

Metaphysical Rationalism

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Abstract

The Principle of Sufficient Reason states that everything has an explanation. But different notions of explanation yield different versions of this principle. Here a version is formulated in terms of the notion of a “grounding” explanation. Its consequences are then explored, with particular emphasis on the fact that it implies necessitarianism, the view that every truth is necessarily true. Finally, the principle is defended from a number of objections, including objections to necessitarianism. The result is a defense of a “rationalist” metaphysics, one that constitutes an alternative to the contemporary dogmas that some aspects of the world are “metaphysically brute” and that the world could in so many ways have been different.

Those who are ignorant of true causes, make complete confusion—think that trees might talk just as well as men—that men might be formed from stones as well as from seed . . .

– B. Spinoza, *Ethics*, 1p8s2

A *metaphysical rationalist* is someone who endorses the Principle of Sufficient Reason (PSR), the principle that everything has an explanation. The PSR can be understood in a number of different ways depending on the meaning of ‘explanation’ and the range of the quantifier ‘everything’, so metaphysical rationalists come in many different stripes. But every rationalist thinks that in *some* interesting sense there is an explanation (or “reason”) for everything. Her rationalism is then qualified as being *metaphysical* to distinguish it from other rationalisms (such as epistemic rationalism, a thesis concerning the sources of justification) but this qualification can now be dropped for brevity.

Although rationalism of one form or another was arguably embraced by such luminaries as Aquinas, Spinoza, and Leibniz (amongst others), it is fair to say that it has since largely fallen out of favor. Indeed my sense is that (with a few exceptions) contemporary philosophers tend to treat it as an antiquated view that need not be taken seriously today.¹ This may be the result of two factors. First, the PSR (in one form or another) is often thought to have consequences that might be thought problematic, including necessitarianism (the view that every truth is necessarily true), the existence of God, and indeed the existence of every conceivable being.² And second, there is a perceived lack of evidence in its favor. These two factors naturally lead to an attitude of (perhaps respectful) dismissal.

This attitude may be justified when it comes to some versions of the PSR. But I believe that there is a version that does not deserve it. One way that this version differs from others is that it is concerned with one particular mode of explanation, what is nowadays referred to as *metaphysical* or *grounding* explanation. I will argue that this version avoids the problematic consequences just mentioned. It does not imply the existence of God or every conceivable being. It does imply necessitarianism of a certain kind, but I will argue that this kind of necessitarianism is not problematic.

But is there any evidence in its favor? If there is, I confess that I have none to offer. But is this a reason to dismiss it? It is *if* rejecting the PSR is the default view, if the burden of proof is on the rationalist to establish her position but not on her opponent to establish hers. This might be true of versions of the PSR that concern *causal* explanation: absent strong evidence in their favor we should probably reject them. But there is an important difference between causal and metaphysical explanation that means that when it comes to the version I want to discuss there is no default view: there is a burden on both those who accept it *and* those who reject it to offer evidence for their view, so that absent evidence one way or the other we should remain agnostic. Since I do not know of much evidence either way, I conclude that the contemporary anti-rationalist bias is unwarranted.

I stress that I will not try to demonstrate that this version of the PSR is true. My aim is just to formulate it (sections 1–5), explore its consequences (sections 6–11), and then argue that the contemporary bias against it is unwarranted (sections 12–16). Still, this is a valuable exercise if only because the version of the PSR I develop is the antithesis to a metaphysical picture that is something of a contemporary dogma. This dogma has two components: that some aspects of the world are “metaphysically brute” or “arbitrary”, and that the world could in so many ways have been different (we will see how these are connected). David Lewis’ doctrine of Humean Supervenience is the zenith (or nadir) of this dogma, but it is found to some degree in most contemporary metaphysics. The rationalist view defended here is an alternative picture. I believe that it resembles a Spinozistic view, but I am no scholar so I will develop it in contemporary terms without rooting it in history. Whether this rationalist alternative is true is a question for another time: here my aim is just to show that *there is* a respectable alternative. Even if we ultimately decide to stick with dogma, we will at least better know our opponent.

1 Metaphysical Explanations

Our first task is to formulate the version of the PSR that I have in mind (sections 1–5). I said that the PSR can be understood in a number of different ways depending on the meaning of ‘explanation’ and the domain of the quantifier ‘everything’. Let us start with the notion of explanation. Some versions of the PSR might focus on *causal* explanation, perhaps stating that everything has a causal explanation.³ Other versions might focus on *teleological* explanation, perhaps stating that everything has a purpose. Yet another version interprets the ‘reason’ in ‘Principle of Sufficient Reason’ to be a practical reason and then states that God had a practical reason

to create the world exactly as she did (this principle might have been what Leibniz had in mind).⁴

I will not discuss any of these versions of the principle. The version to be discussed here specifically concerns the notion of *grounding* explanation—otherwise known as *metaphysical* or *constitutive* explanation—that has been much discussed in recent metaphysics. To illustrate, imagine that you are at a philosophy conference, and imagine that you are asked to explain why a conference is occurring. To *causally* explain it, you might describe a sequence of events that led to the conference: someone sent invitations, others wrote papers and booked flights, etc. But another kind of explanation would try to say what it is about the event that makes it count as a conference in the first place. Regardless of what caused the conference, someone looking for this second explanation suspects that it is not a brute fact that the event is a conference; rather, there must be something about the event *in virtue of which* it counts as being a conference. Perhaps the answer has to do with how various people are acting, e.g. that some are giving talks, others are asking questions, etc. An explanation of this second kind is what I mean by a *grounding* explanation of why a conference is occurring.⁵

Some other standard examples of grounding explanations include the idea that a set exists *because* its members exist, and that there is a table here *because* some particles are arranged here in a certain way. Others have clarified this mode of explanation further and have argued that it is central to philosophy.⁶ For example, on their view the physicalist idea that mental states “arise out of” or are “determined by” physical states should be understood as a thesis about grounds, i.e. about what grounds mentation; and the naturalist idea that natural facts can “account for” normative facts should be understood as a thesis about what grounds the normative. One might of course question whether the word ‘ground’ (so used) corresponds to anything real, just as one might raise the analogous Humean question about ‘cause’. But that issue is beyond the scope of this paper. Here I take the notion for granted and ask what kind of PSR can be formulated in its terms.⁷

Two clarifications will help. First, what is the logical form of a grounding explanation? We often express explanations with the word ‘because’: a conference is occurring *because* people are acting in various ways. So on one view the logical form of a grounding explanation is

ϕ because Γ

where ϕ is a sentence, Γ is a list of sentences, and ‘because’ is read in the metaphysical sense just illustrated.⁸ Informally, the sentences in Γ describe those features of the world that explain why ϕ . An alternative approach is to treat ground as a relation between facts, in which case the logical form of a grounding explanation becomes

the Xs ground Y

where Y is a singular variable and ‘the Xs’ is a plural variable, both ranging over facts.⁹ This second approach leads to easier prose, so I will use it here. But strictly

speaking I think of ground as a sentential operator, so my reference to facts in what follows is merely a convenient shorthand.

Second, I will assume that ground is transitive in the following sense: if the Xs ground Y and if Y along with the Y*s ground Z, then the Xs along with the Y*s ground Z. This is not beyond dispute.¹⁰ Still, the issue is not important for our purposes: if you deny that ground is transitive you can take me to be discussing the transitive closure of your notion.

2 On Innocence and Experience

Assuming that the notion of ground is intelligible, what kind of PSR can be formulated in it terms? One version is that every fact has a ground, but that is not what I want to discuss. I am instead interested in the principle that everything has a special *kind* of ground. What is this special kind?

Grounding explanations start with why-questions. Suppose I ask why (in the metaphysical sense) there is a mountain here and you say that it is because some particles are arranged thus and so. And suppose that what you said is true. Have you answered my question? Certainly there is *a* sense in which you have explained why there is a mountain here. But of course the question then arises as to why those particles are arranged thus and so in the first place. Suppose you now tell me that there is no explanation, that this is just a brute fact. Then in another sense you have not explained why there is a mountain here after all. For you have not explained why the world is one that gives rise to a mountain rather than one in which the particles are arranged differently and give rise (say) to an ocean instead. That is, if the arrangement of particles itself has no explanation it remains unexplained why the world turned out like *this* (gesturing at the mountain and the particles). In that sense my original question of why there is a mountain here remains unanswered. Put figuratively, it has not been explained why, out of all the logically or metaphysically possible ways that things *could* have turned out, it turned out to contain a mountain here.

This is the kind of situation that the rationalist I have in mind rules out. The problem is not so much that there is an ungrounded fact about *the arrangement of the particles*. The problem is rather that because of this the original fact of *the mountain's being here* has not been explained in the way that the rationalist wants. The desire for this special kind of explanation stems from a childlike curiosity in which one looks at the surrounding mountains and oceans and thinks 'Good grief, how come it all turned out like *this*?' Being told that it is because some particles are arranged thus and so does not (even if true) answer the question. This childlike curiosity is easily lost with experience, when what once filled us with awe begins to seem mundane, but the rationalist takes this child's question seriously and expects an answer.¹¹

What would answer the child's question as to why there is a mountain here? Suppose we said that the mountain's existence is grounded in the arrangement of particles, which itself is grounded in some physical field, which in turn is grounded in something else... and so on without end. Would citing some non-terminating

descending chain of grounds like this answer her question? I think not. For her question is not answered at the first step when one describes the particle arrangements, since (as we have seen) she will just complain ‘Yes, but why is the world like *that*?’ But the same goes for any step in the chain. So all we have in a non-terminating descending chain is infinitely many bad answers. And infinitely many bad answers do not constitute a good answer. For the child may legitimately gesture at the mountain and the particles and the fields and all the subterranean material in the descending chain and ask why it all turned out like *that*, i.e. arranged in such a way as to give rise to a mountain.¹²

Nor would the child’s question be answered if we said that the mountain’s existence is grounded in a “self-explanatory” fact, i.e. a fact that grounds itself. For one thing, it is doubtful that the proposed explanation is possible: it is dubious whether a fact can explain itself *in the very same sense* that an arrangement of particles might explain the presence of a mountain.¹³ But even if there could be a self-explanatory fact, the situation would just be a kind of non-terminating descending chain and so would not constitute an answer to the child’s question for the above reason.

A natural thought is that to answer the child’s question one must (at a minimum) explain why there *had* to be a mountain here. Anything less than this (the thought is) will result in the child wondering why the world happened to turn out the way it did. So one might think that to answer the child’s question of why F obtains one must state some *necessary* facts that ground F. But even this might not suffice. For suppose the question then arises as to why those necessary facts obtain, and suppose one is told that there is no answer, that they are just brute. Then the child will complain that it has still not been explained why the world turned out (indeed *had* to turn out) to be like *this*, a world that gives rise to mountains. If the original explanation in terms of contingent particle arrangements did not answer the child’s question, moving to necessary facts does not necessarily help.¹⁴

What then would a satisfactory explanation look like? The previous explanations fell short because whenever they grounded the mountain’s existence in some underlying facts (contingent or necessary) the question always arose as to why those underlying facts obtain. Insofar as this further question arises the child has the unsatisfied feeling that it has still not been explained why the world turned out to contain a mountain here. But this unsatisfied feeling will not arise if the mountain’s existence is explained in terms of facts for which this further question of why they obtain does not even arise in the first place. Roughly speaking, then, let us call a fact *substantive* if it is “apt for being grounded”, if the question of what grounds it can legitimately be raised and admits of a sensible answer (an answer that either states its ground or else states that it has none). In contrast, a fact is *autonomous* if it is not apt for being grounded in the first place, if the question of why it obtains does not legitimately arise. If we explain the mountain’s existence in terms of autonomous facts then the question as to why those underlying autonomous facts obtain does not even arise, and so there is no further question as to why the world turned out like *this*, i.e. set up in such a way as to produce mountains. The child’s question of why there is a mountain here will then be answered after all.

This is not to say that there always is an answer to the child's question. My claim so far is just that there is a way of asking 'Why P?' that we seem to understand and that is properly answered only by appeal to autonomous facts. The version of the PSR I will defend is that there is indeed always an answer to these child's questions, or more precisely *that every substantive fact has an autonomous ground*. But we will assess the view later; for now I am just establishing what the view is.

3 Autonomy

What is this notion of *autonomy*? I said that a fact is autonomous if it is not "apt for being grounded", but what does this amount to? I will not try to give an explicit definition (partly because I suspect that there is none) and will instead take it as a primitive notion. But where one philosopher sees a useful primitive, another will claim to find it unintelligible. So let me say something to illuminate the notion. I will not defend the intelligibility of the notion from all objections, for my primary aim in this paper is to take these notions (of ground and autonomy) for granted and ask what kind of PSR can be formulated with them. Still, since autonomy is less well known than ground, let me clarify it in some detail, starting with a general characterization and then turning to examples.

