KANT'S POSSIBILITY PROOF

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1. INTRODUCTION

In his 1763 work *The Only Possible Ground of Proof [Beweisgrund] for a Demonstration of the Existence of God*, Immanuel Kant offered an innovative argument for the existence of God. Kant's argument differs from cosmological and teleological arguments in that it does not begin by assuming that anything exists or that what exists has any particular nature or appearance of design. It assumes merely that something is possible. He then argues that, if something is possible, there exists a ground of this possibility. Facts about what is possible cannot be "brute"; they require grounds. He identifies the grounds of possibility with the powers of existing substances; an object or state of affairs is possible in virtue of the power of some substance to produce that object or cause that state of affairs to obtain. He goes on to argue that all possibilities must be grounded in a single necessarily existing substance, God. If God did not exist, nothing would be possible.

This is only a sketch of Kant's argument. In this paper, I offer a detailed reconstruction and criticism of it. In the next two sections, I discuss two central notions in Kant's modal metaphysics: grounds of possibility and absolute necessity. The fourth section examines in detail Kant's proof of the existence of a unique absolutely necessary ground of possibility. While some commentators have focused on Kant's later Critical rejection of this argument, I take it on its own pre-Critical terms and conclude that, even as a piece of "speculative" or "dogmatic" metaphysics, it is unsuccessful.

2. POSSIBILITY PRESUPPOSES EXISTENCE

Before continuing, I want to clarify Kant's way of talking about possibility. When he talks about a possibility, Kant is referring to the possibility of a concept—or conceptually described state of affairs—being instanti-
ated; he is not concerned with the possibility of the existence of concepts, as representational items. At some points, I talk about the possibility of properties, to avoid repeating the awkward phrase “the possibility of the instantiation of a concept.” By doing this, I do not mean to commit myself or Kant to an additional ontology of properties, above and beyond concepts; talk of the possibility of the property of being extended is shorthand for talk of the possibility of the instantiation of the concept extended.

Kant begins his argument in The Only Possible Ground by distinguishing the material (real) elements of possibility from the formal (logical) elements of possibility:

Likewise, in every possibility we must first distinguish the something which is thought, and then we must distinguish the agreement of what is thought in it with the law of contradiction. A triangle which has a right angle is in itself possible. The triangle and the right angle are the data or the material element in possibility. I shall also call this latter the logical element in possibility, for the comparison of the predicates with their subjects, according to the rule of truth, is nothing other than a logical relation. The something, or that which stands in this agreement, is sometimes called the real element of possibility. (2:77)

The space of what is possible is constituted by concepts of possible objects and possible states of affairs. The concept of a possible object has both a logical form (the logical relation holding among its constituents) and a matter (the logically atomic concepts standing in that logical relation). For a concept to be a concept of a possible thing, it must have a logically noncontradictory form. This establishes its logical possibility. For real possibility, it is required that any constituent concept “is itself something and can be thought” (2:77). This is what I will call the “material requirement” on possibility. I take it to be the requirement that the very elements that compose the concept, its marks, must be possible.

It is interesting that Kant takes his reasons for accepting this requirement on real possibility to be reasons even his rationalist predecessors Leibniz, Christian Wolff, and Alexander Baumgarten should accept. These three hold a “logicist” view of modality, according to which a concept is possibly instantiated just in case it is logically consistent.\(^3\) This is a view about what Kant calls “real” possibility, what in contemporary metaphysics we would call “metaphysical” possibility. On the logicist view, metaphysical and logical possibilities are coextensive. Kant disagrees. He holds that some logically compatible concepts are not really possibly coinstantiated. For instance, he writes, “The impenetrability of bodies, extension and such like, cannot be attributes of that which has
understanding and will. . . Now although I concede that there is no logical contradiction here, the real repugnancy is not thereby canceled” (2:85). The concept extended thinking thing is logically consistent but metaphysically impossible to instantiate; there is a nonlogical metaphysical incompatibility (a “real repugnance”) between the concept extended and the concept thinking thing.5

However, the material requirement on possibility is the requirement that the individual marks that compose the concept of a possible thing must themselves be really possible; it is not a principle about the compatibility of these marks. If the point of the material requirement were merely that not all logically consistent concepts are really possibly instantiated, it would stand or fall with Kant’s antilogicism. As I will now argue, Kant thinks that even the logicists should nonetheless accept the material requirement on possibility:

You know that a fiery body, a cunning person, and such like, are possible things. And if I ask for nothing more than internal possibility, you will not at all find it necessary that a body, or a fire, and so on, should have to exist as their data: they can be thought, and that is sufficient. But I proceed to ask: is then a fiery body possible in itself? Not being permitted to appeal to experience here, you will enumerate the data of its possibility, namely extension, impenetrability, force, and I know not what else; and you will add that there is no internal contradiction here. I still concede everything. You must, however, give me an account of what entitles you so readily to accept the concept of extension as a datum. It would also be highly improper to appeal to experience in connection with this datum, for what is at issue is precisely whether an internal possibility of the fiery body would occur even if nothing at all were to exist. (2:80)

