

COULD THERE BE A COMPLETE EXPLANATION OF *EVERYTHING*?

One need only shut oneself in a closet and begin to think of the fact of one's being there, of one's queer bodily shape in the darkness...of one's fantastic character and all, to have the wonder steal over the detail as much as over the general fact of being, and to see that it is only familiarity that blunts it. Not only that *anything* should be, but that *this* very thing should be, is mysterious! (W. James, *Some Problems of Philosophy*)

Is contingent existence a proper target for explanation? If so, what kind of constraints might there be on an acceptable explanation? There undeniably is a powerful impetus in us to ask the question, 'Why is there *this*—why, indeed, is there anything at all?' Yet a little reflection shows that a satisfactory answer to this question would require an altogether different kind of explanation from familiar sorts. Would *any* sort manage to do? If so, would more than one?

Long dismissed by philosophers in the grip of various empiricist doctrines concerning meaning or explanation, these questions have begun to attract renewed attention, and I hope in what follows to advance this recent discussion.¹ My aims are modest. I begin by

¹ Excellent contributions include Leslie (1979, 2001), Parfit (1998), Koons, (1997, 2001, 2008), Oppy (1999, 2000, 2004, 2009), Pruss and Gale (1999), Pruss (1998, 2006), and Della Rocca (2010). O'Connor (2008) is my own prior contribution to this discussion.

The present paper is a sequel of sorts to that book, occasioned by discussion with several philosophers and reviews of the book (Forrest 2009, Koons 2009, Mawson 2009, Newlands 2010, Oppy 2008, and the forthcoming symposium in *Philosophia Christi*). I want to clarify and develop some key stage-setting claims and arguments that I make there.

reminding most of us (and perhaps informing a few of us) of the simple and compelling reasons for thinking that an explanation of contingent existence itself is something that empirical science cannot aspire to. I will then bring out some key assumptions concerning modal truth (and knowledge) and causation that underlie either the question concerning the explanation of contingent existence or certain attempts to provide a constructive response to it, and I will situate these assumptions in the context of recent philosophical developments. I find these assumptions to be plausible, but here I will only be able to gesture at reasons that I have for accepting them. (That any interesting metaphysical thesis will require contentious assumptions should go without saying. However, discussions with many philosophers have made me aware that some are prone to applying a double standard when it comes to this topic, given its deep roots within the history of natural theology. Many past thinkers have made inflated claims to offer ‘proofs’ of this or that constructive natural theological thesis. Nearly all contemporary philosophers rightly deny that ‘proof’ or ‘certainty’ can be attained for such claims. Yet some appear to believe that this fact shows that constructive projects in this area—or at least non-naturalistic constructive projects—cannot be profitably pursued. Where this skepticism is applied across the board to all claims or theories in metaphysics generally, it at least has the virtue of consistency. I shall offer no general defense of metaphysics here, though I note that in recent decades it has been a thriving area of philosophical inquiry. In any case, the reader is encouraged to apply appropriate epistemic standards to the present inquiry, just as I take care to note my contentious assumptions and be careful in the conclusions that I draw from them.) With these assumptions spelled out, I turn to my central argumentative burden: rebutting a common objection to the enterprise of seeking an explanation of contingent reality, viz., that the enterprise is bankrupt since contingent

reality, by definition as it were, precludes the possibility of complete explanation. I also respond to the typical fallback objection that the enterprise is animated by an implausibly strong form of rationalism.

My goal, then, is to help get the question of existence itself back on the table of serious philosophical discussion, by showing how it falls naturally out of an attractive (if, inevitably, contentious) metaphysical orientation, making plausible that its resolution must be non-naturalistic, and arguing that the choice between a thoroughgoing necessitarian picture and one involving ‘brutely’ inexplicable facts is a false one: we can have both contingency and complete explanation. I argue this last point through reflection on a broadly theistic metaphysics. If my contention is correct, it is worth considering what other metaphysical schemes might likewise be consistent with complete explanation of contingency. I argued in O’Connor (2008) that a theistic form of such explanation is to be preferred to alternatives that I can presently envision, but I neither assume nor conclude that here. I will be delighted, in fact, if the present modest contribution to the growing body of serious reflection on the question of contingent existence occasioned further development and more powerful defense of non-theistic theories of the *fons et origo* of existence, unshackled from empiricist handcuffs. The possibilities for explaining contingent existence have been underexplored in contemporary metaphysics. This was inevitable, as real progress has required development on a number of ancillary fronts. The time is now ripe.

I Ultimate Explanation is Not to Be Found in Empirical Science

Ultimate explanation would be explanation that involves no brute givens, leaves no

explanatory loose ends whatsoever—such that one could not intelligibly ask for anything more. All true, more limited explanations would rest on something that not only *has* no further explanation, but *can have* no further explanation. I will argue that no foundational physical theory could aspire to explanation of this sort by considering in broad outline three main ways that one might try to pull it off, showing why those ways cannot succeed, and suggesting that the lesson generalizes.

Consider first the *Way of Eternity*: the attempt to provide an adequate theory on which physical reality had no beginning (whether of finite or infinite temporal measure); every temporal stage is fixed by what has gone before; and the totality of physical reality is just the sum of the stages. The Way of Eternity is instantiated by a generalized Newtonian theory of infinite space and time; by contemporary physicist John Wheeler's theory of oscillating universes, or by any theory on which our universe is generated by a primordial 'universe generator', itself eternal or spawned by a sequence of structures that has no beginning.

Second, there is the *Way of Unification*: the attempt successively to reduce physical theory's number of fundamental properties and property-bearers, and the laws governing their co-evolution through spacetime. This Way's theoretical limit is a single simple equation governing the distribution of a single fundamental entity—realizing physicist Stephen Weinberg's dream of an equation that our descendants might display on their t-shirts. With maximal unification, it suggests, comes maximal explicability.

Finally, the *Way of Plenitude*: the attempt to provide ultimate explanation not by

burrowing down or pushing back but by spreading out. Satisfyingly ultimate explanation may be achieved, it is claimed, through the devising of an elegant and empirically adequate theory that locates our universe within a vast structure of totalities that exhibits completely non-arbitrary properties. This might be a plenum of disjoint island universes or of causally non-interacting, n -dimensional spacetimes embedded within a single hyperspace of $n+1$ dimensions. This way's limit case involves the existence of all mathematically consistent totalities: all possible universes, including every hyperspace configuration, as MIT physicist (and closet metaphysician) Max Tegmark (2008) proposes.

One might go further and combine *Eternity* and *Unification*, though neither seems to square with *Plenitude*, as universes with a beginning or which are less than ideally unified would seem to be part of any robust plenitude.

Suppose first that some version of the *Way of Eternity* were correct. Some have thought that, if this were so, there would be nothing left unexplained (that is, *unexplainable* in principle). David Hume, for example, in his *Dialogues Concerning Natural Religion*, contends that a beginningless sequence of events may admit of a complete, purely internal explanation—even if each of its constituent objects is a ‘contingent’ being, such that it might not have existed. All that is needed is that each stage of the sequence has a causal explanation in terms of what preceded it.