The basic idea is reasonably familiar in the case of causal explanation. Consider facts about how various particles are arranged. Some particle arrangements (we may assume) have a causal explanation. The arrangement that constitutes my laptop in its current state might be an example. Other particle arrangements may not. If I ask what causally explains why a certain group of particles were arranged in a certain way and if the denoted arrangement happens to have been the initial condition of our universe, then the appropriate answer would be that there is no explanation, that it is a causally brute fact about the world's initial state. But all particle arrangements are "apt for causal explanation": the question of what causally explains how they came to be arranged like that can legitimately be raised even if the answer is in some cases 'nothing'.

Consider by contrast the fact that $1+2=3$. Like the initial condition, this lacks a causal explanation. But there is a difference. If someone asked you what causally explains why 1 and 2 came to equal 3, you would not just say 'nothing'; you would start talking about the notion of causation and the nature of abstract objects in an attempt to show that the question should not have been raised in the first place. The particle arrangement that happened to be the initial condition lacks a causal explanation even though it is a good question why those particles came to be arranged like that. The mathematical fact by contrast lacks one because it is not "apt for being causally explained" in the first place.

The result is a three-fold distinction. There are those facts that are apt for causal explanation but lack one—e.g. the initial conditions. And there are those that are apt for causal explanation and have one—e.g. the current arrangement of particles that constitute my laptop. And then there are those that are not apt for causal explanation in the first place—e.g. facts of pure arithmetic. My thought is that an analogous three-fold distinction can be drawn in the case of grounding explanations

too. There are those facts that are apt for having a ground but lack one. These are the so-called “fundamental” or “brute” facts. And there are those that are apt for having a ground and have one. These are the so-called “derivative” facts. And finally there are those that are not apt for having a ground in the first place. These are what I call “autonomous”.

That is one route into the notion of autonomy, but a second analogy is also suggestive. Suppose one is doing axiomatic set theory. One starts with a language containing the binary predicate of set-membership and one states some axioms governing it and proves some theorems. It is then useful to expand the language and introduce by stipulation a new word:

Definition: x is a *subset* of $y \equiv_{df}$ any member of x is a member of y .

One can then express various claims about subsets, for example

Proposition: Every set has at least one subset.

and attempt to prove them from the axioms and the definitions. The question of whether the Proposition has a proof is clearly a good question regardless of whether it actually has one. Indeed this kind of question is the bread and butter of set theory. The same applies to the axioms of the system: the question of whether one of them is provable from the rest is a good question that can lead to remarkable advances even if the answer is ‘no’—just think of the attempt to prove Euclid’s fifth postulate!

But the same is not true of the definition itself: it is clearly *not* a good question whether we can prove the definition from the axioms. If your homework buddy asked whether you can prove the above definition you would take her to be confused about its status *as a definition*. You would not just say ‘no’; you would start talking about the role of the definition—that its function is to introduce by stipulation a new term to our language, and so on—so that your buddy comes to see that the request for a proof is in some sense illegitimate. As we might put it, the definition is not “apt for being proved”. There may be other good questions to ask of the definition, such as whether it is useful or corresponds to some prior concept. But how it might be proved from the set-theoretic axioms is not one of them.¹⁵

So as in the case of causation we recognize a three-fold distinction. There are those truths that are apt for proof but lack one (if your derivation system is complete then these are just the axioms). Then there are those truths that are apt for proof and have one. And finally there are the definitions that are not apt for proof in the first place.

My suggestion is that autonomous facts stand to ground as definitions stand to proof. What are some examples of autonomous facts? The analogy with proof is suggestive. For a stipulative definition states *what a term means*, and the worldly analogue is a statement of *what something is*, a statement of its “real definition”. Kit Fine (1994) also called this a statement of its “nature” or “essence”, and I will follow him here. For example, when we ask in the seminar room ‘What is knowledge?’ and consider the answer that knowledge is true and justified belief, we are considering a claim about *what knowledge is*, about the essence or definition of knowledge. And when we ask in a chemistry lab ‘What is water?’ and consider the

answer that water is composed of H_2O we are again considering a claim about *what water is*, about its essence. These particular essentialist claims are just toy examples and may not be true, but we understand them reasonably well. Following Fine, I take the logical form of these claims to be

It is essential to x that ϕ .

where x is an item of any ontological category and ϕ is a sentence.¹⁶ I will take this to be synonymous with saying that it is in the nature of x that ϕ , or—to emphasize that this is *definitional* of x —that it is part of *what x is* that ϕ . Note that it may only be *part* of what x is that ϕ , so we should not presume that ϕ uniquely specifies x . Nor should we presume that there is a collection of such ϕ that does uniquely specify x . It might be that the only essentialist statement of what canary yellow is, is that it is a determinate shade of yellow. This is why the term ‘essence’ is perhaps more natural than ‘real definition’, since the latter suggests that one can state what x is in a way that uniquely specifies it.

So essentialist truths are the worldly analogue of nominal definitions. And they do appear to stand to ground as nominal definitions do to proof: the question of what grounds them strikes us as illegitimate in something like the way that the question of how one might prove a definition does. For suppose (just to take a toy example) that it is essential to knowledge that someone knows only if she truly and justifiably believes. And suppose someone asks what explains this (in the metaphysical sense). In virtue of what (the question is) is it part of *what knowledge is* that someone knows only if she truly and justifiably believes? It is difficult to know how to respond. One is tempted to say that this is *just what knowledge is*...but of course this is what we were asked to explain! In saying this one is most naturally heard not as trying to explain this fact about knowledge in any serious sense but rather as deflecting the demand for explanation.

Or suppose that it is essential to water that it is a substance composed of H_2O , and suppose someone asks what explains this (in the metaphysical sense). The question is not why we should believe it or how ‘water’ came to refer to what it does; there are good answers to both of those questions. The question is rather: In virtue of what is it part of *what water is* that it is composed of H_2O ? It is again hard to know what to say other than that is *just what water is!* And in saying this one is again most naturally heard as sidestepping the question rather than giving it a serious answer.

Compare these essentialist facts to (say) the fact that some particles are arranged thus-and-so. This might (for all we know) be grounded in the undulations of a quantum wave-function in a massively high-dimensional Hilbert space.¹⁷ Or it might be a brute, ungrounded fact about the world. But either way we consider it a perfectly good and legitimate question why they are so arranged, even if the answer turns out to be ‘no reason’.

So we can distinguish brute facts from essentialist facts. Both are groundless, but there is a difference. The former are apt for being grounded; it is just that they lack a ground. By contrast, the latter are not apt for being grounded in the first place, in roughly the same sense that arithmetic facts are not apt for causal explanation and

that definitions are not apt for proof. I am using ‘autonomous’ to label the latter category, and ‘brute’ or ‘fundamental’ to mark the former. Thus the brute facts play an analogous role vis-à-vis metaphysical explanation as the initial conditions play vis-à-vis causal explanation and the axioms play vis-à-vis proof. The autonomous facts play a different role, one more analogous to the role that definitions play in proof.¹⁸

The difference between brute and autonomous facts can be further illuminated by the concept of *arbitrariness*. If particle positions are brute, then they are in an obvious sense arbitrary: there is no rhyme or reason why a given particle is located where it is, it is just a brute fact that it is there.¹⁹ In contrast, even if essentialist facts are groundless, they are not arbitrary in the same sense. There is nothing arbitrary about the fact that water is essentially a substance composed of H₂O: this is, after all, what water *is*!

The claim (to be clear) is not that it is autonomous that water is composed of H₂O. For that may be grounded in the fact that that is part of what water is. More generally one might endorse what Rosen (2010) called Essential Grounding:

If it is essential to x that ϕ , then ϕ because it is essential to x that ϕ .

So the “essentialist fact” claimed to be autonomous is not the fact *that* ϕ but rather the fact *that it is essential to x that ϕ* .

In each case—of ground, causation, and proof—I have argued that certain facts are “not apt for” ground or causal explanation or proof (respectively). I have done this by pointing out that we respond to certain questions in a distinctive way (e.g. that we respond not by answering them but by pointing out that they should not have been asked in the first place). This has led at times to me glossing the notion in epistemic or cognitive terms, for example in terms of certain questions “not making sense” or being “illegitimate”. But the notion of autonomy is not *defined* in epistemic or cognitive terms. Our distinctive response to these questions is evidence that we find the notion intelligible, but is not necessarily that in terms of which the notion is to be defined.²⁰

In particular, the notion of autonomy should be distinguished from the notion of a truth that we are happy to accept as brute. Many contemporary metaphysicians are happy to accept a theory on which *particle positions* are brute, but not a theory on which *counterfactuals* are brute. But still, it does not follow that facts about particle positions are autonomous: as mentioned above, the question of why they obtain is legitimate and might (for all we know) have an answer in terms of a multi-dimensional wave-function, even if we ultimately settle on the view that they are brute.

That concludes my characterization of autonomy. I believe that the notion is of great theoretical utility regardless of its role in the PSR, and that its utility further motivates the idea that it is an intelligible notion in good standing, but that is a long story that there is no space to tell here.²¹ In any case, my aim is not to defend the intelligibility of the notion from all objections, and the characterization above is clear enough to work with. So I will assume that notion is intelligible for the sake of argument.

4 Essence and Autonomy

Earlier I said that essentialist truths are autonomous. My version of the PSR—that every substantive fact has an autonomous ground—does not depend on this claim and is neutral on which facts are autonomous. But it will help to have examples of autonomous facts in hand as we go along, so I will assume that essentialist truths are autonomous as a working hypothesis. While it is beyond the scope of this paper to mount a complete defense of this assumption, it might help to set aside some objections here.²²

Suppose that it is essential to water that it is composed of H₂O. Then our assumption is that the request for a grounding explanation—an explanation of what makes it the case that this is *what water is*—is misguided in something like the same sense that a request for a proof of a definition is. This is not to deny that there are interesting questions nearby. The questions of why ‘water’ refers to what it does and why we should believe that water is composed of H₂O are both great questions. Our assumption is just that the question of what grounds the essentialist fact is not.

Note that by an essentialist fact I mean a statement of what something is *in its most core respects*. Following Fine we can then extend this notion in a number of ways. We can (for example) chain essences together to get *mediated* essences. If it is essential to knowledge that knowledge is true and justified belief, and if it is essential to truth that truth corresponds to the facts, then it is *mediately* essential to knowledge that knowledge is justified belief that corresponds to the facts. It is implausible that mediated essences are autonomous. For if it is mediately essential to knowledge that knowledge is justified belief that corresponds to the facts, then that is presumably *because* of the two statements of (core) essence mentioned above. So when considering putative counterexamples to my assumption that essentialist facts are autonomous it is important to make sure that they concern the core notion of essence, a statement of what something is in its most core respects, and not some extended notion.²³

One might object to my assumption by pointing out that ingenious philosophers have proposed general theories about essentialist truths, for example that something is an essentialist truth *in virtue of* its being a necessary truth of some sort. If essentialist truths are autonomous then the attempt to give this kind of theory is deeply confused in something like the way that attempting to prove a definition is. And even if these theories are false (the objection is) they are surely not confused in that way.²⁴

But if there is a confusion here then I believe that it is easily explicable. It arises from the following picture: one starts with the idea that there are two ways to have a property—an essential way and an accidental way—and one then takes the essentialist facts about something to be facts concerning which properties it has in the essential way. On this picture the essentialist facts are facts concerning which properties are had in that way *by a given domain of things*. And such facts then appear to be substantive: surely we can ask why (in the metaphysical sense) the given object has that property in the essential way. But this picture is deeply

misleading: on my conception the essentialist facts concern *what those things are* in the first place. It is not that there is some independently given domain and the essentialist facts are certain facts about what properties they have. It is rather that the essentialist facts specify *what the domain is* in the first place. It is *those* kinds of facts that strike me as autonomous.²⁵

So my diagnosis is that those who have been tempted to provide grounds for essentialist facts have been in the grip of the picture just described. Insofar as we all mean the same thing by ‘essence’ I claim that the picture is deeply misleading, albeit understandable. But it is also possible that the word ‘essence’ has been used by others to mean something different, in which case the above picture may be accurate of their notion and there may be no disagreement.

Of course one might now question the intelligibility of the term ‘essence’ as I am using it. But that is a big issue that is beyond the scope of this paper. As with the notion of ground, the aim of this paper is to take this notion of essence for granted and ask what kind of rationalist view can be formulated in its terms.

Perhaps the most pressing problem with the idea that essentialist facts are autonomous arises when we think of the similarities in essence amongst things of the same kind. Suppose one holds that it is essential to {Socrates} that it contain Socrates as a member. Presumably one will also think that it is essential to {Aristotle} to contain Aristotle as a member. Why this striking pattern? One might suggest that it is because each essentialist fact has a common ground: they are each grounded (at least in part) in the fact that it is essential to the set-membership relation that it is essential to any set that it has the members it has.

