

Why is There Something Rather Than Nothing? A Probabilistic Answer Examined

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Abstract

Peter van Inwagen has given an answer to the question ‘Why is there something rather than nothing?’. His answer is: Because there being nothing is as improbable as anything can be: it has probability 0. Here I shall examine his argument for this answer and I shall argue that it does not work because no good reasons have been given for two of the argument’s premises and that the conclusion of the argument does not constitute an answer to the question van Inwagen wanted to answer.

1.

Peter van Inwagen has given an answer to the question ‘Why is there something rather than nothing?’. His answer is: Because there being nothing is as improbable as anything can be: it has probability 0. He reaches his answer on the basis of a very simple and clear argument. Now, van Inwagen is unhappy with the argument, since it seems *too* simple to him. He has no doubt that there is something wrong with it, but would like to be told what it is.¹ I have an idea of what is wrong with it, and explaining that is the point of my paper. These are the premises of van Inwagen’s argument:

1. There are some beings.
2. If there is more than one possible world, there are infinitely many possible worlds.
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.

Van Inwagen argues that from these premises it follows that the probability that there are no beings, i.e. the probability that there is

¹ Peter van Inwagen, ‘Why is there anything at all?’, in his *Ontology, Identity, and Modality. Essays in Metaphysics* (Cambridge: Cambridge University Press, 2001), 61.

nothing, is 0. The argument is as follows. Suppose there is only one possible world. Then, by premise 1, it is a necessary truth that there are some beings and therefore the probability of there being no beings is 0. Suppose there is more than one possible world. Then, by premise 2, there are infinitely many possible worlds. By premise 4, those infinitely many possible worlds are equiprobable and, since they are infinitely many, each one of them has probability 0. Since the probability of each world is 0 the probability of a proposition that is true in at most one possible world is 0. Then, by premise 3, the probability of the proposition that there are no beings is 0. Therefore, the probability of there being no beings is 0. This does not mean that the empty world is impossible, but that it has the lowest possible probability.²

2.

There are two basic problems with the argument. One is that apart from the first premise, none of the others is plausible or has been made plausible by what van Inwagen says. The other problem is that the conclusion of the argument does not really answer the question van Inwagen set out to answer.

Before I go into that, it is important to note that for van Inwagen an empty world is a world *with no concrete objects*. Thus, premise 3 must be understood as claiming that there is at most one possible world in which there are no concrete objects. Indeed, van Inwagen assumes that at least some abstract objects (numbers, pure sets, purely qualitative properties and relations, possibilities, possible worlds themselves) exist in every possible world.³ The question van Inwagen is interested in answering is why there are concrete objects rather than the question why there are objects at all, whether abstract or concrete. Thus, an empty world for van Inwagen is a world containing only abstract objects. This, of course, presupposes that at least some abstract objects can exist independently of concrete ones, and that the notion

² van Inwagen, 'Why is there anything at all?', 61, fn. 6, says that the essence of his argument was anticipated by Robert Nozick, *Philosophical Explanations* (Cambridge, Massachusetts: Harvard University Press, 1981), 127–28. True, but it is also important to note that Nozick's is a sketch of an argument rather than a full argument, and there also seem to be some differences between what Nozick and van Inwagen say, for instance in Nozick the infinity of possible worlds (it is not even clear that they are possible worlds in Nozick's argument) seems to play no role.

³ van Inwagen, 'Why is there anything at all?', 57.

Why Is There Something Rather Than Nothing?

of an abstract object is a coherent one. Some philosophers, for different reasons, have rejected these presuppositions. For instance, John Heil seems to doubt even the coherence of the idea of abstract objects, and Jonathan Lowe maintains that abstract objects depend on concrete ones, so that there cannot be a world with only abstract objects.⁴ I disagree. The idea of abstract objects existing on their own seems perfectly clear and plausible to me, and so I shall not question it.

Let us now briefly consider the second premise. All van Inwagen says about it is that 'if there is more than one possible world, 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 2 or just 17 or just 510 worlds'.⁵

One crucial assertion here is that if there is more than one possible world, things can vary. This might be plausible but, given the topic van Inwagen is discussing, this needs to be argued for. For that there is more than one possible world does not entail that things can vary. Suppose that things could not vary: each thing had to be the way it is, *if it existed*. And suppose there were just two possible worlds, the actual world and a world with no things at all. In that case there would be more than one possible world, but things could not vary. Furthermore, in that case the probability of there being nothing would be 0.5, not 0, and the need for an answer to the question why there is something rather than nothing would be as pressing as ever.

