The Principle of Sufficient Reason and the Grand Inexplicable[1]

It is widely held that the Principle of Sufficient Reason (PSR) proves too much. It is conceded that, if the PSR were true, then on its basis we could conclude a great deal, including that a necessary being exists. For everyone grants that contingent beings exist, and if the PSR were true, then the existence of the contingent would have to have an explanation, which only a necessary being could provide. It is also argued, however, that the PSR couldn't possibly be true. For it implies not just that the existence of contingent beings has an explanation, but that every true proposition has an explanation. And it is argued that, necessarily, there are certain true propositions which couldn't possibly have explanations.

In what follows, I will argue that the position sketched in the above paragraph is wrong on all counts, and I will defend a very different view of the PSR and its implications. My chief aim will be to defend the PSR against arguments to the effect that that, necessarily, there are true propositions which can't have explanations. Each of the arguments I will be considering puts forward some particular proposition (which I will call the Grand Inexplicable) and argues that it constitutes a counterexample to the PRS, since the supposition that this proposition has an explanation leads to a contradiction. These arguments fall into two types. First, there are arguments where the proposition that plays the role of Grand Inexplicable is a conjunction of some vast collection of propositions, such as the conjunction of all contingently true propositions. Second, there are arguments where the Grand Inexplicable is an existential claim, such as the claim that the universe exists or that something exists. I will consider these two kinds of argument in the first and second sections of my paper, respectively. I will argue that none of these arguments succeeds, and I will provide a diagnosis for why they fail. In the third section, having considered arguments against the PSR, I will turn to one of the most prominent arguments that employs the PSR, namely the argument from contingency for the existence of a necessary being. And I will argue that this argument requires the very same kind of false assumption that serves as the basis for Grand Inexplicable arguments *against* the PSR. Once we recognize that we must reject this kind of assumption, we can defend the PSR against the view that it leads to contradiction, but at the same we deprive the PSR of much of the power it has been traditionally thought to have. In the concluding section, I will argue that, while the PSR lacks some of the implications that have traditionally been ascribed to it, it has others that are no less surprising.

1. Grand Conjunction Arguments

Consider the following argument from Peter van Inwagen.[2]

[1] I would like to thank Kenny Easwaran, Shieva Kleinshmidt, Alexander Pruss and Gabriel Uzquiano for their tremendous generosity in discussing and providing comments on earlier drafts of this paper. Without them, this paper could not have been written.

Argument 1

(A1) Suppose the following thesis is true.

PSR: For every true proposition A, there is a true proposition B that is sufficient to explain A.

(A2) Let C be the conjunction of all true contingent propositions.

(A3) Since any conjunction with contingent conjuncts is contingent, C is contingent.

(A4) Since C is a true proposition, it follows from our supposition that there is a true proposition (call it D) such that D is sufficient to explain C.

(A5) Since only contingent propositions can suffice to explain contingent propositions, D is contingent.

(A6) For any propositions A and B, if A is sufficient to explain B, then B is true in every possible world in which A is true.

(A7) Thus, C is true in every possible world where D is true.

(A8) The only possible world in which C is true is the actual world.

(A9) Thus, D is true in every possible world in which C is true.

(A10) For any propositions A and B, if A and B are true in exactly the same possible worlds, then A = B.

(A11) Thus, C = D.

(A12) Thus, from (A3) and (A11), D is sufficient to explain D.

(A13) But no contingent proposition is sufficient to explain itself.

(A14) Hence, the supposition that the PSR is true entails a contradiction, namely the conjunction of (A4), (A12), and (A13).

(A15) Therefore, the PSR is false.

This argument relies crucially on a coarse grained conception of propositions, according to which, for every set of worlds, there is at most one proposition that is true in all and only these worlds. For such an account is implied by premise (A10).[3] But the defender of the PSR needn't

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[2]Peter van Inwagen, *An Essay on Free Will* (Oxford: Oxford Univerity Press, 1983), pp. 202-204.

[3] Van Inwagen states his argument not in terms of propositions but in terms of states of affairs. Hence he is arguing not against the PSR, as we have defined it, but rather against:

PSR*: For every *state of affairs* that obtains, there is a sufficient reason for its obtaining.