That there can be immanent, stepwise explanations for particular events in terms of prior causes is hardly news. The crucial claim here is that the aggregation of explanations of

this can be *ultimate*, leaving nothing further to be explained. This claim is plainly mistaken. An ultimate explanation would be *unconditional*—it would not appeal to factors that are themselves left unexplained. This requirement evidently is not met for local, sequential explanations where one event is explained in terms of another *which itself is an unexplained given* in terms of the explanation at hand. (This is not to say that there is anything wrong with conditional scientific explanations. I am merely pointing out that such explanations do not *aspire* to what would be required for Hume's contention to go through.) The point generalizes to other forms of scientific explanation familiar from contemporary theorizing. Explanations of the unfolding of cosmic history that point to the universe's earliest conditions plus its fundamental dynamical patterns treat these latter facts as simply given. Explanations cannot be unconditional if the terms are themselves all contingent, such that they might have not occurred.

Alex Pruss (2006, 44) gives the following nice example that illustrates the essential explanatory incompleteness of simply noting the stepwise dependence within a beginningless sequence of events. Suppose a cannon is fired at time t_0 and the cannonball lands at t_1 . Now consider the infinite sequence of momentary events spanning all times between the two events, excluding t_0 and including t_1 . There is no first event in this sequence, as there is no first temporal instant after t_0 . (Time, we assume, is continuous like the real numbers, rather than discrete like the integers.) Thus, though the entire sequence has a finite duration, it still meets Hume's envisioned scenario of a beginningless infinite sequence of events, each causally dependent on events that precede it. Hume should conclude that this series is explanatorily complete, but this is evidently

false: the entire sequence of events has a partial explanation in terms of an event external to it—the firing of the cannon at t_0 .

One might object that in the scenario Hume envisions, in which the infinite sequence constituting the universe's history *also* has infinite temporal duration, there is reason to think that explanation is complete: unlike in the temporally finite sequence involving the cannonball, there could not be an event temporally prior to the temporally infinite sequence that might play an explanatory role in relation to it. This in turn suggests that there is no room for an explanation of it, which is a pretty good reason to conclude that it is explanatorily complete.² However, this response makes a big assumption that is unmotivated, viz., that there cannot be either atemporal or synchronic causal explanations. It seems possible that there be a causal agent or condition outside the infinite sequence but not temporally anterior to it that is either always or timelessly giving being to the series.

There is reason, then, to suppose that further explanation is possible even in the case of a universe of infinite temporal duration. If so, and if our universe truly is contingent, the obtaining of some fundamental facts or other will be unexplained within empirical theory, whatever the topological structure of contingent reality. An infinite regress of beings in or outside the spatiotemporal universe cannot forestall such a result.

We might hope to be able to conjoin *Eternity* with the *Way of Unification*. But, even supposing an eternal physical reality that is maximally simple at the fundamental level in

² Oppy (2011).

terms of its ontology, dynamics, and topological structure, ultimate explanation would still elude our grasp. A cooperatively simple world reduces the *number* of contingent facts needing *independent* explanation. But in the end, what we get is conditional in character. The most fundamental fact of existence itself is left unexplained.

The same basic problem confronts the *Way of Plenitude*. There undeniably *is* an elegance, a lack of arbitrariness, in the hypothesis that every ‘consistent’ universe exists. It’s a beautiful idea that readily appeals to the foundational theorist, whether physical or metaphysical. But if it is a fact, and our reasons for embracing it are wholly *empirical*, then we must suppose that fact to be contingent: just the way things happened to be, among the ever so many less elegant alternatives. There might have been no ‘multiverse,’ or a less complete multiverse, or a single universe of any arbitrary type. That the plenitudinous multiverse exists at all will not, then, have an unconditional explanation.

If we seek an ultimate explanation of existence, we must pass from physics to metaphysics. More specifically, many philosophers have pretty widely agreed (though see below on one alternative), if there is to be ultimate explanation at all, we must suppose that there can be a kind of *necessary existence*—existence having the same necessity as the truths of pure mathematics—whether had by physical reality itself, à la Spinoza, or by some kind of maximally unified, transcendent cause of physical reality. Necessary existence could have no direct role within empirical theory, though it is open to a scientist of a philosophical bent to suppose that it has application to physical reality (as Einstein, following Spinoza, seems to have done). On a view that accepts the legitimacy of appealing to this feature, *necessary existence* is claimed to be a substantial,

distinctive property, involving a superior mode of existing. The natures of other things (whether instanced or not) will include the property, *being a contingent being*—that is, existing contingently, if at all. And the difference between these two classes of things is intrinsic and fundamental. The one class will include natures that are self-existing, whereas those in the other class are ontologically and explanatorily incomplete in themselves, existing, if at all, in dependency on other things, and ultimately on a necessary being.

II The ‘Opacity’ of Necessity and Its Role in Theoretical Explanations

My remarks concerning the distinction between contingent and necessary beings draw on the first of two important assumptions (or assumption clusters) that are needed to motivate the question of existence and to develop constructive proposals in response to it, or at least the kind of proposals that I find plausible. Much traditional criticism stemming from Hume of philosophical attempts at ultimate explanation rests on the belief that the notion of necessary *existence* is radically defective. According to these critics, the interdefinable modal notions of *necessity* and *possibility* can only be given a ‘thin’ or ‘empty’ understanding; they concern (in Hume’s words) mere ‘relations of ideas’, formal entailment between concepts, or something supposed to be similarly ‘thin.’ While the broad spirit of Hume’s view has been very common in the empiricist tradition, the many empiricist attempts to excise or deflate any lurking appeal to more-than-verbal necessity in empirical explanations have failed, I think it’s fair to say, and resoundingly enough as to suggest that the attempt is futile. Philosophical and empirical explanations alike often (and legitimately) depend on reality’s being characterizable by a rich structure of truths taken as necessary. We might call such truths “opaque necessities”: propositions that we

accept for explanatory reasons, not because they are ‘transparent’ or self-evident in the way that basic logical axioms allegedly are. Indeed, it can plausibly be argued that opaque necessities are implicit in logic and mathematics themselves, in the forms of essentialist commitments concerning propositional entities (see O’Connor 2008, Ch.1). More readily apparent is that there are opaque necessities concerning causation, natural kinds, and basic normative claims concerning what may constitute objective evidence for what. (Consider the vicious circle one would find oneself in if one supposed that the canons of inductive reasoning were not necessary, but contingent, and so themselves stand in need of empirical support.)³

More needs to be said than can be said here to develop a general modal epistemology that doesn’t rely upon the hyper-rationalist notion of ‘directly seeing’ the truth of certain basic modal claims. Consistent with a number of recent thinkers, I believe that we should think instead in terms of a fallibilist procedure that seeks to bring into reflective equilibrium the results of our continuously developing formal disciplines and the considered modal commitments that arise out of scientific and metaphysical theories.⁴

³ For development of this point, see Wright (1986 and 1980, 415-420). Famously, Quine argued for epistemological holism on which even logical and basic epistemic norms are subject to the ‘tribunal of experience.’ But, as Quine recognized, the choice of whether and how to modify such commitments in order to ‘accommodate recalcitrant data’ will inevitably be pragmatic, rather than epistemically objective. I assume that most of my readers will agree with me that there lies shipwreck.