The possibility of some complex concept like fiery body is not settled by the compatibility of the constituents of this concept. Whether fiery body is possibly instantiated depends on whether its constituents—the concepts extension, impenetrability, and force, among others—are themselves possible. And what does the possibility of these constituents consist in? Kant writes:

Suppose that you can now no longer break up the concept of extension into simpler data to show that there is nothing self-contradictory in it—and you must eventually arrive at something whose possibility cannot be analyzed—then the question will be whether space and extension are empty words, or whether they signify something. The lack of contradiction does not decide the present issue; an empty word never signifies something self-contradictory. If space did not exist, or if space were not at least given as a consequence through something existent, the word “space” would signify nothing at all. As
long as you prove possibilities by means of the law of contradiction, you are depending upon that which is thinkable in the thing and which is given to you in it, and you are only regarding the relation in accordance with this logical rule. But in the end, when you consider how this is then given to you, the only thing to which you can appeal is existence. (2:81)

This shows that the material requirement of possibility is not the requirement of real compatibility among the constituents of a concept because the material requirement applies also for logically primitive properties, that is, ones that have no constituents. The material requirement on possibility is that the logically primitive constituents of a concept must themselves be really possible.

In the passage quoted, Kant begins to give his theory of what the possibility of the instantiation of logically primitive concepts consists in. Logically primitive concepts must be grounded in some existing object, either an existing object that instantiates those concepts or an existing object that grounds the possibility of their instantiation as “consequences.” However, Kant does not think that the possibility of the instantiation of properties like extension can be grounded in the existence of finite substances that possess those properties: “You know that a fiery body, a cunning person, and such like, are possible things. And if I ask for nothing more than internal possibility, you will not at all find it necessary that a body, or a fire, and so on, should have to exist as their data: they can be thought, and that is sufficient” (2:80). If the possibility of fire or body depended on the existence of actual fiery substances or bodies, then if those substances and those bodies did not exist, fire and body would be impossible. Kant is assuming that the possibility of such properties cannot depend on the existence of finite substances. 6

Kant’s view is that real possibility presupposes existence. What he means by this claim is that if some state of affairs is possible, then there must exist some object or objects that make it the case that the properties that constitute this state of affairs are possible. Kant’s discussion so far has restricted itself to possibilities for finite objects and their properties. In his terminology, there must be existing objects that ground possibilities for finite objects:

For any proposition \( p \) concerning finite objects and states of affairs involving only finite objects, if it is possible that \( p \) then there exists a \( y \) such that \( y \) is a ground of the possibility that \( p \).

Without further specifying what it is to be a ground of possibility, this principle is fairly weak. In contemporary terms, it amounts to the principle that truths about possibility require truth makers: if is
possible that \( p \), there must be some object that makes it true that it is possible that \( p \).

Kant does not give much explicit argumentation for the claim that possibility presupposes existence. One reason he foregoes explicit argumentation is that he realizes that this principle is common ground: the logicists also accept that possibility presupposes existence. Although the logicists hold that the logical consistency of a concept is necessary and sufficient for its possibility, they do not think that logical consistency exhausts the nature of possibility. They agree with Kant that possibility requires an existing ground of possibility. Leibniz, for example, who expressed his views on the ontological status of modal truths at greater length and with greater sophistication than either Wolff or Baumgarten, held that the space of possibility is a space constituted by concepts and the logical relations among them, but he also held that facts about the possibility of the instantiation of those concepts must be grounded in an existing being, God. He expresses this view in a variety of texts, but one that would have been familiar to eighteenth-century audiences is the *Monadology*:

§43. It is also true that God is not only the source of existences, but also of essences insofar as they are real, that is, the source of that which is real in possibility. This is because God’s understanding is the realm of eternal truths or that of the ideas on which they depend; without him there would be nothing real in possibles, and not only would nothing exist, but also nothing would be possible.