On van Inwagen's version of the argument, the analog of premise (8) is as follows:

accept such a coarse-grained account of propositions, as she may instead accept an account on which propositions are more fine-grained than sets of possible worlds. She might, for example, adopt a view on which every proposition consists in, or at least is representable by, an ordered series of constituents corresponding to the constituents of the sentences by which they would be expressed in a canonical language. And there are well-known advantages adopting a more fine grained conception of propositions. For on the coarse grained account that van Inwagen assumes implies that the two sentences in each of the following pairs expresses the same proposition:

(B1) All bachelors are unmarried.

(B2) Fermat's Last Theorem is true.

(C1) Jack runs.

(C2) Jack runs and Jack is a mammal.

Hence, assuming propositions are the objects of belief and assertion, this view has the problematic implication that one couldn't believe or assert that all bachelors are unmarried without believing or asserting that Fermat's Last Theorem is true, and similarly that one couldn't believe or assert that Jack runs without believing or asserting that Jack runs and Jack is a mammal.

Moreover, when we consider the nature of explanation, we can see that the entities that stand in the explanation relation must be more fine-grained that sets of possible worlds, and hence that the propositions that figure in the PSR can't be coarse-grained entities. This can be seen if we consider the following sets of propositions.

(D1) If the other two sides of a right triangle are 3 and 4 units long, respectively, then the hypotenuse is 5 units long.

(D2) In any right triangle, the square of the hypotenuse is equal to the sum of the squares of the other two sides.

(D3) All bachelors are unmarried.

Here, (D2) explains (D1), but (D3) does not. Similarly, consider an example involving a posteriori propositions

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(8*) *states of affairs* are identical whenever they obtain in exactly the same set of possible worlds.

However, on van Inwagen's conception of states of affairs, they stand in a one-to-one relation with propositions (*ibid*., p. 171), and so, for him (8*) stands and falls with (8). Of course, one might hold a coarse-grained account of states of affairs while holding a fine-grained account of propositions. Hence, one might accept (8*) and endorse van Inwagen's argument against the PSR*, while rejecting (8) and hence rejecting the argument given above against the PSR. But if one adopts this kind of position, then one will be left without an argument against the defender of the principle of sufficient reason who understands the latter as a claim about propositions. Moreover, as I will go on to argue, there is strong reason to understand explanation as a relation that obtains between fine-grained entities. Hence, if one adopts the position in question, and holds that states of affairs are coarse-grained while propositions are fine-grained, then one will have strong reason to state the principle of sufficient reason in terms of propositions, and hence to regard PSR, not PSR*, as the best formulation of the principle of sufficient reason.

(E1) When water molecules are divided, oxygen and hydrogen are formed.

(E2) Water is H20.

(E3) Hesperus is Phosphorus.

Here, (E2) explains (E1), but (E3) does not. Similarly, consider an example involving contingent propositions.

(F1) Ten billion years after the big bang, the universe is in state S2.

(F2) The universe is governed by deterministic laws L, and at the time of the big bang, the universe is in state S1.

(F3) The universe is governed by deterministic laws L, and twenty billion years after the big bang, the universe is in state S3.

Once again, given the right values of L, S1, S2 and S3, (F2) will explain (F1), but (F3) will not. Note, however, that in each of these cases, the second and third propositions in each trio are true in exactly the same possible worlds. Thus, if we want to maintain that the second proposition explains the first, whereas the third proposition does not, then we need to maintain that the second and third propositions are distinct, and so we need to reject premise (A10).

However, not all Grand Conjunction arguments against the PSR require (A10). Consider an argument that begins with (A1) through (A5), and then continues as follows

Argument 2[4]

(G1) Since C is the conjunction of all true contingent propositions, and D is a true contingent proposition, D is a conjunct of C.

(G2) For any propositions A and B, if A is sufficient to explain B, then A is sufficient to explain every conjunct of B.

(G3) Thus, since D is sufficient to explain C, and D is a conjunct of C, D is sufficient to explain D.

(G4) But no contingent proposition is sufficient to explain itself.

(G5) Hence, the supposition that the PSR is true entails a contradiction, namely the conjunction of (A5), (G3) and (G4).

(G6) Therefore the PSR is false.

[4] A similar argument can be found in Alexander Pruss's *The Principle of Sufficient Reason* (New York: Cambridge UP, 2006), pp. 97-98.

