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On 'A new cosmological argument'

GRAHAM OPPY

Philosophy Department, Monash University, Wellington Road, Clayton, VIC 3800, Australia

Abstract: **Richard Gale and Alexander Pruss contend that their 'new cosmological argument' is an improvement over familiar cosmological arguments because it relies upon a weaker version of the Principle of Sufficient Reason than that used in those more familiar arguments. However, I note that their 'weaker' version of the Principle of Sufficient Reason entails the 'stronger' version of that principle which is used in more familiar arguments, so that the alleged advantage of their proof turns out to be illusory. Moreover, I contend that, even if their argument did rely on a weaker version of the Principle of Sufficient reason, nontheists would still be perfectly within their rights to refuse to accept the conclusion of the argument.**

Richard Gale and Alexander Pruss in 'A new cosmological argument', *Religious Studies*, **35** (1999), 461–476, present a cosmological argument which they claim is an improvement over familiar cosmological arguments because it relies upon a weaker version of the Principle of Sufficient Reason than is used in those more familiar arguments. I shall argue that this claim is mistaken: their new argument is no better than the more familiar arguments which they take as their benchmark. In order to explain why this is so, I shall need to explain briefly the theoretical framework in which their proof is located, and to recapitulate the main details of the proof. After I have done this, I shall go on to give my explanation.

The Gale–Pruss proof

Gale and Pruss begin with the following definitions:

Def^{n} 1: A *possible world* is a maximal compossible conjunction of abstract propositions.
Def^{n} 2: The *Big Conjunctive Fact* – BCF – for a possible world is the conjunction of all the propositions that would be true if that world were actual.
Def^{n} 3: The *Big Conjunctive Contingent Fact* – BCCF – for a possible world is the conjunction of all the *contingent* propositions that would be true if that world were actual.

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They make the following two assumptions:

> Ass^{n} 1: For any proposition *p* and any world W, the BCF for W either contains *p*, or the negation of *p*, but not both.
> Ass^{n} 2: For any proposition F, and any world W, if F is in W's BCF, then there is some possible world W* and proposition G such that W*'s BCF contains F, and G, and the proposition that G explains F. (Weak version of the Principle of Sufficient Reason – W–PSR)

Their proof then runs as follows:

(1) If F_1 is the BCCF of a world W_1, and F_2 is the BCCF for a world W_2, and if $F_1 = F_2$, then $W_1 = W_2$. (By Def^{n} 1 and Def^{n} 3.)
(2) @ is the BCCF for the actual world. (Further Def^{n}.)
(3) For any proposition F, and any world W, if F is in W's BCF, then there is some possible world W* and proposition G such that W*'s BCF contains F, and G, and the proposition that G explains F. (Ass^{n} 2.)
(4) (Hence) There is a possible world W′ and a proposition # such that the BCF for W′ contains @, and #, and the proposition that # explains @. (From 2, 3.)
(5) W′ = the actual world. (From 1, Def^{n} 1, Def^{n} 2, and Ass^{n} 1. A world's BCF cannot be contained in another world's BCF, since a world's BCF is a maximal proposition. So if we instantiate for F with a BCF in Ass^{n} 2, it must be that W = W*.)
(6) (Hence) In the actual world, there is a proposition # such that the BCF for the actual world contains @, #, and the proposition that # explains @.

There are then more steps of argumentation which lead to the conclusion that # is a contingent proposition which reports the free intentional action of a necessary being which explains the existence of the actual world's universe. While there are things to contest in this further argumentation, it seems to me that most nontheists will not be happy with the claim that there is an explanation for the BCCF of the actual world; in any case, my aim here is just to object to the argument to this conclusion.

Fitch's theorem

Gale and Pruss claim that their argument is an improvement over traditional cosmological arguments because the Principle of Sufficient Reason upon which it relies is only the weak Principle of Sufficient Reason W–PSR – which claims that, for any proposition *p*, if *p* is true, then it is possible for some proposition *q* to be true and to explain *p* – and not the strong principle of sufficient reason S–PSR – which claims that, for any proposition *p*, if *p* is true, then there is

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a true proposition q which explains p.[1] Moreover, they say that 'it would be imposing on the atheistic opponents of our argument to baldly ask them to accept S–PSR, as do all traditional cosmological arguments' and that 'whereas the atheistic opponents could have been justified in not granting S–PSR to traditional cosmological arguers, it would seem unreasonable for them not to grant us W–PSR' (Gale and Pruss, 463).

I don't think that any of this can be right, since – on a plausible assumption which I shall introduce in a moment – we can derive S–PSR from W–PSR. The argument for this claim is quite straightforward.