§44. For if there is reality in essences or possibles, or indeed, in eternal truths, this reality must be grounded in something existent and actual, and consequently it must be grounded in the existence of the necessary being, in whom essence involves existence, that is, in whom possible being is sufficient for actual being.\(^7\)

Leibniz makes a similar point in *Theodicy*:

[O]ne must not say, with some Scotists, that the eternal verities would exist even though there were no understanding, not even that of God. For it is, in my judgment, the divine understanding which gives reality to the eternal verities, albeit God’s will has no part therein. All reality must be founded on something existent. It is true that an atheist may be a geometricalian: but if there were no God, geometry would have no object. And without God, not only would there be nothing existent, but there would be nothing possible.\(^8\)

On the Leibnizian view, a concept is a concept of a possible thing if and only if it is logically consistent, but the logical consistency of the concept does not by itself render its object possible: the concept is a concept of a possible thing in virtue of being an object of God’s understanding.\(^9,10\)
Kant’s alternative view of how possibility is grounded in actually existing substances derives from Christian August Crusius, the influential critic of Wolffian rationalism. Crusius grounds possibilities in the powers of substances:

*What a power is.* The existence of a thing cannot be viewed as equal to its non-existence. Accordingly, through every thing something else must become possible or actual, whether it be made possible or actual through itself alone or by adding several things. The possibility of one thing, B, which is connected to another thing, A, is called a power in the broadest sense in thing A.\(^\text{11}\)

According to Crusius’s doctrine, B is possible just in case an existing thing, A, has the power to make B actual. Possibility is grounded and explained by what is actual, as Crusius goes on to explain:

The concept of the actual is prior to the concept of the possible. . . . But it deserves to be noted that, although there is less in the concept of the possible than in the concept of the actual, the concept of the actual is still prior to the concept of the possible both according to nature and according to our cognition. First, I say that it is prior according to nature. For if nothing were actual, then nothing would be possible, because all possibility of a thing that does not yet exist is a causal connection between an existing thing and a thing that does not yet exist. Further, the concept of the actual is also prior to the concept of the possible according to our knowledge. For our first concepts are [of] existing things, namely sensations, by which we can attain a concept of the possible only afterwards. In fact, even if one also wanted immediately to meditate a priori most precisely, then the concept of existence is certainly prior to the concept of possibility. For all I need for the concept of existence are the simple concepts of subsistence, coexistence, and succession. By contrast, for the concept of possibility I require the concept of causality, subsistence, and existence.\(^\text{12}\)

When Crusius writes “for the concept of possibility I require the concept of causality, subsistence, and existence” (my emphasis), I take him to mean that the existing things whose causal powers ground possibilities are things that *subsist*, substances. For Crusius, the space of possibility is determined by the range of operation of the powers of existing substances; whatever is within the power of an existing substance to make actual is possible. And since our knowledge of possibility derives from our knowledge of actually existing substances and their causal powers, actuality is both metaphysically and epistemically prior to possibility.

Kant follows Crusius in grounding possibility in the powers of existing substances.\(^\text{13}\) In the section titled “All possibility is given in something
actual, either as a determination existing within it or as a consequence arising from it,” Kant writes,

What has to be shown of all possibility in general and of each possibility in particular is that it presupposes something real, whether it be one thing or many. Now, this relation of all possibility to some existence or other can be of two kinds. Either the possible can only be thought insofar as it is itself real, and the possibility is given as a determination existing within the real; or it is possible as a consequence through another existence. Elucidatory examples cannot yet be suitably furnished here. The nature of the one subject which could serve as an example in this reflection ought to be considered first of all. (2:79)

Kant’s final remark is a reference to the argument for the existence of God he will shortly offer. He here claims that, for any possibility, it is possible either as a consequence or a determination. When Kant talks about possibilities being grounded as “determinations,” he is referring to God’s unlimited powers: the infinite powers of God are possible because they are actually instantiated by God. They are not possible in virtue of being possibly produced by some existing substance. Therefore, the possibilities that are consequences are the possibilities of finite beings. By “consequence,” Kant means “potential consequence of the operation of a power.”14 The possibilities of finite beings are grounded in the powers of existing substances that can make them actual. Kant goes on to argue that there is only one such substance whose powers ground possibilities: God.15

3. Absolute Necessity

One of the central concepts in Kant’s modal metaphysics in Only Possible Ground of Proof is the concept of absolute necessity. His proof of the existence of God is a proof that there is a unique being that exists absolutely necessarily. Therefore, before analyzing Kant’s argument for an absolutely necessarily existing being, we first need to understand what absolute necessity is.

As I have explained, Kant recognizes two different kind of modality—logical possibility/necessity and real possibility/necessity—and, following Crusius, he grounds real possibility in the powers of existing substances. With these views in mind, we are in a position to analyze the following passage and, thereby, introduce Kant’s concept of absolute necessity:

If I now consider for a moment why that which contradicts itself should be absolutely nothing and impossible, I find that through the cancellation of the law of contradiction, the ultimate logical ground of all that can be thought, all possibility vanishes, and there is nothing
left to think. The conclusion immediately follows that, when I cancel all existence whatever and the ultimate real ground of all that can be thought therewith disappears, all possibility likewise vanishes, and nothing any longer remains to be thought. Accordingly, something may be absolutely necessary either when the formal element of all that can be thought is cancelled by means of its opposite, that is to say, when it is self-contradictory; or, alternatively, when its non-existence eliminates the material element and all the data of all that can be thought. The former, as has been said, never occurs in the case of existence. It follows that, since there is no third possibility, either the concept of absolutely necessary existence is a deceptive and false concept, or it must rest on the fact that the non-being of a thing is at the same time the negation of all the data that can be thought. (2:82)

This passage contains a number of important claims and themes; before continuing, we need to separate and analyze them.

