, despite my official denials, I am thinking of possible worlds in a way that implies that the same fundamental objects are present in each world; perhaps I am thinking of worlds as being a kind of concrete analogue of the 'ersatz worlds' Lewis describes in *Counterfactuals*. In that case the fundamental objects present in each world would be something like points in space, and each of them would have two possible states: 'on' and 'off' or 'occupied' and 'unoccupied'. Am I thinking of the empty world as the world in which all the fundamental objects are in the 'off' or 'unoccupied' state? It may be that I am. I try not to use that sort of picture, but it is a powerful and seductive picture and it is possible that, on some level, I have been seduced by it.

Is the principle 'The maximal states of an isolated system are of equal probability' applicable to non-Tractarian systems? Is it, in particular, applicable to a system if one of the states of that system is *There being nothing*—a real 'nothing', not a counterfeit nothing like a vast space composed entirely of unoccupied but potentially occupied points? I am inclined to think so. But I am unable to convince myself that this inclination is trustworthy.