Here I must of course disagree. But I need not deny that the pattern exists or say that it is entirely random. For the above fact about the essence of set-membership and the fact that {Socrates} and {Aristotle} are sets *imply* that {Socrates} essentially contains Socrates and that {Aristotle} essentially contains Aristotle. So there is a relation of implication here, though not one of ground. The resulting picture is not unreasonable. Suppose I want to tell you what something is. Once I tell you that it is a set, it follows (from the nature of set-membership) that I must then tell you what its members are. But each statement of what the thing is—that it is a set, that it contains these members—is autonomous.

This is by no means the end of the issue. But I believe that my working hypothesis that all essentialist facts are autonomous is defensible.²⁶

What about the converse, that all autonomous facts are essentialist facts? I have even less to say about this here. Indeed the resolution to this question will likely depend on very broad-ranging considerations. Suppose one follows Agustín Rayo (2013) in recognizing a distinctive ‘just is’ operator that is used to say things like ‘For the number of dinosaurs to be zero *just is* for there to be no dinosaurs’. And suppose one distinguishes these facts from essentialist facts. Then one might well think that such facts are also autonomous. So the issue depends on very general questions concerning what kinds of metaphysical tools one recognizes and there is clearly no way to settle it here. Other candidates for autonomy are conceptual truths. If a conceptual truth is understood to be something other than a statement of the essence of a given concept then this would also be an example of

non-essentialist, autonomous fact. But again, the issue here clearly depends on broad questions about the nature of conceptual truth. For the sake of concreteness I will largely assume in what follows that all autonomous facts are essentialist facts, but again this is a working hypothesis and not a considered view.

5 A Principle of Sufficient Reason

We now have our raw materials in hand: the notion of ground and the notion of autonomy. So we can now discuss our version of the PSR, namely that every substantive fact has an autonomous ground. More precisely,

PSR: For every substantive fact Y there are some facts, the Xs, such that (i) the Xs ground Y and (ii) each one of the Xs is autonomous.

The principle is not just that all the remarkable facts about mountains and oceans that fascinate the child have a metaphysical explanation. It is rather that they have a metaphysical explanation of a very special kind, the kind that would answer the child's question of why they obtain.

We also have in hand our working hypothesis that all autonomous facts are essentialist facts. Along with this hypothesis, our PSR implies that every substantive fact has an explanation that bottoms out in facts about the essences of things.

Could such a principle be true? I will discuss this at length below. But regardless of whether *every* substantive fact has an autonomous ground, one might wonder whether *any* substantive fact has an autonomous ground. What would an explanation that bottoms out in essential truths look like?

Here are two possible examples. First, when my daughter was 3 she asked me why the DMV was closed on President's Day. One answer (which satisfied her—a high standard!) is that President's Day is a public holiday, that nonessential public services are closed on public holidays, and that the DMV is a nonessential public service. These truths are arguably essential to President's Day, public holidays, and the DMV respectively. (For example, if by 'President's Day' we mean not the calendar date but a day that plays a functional role—so that President's Day might move to another date—then it is plausible that part of that functional role is serving as a public holiday.) If so, we have an explanation that bottoms out in purely essentialist truths. To be clear, nothing hangs on whether this is the correct explanation or whether the explanans really are essentialist truths: the example just serves to illustrate what an explanation in terms of autonomous truths might look like.

A second example is perhaps more enlightening. Consider the fact that the speed of light (in a vacuum) is c .²⁷ What explains this? In a classical, pre-relativistic context, no particular (non-zero) speed is privileged and so it might appear to some extent arbitrary that light travels at this speed. It is certainly not obvious that this follows from essential truths. But here are three discoveries that would lead one to conclude that its speed is explained by the essences of things after all. One first discovers that one lives in a Minkowski space-time structure. In this structure there is a privileged set of trajectories, those of space-time interval 0

(otherwise known as the light-cone structure). One then discovers that light (in a vacuum) travels along these privileged trajectories. This (uncontroversially) suffices to explain why light has the speed it does. And the third discovery is that the previous two discoveries were discoveries about essence: that it is essential to space-time to have the Minkowski structure it has, and that it is essential to light that it travels along those special trajectories. It follows that the speed of light is grounded in the essences of light and of the underlying space-time structure.

Again, the point here is not that this view of light is true (though I believe it is plausible independent of any rationalist considerations). The point is that it is not outrageous: it is a view that we can reasonably debate and which we might even believe. So the example serves to illustrate what an explanation in terms of essential truths might look like. Note that in this case it is an explanation that is discovered partly on the basis of scientific investigation. The rationalist expects (insofar as we are truth-trackers) that this kind of discovery will become the norm and that in the limit we will discover that *everything*—even the existence of mountains and oceans—is like the speed of light, explicable in terms of essence.

The opposing view, fundamentalism, is that some substantive facts have no autonomous ground. This may be because a descending chain of grounds has no end. Or it may be because there is a domain of brute facts (i.e. substantive facts without grounds) that ground all else. Being substantive, these facts at the bottom are perfectly apt for being metaphysically explained; it is just that they have no explanation: things *just are* like that and that is all there is to say about the matter. The child's question of why the mountain exists therefore has (on this view) no satisfactory answer. This helps distinguish rationalism from this second kind of fundamentalism: both think that some groundless facts ground all else, but only the rationalist thinks that those groundless facts are of a kind that suffices to answer the child's questions. The two views are further distinguished with the concept of arbitrariness. Recall from section 3 that brute facts are in a sense arbitrary: there is no rhyme or reason as to why they obtain, they just do. And recall that an upshot of calling essentialist truths autonomous is that they are not arbitrary in that sense. Thus the rationalist thinks that there is nothing arbitrary about the world; whereas the fundamentalist who grounds everything in a domain of brute facts thinks that, ultimately, everything is entirely arbitrary.

So our PSR implies that there are no brute facts, but it also implies that there are no non-terminating descending chains. This might be puzzling. For I initially glossed rationalism as the view that everything has an explanation and this might be thought to imply that every descending chain of ground is non-terminating. So one might complain that someone endorsing our PSR does not deserve the title 'rationalist'.

This complaint is incorrect. For one thing, the PSR has a long history of being interpreted in such a way that it would not be satisfied merely by a non-terminating chain.²⁸ But more importantly, the only groundless facts according to my version of the PSR are autonomous facts. And they are not apt for being grounded in the first place, so it would be perverse to complain that their being ungrounded somehow violates the gloss that everything has an explanation. Compare: I said earlier that I

talk of ground as a relation between *facts*. It follows that my laptop does not have a ground, simply because it is not a fact and so is not the kind of thing that is apt for being grounded. But it would obviously be absurd to infer from this that my laptop is therefore “brute” and the PSR is violated! When we glossed rationalism as the view that “everything” has an explanation we meant that everything *that is apt for being explained* (given the particular notion of explanation in play) has an explanation. For us—using (as we are) the notion of ground—this means that every *substantive fact* has an explanation. Which is precisely what my PSR implies.

6 From Rationalism to Necessitarianism

This then is the version of the PSR I want to discuss. Let us now explore its consequences (sections 6–11) before asking whether the contemporary bias against it is justified (sections 12–16). As I said at the outset the PSR has sometimes been thought to imply necessitarianism (the view that every truth is necessarily true), the existence of God, and indeed the existence of every conceivable being. I will argue that our version has the first consequence but not the latter two.

It should not be surprising that our version implies necessitarianism. For the motivating idea behind our PSR is that for any substantive fact there is a satisfactory answer to the child’s question of why it obtains. And (as I said earlier) it is natural to think that to answer the child’s question one must at a minimum say why it *must* obtain.

But is there a general argument that the PSR implies necessitarianism? Interestingly, one popular argument to this effect fails when applied to our version of the principle.²⁹ The argument is this. Suppose for *reductio* that the PSR is true and that there are contingent facts. Let *C* be the conjunction of all these contingent facts. The PSR is then said to imply that there are some facts, the *Es*, that explain *C*. Now either all the *Es* are necessary facts or not, but the argument is that each disjunct leads to absurdity. Suppose first that all the *Es* are necessary. Then since they explain *C* it follows that *C* is necessary. But *C* is not necessary since any conjunction with a contingent conjunct is contingent. Suppose now that not all the *Es* are necessary. Then one of the *Es*, call it *e*, is contingent. So *e* is a conjunct in *C*; and since the *Es* explain *C* it follows that the *Es* explain any conjunct in *C*; so the *Es* explain *e*; so *e* is part of an explanation of itself. But no contingent fact can be part of an explanation of itself. Q.E.D.

But the argument fails when applied to our PSR. One complaint is that, strictly speaking, our PSR by itself does not imply that *C* has an explanation: if *C* is autonomous then our PSR allows that *C* has no ground. But I do not wish to rest with this complaint. For I am assuming that autonomous facts are all essentialist facts, and *C* is not an essentialist fact: it is a conjunction, not a fact of the form ‘it is essential to *x* that ϕ ’. So let us grant that there must be some *Es* that ground *C*. Instead, the more serious problem with the argument is the inference from the claim that the *Es* explain *C* to the claim that the *Es* explain any conjunct of *C*. This inference is not valid when it comes to ground. For one of the paradigm examples

of ground is the idea that conjunctions are grounded in their conjuncts: if A&B, then A and B together ground A&B. But clearly one may hold this plausible view without holding that A and B together ground A. One might (for example) hold that A and B are each groundless and yet also hold that they together ground A&B. So our rationalist may consistently hold that the Es ground C without thinking that the Es or indeed any subplurality of the Es ground any conjunct in C.³⁰

This is not to deny that the argument may be valid when applied to other versions of the PSR. It may be true that if some Es *causally* explain why there was a hurricane and a snowstorm then those Es also causally explain why there was a hurricane (though I confess to being skeptical in this case too). But this is evidently not true of the notion of ground.

Still, there is another argument that purports to establish that the PSR implies necessitarianism. The argument is roughly Spinozistic in origin: its strategy is to first argue that the PSR implies that everything is explicable in terms of necessary facts and then argue that whatever is so explained must itself be necessary.³¹ Applied to our PSR the Spinozistic argument proceeds as follows. The first premise is that all autonomous facts are necessary. And the second premise is that if the Xs ground Y then it is necessary that if the Xs obtain then Y obtains. From our PSR it then follows that all substantive facts are necessary.³²

Both premises are plausible. The first is particularly plausible if considered in the contrapositive: if a fact is contingent—if it obtains but might not have—then surely the question of why it obtains can legitimately be raised. One might also argue for it on the basis of two sub-premises: that all autonomous facts are essentialist facts and that all essentialist facts are necessary. I will discuss this sub-argument further in due course.

The second premise is also plausible and is widely endorsed.³³ If the fact that a conference is occurring is grounded in how various people are acting (some are reading papers, others are asking questions, etc.), then those actions are what *makes it the case* that there is a conference. If it were possible for those people to act like that and yet for no conference to occur then presumably their acting like that was not the full story of what *makes* the event count as a conference after all. Admittedly, some deny this second premise.³⁴ But this is not the place to engage with their arguments in detail and I will assume this second premise in what follows.

There is more to say about this Spinozistic argument. But before we say it let us pause to consider what it does and does not purport to establish.

7 Relative Possibility

Let us first be clear on the kind of necessity at issue. Consider the argument's second premise. It is controversial whether grounds *logically* or *conceptually* necessitate what they ground. The premise is more plausible when understood as saying that grounds *metaphysically* necessitate what they ground, and this is how I understand the premise here. I will say more about what this notion of "metaphysical" necessity amounts to in the next section but for now let us take it as given. So understood, the

Spinozistic argument does not establish that every truth is logically or conceptually necessary, just metaphysically necessary.

Here is one place, then, where my PSR is weaker than various others. On one reading, Della Rocca (2003b) takes a complete explanation of a given truth to be a demonstration that it is a conceptual truth (or follows from conceptual truths). So his version of the PSR implies that every truth is conceptually necessary. But my version works with a different notion of explanation and so (at least as far as the Spinozistic argument goes) it does not imply that strong a thesis.

Still, my PSR is strong enough! My armchair exists. According to the Spinozistic argument, my rationalist then says that it is metaphysically necessary that it exists, that it could not (in the metaphysical sense) have failed to exist. Nor could it have been (say) 3 inches over the left. It *had* to exist and be *exactly* where it actually is!³⁵

But it does not follow that it *essentially* exists or is *essentially* where it is. This is just to point out the now-familiar distinction between essence and necessity. All that follows from the Spinozistic argument above is that its existence and location are necessitated by autonomous facts which are themselves necessary.

Now given our working hypothesis we can assume that these autonomous facts are essentialist facts. But they need not be essentialist facts *about the armchair itself*. That is one view, but a second view is that its existence is grounded in facts about the essences of the underlying matter making it up. This might be the result of two claims: the (perhaps plausible) claim that the armchair exists because various bits of physical material—particles, fields, whatever—are arranged in a certain way, and the (perhaps less plausible) claim that it is essential to that physical material to be arranged like that. But never mind the details: the idea on this second view is that insofar as the chair exists necessarily this is not thanks to the essence of the chair itself but rather thanks to the essences of the underlying physical material that grounds its existence. Indeed on this second view very little may be essential to the chair itself.