Like Argument 1, Argument 2 aims to show that, if every proposition had a sufficient explanation, then D (the proposition that explains the conjunction of all true propositions) would have to explain itself. But this time, this claim is supported not on the basis of R's supposed identity with C, but rather on the basis of R's being a conjunct of C.

Furthermore, like Argument 1, Argument 2 relies on the stipulation that C is the conjunction of all true contingent propositions. Is this a legitimate stipulation? That will depend on our conception of propositions. Suppose we identify a proposition with the set of all possible worlds in which it is true. Then we can define the conjunction of any propositions as the set of worlds that are contained in each of these propositions. Since, on this view, the true propositions will be the sets of possible worlds that contain that actual world, and since the only world that all these sets have in common is the actual world, it follows that, on this view, the conjunction of all true contingent propositions is the set containing only the actual world. Since, presumably, there is such a set, it follows that, on this coarse-grained account of propositions, there will indeed be a conjunction of all true propositions.

But recall that our reason for moving from Argument 1 to Argument 2 was in order to be able to adopt a more fine-grained account of propositions. And so suppose we adopt such an account, and regard propositions as consisting in, or at least representable by, an ordered series of constituents corresponding to the constituents of the sentences by which they would be expressed in a canonical language. On such an account, for every proposition, there will be a corresponding set of the constituents of this proposition. And a conjunction will have its conjuncts as constituents. And so it follows that, for every proposition, there will be a set that includes all of its conjuncts. On such a view, therefore, there will be a *conjunction* of all true contingent propositions only if there is a *set* of all true contingent propositions. But is there a set of all true contingent propositions? Alexander Pruss offers an argument that there can be no such set. His argument requires the controversial assumption that for every cardinality k, it is possible that the k is the cardinality of objects in the universe. Later in this paper I will be arguing that the defender of the PSR should reject this kind of assumption. But we don't need this kind of controversial assumption. For, given the structured account of propositions we are considering, it's easy to argue that there can be no set of all true contingent propositions, without any assumptions about what the world might we like. For it is well known that there are too many *sets* for there to be a set of all sets. And for every set S, there is a distinct *necessary* proposition of the form S=S—call this proposition NS. And for each of these necessary propositions, we can form a true contingent proposition by conjoining it with a given true contingent proposition (say, the proposition that Caesar crossed the Rubicon). These contingent propositions will all be distinct, since they will differ in one of their constituents. And there will be one such proposition for every set. Hence, since there are too many sets to fit in a set, it follows that there are too many true contingent propositions to fit into a set. Hence, on the account of propositions we are considering, we should deny that there is any conjunction of all true propositions.

Alexander Pruss has proposed a variant of Argument 2 that dispenses with the assumption that there is a conjunction of all true contingent propositions. In this alternative argument, the Grand Conjunction is instead the conjunction of all propositions of the following kinds:

(i) All true basic contingent propositions

(ii) All logically uncompounded true propositions reporting causal relations.

His argument can be reconstructed as follows.

Argument 3

(H1) Suppose the following thesis is true.

PSR: For every true proposition A, there is a true proposition B that is sufficient to explain A.

(H2) Let E be the conjunction of all propositions of kinds (i) and (ii).

(H3) Since any conjunction with contingent conjuncts is contingent, E is contingent.

(H4) Since E is a true proposition, it follows from our supposition that there is a true proposition (call it F) such that F is sufficient to explain E.

(H5) Since only contingent propositions can suffice to explain contingent propositions, F is contingent.

(H6) Every proposition that explains any of the propositions of kinds (i) and (ii) is constructable out of propositions of kinds (i) and (ii).

(H7) Hence, since F is explanatory, and since E is the conjunction of all propositions of kinds (i) and (ii), F is constructable out of the conjuncts of E.

(H8) For any propositions A, B and C, if A is sufficient to explain B, and B is a conjunction of out whose conjuncts C is constructable, then A is sufficient to explain C.

(H9) Therefore, since F is sufficient to explain E, and E is a conjunction out of whose conjuncts F is constructable, F is sufficient to explain F.

(H10) But no contingent proposition is sufficient to explain itself.

(H11) Hence, the supposition that the PSR is true entails a contradiction, namely the conjunction of (A5), (H9) and (H10).

(H12) Therefore the PSR is false.