It would be more promising to argue that because things can vary, there are infinitely many possible worlds. If so, van Inwagen does not need to consider in his argument the possibility that there is only one possible world. But, even then, more should be said about the second premise. For van Inwagen does not say anything about the cardinality of the infinitely many possible worlds. But this is an extremely relevant issue. For if the cardinality of the possible worlds is countable infinity, then those worlds can all have probability 0 only if one rejects the axiom of countable additivity, which says that the

⁴ John Heil, 'Contingency', in T. Goldschmidt (ed.), *The Puzzle of Existence: Why is there Something rather than Nothing?* (New York and London: Routledge, 2013), 174; E. J. Lowe, 'Metaphysical Nihilism Revisited', in T. Goldschmidt (ed.), *The Puzzle of Existence*, 187.

⁵ van Inwagen, 'Why is there anything at all?', 62 (italics in the original).

probability of every countable set, finite or infinite, is the sum of the probabilities of the members of the set. For suppose there are countable infinitely many possible worlds and they all have probability 0. The probability of the total space of possible worlds will then be 0, since that is the sum of the probabilities of the possible worlds. But it is an axiom of probability theory that the probability of the total space of possible outcomes is 1.

The solution is to reject the axiom of countable additivity and limit oneself to the axiom of finite additivity, a recommendation proposed by De Finetti.⁶ The axiom of finite additivity says that the probability of any *finite* set is the sum of the probabilities of the members of the set. This axiom allows one to assign probability 0 to each one of countable infinitely many possible worlds, since it does not force us to assign probability 0 to the countable infinite set of all the possible worlds, thereby avoiding conflict with the axiom that the probability of the total space of possible outcomes is 1.

Nevertheless, the cardinality of the set of possible worlds is likely to be *uncountable* infinity. And in this case it is possible to assign probability 0 to each possible world without having to reject the axiom of countable additivity. Van Inwagen does not say what the cardinality of the set of possible worlds is in his view, but what he says in support of his second premise suggests he is thinking of the cardinality of the continuum, since he says that there seem to be a myriad of dimensions along which things can vary *continuously*. Thus van Inwagen's argument is more conspicuously expressed as follows:

1. There are some beings that can vary continuously.
2. If there are beings that can vary continuously, there are uncountably infinitely many possible worlds.
3. There is at most one possible world in which there are no concrete beings.
4. For any two possible worlds, the probability of their being actual is equal.

This is the version of the argument I shall discuss. Note that given the new first premise in my reformulation of his argument, I am interpreting van Inwagen as meaning that it is possible for actual things to have each one of the values of continuous dimensions rather than that for each value in a continuous quantity it is possible for some thing to have that value. My interpretation is justified in the fact that in the passage I quoted above van Inwagen speaks of a myriad

⁶ Donald Gillies, *Philosophical Theories of Probability* (London and New York: Routledge, 2000), 67.

Why Is There Something Rather Than Nothing?

of dimensions along which the things we observe could vary continuously. Of course, one needs to argue that it is possible for actual things to have each one of the values of continuous dimensions. But I am not going to press the issue here. On the contrary, in this paper I shall grant premises 1 and 2 and their consequence, namely that there is an uncountable infinity of possible worlds.

3.

The main problems in van Inwagen's argument lie in premises 3 and 4. The defense of premise 3 is based on the idea that if two worlds are distinct, there must be some proposition that is true in one and false in the other. But van Inwagen cannot see how that could be the case if there were two worlds in which there are no beings.⁷

Now, Tim Mawson has suggested that empty worlds, worlds with no beings, could differ with respect to the laws that hold in them, which laws support different counterfactuals. If so, there are distinct empty worlds that differ with respect to which propositions are true and false in them, namely the propositions expressing those laws and the counterfactuals they support.⁸ Mawson, following a suggestion of Brian Leftow, also suggests that empty worlds might differ with respect to propositions stating how probable certain events are. For instance, an empty world might be such that it is more probable that a dog will turn up uncaused than a cat, while in another one it is more probable that a cat will turn up uncaused than a dog; an empty world might be such that it is more probable that any dog that does turn up will bark rather than speak and another empty world is one in which it is more probable that any dog that does turn up will speak rather than bark.⁹

In a world where only abstract objects exist, laws, and the counterfactuals and probability statements they support, must either have no truthmakers or else must have as their truthmakers relations between some abstract universals existing in that world. Now, I believe that laws must have truthmakers but those truthmakers are not universals, and so I cannot accept Mawson's examples. Those who do not share

⁷ van Inwagen, 'Why is there anything at all?', 62.