⁴ In O’Connor (2008, Ch.2), I try to sketch out an account along these lines. See also Koons (2000, Ch.15), Plantinga (1993, 110-13), and Goldman (1999).

That the metaphysician likewise appeals to this primitive feature of necessity in attempting to provide a form of explanation of that most general fact of existence itself, then, should not be ruled out of bounds absent some compelling, specific reason to think that necessity cannot characterize any existing entity. And note that necessary mathematical truths are often taken to be entities—propositions—that exist of necessity with the property of truth. (We might follow Leibniz and streamline our ontology by taking them instead to be necessary divine ideas, but that route is obviously of no help to the would-be deflater of necessary existence.)

I noted above that there is one prominent, constructive response to the question of contingent existence that does not (or at least need not) posit the existence of a necessarily existing being. According to John Leslie, the world exists *because it should*.⁵ There are Platonic facts about the existence of some things and the absence of others being ethically required. These facts, says Leslie, are not existing things such as agents, but they are *realities*. The existence of our world is objectively better than nothing, and also better than many on-the-whole-bad worlds. Leslie posits that facts about what is ethically required can be creative without any agent, arguing that only in this way can the contingent existence question be adequately answered.

Derek Parfit (1997) accepts the formal adequacy of Leslie's approach, but holds that there are still other possibilities (although he refrains from endorsing any particular one). Here are some important 'global possibilities': this universe alone exists; every conceivable

⁵ See his 1979 and 2001 books and the concise statement of his position in Leslie (1997).

universe exists; no universe exists; the best possible universe exists; all universes above some threshold of overall goodness exist. Each of these possibilities, he claims, *could* obtain for no reason. It could be just a coincidence, for example, that the best possible universe alone exists. So the Random Hypothesis is that whatever global possibility obtains, even if an ‘interesting’ one, its obtaining has no explanation. Non-random Hypotheses, by contrast, claim that there is a Selector, a feature had by the actual global possibility and such that its obtaining is no coincidence—it is explained by some true principle. So, for example, if the best global possibility is one having our universe alone, and that is what obtains, the hypothesis will be that this possibility obtains *because* it is best. (Or it might be that the best possibility has all universes that are on-balance good, and *that* is what obtains.) While it could have obtained for no reason, it is more plausible to suppose that it obtains just because it is best. Supposing this to be a coincidence, says our hypothesizer, would be unreasonable.

Here I can only confess that I am not able to make sense of the form of explanation considered by Leslie and Parfit. What sort of ‘because’ is involved in asserting that a global possibility obtains because P, for some non-agential principle P? Evidently, it is not causal in the efficient-causal sense. (If it were, we should go on to ask about the nature of this peculiar causal entity. In particular, we can ask whether it is a necessary being, and whether its causality is structurally analogous to nonpersonal causal agents in the universe. It will not do to ward off further inquiries by saying it is an ‘abstract’ entity.⁶) But if the explanation is not causal, we are left with a truth without a truthmaker.

⁶ Cf. Lewis’s quip in another connection (1986, 111): “Could ‘abstract’ just mean ‘don’t worry’?”

And not just any old truth, but the most fundamental truth of all. That does not seem like an illuminating explanation at all.

That said, I am not claiming here to have conclusively rebutted the principle-based approach, just indicating the kind of reason that I judge to be compelling and that warrants discussion by its proponents. In Parfit's case, at least, it is pretty clear that he prefers the principle-based approach to one that appeals to necessary being because he embraces a view of absolute possibility as encompassing whatever is 'fully conceivable,' or perhaps ideally conceivable. (Since it is fully conceivable in the intended sense that there is no necessary being, alleged opaque necessities get us nowhere, as any such truth will itself be a brute contingency from a higher vantage point.) As I have taken pains to emphasize, I am here assuming that this contention is false. If one accepts this assumption, one may have to work a little harder to motivate the principle-based approach than its recent defenders have done.

III The Irreducibility of Causation and the Nature of Indeterministic Propensities

Explanations of the most fundamental sort are often causal, and one sort of causal explanation will feature prominently in the discussion to follow. As with modality, the nature of causation is itself a large and much disputed topic. Here I will have to assume the truth of a general approach to the nature of causation (which I discussed in O'Connor 2008 and elsewhere). I maintain that reductionist accounts of causation, including variants on the influential neo-Humean counterfactual theory proposed by David Lewis, are one and all untenable, for quite general reasons. Reductionist theories purport to analyze causal facts entirely in terms of the non-causal facts, so that causation is not a

metaphysically basic feature of the world, but instead is wholly derivative.⁷ Though popular throughout the metaphysics-disparaging twentieth-century, the reductionist program has consisted in the advancement of one implausible and extensionally inadequate proposal after another. It's time to call it quits.⁸ The alternative that I favor is (loosely speaking) neo-Aristotelian. The details of differing versions of this approach are not important in what follows. All I will assume is the ecumenical core, on which fundamental intrinsic properties of objects are by nature tendencies to contribute towards specific effects. The dispositional does not reduce to the nondispositional, and the manifestations of a disposition consist in the instantiation of a real relation—the relation

⁷ As Lewis thinks of it, causal facts and the laws of nature are reducible to facts concerning the global spatiotemporal arrangement of fundamental natural properties, which we allegedly may conceive in non-dispositional terms. Roughly, the laws are the best system of generalizations over such natural facts, where bestness is determined by the optimal balance of simplicity and strength (or explanatory power). Causation in turn consists in a restricted kind of counterfactual dependence of one event on another, where the counterfactuals are grounded in cross-world similarities.

⁸ I also deem inadequate the novel non-reductionist account developed by David Armstrong (1997) and Michael Tooley (1987), on which causation is a specific higher-order relation among universals. To my mind, this view is neo-Humeanism in disguise, one that simply adds ornamental second-order structure to a cause-less manifold, gaining nothing in explanatory power. (For discussion, see O'Connor, 2008, Ch.2, itself building on criticisms by Lewis 1986a and van Fraassen 1988.)

of causation—that is ontologically basic.⁹ These dispositions may be deterministic or probabilistic, relative to a specific type of circumstance, or perhaps even be an indeterministic tendency that is not probabilistically structured.