Suppose that there is a world W′ which is such that the BCF for that world has no explanation in that world. Let the BCF for that world be p_1. Consider the conjunctive propositions: p_1 and p_1 has no explanation. By hypothesis, this conjunctive proposition is true in W′. Hence, by W–PSR, there is a world W″ in which this conjunction is true and has an explanation. (Of course, by the rest of the Gale and Pruss proof, this world W″ is none other than W′ itself.) So the conjunctive proposition, that p_1 and p_1 has no explanation, has an explanation in W″. But that's absurd. If there is an explanation of why p_1 obtains and has no explanation, there is an explanation of why p_1 obtains. Hence p_1 both has and lacks an explanation in W″. Contradiction! So there can be no world W′ which is such that the BCF for W′ lacks an explanation in W′.

Thus far, we have derived a conclusion which most nontheists will immediately want to reject. However, if we add the further assumption that explanation is *dissective* – i.e. that if there is an explanation for a conjunction, then there is an explanation for each of the conjuncts in the conjunction – then we get the conclusion that that there is no true proposition in any world which fails to have an explanation in that world, i.e. we get out S–PSR. Since this assumption seems plausible, to say the least (how could there be an explanation of why it is that both p and q if there is no explanation of why it is that p?) it is very plausible to claim that S–PSR follows from W–PSR. (Of course, we already made use of the assumption that explanation is dissective in the previous paragraph, for the special case of the proposition p_1 and p_1 has no explanation.)

As Lloyd Humberstone pointed out to me, the argument which I have just given is an instance of a far more general argument due to Fitch.[2] Suppose that O is a sentential operator which is both veridical and dissective, i.e. $(p)(Op \rightarrow p)$ and $(p)(q)(O(p\&q) \rightarrow Op)$. Suppose, further, that M is the standard possibility operator for any normal modal logic, and that $\rightarrow$ is any standard conditional. Then it follows that, if $(p)\ (p \rightarrow MOp)$, then $(p)\ (p \rightarrow Op)$.[3] We argue this as follows.

(1) $(p)\,(p \rightarrow MOp)$	(Hypothesis)
(2) $\sim (q \rightarrow Oq)$	(Hypothesis for *reductio*)
(3) $q\,\&\sim Oq$	(From 2, rules for $\rightarrow$)
(4) $M\,(q\,\&\sim Oq)$	(Instantiating with 3 in 1, and *modus ponens*)

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(5) M $(Oq \,\&\, \sim Oq)$ (From 4, since O is dissective and veridical)
(6) $(q \rightarrow Oq)$ (From 1, 5, by negation elimination, and normality of the modal logic)
(7) $(p)\,(p \rightarrow Op)$ (From 6, by universal instantiation)

This derivation shows that the 'informal' gloss which Gale and Pruss give of S–PSR $((p)\,(p \rightarrow \exists q{:}q\mathrm{E}p)$ can be derived from the 'informal' gloss which they give of W–PSR $((p)\,(p \rightarrow \mathrm{M}\exists q{:}q\mathrm{E}p))$. An almost identical derivation can be given to show that, if O is a sentential operator which is both veridical and dissective, M is a standard modal operator for a normal modal logic, and $\rightarrow$ is a standard conditional, then if $(p)\,(\mathrm{M}p \rightarrow \mathrm{MO}p)$ then $(p)\,\iota\,(p \rightarrow Op)$. This derivation shows that the correct 'informal' gloss of S–PSR $((p)\,\iota\,(p \rightarrow \exists q{:}q\mathrm{E}p))$ can be derived from the correct 'informal' gloss of W–PSR $((p)\,(\mathrm{M}p \rightarrow \mathrm{M}\exists q{:}q\mathrm{E}p))$. Moreover – although this may not be immediately obvious – the argument which I gave a few paragraphs back is just a 'possible worlds' version of this very short and simple modal derivation.

As Alexander Pruss and an anonymous referee for *Religious Studies* pointed out to me, there is a 'more direct' route to the conclusion that W–PSR entails S–PSR which 'piggybacks' on the proof given by Gale and Pruss. By inspection, their proof works for any world, not just the actual world: so, given W–PSR, there cannot be a world in which the BCF for that world has no explanation in that world. But explanation is dissective. So, given W–PSR, every true proposition in every world has an explanation, i.e. S–PSR. However, if this proof is written out in full detail – 'primitive notation' – it is more complicated than the proof I give, since it relies on the full Gale–Pruss proof. Yet, as noted in the 'possible worlds' version of the argument several paragraphs back, the derivation of S–PSR from W–PSR does not rely on the identification of W′ with W″, which is an important and relatively complicated part of the Gale–Pruss proof.