The domain of the logically possible, for Kant, as for the logicists, is structured by the principle of noncontradiction; the principle of noncontradiction is the highest principle governing the domain of the logically possible. Therefore, Kant reasons, if you eliminated or “canceled” the law of noncontradiction, nothing would be logically possible. This is what it means to say that the principle of noncontradiction is absolutely logically necessary. Another way of putting this point would be that, if the law of noncontradiction were unavailable for thought, then there would be no such thing as logical possibility. By contrast, a proposition is conditionally logically necessary just in case it follows from the principle of noncontradiction. All logically necessary propositions, that is, all propositions whose negations entail contradictions, are consequences of the principle of noncontradiction and hence conditionally logically necessary. To say that they are conditionally logically necessary is not to impugn their necessity or to suggest in any way that they might have been false: it is only to draw a distinction between these logically necessary truths, whose truth follows from the principle of noncontradiction, and the principle of noncontradiction itself, which governs the entire domain of logical possibility.

Kant understands absolute real necessity on the model of absolute logical necessity: it is absolutely really necessary that $p$ just in case the “cancellation” of $p$ would cancel all real possibility. An absolutely necessary proposition is a proposition that governs and gives rise to the entire domain of real possibility. Likewise, an absolutely really necessary being is a being whose existence governs and give rise to the entire domain of real possibility. If there is such a being, its nonexistence would cancel all real possibility; without it, nothing would be really possible. Conditionally really necessary truths are truths that follow by real necessity.
from absolutely really necessary truths. There may very well be really necessary consequences of absolutely really necessary truths; likewise, there may be beings whose existence follows with real necessity from the existence of the absolutely necessarily existing being (if there is one). This in no way impugns the necessity of these truths or the necessary existence of these beings; the propositions could not have been false, and the beings could not have failed to exist. It merely draws a distinction between those propositions and those beings whose truth and whose existence follow necessarily from an absolutely necessary being, on the one hand, and absolutely necessary truths and the absolutely necessary being, without which nothing would be really possible, on the other.\footnote{16}

In light of these points, we can state Kant’s definition of absolute necessity:

It is absolutely necessary that in case not-p cancels all possibility, and we can distinguish two different ways of understanding this definition:

\begin{enumerate}
  \item It is absolutely logically necessary that in case not-p cancels all logical possibility.
  \item It is absolutely really necessary that in case not-p cancels all real possibility.
\end{enumerate}

In what follows, I will focus on (1\textsubscript{R}). The most straightforward reading of the relation of “canceling” in this definition is that it refers to a necessary conditional, that is, not-p cancels q if and only if, necessarily, if not-p then not-q. However, interpreting cancelation in terms of a necessary conditional trivializes Kant’s definition of absolute necessity: for any necessarily true p, the conditional necessarily, if not-p then q is true for any value of q. In effect, this reading reduces Kant’s notion of absolute necessity to necessity pure and simple. Furthermore, the “necessary conditional” reading of cancellation eliminates the specific connection between absolute necessity and the cancelation of all possibility. For any necessarily false q, the conditional necessarily, if p then not-q is true, regardless of the value of p. Thus, if we assume the “necessary conditional” reading, the negation of an absolutely necessary truth cancels every necessary proposition, not just the proposition that something is possible. This obscures the close connection Kant sees between absolute necessity and the canceling, specifically, of all possibility (not just any necessary truth).

I think we can do better if we adopt a counterfactual interpretation of “canceling”, but we have to be careful about the type of counterfactual interpretation we choose. For example, if we interpret “cancelation” in counterfactual terms and assume that necessarily, if p then q entails if it were the case that p, it would be the case that q, we still run into
problems. This assumption is equivalent to assuming that all counterfactuals with impossible antecedents are (vacuously) true. If we make this assumption, and we interpret *p cancels all real possibility* to mean *if it were the case that p, nothing would be really possible*, then for any necessarily false *p*, it is true that *p* cancels all real possibility, which once again trivializes the notion of absolute necessity: any necessarily true proposition is absolutely necessary. Consequently, we cannot accept a counterfactual interpretation of “cancelation” if we assume that all counterfactuals with impossible antecedents are true.