Within this account of causation, it is natural to understand ‘probabilistic causation’ not (with some reductionists) as the *causation of probability*—the inducement or alteration of an objective probability of various outcomes, giving formal structure to the context of what is a ‘chance’ occurrence—but instead as the *probability of causation*: the probability measures the objective likelihood that a given set of causal factors will bring about a potential effect. they are *propensities* towards a plurality of possible effects. They are sufficient for each of them only in the sense that they are all that is needed, not in the sense that they are a causally sufficient condition. Every indeterministic event is produced, though none is necessitated.

Some of what I say below crucially depends on the possibility of there being a transcendent cause of the universe as a whole, which causation would be a real relation that does not supervene on any set of nondispositional facts and the patterns therein. One might embrace a mixed view—some variety of deflationary neo-Humeanism about causation within the universe, which in turn has a neo-Aristotelian cause—as Thomas Reid did (though he grouped human causes with the divine cause, rather than Humean mechanistic causes). I take such a mixed ontology of causation to be implausible,

⁹ A number of recent authors have defended versions of this general approach. See, for example, Ellis, (2001), Molnar (2003), Bird (2007).

although by my lights it is preferable to a strict Humeanism that denies the possibility of a neo-Aristotelian cause of contingent existence.

The neo-Aristotelian theory of causation is naturally associated with a broader ontology of the physical world whose elements are basic individuals and a sparse set of natural properties and relations. This ontology, in turn, has implications for the theory of explanation, as we will see below. However, while I shall develop my preferred account of causal explanation, or of a fundamental form of causal explanation, in terms of this sparse ontology of concreta, my position will not essentially depend upon it, as the fundamental point I will make can be motivated independently of it.

IV Explanations and Explanation Schemas

If the two sets of assumptions concerning the legitimate role of ‘opaque’ necessities in some forms of explanation and the irreducible, productive character of causation are granted, how should one proceed in constructing and evaluating possible answers to the ‘existence question’? A good place to start is to distinguish between explanations, properly speaking, and explanation *schemas* that specify a mere broad outline of the causally relevant features of a putative cause and its manner of operation. But we should recognize at the same time that we could have reason to endorse an explanation schema even in the absence of an explanation that fills in the missing details if the schema seems to provide the only, or the best, form of answer, as measured by material adequacy and other standards of theory comparison. (Note that evolutionary theory is, in effect, a rich explanatory schema that entails that there are possible true explanations of a certain type

for ever so many specific facts about biological history, most of which are unavailable to us in any detail.)

Consider the claim that the totality that is the physical universe is metaphysically contingent while being a timeless causal product of a being that exists of absolute necessity. This is not much of a possible explanation of the universe, since it tells us nothing about the manner by which and circumstances in which the necessary being gave rise to it. We might give the claim a little more specificity: the necessary being blindly and inevitably ‘emanated’ the universe of necessity. (In which case, the universe itself turns out to be derivatively necessary, though not necessary *from itself*.) Alternatively, we could suppose that the necessary being generated the universe through an internal, nondeterministic mechanism, capable of generating any of a vast array of possibilities. As it happened, it gave rise to this one, but it needn’t have done so. Thirdly, we might say instead that the necessary being is a personal agent whose actions are guided by purposes. It caused the universe in accordance with some goal or set of goals. This option subdivides into two possibilities: on the first, the totality of its goals and beliefs rendered it inevitable that it would give rise to a universe of just this sort, which perfectly reflects those goals (so thought Leibniz). On the second, the reasons were resistible. It might have chosen a different sort of universe, holding fixed its actual goals and beliefs. (This accords with the more common theistic view.) While these explanatory schema are more informative than the initial barebones thesis, they are still far from full explanations. They tell us very little about the nature of the necessary being or its manner of activity. And there are other, similarly sketchy possibilities besides. We could, e.g., try to follow Einstein and his hero Spinoza in thinking that, appearances to the contrary, the universe

itself is a self-contained wholly necessary being, down to the last, most contingent-seeming fact. (As Spinoza would say, the appearance of contingency here is a result of our ignorance of the totality of causes.) Or we might enrich the *Way of Plenitude* with the metaphysical (not empirical) thesis that the existence of the multiverse is itself necessary.¹⁰

Though all these hypotheses are only schematic, it is possible that we might have reason to embrace a particular one of them even if precious few additional details are forthcoming. We would have such reason if (i) one of them seemed to ‘work’ on reflection and to not generate insoluble puzzles of its own and (ii) we had weighty reasons to think that each of the alternatives we could envision either implode on examination (best case) or face grave problems for which there are no clear remedies (less decisive), and (iii) there is reason to think that the range of alternatives we had considered are exhaustive. Even absent (iii), we would have some reason to adopt the favored view, albeit with less confidence.

¹⁰ We must distinguish this proposal—on which there are an infinite number of *universes* each of which exists necessarily in virtue of having a primitive property of necessity—from David Lewis’s (1986b) notorious *reduction* of modality to nonmodal facts concerning concrete ‘possible worlds.’ I have here assumed that all varieties of modal reductionism are false. For my assessment of Lewis’s account, see O’Connor (2008, Ch.1). Lewis professed to be “inured to brute contingency” and recognized that given his metaphysics, explanation “inevitably terminate[s] in brute matter of fact” (1986, 129).

Returning to the notion of modal structure, structure rooted in the feature of necessity, we might think of it this way. Explanations, especially the very general sorts of explanations offered in philosophy, logic, mathematics, and physics, often posit possibility-constraining structure of various kinds. For example, physics posits spatiotemporal structure and the causal-similarity structure induced by the fundamental properties and relations of matter and by natural kinds, such as *electron*. The philosopher who tentatively endorses one of the existence-explaining schema I mentioned is positing an additional kind of structure to reality: a necessary *ontic* dependency of contingent physical things on a necessary being. Like pure mathematical structure and unlike spatiotemporal structure in physics, it is conceived to be structure that would obtain for any possible reality.¹¹

V Ultimate Explanation and Indeterminism: Modal Collapse or Brute Facts?

Perhaps the fundamental objection to the project of seeking a satisfactory explanation schema for contingent existence takes the form of a dilemma: either we (implausibly) embrace ‘modal collapse’ and suppose that, in the final analysis, nothing is contingent, and ‘all is necessity’; or we concede the existence of ‘brute’ contingency somewhere or other and so give up on the possibility of *complete* or ultimate explanation. The objectors reason as follows: if there truly is a sufficient reason for every truth, a reason why it is so *and not otherwise*, then every truth will be a necessary truth, because a direct consequence of the fully explicable (and hence necessary) activity or choice of a necessary being. If not, if there is at some point a merely contingent link between necessary being and contingent being, so that this contingent world might not have

¹¹ For an engrossing discussion of structure in metaphysics, see Sider (unpublished ms.).

existed, even given the existence and nature of necessary being, then we've after all conceded that some contingent truths are 'brute facts', lacking complete explanation. (And if we have some brute facts, why not let existence itself be one such fact?)¹²

This sort of objection is apt, I believe, when directed at philosophers such as Leibniz who maintain the *Principle of Sufficient Reason* (PSR), strongly construed. However, it shares with defenders of that principle the false assumption that any *complete* explanation of some state of affairs is necessarily and fully *contrastive*, in the following sense: it explains (explicitly or implicitly) why that state of affairs obtains rather than any seemingly possible contrast whose occurrence is consistent with all the available mechanisms and the circumstances in which they operated.