To put this point another way: the Fitch derivation shows that it is possible to simplify the proof given by Gale and Pruss. By the Fitch derivation, if explanation is veridical and dissective, then W–PSR entails S–PSR. But explanation is veridical and dissective; so W–PSR does entail S–PSR. Given S–PSR, it is immediate that the BCF and BCCF for the actual world have explanations in the actual world. Hence, given W–PSR, it follows that the BCF and BCCF for the actual world have explanations in the actual world.

Nontheists can reasonably reject W–PSR

Since S–PSR can be derived from W–PSR, it is tempting to suggest that the Gale–Pruss proof is merely a notational variant of familiar cosmological arguments which rely on that stronger principle. Perhaps, though, they might reply that what their proof actually shows is that S–PSR is unexceptionable: it can be derived from assumptions to which it is not reasonable to object.

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The only important assumptions which are involved in the above derivation of S–PSR are W–PSR and the claim that explanation is dissective and veridical. About W–PSR, Gale and Pruss say that it seems unreasonable to reject it, and that it would be merely dogmatic to object to it on the grounds that it allows the derivation of a conclusion which nontheists do not wish to accept. However, since they also seem to allow that it need not be mere dogmatism which brings nontheists to reject S–PSR, it is not clear whether they would think that the above argument – if correct – shows that nontheists do, after all, have reasonable grounds for rejecting W–PSR. (More about this in a moment.)

Given that there is no doubt that explanation is veridical – you can't explain what isn't true – the only other option is to deny that explanation is dissective. Gale and Pruss give an argument against the claim that explanation is agglomerative (i.e. against the claim that 'explanation is closed under conjunction introduction') which turns on the fact that an explanation for a conjunction $p\&q$ must be an explanation, not merely of each of p and q, but also of their joint obtaining. However, this objection to the claim that explanation is agglomerative seems to take for granted that explanation is dissective – as does the suggestion that a model for explanations of the obtaining of conjunctive facts is to be found in appeals to common causes. So it seems to me that there is no evidence that Gale and Pruss intend to deny that explanation is dissective; and it also seems to me that there is evidence that explanation is dissective.[4]

Quite apart from what Gale and Pruss might themselves say, it seems to me that it would be perfectly reasonable for nontheists to object to W–PSR. Once you understand W–PSR properly, you can see that it entails S–PSR; and S–PSR is something which nontheists have good reason to refuse to accept. Granted that nontheists can be reasonable in refusing to take on theistic beliefs, nontheists can be reasonable in refusing to believe things which fail to cohere with other things which they believe. W–PSR – at least as formulated by Gale and Pruss, and in the context in which it is presented – fails to cohere with other things which nontheists believe and so, on the assumption that those nontheists are not otherwise being irrational in their nontheism, those nontheists have good reason to refuse to accept it.

Gale and Pruss write:

> **Many atheists would be willing to grant W–PSR before we gave our argument, but once they see what follows from its conjunction with some other seemingly innocent premises, they will no longer grant it to us and which charge it with begging the question. This move looks dogmatic, unless they can muster some grounds for doubting W–PSR. It appears as if they are dogmatically committed to rejecting any deductive theistic argument by rejecting some one of its premises.** (Gale and Pruss, 474)

However, it seems to me that this is not fair to nontheists who reject W–PSR when they discover that it contradicts other things which they take themselves to have

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good reason to accept. If nontheists have strong independent ground for refusing to accept theism, then the discovery that W–PSR entails theism will surely be good grounds for rejecting W–PSR. Moveover, those nontheists who were 'willing to grant W–PSR' before they heard the argument which Gale and Pruss give, should then say that they didn't fully understand what it was to which they were giving assent (and they should surely deny that there is any sense in which they were *firmly* committed to its truth). So it seems to me that, even if W–PSR does not entail S–PSR, nontheists are perfectly within their rights to take the proof which Gale and Pruss give as a demonstration of the falsity of W–PSR. And, if W–PSR does entail S–PSR, nontheists will be perfectly within their rights to insist that this reflects poorly on W–PSR rather than well on S–PSR.