⁸ Tim Mawson, 'Why is there anything at all?', in Y. Nagasawa and E. Wielenberg (eds), *New Waves in Philosophy of Religion* (Basingstoke: Palgrave Macmillan, 2009), 43; cf. Matthew Kotzen, 'The Probabilistic Explanation of Why there is Something rather than Nothing', in T. Goldschmidt (ed.), *The Puzzle of Existence*, 218–219, fn. 6.

⁹ Mawson, 'Why is there anything at all?', 44, 53.

these other views with me may find in Mawson's examples reasons to suppose van Inwagen's argument goes wrong at this point. But I shall here give other examples against premise 3 of van Inwagen's argument, examples people with my views about laws can accept.

Before giving my examples against premise 3, let me mention one other way in which I shall not attempt to undermine the premise. If the accessibility relation is not universal, and if some empty worlds have different accessibility relations, some empty worlds will differ from each other in respect of what modal truths hold in them. But there are two reasons why I am not going to use this line of thought. Firstly, I think that the accessibility relation holding between metaphysically possible worlds is universal, that is, every metaphysically possible world is accessible from every metaphysically possible world. Secondly, if the accessibility relation were not universal, which worlds are accessible to which worlds would be grounded in what objects exist in those worlds and what their properties are, and so before establishing that different empty worlds have different accessibility relations, one would have to establish that different empty worlds have either different abstract objects or have the same abstract objects having different properties.¹⁰

Now, even if some abstract objects exist necessarily, not all abstract objects seem to be necessary existents. And at least some of those that are alleged to exist necessarily may have some properties contingently. Both cases provide propositions that should distinguish between different empty worlds. Let me give a couple of examples.

Consider propositions. Propositions are, on many views of them, abstract objects, and here I shall assume them to be abstract objects. This is a harmless assumption, since in fact all I need to assume is that some propositions are abstract objects (and surely some of them are, namely propositions about abstract objects that can exist without concrete ones, since if such propositions were concrete, there could not be a world with only abstract objects – assuming that in every possible world where some objects exist there exist propositions about those objects). More precisely, all I need to assume is that the truth-teller, the proposition that says of itself that it is true, is an abstract object, and this seems to me a very safe assumption, since such a proposition can exist in a world with no concrete objects.¹¹

¹⁰ I am indebted to David Efird for pressing the issue of the universality of the accessibility relation in connection with the topic of this paper.

¹¹ That is, it is a very safe assumption assuming that there is a proposition – as opposed to a sentence – that says of itself that it is true. But I have defended this assumption. See Gonzalo Rodriguez-Pereyra, 'Grounding is

Why Is There Something Rather Than Nothing?

Now, the truth-teller can consistently be assigned the truth value *true* and the truth value *false*. It is plausible to suppose, then, that there are possible worlds in which it is true, and possible worlds in which it is false.¹² But since the truth-teller does not depend on anything concrete, it can exist in a world with only abstract objects, and can take either truth-value there. Thus, there is (at least) one world with only abstract objects where the truth-teller is true and there is (at least) one world with only abstract objects where the truth-teller is false. Thus, on these assumptions, there is more than one world containing only abstract objects.

Now, this is sufficient to falsify premise 3 of the argument. But since van Inwagen believes that, if there are infinitely many possible worlds, any set of worlds of lower cardinality than the set of all possible worlds has probability 0,¹³ all he needs is the weaker claim that there are finitely many empty worlds or at most countably infinitely many empty worlds. Yet the truth-teller example only supports the claim that there are at least two empty worlds. Thus, although the truth-teller example refutes the premise as stated, a simple modification of the premise would give van Inwagen what he needs.

Nevertheless, the example itself can be modified so as to support the claim that there are uncountably many empty worlds.¹⁴ Consider finite loops of propositions each one of which says that the next one is true and assume that for every natural number n there is one such loop. Thus the 1-loop is the truth-teller; the 2-loop is a pair of propositions each one of which says that the other is true; the 3-loop consists of three propositions, the first of which

not a strict order', *Journal of the American Philosophical Association* **1** (2015), 527.