The situation improves if we reject the assumption that all counterfactuals with necessarily false antecedents are vacuously true and interpret Kant’s notion of a “cancellation of possibility” as involving the notion of counterpossible conditionals, conditionals with necessarily false antecedents that are not vacuously true and whose truth or falsity depends partly on their consequents. In other words, on Kant’s conception, some things follow from a necessarily false assumption, and others do not. For instance, from the necessarily false assumption that God does not exist, it follows that nothing is possible, while it does not follow that, for instance, $2 + 2 = 5$. My suggestion, then, is that Kant’s definition of absolute necessity should be reformulated as follows: it is absolutely necessary that *p* just in case, *per impossible*, were it the case that not-*p*, nothing would be possible.¹⁷

We are now in a position to understand Kant’s definition of absolute necessity:

(1) It is absolutely necessary that *p* just in case not-*p* cancels all possibility,

which, I have argued, should be understood as

(1ₖ) It is absolutely necessary that *p* just in case, were it the case that not-*p*, nothing would be really possible.

An absolutely necessary proposition is a proposition whose negation cancels all possibility. This directly entails that:

(1₉) For any *x*, if *x* exists, *x* exists absolutely necessarily just in case were *x* not to exist, nothing would be really possible.

A necessarily existing being is an existing being such that, were that being not to exist, nothing would be possible.¹⁸

In the rest of the paper, I focus exclusively on real possibility and real necessity, which I refer to from now on simply as “possibility” and “necessity.”

In this section, and the immediately preceding section, we have investigated the two central concepts of Kant’s modal metaphysics in *Only*
Possible Ground: the concept of a ground of possibility and the concept of absolute necessity. These investigations have put us in a position to review and evaluate Kant’s argument for the existence of an absolutely necessary being; it is to that argument that we now turn.

4. The Only Possible Proof

Kant’s argument for the existence of God in *Only Possible Ground*, like many arguments for the existence of God, has two components: (i) an argument that there is a unique being with some distinctive metaphysical status (in this case, a unique absolutely necessary being) and (ii) an argument that whatever being has this status has all the attributes traditionally associated with God, for example, understanding, will, simplicity, eternity, etc. In this essay, I focus on the first component: Kant’s argument that there is a unique necessarily existing being. I do not consider whether Kant is justified in regarding this being as God, that is, whether it has any of the attributes traditionally associated with God. However, for ease of exposition, I follow Kant in referring to this being as “God.”

Kant’s argument for the existence of an absolutely necessary being in *Only Possible Ground* is quite long and stretches over several sections. I present it here in its complete form, which I will refer to as the “master argument”:

**Part One: Necessarily, something exists**

(M1)* It is absolutely necessary that $p$ just in case not-$p$ cancels all possibility.

(M2)* If it is possible that $p$, then it is possible that $p$ in virtue of there being an existing ground of the possibility that $p$.

(M3) ∴ The hypothesis that nothing exists cancels all possibility. [From (M2)]

(M4) ∴ It is absolutely necessary that something exists. [From (M1) and (M3)]

**Part Two: Something exists necessarily**

(M5) There is at least one ground of possibility. [From (M1) through (M3)]

(M6)* For all $x$, if $x$ is a ground of possibility, then the non-existence of $x$ cancels some possibility.

(M7)* Any proposition that cancels some possibility cancels all possibility (that is, if, were it the case that $p$, something actually possible would not be possible, then, were it the case that $p$, nothing would be possible).
(M₈) :: Any object whose nonexistence cancels some possibility exists absolutely necessarily. [From (M₇) and (M₇)]

(M₉) All grounds of possibility exist absolutely necessarily. [From (M₈) and (M₉)]

(M₁₀) There is at least one absolutely necessary being. [From (M₅) and (M₉)]

Part Three: It is a ground of all possibility

(M₁₁)* Any absolutely necessary being is a ground of all possibility.

Part Four: It is unique

(M₁₂) Assume: there exist two distinct absolutely necessary beings, A and B.

(M₁₃) :: A is a ground of all possibility, and so is B. [From (M₁₁) and (M₁₂)]

(M₁₄)* For all x, if x is a ground of all possibility, then x is possible without a ground, and other substances are possible as consequences of x.

(M₁₅) :: A is the ground of possibility of B. [From (M₁₃) and (M₁₄)]

(M₁₆) B is possible without a ground. [From (M₁₃) and (M₁₄)] This contradicts (M₁₅).

(M₁₇) :: (M₁₂) is false: that is, there do not exist two absolutely necessary beings.

(M₁₈) :: There is a unique absolutely necessary ground of all possibility.

Asterisks indicate substantive undischarged premises, the fundamental assumptions of Kant’s argument. I have broken up the argument into four parts. In the first part, Kant argues that necessarily, something exists. I discuss this argument in subsection 4.1 below. In the next part, Kant argues that there is an absolutely necessary being. I discuss this argument in subsection 4.2 below. I devote subsection 4.3 to discussing Kant’s conception of a ground of possibility and his justification for the crucial claim that any being that exists absolutely necessarily is a ground of all possibility, premise (M₁₁) in the master argument. In the fourth and final part, Kant argues that there is no more than one necessary being, which I discuss in subsection 4.4 below.