I believe Pruss's revised argument is not concincing, for it faces a dilemma. If we have a sufficiently narrow conception of "basic propositions," then while (A2) is acceptable, (A6) is dubious; but if we don't have such a narrow conception of "basic propositions, then while (A6) may be acceptable, (A2) is dubious. Let's begin with the first horn of the dilemma. On a natural construal of "basic propositions," the true contingent basic propositions will state the Humean facts, that is, they will indicate what qualities are present at what space-time points. Assuming there are only continuum many spacetime points, there will presumably be only continuum many such true basic contingent propositions. Or in any case, there will be few enough such propositions to fit into a set. Similarly, we should expect the propositions of type (ii) reporting causal relations to be maneageable in number as well, since presumably there won't be more of those than there are pairs of events, and there will be only continuum many events. And so if the basic propositions are understood in this Humean manner than we should expect all the propositions of types (i) and (ii) together to form a set, and so we should expect there to be a conjunction of such propositions, as (H6) requires.

But in this case, premise (H6) will be suspect. For it seems there could be law-stating propositions that explain the Humean and causal propositions without supervening on, and hence without being constructible in terms of, the Humean and causal propositions they explain. Here's an illustration. Imagine two worlds, w_1 and w_2, that have identical initial conditions, and whose laws differ in only the following respect. In w_1, it is a law of nature (call it L1) that the attractive force a struon exerts on a fluon is proportional to the charge of the struon. Thus, if a struon is positively charged, then it attracts fluons, and the greater the charge the greater the attraction; but if a struon is negatively charged, then it repels fluons, and the greater the charge the greater the repulsion. By contrast, in w_2, it is a law of nature (call it L2) that the attractive force a struon exerts on a fluon is proportional to the *absolute value* of the struon's charge. Thus, greater the charge of a struon, be it positive or negative, the more strongly it attracts fluons. In both worlds, struons pick up their charge by colliding with thruons (which give them positive charge) and shmuons (which give them negative charge). It just so happens that in both worlds, the struons never collide with the shmuons, and so, while they could easily have acquired negative charge, they never do. Now, since these two worlds have the same initial conditions, and with respect to their laws they differ only in that L1 prevails in w1 and L2 prevails in w2, and since these laws diverge only when struons have negative charge, which never obtains in either world, these two worlds will be identical with respect to true Humean propositions, and with respect to the true propositions concerning causal relations between particular events. But these worlds will differ with respect to what explains these true propositions. When a struon attracts a fluon on w1, this is explained by L1, whereas when a struon attracts a fluon in w2, this is explained by L2. And so these laws explain some of the Humean and causal propositions without be constructable out of the Humean and causal propositions. And so (H6) is false.

Now consider the second horn of the dilemma. Suppose we adopt a broader conception of the basic contingent propositions. Suppose we hold that these include not only the Humean and

causal propositions, but also the law-stating propositions. In this case, there's no guarantee that there will be few enough basic propositions for them all to fit into a set. And the proponent of the PSR is likely to deny that there are so few propositions. For she may hold that, for every set of laws, there is a further law that explains the conjunction of these laws. And from this it follows, on pain of paradox, that there must be too many laws to include in any set.[5] Thus, if the basic propositions include the laws, then it can't be assumed, without argument, that there are few enough laws to fit into a set, since such an assumption appears to beg the question against the PSR.

To sum up, in order to provide a Grand Conjunction argument against the PSR, one would need to assume that there is some *set* of contingent propositions such that any proposition that explains any proposition within this set would have to be somehow included withing this set (either by being one of its elements, or by being constructable out of these elements). But the defender of the PSR can simply deny this. She can maintain that, while every contingent proposition is explained by another contingent proposition, these contingent propositions are too numerous to form a set, and for any set of propositions one must go beyond this set to find the proposition that explains their conjunction.

2. Grand Existential Arguments

In the preceding section, we considered Grand Inexplicable arguments against the PSR in which the proposition that served as the Grand Inexplicable was a conjunction of vastly many contingent propositions. In the present section, we will consider a different kind of Grand Inexplicable argument where this role is played by some existential proposition that is of cosmic significance. One such proposition, which will no doubt be salient to the reader of this volume, is the proposition that *there exists anything at all*. It might seem that this proposition does not admit of any explanation, and hence that it can serve as a counterexample to the PSR. One could argue as follows.

Argument 4

(I1) Suppose the following thesis is true.

PSR: For every true proposition, A, there is a true proposition, B, that is sufficient to explain A.