¹² What makes it true in those worlds where it is true? The fact that it is true. That is, the truthmaker of the truth-teller is the fact that it is true. See Rodriguez-Pereyra, 'Grounding is not a strict order', 520, 525, where I argue that the fact that the truth-teller is true is the alethic-fact ground of the fact that the truth-teller is true; but the alethic-fact grounding relation is a relation linking the truthmaker of a proposition and the fact that it is true; so it follows that the truthmaker of the truth-teller is the fact that it is true.

¹³ van Inwagen, 'Reflections on the Chapters by Draper, Russell, and Gale', in D. Howard-Snyder (ed.), *The Evidential Argument from Evil* (Bloomington and Indianapolis: Indiana University Press, 1996), 239.

¹⁴ The loops example that is to follow was suggested to me by Øystein Linnebo who, nevertheless, is skeptical about the truth-teller and the loops of propositions each one of which says that the next one is true.

says that the second is true, while the second one says that the third is true, and the third one says that the first one is true; and so on for every natural number n . It is plausible to suppose that such loops exist in a world with no concrete objects, since the members of such loops are abstract objects that do not depend for their existence on any concrete objects. The members of any such loop can consistently be all true or all false. It is plausible to suppose, then, that for every such loop there are empty possible worlds in which its members are all true, and empty possible worlds in which its members are all false. Now, empty worlds can vary according to which loops have all their members true and which ones have all their members false (for instance, in one empty world all the members of all loops are true; in another one, all the members of all loops are true, except the member of the 1-loop; in another one all the members of all loops are true, except the members of the 1-loop and the 2-loop; in another one all the members of odd-loops are true but all the members of even-loops are false; and so on). Now, by Cantor's theorem, there are continuum many possible combinations of consistent assignments of truth-values to the members of the set of countably infinitely many loops of propositions. Since each such possible combination can obtain in an empty world, there are continuum many empty worlds.¹⁵

But there are those who will not be swayed by the truth-teller and its loops. Let us then try another case. Consider absolute space. It is often thought to be an abstract object. Furthermore, it has been argued that in the context of this debate it should be considered as an abstract object.¹⁶ But van Inwagen lists space in a list of concrete

¹⁵ I have wondered whether the example could be made to work with finite lists of propositions each one of which says that the next one is true and the last one says of itself that it is true (and where the 1-list is the truth-teller itself). The members of such lists can consistently be all true or all false. Here is an argument that the example does not work with such lists. It is plausible that there is only one proposition that says of itself that it is true, and so it is plausible that there is only one proposition that says of the truth-teller that it is true, and only one proposition that says of the latter proposition that it is true, and so on. So, if in a world the members of the n -list are all true (false), the members of the $n+1$ -list must all be true (false). This means that there are at most two empty worlds varying according to the truth-value of the members of the lists: one in which all the members of all lists are true and one in which all the members of all lists are false.

¹⁶ David Efird and Tom Stoneham, 'The Subtraction Argument for Metaphysical Nihilism', *The Journal of Philosophy* **102** (2005), 311–312.

Why Is There Something Rather Than Nothing?

objects, together with physical things, stuffs, events, time, Cartesian egos and God.¹⁷ Van Inwagen does not give reasons for why he takes space not to be abstract – in fact, he does not tell us how to distinguish between the abstract and the concrete. But van Inwagen needs an account of the abstract/concrete distinction to justify his listing space as concrete: *prima facie* it seems very different from physical things and stuffs, events, egos and God. Furthermore, there is an account of space in terms of regions as possibilities for location. But for van Inwagen possibilities are abstract objects.¹⁸ So there is an account of space on which it counts as an abstract object according to van Inwagen's partial extensional characterization of abstract objects. Let us assume, then, that space is an abstract object. Presumably, its existence is contingent. If it is indeed contingent, then since its existence does not depend on the existence of concrete objects, there are possible worlds containing only abstract objects where space exists and there are possible worlds containing only abstract objects where space does not exist. But even if the existence of space is not contingent, its geometry is, presumably, contingent, and so there are worlds where it has Euclidean geometry and worlds where it has some non-Euclidean geometry. Since the geometry of space is metaphysically independent of whether space is empty or not, there will be worlds containing only abstract objects where space is Euclidean and worlds containing only abstract objects where space is non-Euclidean. Furthermore, the geometry of space can be varied continuously, since, for instance, each degree of space curvature defines a different geometry. Thus, there will be uncountably many empty worlds differing from each other with respect to the geometry of space.¹⁹

Thus premise 3 is plausible only if all abstract objects that do not depend on concrete ones are necessary beings and none of their intrinsic, non-relational properties are contingent.²⁰ But, as we have

¹⁷ van Inwagen, 'Why is there anything at all?', 58.