Note that causal explanations can be targeted at a variety of explananda: events, objects, processes, or facts, with these being more or less finely individuated. I noted above that on an attractive ontology I favor, concrete reality consists in basic individuals and their histories, the latter understood as the instancing by one or more such individuals of one or more 'sparse' or natural properties and relations. If this is correct, then plausibly there is a basic, or minimum-grade, form of causal explanation that targets concrete entities (occurrences or the existence of objects) rather than one of the abundant, more finely-grained facts *about* those entities, and such explanation consists in giving information concerning the dispositional profile of the entity or entities that produced the explanandum. As noted previously, that profile may involve deterministic or probabilistic

¹² Peter van Inwagen (1996, see 97-99) and William Rowe (1984) have formulated versions of this objection.

tendencies, relative to a specific type of circumstance, or perhaps even an indeterministic tendency that is not probabilistically structured. Thus, when we seek an explanation of the existence of the universe as a whole, minimum-grade causal explanation is a permissible form. Of course, we might also seek explanations of more fine-grained truths concerning the universe, though it should not be assumed that potential explanations of them will simply fall out of a viable explanation of the more basic kind.¹³

Within this framework, we may advance the following explanatory principle:

Principle of Contingent Explanation (PCE) I

The existence of every contingent basic individual and the occurrence of every concrete event in or among such individuals has a true minimum-grade causal explanation, one that cites the activation of a dispositional tendency (possibly nondeterministic) in a distinct entity or entities.

¹³ As Peter Lipton (1990) made clear, a request for a contrastive explanation (“Why P rather than Q?”) presumes that there is an explanatory relationship between fact (P) and ‘foil’ (not-Q); it presumes that the occurrence of P and the non-occurrence of Q can be given a unifying explanation. But this assumption plainly will not hold for every such pairing even in a deterministic world—as when the occurrence of P and the absence of Q are completely unrelated matters. In an indeterministic world, contrastive explanation will also fail (plausibly) wherever P and Q are mutually exclusive and each had a significant, non-zero chance of occurring.

One *example* of an explanation conforming to the principle without being fully contrastive is the theistic (schematic) explanation of the realm of contingently existing entities as the causal product of a divine act of will or choice that is guided by some goal or reasons in the face of either competing reasons to will a different outcome or the availability of attractive, alternative ways of achieving the very same goals that guided what was in fact willed.¹⁴ If correct, the existence of every natural particular and the events in which they participate admit, in principle, of a fully adequate explanation in terms ultimately involving their causal dependency on a necessary being, whose activity was guided but not determined by some goal(s) that the actual order of things were seen to satisfy. Which is to say, there is an account of why there is anything at all and why the natural order has the character it has.¹⁵ And note further that by understanding

¹⁴ Objection: In that case, whatever aspect of the divine nature explains the actual outcome must be brutally contingent. Game over. Reply: Not so. A necessarily existing divine being would *necessarily* have a range of creative motivations or goals that point towards different options. For simplicity, say there are two options A and B, such that A is motivated by the state of God's having reason R_A and B is motivated by God's having reason R_B . In the actual world, God chooses A. This is explained by R_A , a necessary part of the divine nature. Similarly, had chosen B, it would have been explained by God's having R_B , a state that God also has necessarily. The fact that one or the other of these states is explanatory of the divine action only contingently (since the action itself might not have occurred) does not imply that the *existence* of these states is contingent.

¹⁵ As Eleonore Stump has reminded me, the ultimacy of explanation on this metaphysics requires the (standard) assumption that the divine being is constituted by a nature all of whose features are essentially interdependent. If this assumption were not made, then

schematically the purposive and free nature and characteristic activity of the being on whom all possibilities and actualities ultimately depend, we might see, too, why these dependent entities exist *only* contingently.

There's much to say about this model of purposive agency. Here I will only note that the more general point—there can be explanations that are not contrastive and do not entail the existence of contrastive explanations for their explananda—is a familiar fact outside the contentious matter of how to understand the will, whether divine or human: it is assumed in our best-confirmed scientific explanations, those given by quantum mechanics (at least on most interpretations). There, it is common to explain a phenomenon such as radioactive decay in terms of mechanisms that are presumed to operate nondeterministically. The phenomenon is adequately explained by describing a mechanism that had a non-zero probability of producing that result in the circumstances and that did in fact produce it. This, even though there is no explanation of why *this* result was produced rather than *that* one, whose probability of occurring was likewise non-zero. Here, too, we have an explanation of why there *cannot be* a correct contrastive explanation of the outcome, for every possible contrast.

there would be an unexplainable and brute fact that this being's nature was contingently constituted by this particular set of properties. Famously, this sort of consideration led many medieval philosophical theologians to embrace a very strong doctrine of divine simplicity. I believe that this stronger assumption is resistible, but we need not consider this matter here. (See O'Connor 2008, Ch.6.)

Intuitively, there is no less stark a contrast between a wholly uncaused (“brute”) event and one that is nondeterministically caused to occur than there is between a brute uncaused event and a deterministically caused one. Nondeterministic causal explanations are not an altogether different kettle of fish from deterministic explanations, as the mechanisms to which both sorts appeal are not deeply different in kind. Indeed, deterministic mechanisms are simply the limit cases of analogous probabilistic mechanisms arranged on a continuum ordered by the strength of their antecedent probability to cause the actual outcome. To put it in other terms, there is nothing *partial* or otherwise defective about nondeterministic, non-contrastive explanations in stochastic physical theories—or, for that matter, in accounts of freely-willed choices. Nothing pertaining to the target phenomena is left out of the explanatory picture: which events actually occur, how they actually are locally produced, and whether and why specific types of alternative events were possible, given the prior circumstances. Things don’t go all mysterious just because some of our world’s causes operate nondeterministically.

In the envisioned theistic framework, which aspires to maximal comprehensiveness in our explanatory project, there are no *brute* contingencies—no unexplained or incompletely explained events—whatsoever. True, where contingency is preserved through the non-necessitation of outcomes, there will be abstract, contrastive facts *about* those events that are not explicable. But this is just to say that the fully explicable events were not causally/metaphysically determined to occur. It is fully explicable why those contrastive facts do not admit specific explanation: the events they concern are the product of a causal agent or agents that operate nondeterministically, an agent or agents whose existence admits of complete explanation. I submit that there is no explanatory

surd in this scenario, nothing that seems to cry out for some kind or other of explanation where there is none—as would be the case on the naturalist-empiricist view that physical reality is ultimate but without explanation of *any* sort.