So this is *a* sense in which the chair's existence is contingent: whether it exists is left entirely open by its own essence. It is only from the essences of the underlying bits of physical material that its existence follows.

What we just did is introduce a kind of relative necessity: necessity due to the essences of a certain class of things. More precisely let us say that it is *necessary relative to some things, the Xs, that ϕ* iff either (i) it is essential to one or more of the Xs that ϕ , or (ii) the fact that ϕ is grounded in facts about the essences of one or more of the Xs. The dual is a notion of relative possibility: it is *possible relative to the Xs that ϕ* iff it is not necessary relative to the Xs that $\sim\phi$. That is, if the essences of the Xs do not include and do not ground the fact that $\sim\phi$.³⁶

The result is this. If the argument in the last section is sound then the rationalist must say that my chair's existence is necessary. But finer-grained distinctions are possible. She can consistently say that it is necessary *relative to the underlying physical material* that my armchair exists and yet also that it is possible *relative to my armchair* that it does not exist. The rationalist can even say that it is possible *relative to everything we know of* that it does not exist—no wonder then that its existence strikes us as contingent!³⁷

8 Necessitarianism Revisited

So our PSR is consistent with contingency in some senses of the term. It may be logically and conceptually possible that my chair does not exist. And it may be possible *relative to itself* that it not exist. Our PSR just implies (according to the Spinozistic argument) just that it is metaphysically necessary that it exists. But what is meant by ‘metaphysically necessary’?

On one view metaphysical necessity can be defined in terms of relative necessity. For example one might say that to be metaphysically necessary is to be necessary *relative to the world*—that is, relative to all things taken together.³⁸ Necessitarianism then becomes the view that every fact is either an essentialist fact or else grounded in essentialist facts. But now recall our working assumption, that the autonomous facts are all and only the essentialist facts. Given this assumption, necessitarianism then amounts to the claim that every fact is either autonomous or grounded in autonomous facts...a restatement of our PSR. So on this view of metaphysical necessity (and our working assumption) our PSR implies necessitarianism only because they are one and the same claim! And (unsurprisingly) the first premise of our Spinozistic argument that our PSR implies necessitarianism—the premise that all autonomous facts are necessary—becomes a logical truth. For it becomes the claim that all essentialist facts are either essentialist facts or grounded in essentialist facts, a tautology of the form ‘All Fs are Fs or Gs’.

But if one rejects the idea that *all* metaphysical necessity is necessity relative to the world, then the claim that our PSR implies necessitarianism becomes a non-logical truth in need of argument. In particular our first premise—that all autonomous facts are necessary—is on this notion of metaphysical necessity a non-logical truth. So is it true?

It is hard to say without more details about the modal notion under discussion. But some schematic defense can be given. For (as mentioned earlier) the premise follows from the two sub-premises that all autonomous facts are essentialist facts and that all essentialist facts are necessary. The first sub-premise is a working assumption, but what about the second? I believe that it is very plausible indeed given the notion of essence I am using here—at least it is hard to see how they could be contingent.

For a possibility is a way for things to be. But essentialist facts (as I understand them) detail what those things are in the first place. In this sense then the essentialist facts are *prior to the possibilities*: the essentialist facts about the things give us the raw materials, as it were, and only then do the possibilities detail different ways for that raw material to be. For example the essentialist facts about {Socrates} tell me what the thing is, that it is a singleton containing Socrates. Once this is specified we can specify various possibilities for this singleton, for example whether or not it exists along with {Aristotle}. But if essentialist facts are prior to possibilities then it is not the case that they obtain in some and not in others. So they are not contingent.

This idea that essentialist facts are prior to possibilities is encouraged by the analogy with stipulative definitions. For (at least on the pre-Quinean picture)

definitions are prior to theories: one must first define one's terms, and only then can one use them to express a theory. As a result it is incoherent for one and the same definition to be true in one theory and false in another.³⁹ Of course things are different on the Quinean picture, on which words do not have meanings prior to being used in theories but instead acquire their "meanings" (insofar as that is the appropriate word) from their roles in the theory. The worldly analogue of this Quinean view is perhaps the idea that essences are contingent, that (for example) the essence of this armchair—what the armchair is—depends on what is actually true of it. There may be notions of essence that bear analogy with this Quinean picture, but I am (by stipulation) talking about the worldly analogue of pre-Quinean definitions and so it seems to follow that they are prior to possibilities.⁴⁰

Does this mean that essentialist facts are necessary, obtaining in all possible worlds? Not quite. Insofar as essentialist facts are prior to possibilities there is a sense in which they do not obtain "at" possibilities in the first place. So we might distinguish between the necessary facts—i.e. those that obtain at all possibilities—and the essentialist facts that are prior to those possibilities. These latter might be better labelled as 'amodal'. The fact that it is raining or it is not raining is (arguably) a fact of the first kind, a fact that obtains in all possibilities.⁴¹ Of course we can then define a broader notion of necessity by disjoining these notions of necessity and amodality. If something is necessary in this broad sense then it does not vary from possibility to possibility (either because it obtains at all possibilities or because it is amodal, or some combination of the two). In this broader sense the essentialist facts are then necessary after all.

There is no need to decide which notion corresponds best to our intuitive notion of necessity—indeed there may be no determinate answer to that question. It suffices to distinguish the notions and the corresponding necessitarian theses. In terms of the broad notion, necessitarianism becomes the view that no fact is contingent in the sense of varying from possibility to possibility. This can be argued to follow from our PSR by the two-premise Spinozistic argument I have been discussing. One might suspect that our PSR also implies the stronger claim that all facts are amodal.⁴² But I will not discuss this further here: the idea that no fact is contingent in the sense of varying from possibility to possibility is interesting enough to be getting on with, so that is how I will understand necessitarianism in what follows.

9 Essential Existence

So much for necessitarianism. The PSR has also (at times) been thought to imply the existence of God, or at any rate the existence of some *necessary* or *self-explanatory* being that might then be argued to have various divine or unnatural attributes. Does our PSR have these consequences? It depends on what is meant by 'necessary' and 'self-explanatory'. Our PSR does imply the existence of beings that satisfy these descriptions under some interpretations, and it is worth clarifying what these interpretations are. But none are theological or unnatural: I will argue that the atheist-cum-naturalist philosopher can find our PSR agreeable.

Start with the question of self-explainers. Samuel Clarke's cosmological argument famously purports to show that the PSR implies that there is a self-explainer, and he goes on to argue that the self-explainer is divine (see (Clarke, 1998)). But whatever the merits of his argument, it is clear that our PSR does not imply that there are facts that explain themselves *in the very same sense* that (say) an arrangement of particles might explain the existence of a chair. It does of course imply that there are autonomous facts, and perhaps there is a loose and non-literal sense in which one might describe autonomous facts as self-explanatory. But my autonomous facts are not self-explanatory in any literal sense. Nor must they be unnatural or divine: they are just essentialist facts, facts that we express when stating what (for example) knowledge is.

What about necessary existence: does our PSR imply that there are *necessary* beings? And if so does it follow that these beings are somehow unnatural or divine? Well, our PSR certainly implies (as we saw) that even such mundane things as my armchair exist necessarily, if by 'necessarily' we mean 'necessarily *relative to the world*'. But this clearly does not imply that it is in any way unnatural or divine. A much stronger sense in which something *x* exists necessarily is to exist necessarily *relative to itself*—that is, for it to be essential to *x* that it exists, or for *x*'s existence to be grounded in its own essence. Does our PSR imply that there are such things?

One might suspect that it does. For suppose that my armchair is not such a thing. Since its existence is not autonomous (at least, not on our working hypothesis that autonomous facts are essentialist facts) our PSR implies that there are some facts, the Xs, that ground its existence. Now suppose (premise) that existence can be explained only in terms of existence. More fully, call a fact of the form '*x* exists' or of the form 'it is essential to *x* that *x* exists' an *existence fact*. Then our premise is that if some facts ground the fact that *y* exists then at least some of them are existence facts. This is not wholly implausible: if my chair's existence is grounded in (say) facts about the arrangement of particles then some of these latter facts presumably include that those particles exist. The fact that those particles exist may then be explained in terms of the existence of some more basic matter, perhaps some kind of field or what have you. But according to our PSR the chain of ground must terminate in some autonomous facts. And according to our premise these must include a fact to the effect that it is essential of some given thing that it exists. So if my chair exists then there is some *x* (who knows what) such that it is essential to *x* that *x* exists—that is, an *x* that exists necessarily relative to itself.⁴³

In response one might object to the premise.⁴⁴ But I do not want to pursue that line here. So let me grant that the PSR implies that there are beings that exist necessarily relative to themselves. What follows? Does it imply that these beings are somehow unnatural or divine? I see no reason to think so. For something might be thought to exist necessarily in this strong sense but not thereby inherit these attributes.⁴⁵

Natural numbers might be an example. For suppose that one believes that natural numbers exist and (moreover) exist necessarily. Necessarily, in what sense? Do they exist necessarily thanks to their own natures or thanks to the nature of something else? It is hard to see what the something else could be. So a potentially attractive

view is that they exist necessarily in the strong sense, that it is in their own nature to exist and instantiate the structure they do. Never mind whether this is correct; the point is that no one would take this to imply that numbers are divine.

Space (or space-time) might be a better example. For suppose one endorses the substantialist view that space-time exists independently of the material bodies and fields situated within it. On this view space-time is the “stage” on which the material history of the world unfolds. Now one idea traditionally associated with this view is that space-time is constant across possible worlds: there may be many ways for the material history of the world to unfold but it always unfolds on the same stage. On this view, then, space-time exists necessarily. But again, in what sense? Is the necessary existence of space-time due to the nature of space-time itself or to the nature of something else? Again, it is hard to see what the something else could be—certainly not matter, since the whole point of substantialism is that space-time is *independent* of matter. So the substantialist might naturally be led to the view that it is essential to space-time that it exist and instantiate the structure it does. Never mind (again) whether this view is correct; the point is that no one would take this to imply that space-time is somehow unnatural or divine.⁴⁶

Indeed this last example indicates that our PSR is consistent with contemporary physicalism-cum-naturalism. The combined view would be that at rock bottom there is some kind of physical “space” (in the broad sense of the term) in whose nature it is to exist and instantiate some kind of structure the details of which will depend on the particular physical theory guiding the physicalist (if general relativity, it might be a four-dimensional topological manifold instantiating a certain geometric form; see footnote 46). The view will then be that all other (substantive) facts—about my armchair, my mental states, my duties and obligations—are grounded in the existence and structure of that underlying physical space (which as we said is essential to it). The existence of my armchair and my mental states is then necessary not because of their own natures but because of the nature of the underlying physical material in which they are grounded.

To be clear, I am not asserting that it is essential to numbers or space-time that they exist and instantiate the structure they do. The point is just that these claims can be debated and yet not thought to entail the existence of anything unnatural or divine. Of course one might insist that *anything* in whose essence it is to exist deserves the title ‘God’. But I do not want to fight over the word: the important point is just that the claim that it is essential to something (e.g. space-time) to exist does not conflict with the views of an atheist-cum-naturalist philosopher.

Once again, much hangs on the particular version of the PSR under discussion. For suppose one were considering a version of the PSR that implies that it is *analytically* or *conceptually* true, of some being x , that x exists.⁴⁷ Then one might object that analytic or conceptual truths are never existence-entailing, or else insist that a being that exists as a matter of analytic or conceptual truth must be divine indeed! But our version of the PSR does not imply this: it just implies that it is an *essential* truth about something that it exists, and not all essential truths are analytic (it might be essential to water to be composed of H_2O , but this is not analytic).⁴⁸

Still, the fact that our PSR implies that there are beings that exist necessarily relative to themselves might be thought problematic enough regardless of whether they are unnatural or divine. So let us flag this consequence as one to be discussed when asking whether the contemporary anti-rationalist bias is justified.

10 Nonexistence and Plenitude

Spinoza (1994) offered a rather different argument from the PSR to the existence of God. He supposed for *reductio* that God does not exist. By the PSR, there must then be some explanation of this. He then argued that there could not be an explanation; hence God exists.

Spinoza's argument that there could be no explanation for the nonexistence of God involves some of the more idiosyncratic elements of his philosophy.⁴⁹ But regardless of those details it is clear that a rationalist atheist must either find some autonomous ground of God's nonexistence or else claim that her nonexistence is autonomous. The same goes for other nonexistents. There are no humans over 9 feet tall, but this is a substantive fact so (by our PSR) it must have an autonomous ground. And I have no identical twin, but again this is substantive and so (by our PSR) must have an autonomous ground. If there is no autonomous ground then our PSR implies that these things exist after all. So if no autonomous grounds are found our PSR might be thought to imply the "principle of plenitude", the principle that every conceivable being exists.⁵⁰

So the challenge is to find autonomous grounds for substantive facts about nonexistence. One idea is to ground something's nonexistence in its own essence. But even if this is the right explanation in some cases (perhaps the nonexistence of a square circle) this is unlikely to generalize. In particular, it is unclear whether God has this kind of essence. So let us ask what other kinds of explanations of nonexistence might be available.