(I2) Let G be the proposition that there exists some being.

(I3) Thus, by our supposition, there is a true proposition (call it H) that is sufficient to explain G.

[5] Suppose there were few enough to include in a set. Then there would be a set S of all laws. But, *ex hypothesi*, for every set of laws, there's a further law that explains their conjunction. And so there must be some further law, not in S, that explains the conjunction of the laws in S. But S includes all the laws. So we have a contradiction.

(I4) For any kind K of beings, the proposition that there exists something of kind K can be explained only by a proposition that appeals to the existence of beings that are not of kind K.

(I5) Thus, since H is sufficient to explain G, and since G is the proposition that there exists something that is a being, H must appeal to the existence of beings that are not beings.

(I6) And so, since no true proposition appeals to the existence of beings that are not beings, H is not true.

(I7) Hence, the supposition that the PSR is true entails a contradiction, namely the conjunction of (I3) and (I6).

(I8) Therefore, the PSR is false.

The crucial premise of this argument is (I4). This premise has some prima facie plausibility. After all, one might hold that any explanation of an existential claim would need to involve another existential claim. But if, in explaining the existence of Bs one appealed to the existence of Bs, then this would appear to be viciously circular. And so it may seem, prima facie, that any explanation of the existence of Bs must appeal to the existence of non-Bs. And so (I4) has some plausibility. Nonetheless, we should reject (I4). Here's a counterexample. Consider the following proposition:

(J1) There is something that undergoes gravitational attraction.

This proposition could be explained by the following proposition:

(J2) There are at least two massive bodies, and every massive body is gravitationally attracted to every other massive body.

But while (J2) explains (J1), (J2) doesn't appeal to the existence of anything that is not of the kind posited by (J1). For the only objects to whose existence (J2) appeals are massive bodies, and all these objects undergo gravitational attraction. And so this pair of propositions constitutes a counterexample to (I4).

But maybe there's a way of construing the claim that something exists in such a way that it can serve to refute the PSR without appealing to (I4). Perhaps it can be understood not as the claim that there exists something in the kind beings, but rather as the claim that there exists something in set S, where S happens to be the set of all beings. For there is an important difference between explaining why there are things of kind K, and explaining why there are members of set S: it seems you can explain why there are things of kind K without explaining why any of the things in kind K exist—this is what the case above illustrates, for here we explain why there are things that undergo gravitational attraction, without explaining why it's true that

any of the things that happen to undergo gravitational attraction exist. By contrast, since sets contain their members essentially, you can't explain why there are members of a given set without explaining why it's true that any of the members of the set exist.

It seems, therefore, that we could solve the problem faced by Argument 4 by replacing premises (I2) and (I4) with the following two premises, respectively, and by revising the other premises accordingly.

(K2) Let S be the set of all beings, and let G be the proposition that there exists at least one member of S.

(K4) For any set S of beings, the proposition that there exists at least one member of S can be explained only by a proposition that appeals to the existence of beings that are not in S.

Premise (K4) is much more plausible than (I4), and it is immune to the counterexample that (I4) faces. To see why, let S be the set of objects that undergo gravitational attraction. Suppose there were three objects that undergo such attraction, and call them Peter, Paul and Mary. Thus, S = {Peter, Paul, Mary}. While (J2) may explain why there are objects that undergo gravitational attraction, it doesn't explain why Peter, Paul or Mary exist, and so it doesn't explain why there exists at least one member of S. And so this example is not a counterexample to (K4).

But there's a problem. While (K4) is perfectly acceptable, (K2) is not. For (K2) assumes the existence of a set of all objects. But there is no such set. For there are too many objects to fit into a set. This follows from the fact that there are too many sets to fit into a set, and the fact that all sets are objects.

Thus, it's not so easy to refute the PSR using the claim that something exists. For, where this is understood as the proposition affirming the existence of something in the kind *beings*, an appeal to this proposition can refute the PSR only when combined with something like (I4), which, as we have seen, is false. If, on the other hand, the claim that something exists is understood as the proposition affirming the existence of something in the *set* of *beings*, then it is doubtful that this could be a true proposition, for it is doubtful that there is any such set.

What about the proposition, not that something exists, but that *everything* exists. Could this serve as a Grand Inexplicable in an argument against the PSR? Might we argue that, if there were an explanation of the existence of everything, it would have to appeal to the existence of something outside of everything, which is impossible, and hence that there can be no explanation of the existence of everything?