¹⁸ *Ibid.*, 57.

¹⁹ Such empty worlds differing with respect to the geometry of space will also differ with respect to the counterfactuals holding in them, since the different geometry of space in different worlds would ground different counterfactuals.

²⁰ E. J. Lowe claimed that van Inwagen's argument presupposes that all abstract objects are necessary (Lowe, 'Why is there anything at all?', *Proceedings of the Aristotelian Society*, Supplementary Volume **LXX** (1996), 115). But, in fact, as I have already pointed out, what it presupposes is that abstract objects that do not depend on concrete ones are necessary *and* that none of their intrinsic properties are contingent.

seen by means of our two examples, neither supposition seems evident or necessary. In particular, if space is an abstract object, it seems to be an abstract object that can vary continuously along a certain dimension (i.e. its curvature). One important problem with van Inwagen's argument is, then, the lack of support for its third premise, a lack of support that would be remedied to some extent with an account of the nature of space.

4.

Premise 4 is the one van Inwagen discusses at length. His defense of the premise is based on the following principle: The maximal states of an isolated system are of equal probability. But, van Inwagen claims, Reality is an isolated system and possible worlds are its maximal states, therefore, possible worlds are equiprobable.²¹

So, what is an isolated system, and what are its maximal states? An isolated system is one such that no facts about objects external to the system could in any way influence the system, and a maximal state is a state such that, for every other state, either the maximal state entails the other state, or it entails its complement.²²

Van Inwagen supports the plausibility of his principle that the maximal states of an isolated system are equiprobable by means of a fanciful example. The use of the example presupposes that in some cases, in particular in the case of the maximal states of isolated systems, we can determine their equiprobability a priori, and van Inwagen explicitly recognises that we have a capacity for determining a priori the equiprobability of such states.²³ The example is that of a computer that comes out of an evaporating black hole. In this case we would expect a hard disk that contained novels written in English, French, Urdu, and Esperanto to be equally probable. This is because (a) 'we think that in the space whose points are maximal software states, blobs of about equal volume represent hard disks containing novels in French and Urdu (simply because the number of maximal states of the system is finite, and about the same number of states includes a disk that contains a novel in either language)' and (b) 'we think the black hole is equally likely to produce any of the maximal states'.²⁴ But why do we think (b)? Apparently

²¹ van Inwagen, 'Why is there anything at all?', 67.

²² *Ibid.*, 65.

²³ *Ibid.*, 65.

²⁴ *Ibid.*, 66.

Why Is There Something Rather Than Nothing?

because the black hole on which the computer depends ‘cannot easily be supposed to “prefer” any of the possible software states of the system to any of the others’.²⁵

Indeed, van Inwagen thinks that any reason to think that some possible worlds are more probable than others, and in particular any reason to think that the world without concrete objects is more probable than the others, presupposes a factor external to Reality that is determining or at least influencing which possible world becomes actual. But if this is the case, Reality is not an isolated system. But Reality is an isolated system, since nothing is outside reality.²⁶

But is it true that it is not easy to suppose an isolated system ‘preferring’ one of its maximal states? Consider the actual world – not the universe, but the actual world, the totality of every existent entity plus the laws governing it.²⁷ This is an isolated system, since no entity that does not exist can influence it in any way, and the laws and the existent entities that can influence it are part of it. Now, at every moment t , there are different maximal states the world can be in. For instance, at a certain moment t when a certain coin has been tossed and it is about to land, there are several maximal states the world might occupy at the following moment t^* . Let us simplify for the sake of example and suppose that there are exactly four maximal states for the world to occupy at t^* : (a) the coin does not land, (b) the coin lands heads, (c) the coin lands tails, and (d) the coin lands on its edge.²⁸ Now, it is perfectly easy to suppose, and indeed most theories of physical probability entail, that, given the laws of nature and the physical characteristics and position of the coin at time t , one of those four maximal states is more probable than the others (i.e. it is more probable that the world will be at t^* in one of those states rather than the others).