4.1 Necessarily, something exists.

The first part of Kant’s master argument consists in an argument that it is absolutely necessary that something exists. The argument is
(M₁)* It is absolutely necessary that \( p \) just in case not-\( p \) cancels all possibility.

(M₂)* If it is possible that \( p \), then it is possible that \( p \) in virtue of there being an existing ground of the possibility that \( p \).

(M₃) ∴ The hypothesis that nothing exists cancels all possibility. [From (M₂)]

(M₄) ∴ It is absolutely necessary that something exists. [From (M₁) and (M₃)]

The central claim in Kant’s entire argument is (M₁), which expresses his conception of absolute necessity, the central notion of the argument. Since Kant is effectively introducing the concept of absolute necessity through this premise, I think we should understand it as a stipulative definition and grant it to him. The other undischarged premise in the first part of Kant’s argument is the principle that possibility requires an existing ground of possibility, claim (M₂). While not philosophically uncontroversial, by itself this is not a very strong claim, and so I think we should grant it to Kant and see whether the argument he builds on it succeeds.²²

4.2 Something exists necessarily.

The second stage of Kant’s master argument consists in his argument that there is a necessarily existing being, that is, a being whose non-existence cancels all possibility. Before discussing Kant’s argument in detail, we should be clear on what he is trying to establish in arguing that there is at least one absolutely necessary being. Here is one potential picture of how possibilities are grounded: there is a plurality of finite substances, each of which has the power to ground some proper subset of the totality of possibilities, but none of which has the power to ground all possibilities. If none of these substances were to exist, nothing would be possible. However, the nonexistence of any individual substance does not cancel all possibility. The nonexistence of the totality of these substances cancels all possibility. Each individual substance remains absolutely contingent, for its nonexistence does not cancel all possibility. In arguing that there is an absolutely necessary being, Kant is arguing that this alternative picture I have sketched is not accurate.

That Kant understands that the purpose of his argument is to exclude such a picture of modality is clear from two passages:

For suppose that realities, which are, so to speak, the material of all possible concepts, were to be found distributed among a number of existent things; it would follow that each of these things would have its existence limited in a certain way. In other words, the existence of each of these things would be combined with certain deprivations.
Absolute necessity is not compatible with deprivations as it is with realities. Deprivations, however, belong to the complete determination of a thing, and without this complete determination a thing could not exist. This being the case, it follows that the realities which are limited in this way will exist contingently. (1:395)

If, accordingly, the internal possibility of things does not presuppose a particular existence, the latter is contingent, for its opposite does not cancel possibility. Or, to express the same matter in a different way: that existence, by means of which the material element of all that can be thought is not given, and in the absence of which, therefore, there is still something to be left to be thought, that is to say, something possible—the opposite of such an existence is possible in the real sense; and in that same real sense it is also contingent. (2:83)

The first passage is from *New Elucidation of the First Principles of Metaphysical Cognition* of 1755. In that early text, Kant held a different view about precisely how possibilities are grounded in God from the one he defends in *Only Possible Proof*. However, what is common between these two works is the view that possibility is not “parceled out” among a plurality of finite substances.23

Although it is easy to miss his argument for this point, Kant argues against this hypothesis when he argues that the necessary being is simple (that is, is not a collection of individually absolutely contingent beings):

For if one were then to conceive internal possibility in such a way that some parts could be cancelled, but so cancelled that there still remained something left which could be thought and which was given through the other parts, one would have to suppose that it was in itself possible, for internal possibility to be denied or cancelled. But it is entirely inconceivable and self-contradictory that something should be nothing. But this is tantamount to saying that canceling an internal possibility is the same thing as eliminating all that can be thought. It is apparent from this that the data for anything which can be thought must be given in the thing of which the cancellation is also the opposite of all possibility; and that, therefore, that which contains the ultimate ground of one internal possibility also contains the ultimate ground of all possibility whatever and that, as a consequence, this ultimate ground of all possibility whatever cannot be divided among different substances. (2:85)

I have reconstructed Kant’s argument in this passage as follows:

(M5) There is at least one ground of possibility.

(M6*) For all x, if x is a ground of possibility, then the nonexistence of x cancels some possibility.
Any proposition that cancels some possibility cancels all possibility (that is, if, were it the case that \( p \), something actually possible would not be possible, then, were it the case that \( p \), nothing would be possible).