Now on one construal of the claim that everything exists, it's a tautology, and it would be true even if nothing existed. Clearly, construed in that manner, its explanation would not require positing the existence of anything, let alone the existence of anything outside of everything. But

there are other construals of the claim that everything exists on which it is not a tautology. For it could be understood as the proposition that everything in S exists, where S is the set of all objects. One might argue that any explanation of this principle would need to appeal to the existence of something outside of S. But, as before, we should reject any such argument against. For such an argument would have to assume that there is a set of all objects, and it is doubtful that there is any such set

Lastly, we might understand the claim that everything exists as the proposition that F exists, where F is the fusion or mereological sum of everything that exists. And we might argue that the existence of this Grand Fusion could never be explained, since any explanation would have to appeal to the existence of something outside that fusion, and there is no such thing. Thus we could formulate a variant of Argument 4 in which (I2) and (I4) are replaced by the following premises, and the other premises are revised accordingly:

(L2) Let F be the fusion of all beings, and let G be the proposition that F exists.

(L4) For any fusion A, the proposition that A exists can be explained only by a proposition that appeals to the existence of something disjoint from A.

The problem here, however, is that while (L2) may be unproblematic, (L4) is not. For it seems that fusions can be explained by their parts. As an illustration, let J be the fusion of Cleopatra's nose and Mount Everest. Now is seems the following proposition

(M1) J exists.

can be explained by this proposition

(M2) Cleopatra's nose exists, and Mount Everest exists, and for any two disjoint objects, the fusion of these objects exits.

But while (M2) explains (M1), (M2) doesn't appeal to the existence of anything disjoint from J. And so this case constitutes a counterexample to (L4).

It seems, therefore, that we can no more refute the PSR by appealing to the claim that everything exists than we can by appealing to the claim that something exist. Neither of these appears to correspond to a proposition which is essentially inexplicable.

3. Arguments from Contingency

Having seen why the Grand Existential arguments, we are in a position to appreciate the weakness of arguments from contingency. Consider the following version of the latter argument.

Argument 5

(N1) Let L be the proposition that there is a contingent being.

(N2) PSR: For every true proposition A, there is a true proposition B that is sufficient to explain A.

(N3) Since L is a true proposition, it follows from the PSR that there is a true proposition (call it M) such that M is sufficient to explain L.

(N4) For any kind K of contingent beings, the proposition that there exists something of kind K can be explained only by a proposition that appeals to the existence of beings that are not of kind K.

(N5) Thus, since M is sufficient to explain L, and since L is the proposition that there exists some contingent being, M must appeal to the existence of something that is not a contingent being, but is instead a necessary being.

(N6) But if a true proposition appeals to the existence of a necessary being, then there must be a necessary being.

(N7) Therefore, there is a necessary being.

Van Inwagen presents an argument of this form, and he claims that, if only the PSR were true, this argument would be sound.[6] It is now clear, however, that van Inwagen is mistaken in this assertion. For (N4) is simply (I4) from Argument 4 restricted to contingent beings. And (N4) is vulnerable to the same counterexample as (I4). For recall the proposition *there is something that undergoes gravitational attraction*. The kind that figures in this proposition (things that undergo gravitational attraction) is a kind of contingent beings. And so (N4) has the false implication that whatever explains this proposition would have to appeal to the existence of things that don't undergo gravitational attraction.

As before, we might try to solve this problem by replacing premises (N1) and (N4) with the following premises.

(O1) Let S be the set of all contingent beings, and let L be the proposition that there exists at least one member of S.

(O4) For any set S of contingent beings, the proposition that there exists at least one member of S can be explained only by a proposition that appeals to the existence of beings that are not in S.

But once again, the first premise is problematic, since it assumes the existence of a set of all contingently existing objects. And it can easily be argued that there can be no such set. For we know that there are too many sets to fit into a set. Now if all the contingently existing sets belonged to a set, and all the necessary existing sets belonged to a set, then all sets would belong to a set. Hence, either there are too many necessary sets to fit into a set, or there are too many

[6] Peter van Inwagen, Metaphysics (Boulder: Westview Press, 2009), pp. 148-150.

contingent sets to fit into a set. But there are at least as many contingently existing sets are there are necessarily existing sets. For, for every necessarily existing set, we can construct a distinct contingently existing set by pairing it with some contingently existing object, such as Jack. Hence, if there are too many necessarily existing sets to fit into a set, then there are too many contingently existing sets to fit into a set. And so we may conclude that there are too many contingently existing sets, and hence too many contingently existing objects, to fit into a set.