It might be objected that the fact that we can easily suppose that one of the possible maximal states of the world at t^* has a greater physical chance or probability than the others is due to the fact that we know what gives a state of a system a physical probability,

²⁵ van Inwagen, ‘Why is there anything at all?’, 66.

²⁶ *Ibid.*, 70.

²⁷ For van Inwagen there are no non-existent entities: see van Inwagen, ‘Meta-ontology’, *Erkenntnis* 48 (1998), 235.

²⁸ This is a simplification in two ways. First, each one of those four states is not maximal since they do not include anything about the rest of the world. Second, each one of those four states is not maximal since they do not fully specify the way in which the coin fails to land, or lands heads, or lands tails, or lands on its edge.

namely the previous condition of the system and the laws of nature, while we do not know what gives a possible world its probability of being actual. This might very well be true. Indeed, the kind of probability van Inwagen attributes to possible worlds cannot be physical probability, since such probability is given by the laws of nature and the initial conditions of the system in question, but possible worlds include the laws of nature and their own initial conditions, so that the probability of a possible world is in part the probability of its laws and its initial conditions. Indeed, van Inwagen is not concerned with how probable the initial conditions and laws of nature of the actual world make the proposition that there are no concrete objects. What van Inwagen is asserting is that a metaphysically possible world containing no concrete objects has probability 0 of being actual. But since the actuality of whatever world is actual is not the result of a physical process governed by natural laws, van Inwagen cannot be claiming that the physical probability of being actual of the world with no concrete objects is 0.

Van Inwagen indicates that the kind of probability he is talking about measures the probability of a proposition in terms of the proportion of the set of all possible worlds that is occupied by the worlds in which the proposition in question is true.²⁹ If there is only one possible world where the proposition that there are no concrete objects is true and there are infinitely many possible worlds, then the probability of the proposition that there are no concrete objects is 0. And therefore the probability of the world with no concrete objects being the actual world is also 0. (This is a particular instance of van Inwagen's claim that if there are infinitely many possible worlds, any set of worlds of lower cardinality than the whole set of possible worlds has probability 0.)³⁰

The idea behind van Inwagen's argument is that if certain possible worlds occupy the same proportion of the space of the totality of possible worlds, such worlds have the same probability. But what proportion of the set of all possible worlds a certain world occupies is a function of how many possible worlds there are. Such a proportion can determine the probability of a world only if it is assumed that all worlds are equiprobable in themselves or, in other words, that Reality is indifferent as to what world is actual, i.e. that Reality has no 'preference' as to which world is actual. But why couldn't some

²⁹ van Inwagen, 'Reflections on the Chapters by Draper, Russell, and Gale', 223–25, and 'Why is there anything at all?', 63.

³⁰ van Inwagen, 'Reflections on the Chapters by Draper, Russell, and Gale', 239.

Why Is There Something Rather Than Nothing?

possible worlds be more probable than others, even if all of them occupy the same proportion of the space of the totality of possible worlds? Imagine tossing a loaded die. There are six possibilities for it to fall on one of its faces. If probability is determined by the proportion of the space of possible outcomes each possible outcome occupies, then the probability of the die falling on any particular face is $1/6$. But since the die is loaded, one outcome, say the die falling 2, is more probable than the others. I can see no reason why Reality could not be 'loaded', i.e. why some possible worlds could not be more probable than others.³¹

Sure, we might have no reason to think that a certain world is more probable than the other ones. But from the fact that we have no such reason, nothing follows about whether such a world is or is not more probable than the other ones. Indeed, it might be a brute fact that a certain possible world is more probable than others, in which case there would be no reason why it is.

Van Inwagen cannot appeal to the Principle of Sufficient Reason to reject this possibility, since he rejects the Principle of Sufficient Reason.³² But there might be a reason why no possible world can be more probable than any other. This is that Reality is indifferent between all possible worlds – and indeed such a principle of indifference has been assumed by van Inwagen. But before giving such a principle of indifference as the reason why no possible world is