It helps to note that this question also arises for some fundamentalists. For regardless of the fundamentalism/rationalism issue, some have been attracted to the view that negative facts are grounded in positive facts, i.e. that what is *not* the case is grounded in what *is* the case. This is one interpretation of the slogan that "truth depends on being". More precisely, the thesis is that any fact of the form

It is not the case that ϕ .

is grounded in facts that are not of that form. The negative fact that I am not a doctor will on this view be grounded in various positive facts about what I *am*, for example that I am a teacher, a father, ..., perhaps along with a "totality fact" that those are all the facts about what I am.⁵¹ But facts about nonexistence are negative facts. So *anyone* who thinks that truth depends on being—rationalist or fundamentalist—thinks that facts about nonexistence are grounded in positive facts. One might say for example that there are no humans over 9 feet tall because *this* human is less than 9 feet and *that* human is less than 9 feet and...(and one might add the totality fact that these are all the humans). And so the atheist may then

ground the nonexistence of God similarly: God does not exist because *these* are all the existents and they have *these* (non-divine) attributes.

The point is that this explanation of nonexistence is just as available to the rationalist as it is to the fundamentalist.⁵²

11 The Appearance of Bruteness

The following rationalist picture emerges. At rock bottom are facts about the essences of things. They may or may not include facts about the essences of nonexistents but let us suppose (to build a clear picture) that they do not. Other positive facts are then grounded in those essentialist facts. And negative facts—including those about nonexistence—are then grounded in those positive facts.

Since the atheist denies that God exists she will on this picture deny that there are positive facts about the essence of God. So when the theist says that it is essential of God that she is perfect the atheist will disagree. The atheist may think that there are *negative* facts about the essence of God, e.g. that it is *not* the case that it is essential of God that she is perfect. But these are (on this picture) grounded in the positive facts about the essences of things, none of which are about God.

Does this satisfy our PSR? One might worry that it does not. For consider all the essentialist claims that the theist makes about God: that it is essential to her that she is perfect, that she is omnipotent, and so on. They constitute (let us suppose) a logically consistent description, a description of some logically possible being. Indeed there are many logically consistent descriptions that might (for all we know) constitute something's essence: one for Obama, one for God, one for my (merely possible) identical twin, and so on. Why then did the first turn out to describe something real but not the latter two? On the current picture there seems to be no answer: it looks brute and inexplicable which of the many logically consistent descriptions that *might* constitute something's essence *are actually* true of something that exists, in violation of our PSR.

But there is a reply available. If the question is why essentialist facts about Obama—i.e. facts of the form 'It is essential to Obama that ϕ '—obtain, the answer is that they are autonomous and so are not apt for being grounded in the first place. So there is no explanation of why they obtain but this does not violate our PSR. If instead the question is why essentialist claims about God do not obtain, then this is just a request for an explanation of a negative fact, e.g. that it is not the case that it is essential to God that she is perfect. On the current view these are grounded in positive facts which are in turn grounded in autonomous facts about the essences of the existents. Either way, there is no violation of our PSR.

The worry that there is something brute stems I think from the feeling that since the theist's statement of the essence of God is logically consistent it surely *could* be true and describes something that *could* exist. This feeling is correct but one must be careful to identify the sense of contingency in play. It is not that the statement could be true in the metaphysical sense of 'could'. It is rather that it could be true in a logical or epistemic sense. For all we know a priori, we might say, there are many ways the world could turn out, many essentialist statements that could obtain

and would then provide the ground for all else. Some of these epistemic or logical possibilities include facts about the essence of God. But once we discover that these possibilities do not obtain we see (as rationalists) that in the metaphysical sense they could not obtain.

To be sure, there may be some readings of ‘explanation’ on which this response is not available. To explain something on some readings of the term might require showing that it is (or follows from) an a priori or conceptual truth. As I said, Della Rocca (2003a) appears to work with a notion of ‘explanation’ rather like this. But (as we have seen) ground is not this kind of explanatory notion.

12 The Anti-Rationalist Bias

So far I have stated a version of the PSR and explored its consequences. Let us now ask whether the contemporary bias against it is justified (it should be clear by now that there *is* a contemporary bias against it!). My aim is to argue that it is not.

What could justify this bias against rationalism? One objection to rationalism is that the notions in terms of which it is formulated (such as ground and autonomy) are unintelligible. But if they are unintelligible then fundamentalism (as I have defined it) is also unintelligible and the entire debate (if there is one to be had) needs to be formulated differently. So in order to have *this* debate let us take these notions for granted.

There are then (broadly speaking) two potential considerations against rationalism. First, one might have reason to think that rationalism is false. But second, even if one does not, one might think that rationalism is such a very strange view that fundamentalism is the default view, so that absent strong arguments either way we should be fundamentalists. Later, in section 16, I will argue that this second consideration is a mistake: neither view is default, each requires strong arguments to warrant our belief.

So let us start with the first consideration. What reasons are there to think that rationalism is false? Not counterexamples: I doubt that the contemporary fundamentalist rests her position on a particular substantive fact that she believes to be brute or grounded in an infinite descending chain. For I do not think we have firm beliefs as to what kinds of facts are brute. Fundamentalists may sometimes write as if (say) particle positions are brute but this is often a simplification used to sidestep difficult questions about the interpretation of quantum mechanics and other field theories. And in any case I doubt that a fundamentalist would wish to rest her position on this or that final theory of the world turning out correct.⁵³

So if there are reasons to think that rationalism is false they must be very general considerations, considerations that consist in showing that various implications of the PSR are false prior to settling on a final theory of the world. Now our PSR (as we have seen) does not imply the existence of God or every conceivable being so one cannot object to our PSR on those grounds. But we have identified two potentially objectionable consequences: that there is something that exists necessarily relative to itself, and that everything is necessary. So I will try to show that these consequences

are not problematic (sections 13–15). It goes without saying that I cannot settle the matter in the space available, but I will outline the beginnings of a defense.

13 Against Essential Existence?

Start with the idea that there is something that exists necessarily relative to itself. Remember, for x to exist necessarily relative to itself is for it to be essential to x that x exists, or for x 's existence to be grounded in its own essence. Is the existence of this kind of thing problematic? Note that essentialist facts need not be analytic so it is not in order to complain that analytic truths are never existence-entailing. Still, it might be thought problematic for the following reason. Call an essentialist fact *Kantian* if it is of the form

It is essential to a that $(\forall x)(x = a \text{ __ } \phi(x))$.

where the underscore may be filled by 'if', 'only if', or 'iff'; and *Anselmian* otherwise.⁵⁴ Then one might argue (i) that all essentialist facts are Kantian, and (ii) that if all essentialist facts are Kantian, then nothing exists necessarily relative to itself.

Rosen (2006) defends (i). Roughly speaking, his idea is that an essential truth about a specifies a condition on *what it is to be a*. The condition may be just necessary, e.g. that something x is Kripke only if x is human. Or it may be sufficient, e.g. that something x is the number 1 if x is the successor of 0. Or it may be necessary and sufficient, as the last example arguably is. But if Rosen is right that essential truths specify conditions on what it is to be something, then it seems reasonable to regiment those conditions in the above Kantian form.

What about premise (ii)? To avoid stacking the deck against it, let us work in a free logic in which $\phi(a)$ does not imply that a exists. In this setting we can discuss essentialist truths about a without assuming that a exists. Then there is a reasonably strong case to be made in favor of (ii). For there are two ways for a to exist necessarily relative to itself. One way is for it to be essential to a that a exists. Note that if the essentialist operator 'it is essential to x that ϕ ' is factive, this implies that a exists. But this essentialist fact about a is Anselmian, so if all essentialist facts are Kantian then a cannot exist relative to itself in this way.

The other way for a to exist necessarily relative to itself is for a 's existence to be grounded in essential truths about a . But it is hard to see how a 's existence could be grounded like this, if all essentialist facts are Kantian. The closest way of replicating the above Anselmian essence in a Kantian framework is to suppose that it is essential to a that $(\forall x)(x = a \text{ only if } x \text{ exists})$. But now, in contrast with the above Anselmian essence, it does not follow that a exists. It might be part of what Pegasus is that something x is identical to Pegasus only if x exists, but it does not follow that Pegasus exists. So it is hard to see how a Kantian essence of this form could ground a 's existence. One might instead try supposing that it is essential to a that $(\forall x)(x = a \text{ if } x \text{ exists})$. But regardless of the strange conclusion that a is the only existent, it still does not follow that a exists, and so (again) it is hard to see how this could ground a 's existence.

In further defense of (ii), note how weak a Kantian essentialist truth is. Suppose that it is essential to my armchair that $(\forall x)(x = \text{my armchair if } x \text{ is composed of these particles arranged in this way})$. This is a Kantian essence. It does not imply that my armchair exists (in a free logic). But even if those particles are so arranged it still does not follow (logically) that there is anything composed of them, so it *still* does not follow that my armchair exists. Contrast this with the following Anselmian essence: that it is essential to my armchair that it exists if these particles are arranged in this way. If those particles are indeed so arranged then it does follow that my armchair exists. So Anselmian essences have the capacity to imply the existence of things when Kantian essences cannot.

These reasons are not decisive, but I am inclined to accept premise (ii). Instead, I reject premise (i): I see no reason to think that all essences must be Kantian. The Anselmian statement of the essence of my chair just described may or may not be true, but is there something about the notion of essence that *requires* that it is false? I cannot see that there is. For a statement of x 's essence (as I use the term) is a statement of *what x is*. And the Anselmian statement above seems to me a perfectly legitimate statement of what my chair is (whether or not it is true): it is something that exists if these particles are arranged in a certain way.⁵⁵

I said that Rosen defended (i), but in fact there may be no real disagreement. The key here is to distinguish between two statements. On the one hand is a statement of *what x is*, where x may be an item of any category (an object, a property, what have you). This is what I am calling an 'essentialist truth about x '. And on the other hand is a statement, for a given property, of what it is for an object to have that property. A Kantian statement is really a statement of this latter form, i.e. a statement of what it is for something to have *the property of being identical to x* . Now, one often sees the notion of essence introduced as follows: an essentialist truth about x is a statement of *the conditions under which something is x* . This amounts to a statement of the conditions under which something has the property of being identical to x , i.e. a Kantian statement. So, if one starts with that initial gloss on the notion of essence, I agree that all essentialist truths *in that sense* are Kantian. But my starting point was different: my initial gloss was that an essentialist truth about x is a statement of *what x is*. What we can now see is that these two glosses introduce distinct notions. Thus those tempted by (i) are, perhaps, using the term 'essence' to mean something different than I am.

14 Intuitions and Conceivings

Let us turn then to the other controversial consequence of our PSR, necessitarianism. This is perhaps enough on its own to turn people against rationalism. But why think that necessitarianism is false? What exactly is wrong with the view that every truth is necessary?

It is surprisingly difficult to say. Perhaps the first thing that springs to mind is the "objection from obviousness". It just seems *obvious* that my chair could have been a little over to the left—if the rationalist denies this she denies what we surely know to be true!

But a number of responses are available. First, the rationalist might accuse the objection of using a modal “intuition” as evidence for modal truth and then point out problems with using intuitions as evidence. But I do not want to rest on this response. Insofar as the objection rests on “intuition” I am happy to think of an intuition as a commonsense belief in which one has enough confidence to use as a premise in an argument. We are all confident indeed that the chair could be a little over to the left!

A second response is to deny that our modal intuition (or belief) has the advertised content. For (as we saw in section 7) the rationalist can agree that it is possible *relative to the chair* that it be elsewhere, that the nature *of the chair* does not settle one way or the other where it is. Indeed she can agree that it is possible *relative to everything we know of* that it be elsewhere. So she might say that our modal intuition is just that it is possible in this relative sense for my chair to be elsewhere, in which case the intuition does not conflict with rationalism.

Relatedly, even if our intuition has the advertised content and does conflict with rationalism, the rationalist might explain why untutored intuition is in error by saying that it confuses a false proposition for a related true one. Specifically, it confuses the false proposition that my chair could have been elsewhere with the true proposition that it is possible *relative to the chair* that it be elsewhere. This is analogous to the standard Kripkean response to the intuition that water can exist without H_2O , on which untutored intuition confuses the false proposition that water can exist without H_2O with the true proposition that watery stuff can exist without H_2O .