The plausibility of the above explanatory principle rests on an ontology that draws a sharp distinction between concrete contingent events, consisting in one or more individuals instantiating one or more basic properties and relations, and the uncountable abundance of contingent facts those events make true. However, we may make the required distinction between brute and non-brute truths without this particular ontology, while continuing to avoid modal collapse. It is embodied in the following alternative principle, implicit in some of my above remarks:

Principle of Contingent Explanation (PCE) II

For *every* contingent event or fact, either there is a true explanation of it or there is a nonvacuous true explanation why the event or fact has no true explanation.

Where an event is caused but not determined by a prior factor, there is no true explanation why that event occurred rather than some causally possible alternative (at least where the probability of the alternative is significant). That this is so, however, is not mysteriously brute. It is fully explained by the nondeterministic nature of the causal factor in question. This shows that seeking an explanation for contingent existence itself need be neither quixotic nor arbitrary. If contingent reality is causally grounded in a necessary being operating nondeterministically, PCE II will be satisfied. By contrast, were contingent existence to lack explanation altogether, as contemporary naturalists

suppose, it will not be satisfied. There would be not only no explanation for this fact, but also no substantial explanation that enabled us to see why it has no explanation: it would be brute.¹⁶

VI Naturalism, Transcendent Necessary Being Explanations, Simplicity and Economy

In its barest form, the theistic explanatory schema for existence is this: the reason that any contingent thing exists at all (and, in particular, the world of which we are part) is that it is a contingent, causal, and intended consequence of an absolutely necessary being.

Absent a powerful case for supposing that explanatory appeal to necessary being is illusory, it seems unreasonable, at least on the face of it, to allow that the question, *Why this?*, is a perfectly coherent one, and that it correctly presupposes that the universe and everything therein need not have existed—that is to say, its existence is entirely contingent—and nonetheless hold that there is no answer to it: hold that the universe's existence is simply a brute, *unexplainable* fact. In practice, we would not countenance local contingent facts entirely lacking in causal antecedents, regardless of the length and thoroughness of failed attempts to generate plausible hypotheses. A difference of attitude when it comes to the most general of contingent facts seems arbitrary. It seems even more

¹⁶ And thus my reply to Newland's insistence that, "in the absence of the general general justification which the PSR so wonderfully provides, O'Connor must show why we should favour metaphysical outlooks which provide meaningful answers to the 'Why anything contingent at all?' question in preference to those which answer with nothing but iterated bruteness." (2010, 439). The generality of PCE I and II also undercuts Della Rocca's (2010) argument that non-arbitrary commitment to popular and more limited explicability arguments requires acceptance of PSR.

unreasonable to deny that, other things being fairly equal, given two metaphysics such that one of them is consistent with there being an ultimate, non-arbitrary explanation of existence and the other of which precludes such explanation, we should prefer the one that answers it on account of its greater explanatory power.

Tom Senor suggests that this stance begs the question against theism's chief rival—"brute naturalism," on which the existence of the universe is a brute fact.¹⁷ Explanatory power is a theoretical virtue only when dealing with a phenomenon that clearly *has* some explanation. But the bare existence of the universe just isn't one of those facts that *cry out for explanation* (even if, as Senor himself supposes, it in fact has an explanation).

In reply, I don't see how we might make a principled, let alone plausible, distinction between facts that do and facts that don't cry out for explanation of any sort whatsoever. I don't see this distinction at work in any ordinary explanatory context, steering us away from so much as contemplating the possibility of explanations for certain facts among others (the explanation-worthy ones) within a domain. Certainly, all manner of practical considerations partly determine which facts a theorist might sensibly hope to explain at a given stage of inquiry. And fruitful theories frame inquiry in ways that place certain kinds of fact front and center while folding others into the theoretical superstructure, rendering them impervious to substantive explanation from within the theory. In practice, there will always be limits of these kinds to human inquiry. But Senor, I take it, wants to

¹⁷ See Senor's contribution to a symposium on O'Connor (2008) that is forthcoming in *Philosophia Christi*, 2010. Some of my remarks to follow in the text are taken from my response to Senor in that volume.

claim something much stronger: certain contingent facts just are such *in and of themselves* as not to require causal explanation of any kind whatsoever (purposive or mechanistic, deterministic or merely probabilistic, or even a non-trivial explanation of why they have no explanation). What does it take to be a fact like that? Time has not dealt kindly with Enlightenment suggestions on this score: modern cosmology is rife with attempted explanations of the universe we inhabit and facts concerning the nature of time and space. One suspects that the only way for a philosopher to delineate in advance the fact or facts that *cry out to be ignored* is this: whatever turn out to be the most basic facts of natural reality. That kind of special pleading is quite a comedown for the heirs of Hume and Kant.

It's important to see my appeal to greater explanatory power in setting aside brute naturalism in context. As noted earlier, Hume, Kant, and others have tried to argue that the idea of necessary (concrete) existence is incoherent and/or 'empty' (and so explanatorily useless), or that appeal to necessary existence to explain contingency leads to 'modal collapse', such that all is necessity. If either of these familiar contentions were correct, then we would indeed have a principled reason for thinking that explanation cannot be pushed through entirely, so that there must be brute (inexplicable) contingency somewhere or other. In the present discussion, I have assumed the falsity of the first of these contentions and argued against the second. If—but only if—my positions on these matters are well-founded, and an explanation for contingent existence itself is a coherent theoretical possibility, then it does seem proper to prefer a metaphysics on which it is *explainable* (in principle, even if we will never be in a position to fill out the explanation in detail) to one on which it is not, *other things being equal*.

Graham Oppy (2011) urges that it is inevitable that other things will *not* be roughly equal in this context. We need to weigh explanatory scope against other desiderata for theories, such as simplicity and ontological economy. And he contends that when we do take these into account, it is not at all obvious that *Naturalism* (as a metaphysical doctrine) will not come out ahead of *Theism*, all things considered. As he notes, accepting the theistic explanatory framework commits one to a new kind of entity having new kinds of properties and new theoretical problems (reconciling human freedom and divine conservation, etc.).

In reply, we should observe first of all that not all explanations of existence that posit the existence of a necessary being are theistic. An initial advantage of a broadly ‘Spinozistic’ ontology is precisely that it involves no new entities (at least, no new and wholly independent entities).

But suppose that there were powerful reasons to prefer a theistic construal of necessary being to other accounts. Then we should observe, secondly, that (contingentist) Naturalism simply is not a rival *explanatory* scheme for existence to Theism. Naturalism accepts as brute what theism seeks to explain. Further, if we let *naturalism* (small ‘n’) denote the full, structured set of true empirical explanations supposed to exist by philosophical *Naturalism* (big ‘N’), *minus* any claim of explanatory comprehensiveness, then the theistic explanatory schema can (and ought) to *absorb* small-n naturalism. For an unconditional explanation of existence need not in any way compete with conditional, empirical explanations of the sort that comprise the explanatory nuts and bolts of the

naturalist scheme. Indeed, it is natural to suppose that empirical explanations will be subsumed within the larger structure of the complete explanation, consistent with the plausible, deep assumption that reality is unified.