³¹ Erik Carlson and Erik Olsson consider worlds ('universes' in their terminology, but their universes correspond to van Inwagen's worlds: Carlson and Olsson, 'The Presumption of Nothingness', *Ratio* 14 (2001), 208, fn. 22) containing only a fair coin and a coin-tossing mechanism that repeatedly tosses the coin until tails comes up and then it never tosses the coin again. They think it is clear that worlds where tails comes up on the first toss are more probable than worlds where there is a sequence of heads before the first tails comes up ('The Presumption of Nothingness', 209–11). I am not convinced. While I agree that, within each world, before the coin lands for the first time, the sequence T (0.5 chance) is more probable than the sequences HT (0.25 chance), HHT (0.125 chance), and so on, it does not follow from this that a world where tails comes up on the first toss is more probable (i.e. has a greater probability of being the actual world) than worlds where tails comes up on the second toss, or the third toss, and so on. For nothing in the way they present their example entails that Reality is 'loaded' in any way and, in particular, nothing in their example entails that Reality is 'loaded' towards worlds where tails comes up on the first toss.

³² van Inwagen, 'Why is there anything at all?', 60, and *Metaphysics* (Boulder, Colorado: Westview Press. 2002), 122.

more probable than any other we should give a reason for the principle of indifference itself. For what reason do we have to think that Reality is indifferent between all possible worlds, rather than indifferent between *kinds* of worlds? In particular, what reason do we have to think that Reality is not indifferent between worlds containing concrete objects and worlds containing no concrete objects? If this is what Reality is indifferent about, then there is a 0.5 chance that the world contains concrete objects and a 0.5 chance that the world contains no concrete objects (in this case, *if* van Inwagen is right in claiming that there is only one world containing no concrete objects and that there are infinitely many worlds containing concrete objects – the first part of which claim was undermined in section 3 – then the world containing no concrete objects would be more probable than any possible world containing concrete objects).

Thus the premise that all possible worlds are equiprobable is still wanting support.

5.

There is another problem with van Inwagen's argument, which concerns its significance. Van Inwagen thinks that the conclusion of the argument, namely that the probability of the possible world with no concrete objects is 0, is significant because it gives an answer to the question of why there is something rather than nothing – or, what is the same question on his interpretation of it, the question 'Why is there anything at all?'.³³

One potential problem with van Inwagen's answer to the question of why there is something rather than nothing is that it explains why it is false that there are no concrete objects by appealing to the fact that such a proposition has probability 0. But the probability of the proposition stating that things are exactly as they are (i.e. the probability of the proposition that describes only the actual world) is also 0. So how can having probability 0 explain the falsity of the proposition that there are no concrete objects? It is not clear that there is a satisfactory answer to this question, but it is not clear that there is no satisfactory answer to it either, since it might be that what is sufficient to explain a falsity need not be sufficient to explain a truth. In any case, I shall not press this issue, since I think there is a graver problem with van Inwagen's argument.

³³ van Inwagen, 'Why is there anything at all?', 60.

Why Is There Something Rather Than Nothing?

As I said, van Inwagen thinks that the conclusion of the argument, namely that the probability of the possible world with no concrete objects is 0, is significant because it gives an answer to the question of why there is something rather than nothing.³⁴ Now, that the only possible world with no concrete objects has probability 0 and the set of possible worlds containing concrete objects has probability 1 does not tell us *why* there is something rather than nothing (i.e. it does not tell us why there are concrete objects rather than not). It only tells us that it is more probable that there is something (concrete) rather than nothing (concrete). But probable or even very probable things do not happen because of being probable or very probable, even if they happen to have probability 1. And so, since citing the probability 0 of there being no concrete objects and the probability 1 of there being concrete objects does not tell us why there are concrete objects, van Inwagen has not really provided an answer to the question why there is something rather than nothing.³⁵ True, van Inwagen does more than merely citing the probability 0 of there being no concrete objects: he also gives an argument why such probability is 0. But citing the probability of an event and arguing that that is its probability does not explain why the event happened, but only establishes (assuming that the argument works) how probable the event is.

It is important to remember that having probability 1 is not the same as being necessary, since having probability 0 is not the same as being impossible, as van Inwagen rightly acknowledges.³⁶ Of course, necessary events have probability 1 and in some cases that something is necessary explains why it occurs or obtains – but in that case what explains its occurrence is its necessity, not its probability 1.³⁷

If I want to know why event X happened, and I am told that the probability of its happening was 0.99, or 1 for that matter, I do not

³⁴ van Inwagen, 'Why is there anything at all?', 60.