There is much to be said in favor of these responses but again I do not want to rest on them. Instead I want to outline a more concessive response. Grant that there is no confusion over which modal proposition is intuited: we clearly intuit that my chair could (simpliciter) have been elsewhere. Grant that this modal intuition is evidence for modal truth, and that this modal truth conflicts with rationalism. Still, the rationalist can say that this modal evidence is *subordinate* to other evidence.

Let me explain what I mean by example. Consider the question of whether water is composed of H_2O . This is in large part an empirical question to be settled in the laboratory. Now, suppose that prior to chemical investigation our ancestors had the modal intuition (or belief) that water—*water*, not just watery stuff—could exist without H_2O . If they were correct it would follow that water is not composed of H_2O . But what was the epistemic significance of this modal intuition? One view is that it was no evidence at all. But I am exploring a more concessive approach to modal intuition, so let us grant that it was at least *some* evidence that water is not composed of H_2O . Still, there is obviously a sense in which it does not “carry the day”. What does this mean? Two things. First, that empirical evidence (from chemistry) *trumps* the modal intuition, in the sense that if empirical evidence conflicts with modal intuition then the empirical evidence defeats the intuition (not the other way round). And second, that only empirical evidence is sufficient to *settle the matter* of the composition of water. Here I do not mean that the empirical evidence is indefeasible: all evidence is defeasible. I mean that only the

empirical evidence is sufficient to render the question (of the composition of water) a closed research project not worthy of further serious investigation. No amount of modal intuition can settle the question in this sense, but empirical evidence can and has. When I say that evidence from modal intuition is *subordinate* to the empirical evidence, I mean that the latter trumps the former and that only the latter is sufficient to settle the matter.⁵⁶

When it comes to the question of the composition of water, modal intuition is obviously subordinate to empirical evidence. Indeed this was obvious to our ancestors: even back then, before doing the science, it should have been considered bad intellectual practice to think that the question of the composition of water could be settled by modal intuition. Which is presumably why they bothered to do the science in the first place!

I claim that the same goes for questions about what grounds my chair's existence and location. These questions are in large part empirical, scientific questions. Settling them will involve settling empirical questions about the chair's ultimate physical composition and the structure of space-time. The rationalist thinks that the answers will turn out to consist in facts that we take to be essentialist facts; the fundamentalist disagrees. But it is a largely empirical question what the answer is.⁵⁷ Now admittedly the idea that they are essentialist facts goes against our modal intuitions, but what is the epistemic significance of this? Not much. It is no more epistemically significant (I claim) than our ancestor's intuition that water could exist without H₂O. Even if we grant that it counts as *some* evidence against rationalism, it is subordinate to empirical evidence.

Here it might help to recall the case of the speed of light discussed in section 5. Prior to relativity theory, our ancestors may well have had the intuition that its speed could have been different. But the empirical evidence arguably confirms a view on which its speed is grounded in various truths about the light-cone structure of space-time, truths that we take to be essential truths. On this view, the speed of light turns out to be necessary. If that is what the empirical evidence suggests, I claim that our ancestors' modal intuition to the contrary is subordinate to that evidence.

So our modal intuition does not settle the matter and it would be a mistake to consider the question of rationalism vs fundamentalism a closed question not worthy of further investigation on the basis of those modal intuitions. And yet contemporary metaphysicians regularly make this mistake when they assume fundamentalism without so much as a passing comment! *This* is what I mean when I say that the contemporary anti-rationalist bias is unjustified.

At the very least, anyone wishing to argue against rationalism by way of modal intuition must say why our modal intuition against rationalism is any more epistemically significant than (say) our ancestors' modal intuition about water or the speed of light.

The same goes for arguments from conceivability. For the fundamentalist might argue that it is possible for my chair to be elsewhere because one can *conceive* of it being elsewhere. Here the rationalist could in principle reply that conceivability is no guide to possibility. But the more concessive response is to grant that

conceivability is *some* evidence for possibility but insist that evidence from conceivability is subordinate to non-modal evidence in the above sense.

The virtue of these concessive responses is that one need not question the connection between possibility and conceivability, or between possibility and modal intuition. The exact nature of these connections is a matter of considerable controversy, but one might think them so central to the notion of possibility that one denies them only by changing the subject. The concessive response does not face this problem.⁵⁸

This is not to say that intuitions or conceivings can never carry the day. Consider for example conceivability arguments against physicalism. Here one argues that one can conceive of physically duplicate situations that differ in various respects about consciousness, and on that basis one argues that the physical facts are not sufficient to explain consciousness. I believe that our conceptions *can* carry the day in this kind of case. Why the difference? Well, the question at issue here is whether various facts *would (if they obtained)* count as a sufficient explanation for another fact. These are largely a priori questions: we can work out, in advance of knowing what water is composed of, whether the hypothesis that it is composed of H₂O would explain its fluidity. The largely empirical question is which, out of all the possible facts that *would (if they obtained)* explain something, actually obtain. My claim is just that modal intuition and conceivability do not carry the day with regards to these latter questions.

So much for intuition and conceivability. One might instead argue for contingency from the Humean slogan that there are “no necessary connections between distinct existences”. According to this slogan my existence, for example, should not necessitate the existence of the Eiffel Tower, *contra* necessitarianism. But on further examination it is not clear whether rationalism need be at odds with the slogan. For why should we think that there are no such necessary connections? One reason might be that they would be brute and unexplained. If so then the idea behind the slogan is that there are no brute necessities. But of course the rationalist agrees since she claims that there are no brute facts *tout court!* So at least on this interpretation of the slogan there is no conflict between it and the kind of necessitarianism that the rationalist endorses.

Perhaps a historically more accurate interpretation of the slogan has to do with conceivability: that we can always conceive of distinct things existing without each other. But then the argument collapses into the argument from conceivability discussed above.

15 The Role of Contingency

What other reasons are there to believe in contingency? One might worry that one cannot be a free or responsible agent if there is no contingency. This is a serious worry and I do not know how to answer it. But the worry applies just as much to the fundamentalist who believes that the laws are deterministic as it does to the rationalist. For the worry stems from the idea that we are not in control of what we do, regardless of whether this is because what we do is nomically necessitated by

the past or whether it is metaphysically necessitated *tout court*. And indeed many solutions to the problem that are available to the fundamentalist determinist are also available to the rationalist. For example, Frankfurt (1971) has argued that freedom and responsibility consist in various psychological mechanisms corresponding to motivation that can be present in a deterministic world. But the same mechanisms can be present in a necessitated world too so this solution to the problem is available to the rationalist.

A somewhat different way of arguing for contingency is to argue that it plays an indispensable role in various successful philosophical theories and that we should therefore believe in it for that reason.

This might appear to be a promising strategy, for recent philosophy is replete with modal analyses that require contingency for their success. Consider for example the project of modeling content with sets of possible worlds. Here I include the semantician who models the content of an utterance with a set of possible worlds, and the Bayesian epistemologist who models an agent's doxastic state with a credence function from sets of possible worlds to the real numbers. Both projects require that there be very many distinct possible worlds, enough to generate the many distinct sets of worlds that serve as the objects of credence or the contents of utterances. Since both projects require contingency one might infer from their theoretical success to the falsity of rationalism.

In response, I deny the assumption that these projects use the notion of *metaphysical* possibility. Or to be more accurate, I deny that *the best versions of* these projects use the notion of metaphysical possibility. Why? Precisely because of the potential conflict with rationalism under discussion! Consider for example Spinoza's derivation of necessitarianism from (something like) the idea that all truths flow from the essence of God, a necessary being. Regardless of whether you think Spinoza was right about this, the idea that he would thereby not be in a position to do semantics or formal epistemology strikes me as absurd. But that is what these projects imply if they use the notion of metaphysical possibility.

To put a different spin on the same point, if the semantician insists on using metaphysical possibility then the success of her theory of (say) definite descriptions would depend on the falsity of Spinoza's metaphysics. A complete defense of her theory of descriptions would then require a refutation of Spinoza's view. And this is absurd: surely the success of her theory of descriptions has *nothing whatsoever* to do with the truth or falsity of Spinoza's theological beliefs! Just imagine how absurd it would be to teach a class on the semantics of descriptions and hear a student object on the basis of Spinozistic metaphysics. The absurdity does not stem just from the fact that Spinoza's views are not widely held, for even someone who takes Spinoza's view seriously should balk at the student's objection. The absurdity stems instead from the fact that the question of the meaning of descriptions does not hang on issues about God's nature.

To be clear, the argument here is not that Spinozism is true, therefore possible-worlds semantics is wrong. The point is rather that this argument would be valid if the semantician used the the notion of metaphysical possibility; but the argument clearly is not valid—hence she should not use metaphysical possibility.⁵⁹ Of

course if she uses the notion of *logical* or *epistemic* or *conceptual* possibility then none of these problems arise since these notions are not hostage to metaphysical fortune.⁶⁰ But then the assumption of *metaphysical* contingency is not playing an indispensable role in these theories and there is no conflict with rationalism after all.

A similar point applies to modal theories of other notions, where the success of the theory requires that there be many possibilities. Such theories include familiar modal analyses of notions like dispositions, laws, and intrinsicity. In each case we must apply the “Spinoza test”: could someone who believes for metaphysical or theological reasons that everything is metaphysically necessary make (non-trivial) sense of the notion? If the answer is ‘yes’, then the analysis in terms of *metaphysical* possibility is inadequate for the above reason. And in the above cases the answer is arguably ‘yes’: for example, I see no reason why someone with Spinoza’s metaphysical and theological views could not recognize a distinction between intrinsic and extrinsic properties. If this is right, there are then two options. First, one might give up the philosophical theory altogether, e.g. taking the notion of intrinsicity as primitive. Or second, one might accept the modal theory of (say) intrinsicity but clarify that the sense of ‘possible’ it uses is not *metaphysical* possibility. Someone taking this second line must then say what the relevant sense of ‘possible’ is: e.g. whether it is *epistemic* or *conceptual* or *logical* possibility, or perhaps the notion of *relative* possibility outlined in section 7, or perhaps another notion altogether.

I have argued that the notion of *metaphysical* possibility should not be used to analyze notions that pass the “Spinoza test”, i.e. notions like content and intrinsicity. If that is right, then one cannot reasonably argue from the (supposed) success of some modal theory of these notions to the falsity of rationalism.

But perhaps other notions do not pass this test. For example, Lin (2012) argues that metaphysical possibility is constitutively tied to counterfactuals in roughly speaking the following sense: if it makes sense to reason about what would be the case if P, then P is metaphysically possible. His idea is that this is not just a piece of theory but a *platitudo* used to fix the referent of ‘metaphysical possibility’. Thus, for Lin, someone who believes for theological reasons that everything is metaphysically necessary cannot reason about what would be the case if P, for any non-actual P. If Lin is right, counterfactuals do not pass the Spinoza test.⁶¹

In cases like these, the dialectic is a little different. It would obviously be objectionable for the rationalist to bite the bullet and say that counterfactual reasoning makes no sense. So a natural move is to try using some other modal notion to make sense of counterfactual reasoning. For example, she might use the notion of relative possibility from section 7, and argue that if it makes sense to reason about what would be the case if P, then it is possible *relative to some x* that P. Since the rationalist can agree that many falsities are possible relative to some *x*, this would allow her to make sense of counterfactual reasoning after all. And indeed Lin argues that (something like) this move is available to the rationalist.⁶² But of course if Lin is right that this connection to counterfactuals is constitutive of what metaphysical possibility is, then it follows that to be metaphysically

possible *just is* to be possible relative to some x ! The result is that rationalism does not imply necessitarianism after all. So perhaps we do not have an objection to rationalism, but we do have an objection to the claim that rationalism implies necessitarianism.

Now, I disagree that counterfactuals are constitutively tied to metaphysical possibility: I think that it can make sense to reason about counter-possible situations. (Perhaps you disagree. But if you were me, what would you say at this point?) But there is no need to settle the issue here, for I take it to be largely verbal. For both Lin and I recognize the notion of relative possibility, which (let us grant) plays a central role in counterfactual reasoning. And we can both also recognize another notion of possibility, one on which rationalism implies that everything is necessary. We understand this second notion well enough: it is the sense of ‘necessary’ in which essentialist truths are plausibly necessary, and the sense in which the grounds necessitate what they ground. And the thesis that everything is necessary in this sense is hardly devoid of interest! The only thing we then disagree on is which notion of necessity is *metaphysical necessity*. Lin claims that it is the one with the right link to counterfactual reasoning. I am inclined to disagree, but I am also inclined to think that the issue is not important and is largely verbal.

16 Burden of Proof

No doubt there are other potential objections to rationalism. But there is no room to discuss them all. Suppose for the sake of argument that the rationalist can respond to them. What follows? Does it follow that the contemporary bias against rationalism is unjustified?