Now, Oppy is correct to insist on the relevance of the fact that a naturalist might judge the internal conceptual problems facing theism to be intractable. Conditional on this judgment, would it not be rationally preferable to forego the possibility of explaining existence? I don't believe so. For if one does make this judgment, there is a better fallback option: a construal of necessary being as an *impersonal* transcendent and indeterministic cause of contingent existence. Such a view likely doesn't face whatever problems Oppy or other naturalists might judge to afflict theism. It would require giving implausibly decisive weighting to economy of ontological commitment to judge that it is better to forego explanation altogether than to accept the existence of an unobserved necessary being.

That said, I would make one modest concession to Oppy on this matter. Since, as a practical matter, we are at best in a position to give reasons in favor of this or that explanatory *schema*, epistemic modesty is in order. We must always allow for the *epistemic* possibility that a favored, or indeed any, explanatory schema cannot be fully and consistently developed. If we knew this to be so, we would after all have reason to reject our Principles of Explanation on the excellent grounds that they cannot possibly be satisfied. But this concession does not invite skepticism about the project any more than the possibility of overlooked difficulties with complex physical theories should invite

skepticism (as opposed to a healthy circumspection in confidence) about the project of pursuing true physical theories.

VII Which Existence Question?

We are now in a position to see that certain ways of formulating the question regarding contingent existence that is to be answered make questionable assumptions about the form an explanation schema for existence must take. It is commonly put thus: *why is there anything at all?* But this very general formulation admits importantly distinct ways of making it more precise: What explains the fact that there are contingent things (things that might not have been)? What explains the fact that *these* contingent things exist? What explains the fact that *these* contingent things exist rather than *those* apparently possible others? Why are there any contingent things rather than there being nothing contingent at all?

I suggest that the *best* formulation of the question is this:

The Basic Question of Contingent Existence

Are there contingently existing objects, and if there are, why do those particular contingent objects there are exist and undergo the events they do?

The reason to prefer this formulation is that it presumes the least about what is there to be explained and what form a true explanation may turn out to have. Spinoza and perhaps Einstein want to question the common assumption that there are any contingent truths at all. The second half of *The Basic Question* sets a *minimum bar* for precluding brutally

(wholly inexplicable) contingent existences or occurrences in reality. Some explanations consistent with *PCE I* and the more general *PCE II* are not consistent with *PSR* and are no worse for that. Contingency rooted in indeterministic causes need not be brute.

Finally, let me try to clarify a subtle issue in the neighborhood.¹⁸ We start by noting that all noncontrastive explanations for *P* appear to provide, in trivial fashion, the materials for a corresponding contrastive explanations of *P rather than not-P*—the limit case, we might say, of contrastive facts. Since *P* is equivalent to *not-not-P*, to explain why *P* plausibly is to provide the resources for explaining why *not-not-P*. (There are niceties to be explored here that turn on the intensionality of explanations, but I don't think these suffice to call into question the claim I just made.) And to explain why *P* and (thereby) why it's not the case that *not-P* seems tantamount to explaining why *P rather than not-P*.

But now consider the question, *Why is there something contingent rather than there being nothing contingent?*, a question that has the form of *Why P rather than not-P?* I have been arguing, it seems, that there could be an adequate noncontrastive explanation of the first disjunct (*there is something contingent*) in terms of its being nondeterministically caused by God in accordance with certain (resistible) reasons. If so, and if *Why is there something contingent rather than there being nothing contingent?* is asking for a *trivially* contrastive explanation, the requisite answer should fall out of the noncontrastive explanation. But this contrastive question appears *not* to be answered by appeal to a non-necessitating cause that need not have caused anything contingent at all. So what's going on here?

¹⁸ Thanks to William Lane Craig for raising this matter in discussion.

We have gone astray, I believe, in the very first step, where it was supposed that the contingent activity of a necessary being noncontrastively explains the fact that there is something contingent. For this question is implicitly contrastive, and, thus, so must be any adequate answer to it. Unpacked, it asks, *Why does one of these possibilities—the ones that involve contingently existing things—obtain, rather than none of them?*

Whether it has an answer depends on the details of the proposed theistic scenario. One might suppose that while it was undetermined which contingent reality God produced, it was necessary that God produce some reality or other. (One reason to think this might be so comes from the Platonic-medieval thesis that Goodness naturally diffuses itself.)¹⁹ In that case, there will be available an explanation for our implicitly contrastive question. But if we do not suppose this, then we also do not have reason to suppose an explanation of *there is something contingent*. In this scenario, what there will be an explanatory answer to is *Why is there this contingent reality?*, a different question from *Why is there anything contingent?*

VIII On the Disparagement of ‘Rationalism’

I turn to a final objection. Endorsing a metaphysical explanation schema for contingent existence, empiricists complain, is indulging in an extreme and outmoded variety of ‘rationalism’. John Mackie, for example, scorned the assumption that our world is “intelligible through and through,” or ultimately intelligible, in the way that would be the case if existence itself admitted of explanation.

¹⁹ For discussion, see Kretzmann (1988), and O’Connor (2008), Ch.5.

Such a charge, when made explicit, is either mistaken or liable to be turned back on the one who makes it. If Mackie is right that our universe is *not* intelligible, then a necessary being that either constitutes all of reality or serves as the source of an independent contingent reality doesn't just happen to be absent, as it happens to be the case that there are no unicorns; its existence is *impossible*. For it cannot be that while there *is* no necessary being, there *might* have been one. The concept's peculiar logic precludes that. (This is the lesson of the modal ontological argument.) The concept of a necessary being is of one that could not have failed to exist, absolutely speaking. For such a being to be possible, it must be such that it would exist in every possible circumstance, including the actual one.²⁰ (That's precisely why the question of *its* existence cannot arise, thereby ending the regress of explanation non-arbitrarily.) Thus, in opposing a 'rationalist' commitment to the ultimate intelligibility of our world, the critic is thereby advancing an equally strong thesis, implicitly held as a *necessary* truth: it is necessarily the case that there is no ultimate explanation. Given that our natural, intuitive assent is towards our world's *being* ultimately intelligible (as the pervasive tendency to raise the question of the explanation of existence indicates), it is hard to motivate the Mackian attitude. Furthermore, note the distinctness of two 'rationalist' theses:

- (1) Existence has an explanation. (Reality is intelligible 'through and through.')
- (2) Human beings are capable of laying bare the full intelligibility of reality.