³⁵ As I understand it, Earl Conee makes this sort of criticism to what he calls the statistical explanation of why there is something rather than nothing, although he does not refer to van Inwagen's argument (E. Conee and T. Sider, *Riddles of Existence. A Guided Tour of Metaphysics* (Oxford: Oxford University Press, 2014), 122.

³⁶ van Inwagen, 'Why is there anything at all?', 61, fn. 5.

³⁷ Benjamin Schnieder, 'On the relevance of grounds' (forthcoming), argues that in no case does the fact that something is necessary grounds its obtaining. Even if Schnieder is right, that does not affect my central point, which is that having a high probability, even probability 1, does not explain the obtaining or occurring of anything.

thereby gain any understanding of why it happened – even if I understand why the probability of its happening is 0.99 or 1. I *might* be less surprised about its happening than I was when I did not know how probable it was, or when I thought that it was highly unlikely, but being less surprised about its happening is not the same as understanding why it happened, nor is it what enables the understanding of why it happened.³⁸ Telling me that the probability of X's happening was 0.99 or 1 does not tell me why X happened. If X's being probable is what explains why X happened then we are committed to the claim 'X because X is probable'. But things don't happen out of a high probability – not even when such a probability is 1.

It is important to see that this is not a commitment to the claim that everything has a cause. Nor is it a commitment to the claim that every cause is a deterministic cause. Some things may just happen, uncaused. Others may be caused by things that do not determine them to happen.

Furthermore, what I have said is not a commitment to the idea that claims about the probability of events are irrelevant to the task of finding and providing explanations. For instance, the frequency of a certain kind of events might be explained by citing the probability of events of that kind (similarly, that the frequency of a certain kind of events is greater than that of another kind of events might be explained by saying that events of the former kind are more probable than events of the latter kind). Even in the case of singular events, probabilities are relevant when trying to explain them. For instance, if I know that smokers are likely to get lung cancer, and I want to know what caused Carol to get lung cancer, then it would be a good idea to investigate whether her lung cancer was caused by her smoking. But it would be wrong to say that she got lung cancer because, given her circumstances, it was very probable that she would. And the generalization of this is all I am committing to, namely that the claim that a certain event is very probable does not answer the question of why it happened and therefore it does not explain why it happened.³⁹

³⁸ Thus I disagree with Hempel, according to whom showing that a certain event was to be expected is what enables one to understand why it happened. See Carl G. Hempel, 'Aspects of Scientific Explanation', in his *Aspects of Scientific Explanation and Other Essays in the Philosophy of Science* (New York: The Free Press, 1965), 337.

³⁹ That if a claim does not answer the question of why something happened, then it does not explain why it happened, is obviously the case if explanations are answers to why-questions. See Bas van Fraassen, *The*

Why Is There Something Rather Than Nothing?

Thus the probabilistic answer to the question of why there is something rather than nothing does not really answer the question and does not really explain why there is something rather than nothing.

6.

I have argued that van Inwagen's argument that the probability of there being no concrete beings is 0 does not work for the following reasons: (a) no good reasons have been given that there are not uncountably many possible worlds containing no concrete objects, (b) no good reasons have been given that all possible worlds are equiprobable, or even that the probability of a unique world containing no concrete objects is 0. I have also argued, furthermore, that even if the probability of there being concrete objects were 1, this would not constitute an answer to the question why there is something concrete rather than not.⁴⁰

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Scientific Image (Oxford: Clarendon Press, 1980), 134. But the point I am making does not commit me to this theory of explanation. For, whatever the right theory of explanation, it is independently plausible that what does not answer a question 'Why *p*?' is not an explanation of *why p*.

⁴⁰ I thank Paul Audi, Eduardo Barrio, Earl Conee, Eleonora Cresto, Eileen Daly-Boas, Richard Dees, David Eford, James Grant, Anil Gomes, John Heil, Alison Hills, Peter van Inwagen, Nick Jones, Kolja Keller, John Komdat, Jonathan Kvanvig, Brian Leftow, Øystein Linnebo, Kris MacDaniel, Tim Mawson, Hugh Mellor, Deborah Modrak, Alex Paseau, Martin Pickup, Lucas Rosenblatt, Benjamin Schnieder, Jannai Shields, Tom Sinclair, Damian Szmuc, Tuomas Tahko, Edward Wierenga, Alastair Wilson, Tim Williamson, and Ezequiel Zerbudis for discussion on the content of previous versions of this paper.