Maybe we can solve this problem by focusing not on contingent objects in general, but on contingent concrete objects. This way, we'd exclude sets from the class of relevant objects, thereby allowing for the possibility that these objects could be sufficiently few to fit into a set. We could thus revise our argument by replacing (N1) and (N4) with the following premises:

(O1) Let S be the set of all *contingent concrete* beings, and let L be the proposition that there exists at least one member of S.

(O4) For any set S of *contingent concrete* beings, the proposition that there exists at least one member of S can be explained only by a proposition that appeals to the existence of concrete beings that are not in S.

If these premises were true then, together with the PSR, they would allow us to conclude that there is a necessary, concrete being. But again, we should be skeptical of the first premise, for we should be skeptical of the assumption that there is any set of contingent concrete beings. Why couldn't these be too numerous to fit into a set? It is plausible that the objects that could fit into a single spacetime continuum would have to belong to a single set. But there might be lots of disconnected spacetime continua, including duplicate, qualitatively identical spacetime continua. And if we allow that, then it's hard to see what constraints there could be on how many spacetime continua there could be. And so it's hard to see why there would be any constraints on how many concrete contingent objects there could be.

Moreover, it seems that if one accepts the PSR, and if one accepts (O4), then one will have reason to maintain that the concrete contingent objects are too numerous to fit into a set. For if one accepts (O4), then one will have reason to accept the following strengthening of that principle.

(P1) For any set S of *contingent concrete* beings, the proposition that there exists at least one member of S can be explained only by a proposition that appeals to the existence of *contingent concrete* beings that are not in S.

After all, one might think that whatever was sufficiently explained by the existence of a necessary being would have to be necessitated by the existence of the necessary being, and so it would have to be necessary. Thus, one might think that whatever it is whose existence explains the existence of contingent beings must itself be contingent. But from (P1), together with the

PSR, it follows that there can be no set that includes all contingent concrete beings, since, for any set of contingent concrete beings, there must be contingent concrete beings outside that set.

Thus, the kind of arguments we have been considering in this section will enable us to infer the existence of a necessary being from the PSR only if we assume that there is a set of all concrete contingent objects. But anyone who accepts the PSR will have reason to be skeptical of the existence of any such set.

4. The Real Import of the PSR

I have argued that the PSR doesn't have the implications it is widely thought to have. Contrary to many of its detractors, assuming the PSR is true doesn't lead to contradiction. But at the same time, contrary to many of its proponents, assuming the PSR is true doesn't allow us to infer the existence of a necessary being. Does this mean the PSR is not a very interesting principle? Far from it. For the PSR has very striking implications. In particular, if it is true, then it implies that the world is a very complicated place. It's a place that's so complicated that there is no set of first principles, however large, on the basis of which all other truths can be explained.

Suppose we lived in a simple world. In such a world, there would be some set of propositions that jointly explained all the less fundamental propositions. These might in turn be explained by some simpler set of propositions. But assuming that explanations need to be simpler or more unifying than what they explain, it follows that as we moved to deeper and deeper explanations, we'd eventually reach a set of explanatory propositions the conjunction of which is at least as simple and unifying as anything one might adduce to explain it. So eventually, we'd reach a point where explanation must come to an end.

The defender of PSR is committed to claiming that the world is more complicated than that. Indeed, she must claim that the actual world is delicately poised between order and chaos. It must be sufficiently orderly that that every fact has an explanation. But at the same time it needs to be sufficiently complicated for there to be no fact or set of facts that explains all the less fundamental facts and that is sufficiently simple and unifying as to admit of no further explanation.

Traditionally, the PSR has often been thought of as a fundamental principle of reasoning, or Law of Thought. Furthermore, it has often been thought that the principles of reasoning guide us to favor the simple theories over complicated ones, and hence that they involve a kind of presumption that the world is a simple and orderly place. It now seems, however, that these two thoughts can't both be true. If the PSR is indeed a principle of reasoning, then reason dictates that we presume that the world is overwhelmingly complicated.