\( \text{(M}_7 \text{)} \)∴ Any object whose nonexistence cancels some possibility exists absolutely necessarily. [From (M\(_1\)) and (M\(_7\))]

\( \text{(M}_8 \text{)} \) All grounds of possibility exist absolutely necessarily. [From (M\(_6\)) and (M\(_8\))]

\( \text{(M}_9 \text{)} \) There is at least one absolutely necessary being. [From (M\(_8\)) and (M\(_9\))]

Premise \( \text{(M}_7 \text{)} \) is obviously the problematic element in this argument. It entails that a being exists absolutely necessarily just in case its nonexistence cancels some possibility. The argument consists in drawing out one apparent consequence of this: if the nonexistence of a given ground of possibility cancels the possibilities it grounds, then all grounds of possibility exist absolutely necessarily.

The problem with premise \( \text{(M}_7 \text{)} \) is that it is a very strong claim, and Kant gives no good reasons that we should accept it. Consider the “multiple cancelers” view: there are multiple beings, the nonexistence of any one of which would cancel some proper subset of all possibilities. Consequently, none of these “cancelers” is absolutely necessary. Premise \( \text{(M}_7 \text{)} \) is the denial of this. In the passage quoted earlier, the only reason Kant gives in support of \( \text{(M}_7 \text{)} \) is that if something is possible, then anything that cancels its possibility is impossible. However, this only supports the weaker conclusion that any being that grounds some possibilities exists necessarily. It does not support the stronger claim, \( \text{(M}_7 \text{)} \), that any canceler exists absolutely necessarily. Without an argument for this premise, Kant’s overall argument is significantly weakened. In section 4.4 below, I show that this weakness has wider ramifications.

This portion of the argument aims to establish that all real grounds of possibility are absolutely necessary. I have questioned whether it succeeds in establishing even that limited conclusion. It is important to note, further, that by itself it does not establish a similar, but distinct, further claim: that any ground of possibility is a ground of all possibility.

This portion of the argument, which I will now examine.
4.3 The Real Ground of All Possibility

As we saw earlier in the presentation of the master argument, Kant’s argument that there is a unique necessary being appeals to the crucial premise that

\[(M_{11})^*\] Any absolutely necessary being is a ground of all possibility.

First, we need to understand what it means for a being to ground all possibility and how God is supposed to do this. Second, we need to understand his reasons for claiming any absolutely necessary being grounds all possibility in this fashion.

The key to understanding Kant’s conception of God as the ground of all possibility is his general conception of grounds of possibility. In section two, we saw that Kant grounds possibilities for finite objects in the powers of existing substances to make those possibilities actual. This entails the following requirement on grounds of possibility:

For all propositions \(p\) concerning finite objects, \(x\) is a ground of the possibility that \(p\) just in case \(x\) has the power to make it actual that \(p\).

This entails that God is a ground of possibilities for finite substances in virtue of having the power to produce any possible finite substance or any possible alteration in any finite substance. This leaves unanswered the question of what grounds the possibility of those very divine powers themselves. This question, however, lies outside the scope of this paper.\(^{25}\)

Before continuing, I want to discuss an alternate model of how God grounds possibilities. In a recent paper, Andrew Chignell interprets Kant as holding that all “maximal and fundamental properties are instantiated” by God.\(^{26}\) What Chignell means is that, for any possible property, it is possible in virtue of the fact that God instantiates an unlimited form of the positive properties that compose it. These are the maximal and fundamental properties Chignell refers to. On his view, possible properties are composed by the logical operations of negation, limitation, and conjunction of the unlimited positive properties—or what Kant calls “realities”—instantiated by God.

This is Chignell’s gloss on Kant’s claim that “the data of all possibility must be found in the necessary being either as determinations of it, or as consequences which are given through the necessary being as the ultimate real ground” (2:85). However, Kant goes on in the very same passage to make clear that

this is not to be understood to mean that all possible reality is included among its [God’s] determinations. This is a conceptual confusion...
which has been uncommonly prevalent until now. All realities are attributed indiscriminately as predicates to God or to the necessary being. That all these predicates can by no means co-exist together as determinations of a single subject is not noticed. The impenetrability of bodies, extension and such like, cannot be attributes of that which has understanding and will. Nor does it help if one seeks to evade the issue by maintaining that the quality in question is not regarded as true reality. (2:85)

Kant then gives a series of examples of positive realities that are metaphysically incompatible—in his terminology, they stand in “real repugnance.” Because they are positive realities, they cannot be logical complexes involving negation and hence must be logically compatible. He concludes that their metaphysical incompatibility does not consist in their logical incompatibility:

From this it is also apparent that real opposition is something quite different from logical opposition or positive conflict among its own determinations, for the consequence would be a deprivation or lack and that would contradict its supreme reality. Since a conflict such as this would be bound to occur if all realities existed in the most real being as determinations, it follows that they cannot all exist in it as determinations [author’s emphasis]. Consequently, since they are all given through it, they will either belong to its determinations or to its consequences [author’s emphasis]. (2:86)

In this passage, Kant explicitly states that God does not instantiate all maximal and fundamental properties because there is real metaphysical incompatibility between some of these properties. The concept being possessed of every maximal and fundamental property is a logically consistent concept of a really impossible being, according to Kant.