The similar standing of modal ontological arguments

Gale and Pruss claim that, even though it would be unjustified for nontheists to object to W–PSR on the grounds that it can be used as the foundation for a proof of the existence of God, nontheists are justified in objecting to the possibility premise in the familiar S5-based ontological argument:

(1) It is possible that it is necessary that God exists. (Premise)
(2) (Hence) God exists. (From 1, by the S5 and T axioms)

on more or less just these grounds. Slightly more exactly, what Gale and Pruss say is that properly informed nontheists who understand the S5 axiom (if it is possible that it is necessary that p, then it is necessary that p) will be perfectly justified in rejecting the claim that it is possible that it is necessary that God exists, on the grounds that this claim 'begs the question'. While we might quibble about whether this is exactly the best way to formulate the nontheist's objection to this premise – we might do better just to insist that the nontheist will not accept that this premise is true – a more important point is that there seems to be a much closer similarity between the S5-based modal ontological argument and the new cosmological argument than Gale and Pruss allow.

In effect, Gale and Pruss ask us to accept a universally quantified possibility claim:

> For any proposition p and world W, if p is true in W, then there is some world W′ in which p is true and also in which there is a proposition q which is true and which explains p.

This is a complex claim; and it can hardly be said that one understands it fully until one understands the consequence which it has for propositions – such as maximal propositions – which can only be true in one possible world. But, once a nontheist understands that it is a consequence of this claim that propositions which can only be true in one world are guaranteed by the principle to have an

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explanation in that world, and also understands that any proposition which fully characterizes a world is just such a proposition, then a nontheist will see that the claim is only acceptable if it can be accepted that every world has an explanation. Since nontheists typically do not accept this consequence of the claim, they will justifiably object to W–PSR.

(This last argument goes by way of the Gale–Pruss proof. We may equally well point out that, once a nontheist understands that it is a consequence of the claim which Gale and Pruss ask nontheists to accept, that, for any proposition p and any world W, if p is true in W, then there is a proposition q which is true in W and which explains p in W, then that nontheist may justifiably object that she accepts no such thing.)

Perhaps it might be said that the fact that it is harder to identify the consequences of W–PSR marks a significant difference between W–PSR and the possibility premise in the S_5-based modal ontological argument. However, it seems to me that this difference is quite unimportant. One does not get a good argument for the existence of God by cleverly constructing premises which are hard to understand, which have superficial appeal, but which entail claims which nontheists characteristically do not accept and which it is well known that nontheists characteristically do not accept. (One might as well say that those spoof mathematical proofs for the conclusion that $1 = 2$ are good if the errors which they contain are so well concealed that only those with a considerable amount of mathematical training can detect them!) Once a nontheist really understands W–PSR, she will say that it is at best nearly true: for most propositions p and worlds W, if p is true in W, then there is a world W′ in which p is true and in which there is a true proposition q which explains p. Whatever intuitive force one might have credited to W–PSR can readily be credited to this claim instead.

Perhaps there is a little more to be said on behalf of W–PSR. For example, it might be contended that, even if there are universes which have no explanation for their existence, there must be a sense in which it is true that any universe could have had an explanation of its existence. Consider one of the universes which has no explanation of its existence. Why isn't it possible for there to be a universe which is 'just like it' but which is the product of supernatural agency? Given the principle that we ought to suppose that things are possible unless we have good reason to think otherwise, there does seem to be some force to the idea that we ought to accept the claim that any universe could have had an explanation for its existence. But, even if this is right – and it is certainly not beyond dispute – it lends no support to the principle W–PSR. For, whether the intuition which is being appealed to here is that there is an explained *counterpart* of any unexplained universe, or that there is an explained *duplicate* of any unexplained universe, it is clear that a much weaker principle than W–PSR would suffice to capture it.

Note, too, that there may be an equivocation on the word 'universe' which is coming into play here. In the sense in which 'universes' are characterized by BCFs,

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there could not be a universe which is 'just like ours' but which differs from it in some way, say, by being the creation of some supernatural agency – for whatever supernatural agents there may be are parts of the 'universe' in this sense. If we suppose that the 'universe' could have been just as it is, even though some facts were otherwise, then we must be thinking of the 'universe' as 'the physical universe', 'the space–time continuum and its contents', or the like. And for this conception of 'universe', there is no prospect of getting anything like the new cosmological argument to work, since a complete characterization of one of these 'universes' need take no stand on whether there are supernatural creators and the like, and hence need not be a maximal proposition.

Perhaps there are yet more things which might be said on behalf of principles which resemble W–PSR; however, I shall not here attempt to explore this issue further.

A brief remark about abstract propositions

There are questions which one might raise about the background metaphysics which is presupposed in the Gale–Pruss proof. In particular, Gale and Pruss begin by taking for granted the notion of an abstract proposition. There are many questions which one might ask about these entities, and to which Gale and Pruss provide no answers. (This is not to say that they *ought* to have provided answers to these questions in their paper; however, it is to insist that it would be problematic if their proof stood or fell with the details of their favoured account of the nature of abstract propositions.)