Attacks on rationalism are quite plausible when directed at (2), a thesis held by very few, if any, philosophers of tradition. As I've emphasized, it is enough to seek, not a

²⁰ I here assume with many that S5 is the correct logic of absolute necessity.

comprehensive ultimate explanation, but the outline of an explanation (or range of possible explanations, if there is more than one that is viable upon sustained reflection). Schematic answers may suffice for very significant constraints on general metaphysics. Anti-rationalist attacks are far less plausible when directed at (1), once we see the equally strong necessity claim that its repudiation commits us to and we further recognize that it is entirely independent of the inflated optimism embodied in (2).²¹

²¹ Versions of this material were presented to audiences at the Center for Philosophy of Religion at the University of Notre Dame, the Butler Society at Oriel College, the University of Oxford, *The Philosophy of Cosmology* conference at St. Anne's College, also at Oxford, Wheaton College, and as a plenary address at the annual meetings of the Evangelical Philosophical Society in New Orleans. I hope the present paper is considerably clearer as a result of the helpful criticisms and suggestions I received. I wish to thank in particular Robert Audi, John Bishop, John Churchill, William Lane Craig, Thomas Flint, John Hare, Jeff Koperski, Matthew Lee, Brian Leftow, Michael Murray, Samuel Newlands, Michael Rea, Chris Tweedt, and finally, Sir Martin Rees, my commentator at the cosmology conference. I have also benefited from reading reviews of *Theism and Ultimate Explanation* by Peter Forrest, Robert Koons, T. J. Mawson, Samuel Newlands, Graham Oppy, and Tom Senior.

Bibliography

- Armstrong, David (1997). *A World Of States Of Affairs*. Cambridge: Cambridge University Press.
- Bird, Alexander (2007). *Nature's Metaphysics*. Oxford: Oxford University Press.
- Della Rocca (2010). "PSR" *Philosophical Imprints* 10 (7), 1-13.
- Ellis, Brian (2001). *Scientific Essentialism*. Cambridge: Cambridge University Press.
- Forrest, Peter (2009). "Review Of Timothy O'Connor, Theism and Ultimate Explanation: The Necessary Shape of Contingency," *Analysis* 69 (3), 589-91.
- Goldman, Alvin (1999). "A Priori Warrant and Naturalistic Epistemology," *Philosophical Perspectives 13: Epistemology*, 1-28.
- James, William (1998). "The Problem of Being," in *Some Problems of Philosophy*. New York: Longmans, Green, 1911; Reprinted in Van Inwagen, Peter and Zimmerman, Dean (eds.) *Metaphysics: The Big Questions*. Blackwell Publishing, 415-18.
- Koons, Robert (2000). *Realism Regained*. New York: Oxford University Press.
- (1997). "A New Look At The Cosmological Argument," *American Philosophical Quarterly* 34, 193-211.
- (2001). "Defeasible Reasoning, Special Pleading and The Cosmological Argument: A Reply To Oppy," *Faith And Philosophy*, 18, 192-203.
- (2008). "Epistemological Foundations for the Cosmological Argument," *Oxford Studies In Philosophy Of Religion* 1, 105-133.
- (2009). "Review Of Timothy O'Connor, Theism and Ultimate Explanation: The Necessary Shape of Contingency," *Mind* 118 (July), 862-867.

- Kretzmann, Norman (1988). "A General Problem of Creation: Why Would God Create Anything At All?" in Macdonald, Scott (ed.) *Being and Goodness*. Ithaca: Cornell University Press, 208-228.
- Leslie, John (1979). *Value And Existence*. Oxford: Blackwell.
- (1997). "A Neoplatonist's Pantheism," *The Monist* 80 (2), 218-231.
- (2001). *Infinite Minds*. Oxford: Clarendon Press.
- Lewis, David (1986a). *Philosophical Papers, Vol.II*. Oxford: Oxford University Press.
- (1986b). *On The Plurality Of Worlds*. Oxford: Blackwell.
- Lipton, Peter (1990). "Contrastive Explanation," in D. Knowles (ed.), *Explanation and its Limits*, Cambridge University Press, 1990, 247-266. Reprinted in D. Ruben (ed.), *Explanation*, Oxford: Oxford University Press, 1993.
- Mawson, T.J. (2009). "Review of Timothy O'Connor, *Theism and Ultimate Explanation: The Necessary Shape of Contingency*," *Religious Studies* 45, 237-241.
- Molnar, George (2003). *Powers*. Oxford: Oxford University Press.
- Newlands, Samuel (2010). "Review of Timothy O'Connor, *Theism and Ultimate Explanation: The Necessary Shape of Contingency*," *Philosophical Quarterly* 60 (239), 438-442.
- O'Connor, Timothy (2008). *Theism and Ultimate Explanation: The Necessary Shape of Contingency*. Blackwell.
- Oppy, Graham (1999). "Koons' Cosmological Argument," *Faith and Philosophy*, 16, 378-89.
- (2000). "On 'A New Cosmological Argument'," *Religious Studies* 36 (3), 345-353.

- (2004). “Faulty Reasoning About Default Principles in Cosmological Arguments,” *Faith And Philosophy*, 21, 242-49.
- (2008). “Review of Timothy O'Connor, *Theism and Ultimate Explanation: The Necessary Shape of Contingency*,” *Notre Dame Philosophical Reviews* 2008 (6).
- (2009). “Cosmological Arguments,” *Noûs* 43 (1), 31-48.
- (2011). “O’Connor’s Cosmological Argument.” *Oxford Studies in Philosophy of Religion* 3.
- Parfit, Derek (1998). “The Puzzle of Reality: Why Does the Universe Exist?” in Van Inwagen, Peter and Zimmerman, Dean (eds.) *Metaphysics: The Big Questions*. Cambridge, MA: Blackwell Publishers, 418-27.
- Plantinga, Alvin (1993). *Warrant and Proper Function*. New York: Oxford University Press.
- Pruss, Alexander (1998). “The Hume-Edwards Principle and the Cosmological Argument,” *International Journal for the Philosophy of Religion* 43, 149-65.
- (2006). *The Principle of Sufficient Reason*. Cambridge: Cambridge University Press.
- Pruss, Alexander and Gale, Richard (1999). “A New Cosmological Argument,” *Religious Studies* 35 (4), 461-476.
- Rowe, William (1984). “Rationalistic Theology and Some Principles of Explanation,” *Faith and Philosophy* 1, 357-369.
- Sider, Ted (unpublished Ms.). *Writing the Book of the World*.
- Tegmark, Max (2008). “The Mathematical Universe,” *Foundations of Physics* 38, 101-50.
- Tooley, Michael (1987). *Causation: A Realist Approach*. Oxford: Clarendon Press.

Van Fraassen, Bas (1988). *Laws and Symmetry*. Oxford: Clarendon Press.

Van Inwagen, Peter (1996). "Why Is There Anything at All?" *Proceedings of the Aristotelian Society*, Supp. Vol. 70, 95-110.

Wright, Crispin (1980). *Wittgenstein on the Foundations of Mathematics*. London: Duckworth.

—(1986). "Inventing Logical Necessity," in Butterfield, J. (ed.) *Language, Mind, and Logic*. Cambridge: Cambridge University Press, 187-209.