Perhaps not, for one might argue that the burden of proof is very much on the rationalist. The rough idea here is that it is the rationalist who makes the strong and controversial claim, not the fundamentalist. The rationalist (after all) thinks that *every* substantive fact has an autonomous ground, while the fundamentalist merely thinks that *there is* a substantive fact without one. Just think (then) about all the very many ways in which rationalism could fail: it could fail because *this* substantive fact has no autonomous ground or because *that* substantive fact has no autonomous ground or.... So the rationalist makes a “stronger” claim in the loose sense that a universal generalization over a large domain is stronger than its negation. And so one might think that fundamentalism is the default position: absent compelling reasons one way or the other we should put our faith in fundamentalism.

That at least is the rough worry. But it is difficult to make precise. For the obvious idea is to appeal to an indifference principle to the effect that all logically independent possibilities are equally likely, and then point out that there are many more logically possible ways for fundamentalism to be true than rationalism. And there are famous problems with indifference principles like these (especially when applied to infinite domains). So the rationalist might respond to the worry along these lines.

But I do not want to rest on that response, for it focuses on just one way of stating the worry. And (speaking personally) the worry remains even once problems

with indifference principles are pointed out: there remains a sense that because the rationalist makes this universal claim about how *all* facts of a certain kind are grounded, there is a burden on her to provide serious evidence in favor of her view. So let me grant that this is the case.

Still, it follows that fundamentalism is the default view only if the fundamentalist does not *also* incur a burden to provide evidence in favor of *her* view. In stating the above worry we assumed that she does not, because we assumed that she does not make a universal claim about how *all* facts of a certain kind are grounded. But this, I think, was a mistake: I will argue that the fundamentalist will go on to make *other* universal claims about how all facts of a certain kind are grounded that the rationalist need not make. So *if* there is a burden on the rationalist to provide evidence for her view then there is (by parity of reasoning) also a burden on the fundamentalist to provide evidence for her view. The result is that neither view is the default view: absent evidence one way or the other, it would be a mistake to put one's faith in fundamentalism.

Why will the fundamentalist go on to make various universal claims about how all facts of a certain kind are grounded? The key lies in an important difference between metaphysical and causal explanation. Let me say what the difference is and why it is important.

Consider an arrangement of particles at a given time, perhaps the arrangement that currently constitutes my laptop. And let us suppose that the arrangement has a cause, in the sense that the physical state of the world at some prior time nomically determined that the particles would come to be arranged like this. Still, the arrangement did not *have* to be caused—at least, not if the physical laws take anything like the standard dynamical form. For such laws are consistent with *any* instantaneous arrangement of particles being the initial condition of a (possible) physical system; all they describe is how such a system would evolve over time. Moreover nothing about the nature of the particular particle arrangement rules out its being an initial condition of a physical system.

But ground is different in this respect. Suppose for example that there is a conference occurring, and suppose (as is plausible) that this is grounded in facts about how various people act (some wrote papers, others read them, all converged in a hotel to discuss, etc.). Then it is not that the occurrence of the conference just *happens* to be grounded; it is not that it could have been brute. Rather, if there is a conference occurring then this *has* to have a ground. Something about the nature of ground or the nature of conferences implies that it is impossible for there to be brute conferences. Other examples abound. Facts about football matches, the economy, and operatic performances (to take just a few cases that spring to mind) are not only grounded but *had* to be grounded: it is impossible for them to be brute, ungrounded facts about the world.

So the difference is this. In the case of ground we do not think that any old fact can be brute. Rather, we think that *all brute facts are of a certain type*. For now we can leave it open how this certain type is to be characterized, so long as it excludes facts like the occurrence of a conference. The important point is just that in the

case of causation there is no such restriction: any particle arrangement can be a causally brute initial condition.

To see why this matters, compare our version of the PSR with a causal version that states that every arrangement of particles has a causal explanation. Suppose that A asserts that this *causal* PSR is true. In asserting this she makes a universal claim about the causal status of all particle arrangements. If B then denies it and says that there are causally brute facts then there is no need for B to also say that those causally brute facts are all of some type. Indeed B may have no opinion about what those causally brute facts are like. So if we assume (as we are) that those making strong universal claims carry a burden of proof then it is just A and not B who carries that burden. So rejecting the causal PSR is indeed the default position.

But if A asserts that our *grounding* version of the PSR is true then the situation is different. For suppose B denies our PSR and says that there are metaphysically brute facts, i.e. substantive facts without grounds. Then (as we just saw) B will go on to say something about what those brute facts are like, i.e. that they are *all* of a certain type. For B, this is a strong universal claim about a non-empty class. So both A and B assert a strong universal claim about some non-empty class. So *if* A incurs a burden of proof because she asserts a strong universal claim about a non-empty class, then (by parity of reasoning) so does B. So neither view is the default position; both views require evidence to warrant our belief. In this way the difference between metaphysical and causal explanation leads to this dialectical difference between the two versions of the PSR.

I said that B (who rejects the PSR and believes that there are brute facts) will say that every brute fact is of a certain type. To get a feel for how strong this claim is, consider some ways in which this type might be characterized. One idea is to follow Sider (2011) and introduce the primitive notion of something's being *natural*.⁶³ Perhaps the natural things include electrons and the property of being negatively charged, while the unnatural things include football matches and the property of being a stable economy. Then B's universal generalization might be construed as the claim *that every brute fact contains only natural constituents*.⁶⁴ This is a very strong claim: it rules out all (logically possible) chains of ground that bottom out in things that are not perfectly natural like football matches and operas and conferences and the like. That this is a strong claim can be missed if by 'natural' you read 'constituent of an ungrounded fact', in which case it is a logical truth. But on Sider's approach 'natural' is a primitive notion not defined in terms of ground. So the italics express the strong claim that any brute fact is constituted just of entities of a certain (independently specified) kind.

Alternatively, one might try to characterize B's claim in terms of the notion of essence. When we noted that facts about conferences are necessarily grounded it may have been tempting to think that this is due to the nature of conferences, i.e. that it is essential to conferences that facts concerning them are grounded. Conversely then one might think that the same goes for brute facts. Suppose that the fact about the charge of a given electron is brute. Then one might say that it is essential to being an electron and being negatively charged that if x is an electron that is

negatively charged then this is a brute fact. So B's universal generalization might be (roughly) construed as the claim *that every brute fact is essentially brute* in this sense. Once again this is a very strong claim: it rules out all grounding explanations that bottom out in facts that are not essentially brute (like the occurrence of a conference).

In any case there is no need to decide between these two ways of fleshing out B's claim. The point is just that she will—on pain of admitting the possibility of brute conferences!—make some strong claim of this kind. So *if* we grant that those making strong universal claims carry a burden of proof then it follows that both the rationalist and her opponent B carry this burden and that neither holds the default view.

Now even if B carries a burden of proof it does not *quite* follow that the *fundamentalist* carries a burden of proof, for the fundamentalist (i.e. someone who rejects our PSR) is not forced to agree with B that there are brute facts. She might instead think that there is a non-terminating descending chain of grounds for *every* substantive fact. But this is (of course) another strong universal generalization! So the way to put the point is this. There are two ways in which our PSR could fail: either *every* substantive fact is grounded in a non-terminating descending chain, or there are brute facts and *all* of them are of a certain type. Each way consists in a strong universal generalization over a non-empty class.⁶⁵

The upshot is this. With the *causal* version of the PSR, it is perhaps correct to say that rejecting it is the default position. But even if so, the difference between causal and metaphysical explanation means that when it comes to our *grounding* version of the PSR the dialectic is different. It would be a mistake to think that either the rationalist or the fundamentalist position is default, so the burden is on the proponent of each view to provide evidence in its favor.

17 Conclusion

Our choice then is between two strong views, rationalism and fundamentalism. How are we to decide between them? We could of course wait until we settle on our best final explanatory theory of the world and see which one it implies. But can we do better? Can we argue in advance, prior to settling on such a theory, that one of these views *must* be correct?

It is easy to be pessimistic. For each view is a strong and universal claim about grounding explanations. And I take it that neither is an analytic or conceptual truth.⁶⁶ So one might wonder what reason we could have, in advance, to expect to find either pattern in nature. What could such a reason be founded in? The deliverances of some miraculous faculty of insight by which we peer into the explanatory structure of the world?

Any argument for rationalism or fundamentalism will have to confront these difficult questions in epistemology. For this reason I have left arguments one way or another for another time.⁶⁷ Still, what I *have* tried to argue is that the anti-rationalist bias prevalent in contemporary metaphysics is unwarranted, an article of faith rather than reason.⁶⁸

Notes

¹ Two notable exceptions include Della Rocca (2003a) and (2003b), and Pruss (2006), who have each argued for rationalism recently. Lin (2012) and (forthcoming) discusses rationalism in some detail and defends it from an important objection, though I do not know whether he ultimately endorses the view.

² To be clear, it is (as we will see) somewhat controversial whether the principle does indeed have these consequences. For example, Lin (forthcoming) raises difficulties with the claim that they follow from Spinoza's understanding of the principle. Still, they are all consequences that have (at one time or another) been associated with the PSR.

³ Pruss (2006, chapter 13), and Weaver (2012) and (2013), have recently argued for a principle roughly along these lines, namely that all contingent events have causes.

⁴ These versions each focus on just one kind of explanation, but others may be more general. For example, one of the principles that Rowe (1975) finds in Clarke (1998) is disjunctive, and states (in effect) that the existence of every being is explicable *either* by the causal effect of another being *or* "by its own nature". And one might consider the more general principle that everything has an explanation of some kind or other. My sense is that Pruss (2006) is interested in a principle along these lines, though as I said in footnote 3 he has also argued for more specific principles.

⁵ This is just a toy example. No doubt the full explanation of why a conference is occurring will be rather more complex.

⁶ See (Fine, 2001, 2012), (Rosen, 2010), and (Schaffer, 2009).

⁷ See (Hofweber, 2009) for skeptical arguments against the notion of ground. See (Raven, 2012) for a defense of the notion.

⁸ This is how Fine characterizes the logical form in his (2001) and (2012). One reason why Γ is a list, not a conjunction, is to make room for the plausible view that a conjunction is grounded in its conjuncts but not grounded in itself.

⁹ This is how Rosen (2010) characterizes the logical form. Strictly speaking, one might want to allow that ground is non-distributively plural, in the sense that sometimes a collection of facts *are* together grounded even though none has a ground on its own (see Dasgupta (2014)). But I will ignore this complication here.

¹⁰ Schaffer (2012) and Tahko (2013) argue against transitivity. Litland (2013) offers a response to Schaffer's arguments.

¹¹ It is particularly easy to appreciate the childlike mode of questioning in the case of the logical connectives. Even if the conjunctive fact $A \& B$ is grounded in its conjuncts, A and B , this does not answer the child's question of why the world turned out to be such that $A \& B$ obtains. The child's question is why, out of all the ways the world could have turned out, did it turn out to be like *this*, i.e. a world that gives rise to $A \& B$. Similar remarks apply to disjunctions, existential quantifications, and so on.

¹² Bliss (2013, section 4) makes a related point.

¹³ See (Jenkins, 2011) for a discussion of this issue.

¹⁴ This is why the modal description of the child's question was merely figurative.

¹⁵ Of course in another axiomatic system the word 'subset' might be defined differently, in which case the material equivalence ' x is a subset of y iff any member of x is a member of y ' might have a (non-trivial) proof from *those* other axioms and definitions. Moreover one might construct a "logic of definition", i.e. a logic of the \equiv_{df} operator, and one might conceivably then show that the definition in the text is provable from the axioms governing \equiv_{df} . But the point is just that when doing standard axiomatic set-theory, the question of whether the definition in the text can be proved is a bad question.

¹⁶ This is how Fine (1995) regiments talk of essence.

¹⁷ See (Ney and Albert, 2013) for essays that discuss this view.

¹⁸ We can now see that the analogy with causation is (like any analogy) not perfect. I said that arithmetical facts are not apt for causal explanation, but they also (arguably) do not causally explain anything. In contrast, even if essentialist facts are autonomous they certainly ground other facts: a conjunction of two essentialist facts will (like any conjunction) be grounded in its conjuncts. Still, the point of the analogy is to bring out the similarity between arithmetic facts and essentialist facts vis-à-vis the question of *what explains them*, regardless of what (if anything) they explain.

¹⁹ There may of course be a *causal* explanation of why the particles are where they are; here my point is that with regards to *grounding* explanations there is no rhyme or reason why they are where they are.

²⁰ One might propose a link between autonomy and some epistemic notion, for example that a fact is autonomous iff it is a priori or conceptual, but even if true this would be a strong thesis in need of motivation. On one reading, Della Rocca (2003b) defends something like the view that a fact is autonomous iff it is conceptual. I am inclined to think that the case of water discussed above is a counterexample to this thesis but I will not discuss this further here.