For example, despite the claims of Gale and Pruss to the contrary, one might wonder whether the BCCF for a world can differ from the BCF for that world: since a conjunction of a necessary proposition and a contingent proposition is contingent, the conjunction of all contingent propositions will 'include' all of the necessary propositions. Gale and Pruss attempt to ward off this kind of worry by saying that there are no 'truth–functional repetitions' in either the BCF or the BCCF: however, in the absence of further details about the nature of 'abstract propositions', it is unclear whether this proposal will suffice to avoid the collapse of BCCF into BCF. Given that Gale and Pruss say that one proposition 'contains' a second just in case all of the conjuncts of the latter are conjuncts of the former, it seems likely that they have some notion of 'atomic conjunct' in mind – but it is not entirely clear how this notion is to be explained.

In any case, for the purposes of the present paper, it seems to me that these kinds of issues can be set safely to one side: for nothing in the above criticisms of the Gale–Pruss proof turns on questions about the nature of abstract propositions. Indeed, the Fitch-style derivations of S–PSR from W–PSR involve no assumptions about the nature of abstract propositions – which shows, in effect, that the background framework need play no role in the relevant part of the Gale–Pruss proof.

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If my criticisms are well taken, then no-one could reasonably think that special assumptions about the nature of abstract propositions might be able to rehabilitate the proof.[5]

Notes

1. Strictly, their 'informal' glosses do not express the formal principles which are under consideration. The claim that, for any proposition p, if p is true, then it is possible for some proposition q to be true and to explain p, is a claim which quantifies over propositions true in the actual world. On the other hand, the principle W–PSR quantifies over propositions true in any world – and hence is a much stronger claim. A better 'informal' gloss for it would be that there is no proposition which is both possibly true and necessarily unexplained $((p)(Mp \rightarrow M\exists q{:}\, qEp))$. And a better 'informal' gloss for S–PSR is that every proposition necessarily has the property of being explained if true $((p)\iota(p \rightarrow \exists q{:}\, qEp))$.
2. See F. Fitch 'A logical analysis of some value concepts', *Journal of Symbolic Logic*, **28** (1955), 135–142; W. Hart 'The epistemology of abstract objects', *Proceedings of the Aristotelian Society*, supplementary vol. **53** (1979), 153–165; D. Edgington 'The paradox of knowability', *Mind*, **94** (1985), 557–568; T. Williamson 'On the paradox of knowability', *Mind*, **96** (1987), 256–261; and much subsequent discussion. Fitch credits the argument to an anonymous referee for a paper which he sent to the *JSL* in 1947, but never published. As Hart observes, it would be nice to know the identity of that referee. Two more quick points: (1) Fitch's proof has been previously mentioned in the philosophy of religion literature; see D. Walton 'Some theorems of Fitch on omnipotence', *Sophia*, **15** (1976), 20–27. (2) Edgington's controversial 'defence of verificationism' cannot be adapted to help Gale and Pruss: neither the claim that $(p)(@p \rightarrow M\exists q{:}\, qE@p)$ nor the claim that $(p)(@p \rightarrow M\exists q{:}\, qEp)$ can be given an interpretation which is intelligible, sufficient for the proof, and not evidently question-begging in the circumstances at issue.
3. Although I have formulated the theorem and proof in terms of propositional quantifiers, nothing at all turns on this. Logicians would probably prefer a formulation more along the following lines: Suppose that O is a sentential operator which is both veridical and dissective, i.e. for which $p \vdash Op$ and $O(p\&q) \vdash Op$. Suppose further that M is the standard possibility operator for any normal modal logic, and that $\rightarrow$ is any standard conditional. If $\vdash(p \rightarrow MOp)$, then $\vdash(p \rightarrow Op)$.
4. Perhaps it might be thought to be carping to point out that, if explanation is dissective, then, by their own lights, Gale and Pruss ought also to concede that there is a sense in which it is agglomerative: by the earlier argument, every true proposition has an explanation, and so, in particular, any conjunction of true propositions has an explanation! Of course, this is not to deny that the conjunction of an explanation of p and an explanation of q need not be an explanation of the conjunction $p\&q$ – so their objection to Hume is not threatened by this observation.
5. I am indebted to Lloyd Humberstone, Alexander Pruss, and two anonymous referees for *Religious Studies* for comments on an earlier draft of this paper. Special thanks are due to Richard Gale for his encouragement during the writing of this paper, and for his generous and enlightening correspondence about these and other philosophical matters.

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