²¹ The theoretic utility I have in mind is (in rough outline) this. One of the central theoretical roles for the notion of ground is to make sense of -isms like naturalism, phenomenalism, physicalism, and so on. The rough idea is to understand (say) physicalism as the view that all facts are grounded in purely physical facts. But there is a problem with this rough idea that the notion of autonomy can be used to solve. The problem arises when we ask what grounds those facts that detail how various (say) mental facts are grounded in physical facts. According to physicalism as understood above, they must also have a purely physical ground, but it turns out (and this is part of the long story) that they do not. The solution is to see that our intuitive understanding of physicalism is a restricted claim: that all facts *of a restricted kind* are grounded in purely physical facts, where the grounding facts themselves are not of this restricted kind. Of course the challenge is then to say what the restriction is and why it is not *ad hoc*. I believe that we can meet the challenge by using the notion of autonomy. If this is right then the notion of autonomy plays a central role in making intelligible some of the central questions of philosophy. I argue for this in (Dasgupta, forthcoming).

²² I discuss some other objections in (Dasgupta, forthcoming).

²³ Fine (1995) discusses the notion of mediated essence further. Koslicki (2012) also distinguishes a number of other notions of essence. It is a good question whether one of these notions can be taken to ground the others, but I cannot discuss this here.

²⁴ Thanks to Tobias Wilsch for pressing this objection on me.

²⁵ Of course given my notion of an essentialist fact one may define the notion of having a property essentially: x essentially has the property of being $F \equiv_{df}$ it is part of what x is that x is F . In this way we can make perfectly good sense of the idea that there are two ways to have a property and that the essentialist truths are those regarding which properties things have in the essential way. But we are misled if we forget that the primary notion here is that of a specification of what something is. This is why I call the above picture misleading and not false.

²⁶ I give this claim further defense in (Dasgupta, forthcoming).

²⁷ Where $c = 299,792,458$ meters per second.

²⁸ Just think of Clarke's (1998) cosmological argument in which he insists (on the basis of some version of the PSR) that a non-terminating chain of dependence must itself have some external cause. It is debatable what version of the PSR he used but he clearly did not consider it satisfied merely by a non-terminating chain.

²⁹ The argument is due to Bennett (1984) and van Inwagen (2002). My presentation here is based on Della Rocca's presentation in his (2003a). van Inwagen's argument differs a little from Della Rocca's presentation but the moral of what I say here applies to van Inwagen's original presentation.

³⁰ In conversation van Inwagen suggested to me that the argument goes through if we accept the general principle that if the E s explain C and C necessitates C^* then the E s explain C^* . For since C necessitates each of its conjunctions it follows that the E s explain each conjunct. But if 'explains' means grounds we should reject this principle for independent reasons. For the arrangement of particles in front of me might ground there being a mountain here, and there being a mountain here necessitates that $2+2=4$, but the arrangement of particles in front of me does not (I claim) ground the fact that $2+2=4$.

³¹ I take it that this is (in roughest outline) Spinoza's idea in the *Ethics*, 1p29: 'In nature there is nothing contingent, but all things, from the necessity of the divine nature, have been determined to exist and act in a certain way.' At any rate, this is how Lin (2012) interprets this passage.

³² Strictly speaking we also need the assumption that if it is necessary that if the X s obtain then Y obtains, then if the X s are necessary then Y is necessary too. But (ignoring complications regarding plurals) this is just the distributive axiom K , which is a logical truth in all serious logics of necessity.

³³ Fine (2012) and Rosen (2010) explicitly endorse it. Trogon (2013) provides an extended argument in its favor.

³⁴ See for example (Leuenberger, 2013) and (Schaffer, 2010).

³⁵ In the metaphysical sense of 'had', of course; I will often drop this qualification now for ease of prose.

³⁶ This is related to Fine's notion of relative possibility in his (1994). However, his notion of necessity relative to the Xs did not include clause (ii).

³⁷ This notion of relative possibility resembles the notion of *per se* possibility that Adams (1994) and Lin (2012) both attribute to Leibniz (at least during some points of his career). On this view, 'a substance is necessarily *F* just in case it is essentially *F*. A substance is possibly *F* just in case it is not essentially not-*F*' (Lin (2012), p. 427). This allows Leibniz to say that it is possible in this *per se* sense that I do not exist, even though in another sense (the "*per accidens*" sense) I *had* to exist by virtue of the fact that God had to choose our world (it being the best of all possible worlds). But there are differences. First, the notion of relative possibility is more general: with *per se* possibility we get only what is possible for *x* relative to *x*, but with relative possibility we can relativize what is possible for *x* to any arbitrary collection of entities. And second, even when we relativize what is possible for *x* to *x*, relative possibility is stronger than *per se* possibility. For (loosely speaking) for it to be *per se* possible that *x* is *F*, being *F* just has to be consistent with the essence of *x*; while to be possible relative to *x* that *x* is *F*, being *F* has to be consistent with the essence of *x* and *all that that essence grounds*. Still, I take it that the two notions of *per se* and relative possibility are very much in the same ballpark. Newlands (2010) argues that a similar notion can also be found in Spinoza.

³⁸ This is (I take it) more or less Kit Fine's idea that metaphysical necessity flows from the natures of things; see his (1994).

³⁹ There are delicacies here regarding the individuation of terms. For it is of course possible that one and the same syntactic string receive two different definitions—this is just a case of ambiguity. What is incoherent on this pre-Quinean picture is the idea that a definition of a *word* (understood as a semantically individuated entity) could be true in one theory and false in another.

⁴⁰ At this point one might again wonder whether the particular notion of essence I have in mind corresponds to anything real. But as I said in section 4 this is not a topic I can settle here. The dialectic in this paper is to take the notion as given and see what kind of rationalist view can be formulated in its terms.

⁴¹ This notion of amodality bears comparison with the notion of an "unworldly" fact that Fine discusses in his (2005). See also Hudson (1997) for a related idea.

⁴² For what the PSR implies (given our working assumption that autonomous facts are essentialist facts) is that all facts are grounded in an amodal base. So suppose that if the Xs ground Y and if the Xs are amodal, then Y is amodal too. Then the stronger necessitarian thesis follows.

⁴³ This bears some resemblance to Aquinas' cosmological argument in its insistence that a descending chain of explanations must terminate.

⁴⁴ One objection would be to propose that facts about the existence of particulars are grounded in facts expressed by a kind of predicate-functor language (see O'Leary-Hawthorne and Cortens (1995) and Dasgupta (2009) for developments of this idea). Indeed we might think that these predicate-functor facts are essentialist facts if we relax our logical form of claims about essence to include claims of the form

It is essential to being *F* that ϕ .

where ϕ need not concern the existence of anything. On this view we can satisfy the PSR without accepting that there is something whose existence is part of or grounded in its own essence.

⁴⁵ This point is not new and dates back at least to Kant.

⁴⁶ This view is perhaps easiest to motivate in the context of physical theories in which space-time has a fixed metric structure. But even in theories in which the metric is dynamic the view is not unimaginable. Indeed, Maudlin (1988) proposed, when discussing General Relativity, that space-time points bear their metric relations essentially. This not quite the view under discussion, but it is related.

⁴⁷ The version that Della Rocca (2003b) discusses may well be of this type.

⁴⁸ Adams (1983) makes a similar point when discussing necessary existence, though for a somewhat different purpose.

⁴⁹ His idea was that the explanation would be either “internal” or “external”. The latter would appeal to a substance distinct from God, but this is ruled out by Spinoza’s view that distinct substances cannot affect each other. An internal explanation would explain God’s nonexistence by citing some contradiction in God’s nature, much as we might explain the nonexistence of a square circle by citing a contradiction in the nature of that shape. But Spinoza claims that God is not self-contradictory so there cannot be an internal explanation of Her nonexistence either. Something like this argument can be found in the various proofs of proposition 11 in part 1 of the *Ethics*. But I am no scholar so I may well be ignoring many subtleties in Spinoza’s view. Lin (forthcoming) and Della Rocca (forthcoming) discuss Spinoza’s views on this matter in more detail.

⁵⁰ For more on the relation between the PSR and the principle of plentitude in Spinoza, see (Lin, forthcoming).

⁵¹ On one view the totality fact is part of what grounds the negative fact. On another view it is not part of the the ground but is a necessary condition for the other positive facts to count as a ground for the negative fact. I will not try to decide between these views.

⁵² This is to give an “external” explanation of God’s nonexistence, to use Spinoza’s expression (see footnote 49). Spinoza may have used a notion of explanation on which he is correct to say that there can be no external explanations. But for us, using the notion of ground, such explanations would appear to be commonplace—at least, they are on the view that truth depends on being.

⁵³ Note in this regard that genuinely chancy events (particle decays or wavefunction collapses, on some views) would not be counterexamples to our PSR. At best they are counterexamples to *causal* versions of the PSR, but it is consistent with the existence of genuinely chancy events that they have an autonomous ground.

⁵⁴ This terminology was introduced by Rosen (2006). See (Kment, 2014, chapter 6) for further discussion of the distinction.

⁵⁵ Of course my example of the Anselmian essence of my chair falls short of the kind of Anselmian essence that the rationalist might require, i.e. an essence of x that would ground x ’s existence. The point here is just that the current argument against such essences, which appeals to (i), is not convincing.

⁵⁶ I am slurring over a subtlety regarding the nature of evidence. Suppose one’s evidence is what one knows. And suppose one takes the initial evidence to be the modal proposition that water could exist without H_2O . Then the correct way to put the point is that when one learns (on the basis of the empirical evidence) that water is H_2O , one in part learns that the modal proposition was not evidence after all. If (on the other hand) one takes the initial evidence to be that the proposition that *it is intuitive that* water could exist without H_2O , then this might be true and known and therefore count as evidence even if water is H_2O . But these details do not matter for our purposes here.

⁵⁷ To be clear, the claim is not that the question of rationalism vs fundamentalism is purely empirical. The claim is that it is largely empirical what facts ground the chair’s existence and location; the question of whether those facts are essentialist facts or not may then involve a complex mix of empirical and a priori factors.

⁵⁸ For more on the exact nature of the connection between conceivability and possibility, see essays in Gendler and Hawthorne (2002). I should say that my concessive strategy here is neutral on the degree to which modal intuition is evidence for these empirical propositions. One view is that it is *some* evidence but not much, e.g. it justifies slight changes in credence but not much. But the concessive response can even grant that it is strong evidence in the sense that it justifies large changes in credence. On this view our ancestors may have been justified (on the basis of modal intuition) in having a very high credence that water is not H_2O . The point then is that having high confidence does not entail considering the matter settled (in the sense discussed in the text). There is no need here to decide between these two versions of the concessive strategy.

⁵⁹ The point here is therefore different from the familiar point that possible-worlds analyses of content struggle with (say) mathematics. For the argument there is that mathematics is necessary, therefore possible-worlds semantics is wrong in the case of mathematical belief. I am not making that kind of argument. Moreover in the case of mathematics the possible-worlds theorist can always try to avoid the conflict by modifying the theory to account for these “outlier” cases or restrict the scope of her theory to contingent propositions. But obviously neither of these responses is available if one is faced with someone who thinks that *everything* is necessary!

⁶⁰ For example, Chalmers (2011) develops a version of Bayesianism that uses a notion of epistemic possibility.

⁶¹ Lin also argues that the notions of freedom and law do not pass this test, but I will focus on counterfactuals here.

⁶² His discussion concerns Leibniz's notion of *per se* possibility rather than my notion of relative possibility, but the notions are similar enough that the difference does not matter here. See footnote 37 for more on *per se* possibility.

⁶³ Sider uses the term 'fundamental' but that term is already in use here so is likely to be misleading. Sider's notion is (as he emphasizes) a generalization of Lewis' notion of naturalness so my switch in terminology is not entirely out of place.

⁶⁴ This is very close to Sider's principle of purity.

⁶⁵ Of course the fundamentalist might just make the disjunctive claim that our PSR fails in one of these two ways, and this disjunction is (in the logical sense) weaker than either disjunct. But still, it is hard to see why this would absolve her of the burden of showing that the disjunction is correct.

⁶⁶ Here Della Rocca (2003b) would disagree and would urge that the PSR is itself a conceptual truth. But this disagreement stems from him using a different notion of 'explanation' than I am.

⁶⁷ For some arguments for rationalism, see Della Rocca (2003a) and Pruss (2006). I am not wholly moved by those arguments but this is not the place to say why.

⁶⁸ Versions of this paper were presented at the Carolina Metaphysics Workshop (June 2012), at colloquia in the philosophy departments at Rochester University and MIT (both in November 2012), at the Princeton first-year seminar in November 2012, and at a conference on explanation in metaphysics in Neuchâtel, Switzerland, in June 2013. Many thanks to all involved for those helpful discussions, especially to Dan Korman and Nat Tabris for their detailed comments on the paper at two of those events. Thanks also to Elizabeth Barnes, Ricki Bliss, Darren Bradley, Jonathan Cottrell, Sinan Dogramaci, Michael Della Rocca, John Morrison, Jonathan Schaffer, Ted Sider, James Stazicker, and Michael Strevens for their extremely valuable comments on previous drafts of this paper.

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