Recall that Kant’s “master argument” appeals to the crucial premise that

\[
(M_{11})^* \text{ Any absolutely necessary being is a ground of all possibility.}
\]

However, nothing in Kant’s conception of God as a real ground of all possibility licenses this conclusion. An absolutely necessary being is one whose nonexistence cancels all possibility. If God is the ground of all possibility, then it follows that if he does not exist, nothing is possible, that is, he is absolutely necessary. This follows directly from previous premises of Kant’s argument, that is, \((M_6)\) and \((M_7)\). But \((M_{11})\) is the converse of that claim. Kant has not given any reason why an absolutely necessary being must be absolutely necessary in virtue of being a ground of all possibility. To see why this is a problem, consider a situation in which there is a unique ground of all possibility, God, and a being—call
it the “demiurge”—that stands in a particularly intimate connection with God: necessarily, if God exists, the demiurge exists, and thus if the demiurge did not exist, God would not exist. There is a counterfactual relationship between God and the demiurge, but one that obtains in virtue of God’s production or emanation of the demiurge (not the other way around). It is not difficult to convince oneself that this is a serious possibility. Consider, for instance, God’s omnibenevolence. If God’s omnibenevolence does not exist, God does not exist, even though the former is only a determination of the latter. To return to the argument, if the demiurge did not exist, God would not exist; thus, nothing would be possible. Consequently, the demiurge is absolutely necessary. However, the demiurge is not a ground of possibility. Kant has given no reason to exclude possibilities like this and thus no reason to accept (M\(_{11}\)).

To put the point more generally, an absolutely necessary being bears a counterfactual relation to possibility (its nonexistence counterfactually entails that nothing is possible), while a ground of all possibility bears a causal one (it grounds possibilities through its powers). Quite generally, counterfactual relations do not entail causal ones. This seriously undermines Kant’s case for (M\(_{11}\)). With this in mind, I now turn to discussing in detail Kant’s argument for the existence of a unique absolutely necessary being.

4.4 There is a unique necessary being.

Taking himself to have already shown that there is at least one absolutely necessary being, Kant goes on to argue that there is at most one such being:

Suppose that A is one necessary being and B is another. It follows from our definition that B is only possible in so far as it is given through another ground, A, as the consequence of A. But since, ex hypothesi, B is itself necessary, it follows that its possibility is in it as a predicate and not as a consequence of something else; and yet, according to what has just been said, its possibility is in it only as a consequence, and that is self-contradictory. (2:84)

I have summarized this argument as follows:

\[
\begin{align*}
(M_{10}) & \quad \text{There is at least one absolutely necessary being. [From (M}_5 \text{ and (M}_9)\text{]} \\
(M_{11}) & \quad \text{Any absolutely necessary being is a ground of all possibility.} \\
(M_{12}) & \quad \text{Assume: there exist two distinct absolutely necessary beings, A and B.} \\
(M_{13}) & \quad \therefore A \text{ is a ground of all possibility, and so is B. [From (M}_{11}) \text{ and (M}_{12})\text{]} 
\end{align*}
\]
(M\textsubscript{14}) For all \(x\), if \(x\) is a ground of all possibility, then \(x\) is possible without a ground, and other substances are possible as consequences of \(x\).

(M\textsubscript{15}) \(\therefore\) A is the ground of possibility of B. [From (M\textsubscript{13}) and (M\textsubscript{14})]

(M\textsubscript{16}) B is possible without a ground. [From (M\textsubscript{13}) and (M\textsubscript{14})] This contradicts (M\textsubscript{15}).

(M\textsubscript{17}) \(\therefore\) (M\textsubscript{12}) is false: that is, there do not exist two absolutely necessary beings.

(M\textsubscript{18}) \(\therefore\) There is a unique absolutely necessary ground of all possibility.

This argument appeals to Kant’s distinctive conception of a real ground of all possibility: a being that grounds possibilities of all other substances through its powers. It follows that if substance A is a ground of all possibility, then substance B is possible as a consequence of substance A’s powers, and substance A’s powers have no ground. This directly entails that substance B cannot be a ground of all possibility. There can be at most one ground of all possibility.

This argument also appeals to the principle that, if a being exists necessarily, then it is a real ground of possibility, premise (M\textsubscript{11}). However, as we saw in the last section, Kant has good reasons for thinking that a ground of all possibility exists absolutely necessarily but gives us few good reasons to think that the entailment holds in the other direction. But this problematic assumption is indispensable to Kant’s larger argumentative strategy; without it, he could not prove that there is a ground of all possibility (rather than a plurality of grounds of possibility, none of which grounds all of possibility). Now we are in a position to understand precisely how problematic (M\textsubscript{11}) is. In subsection 4.2, we saw that Kant’s argument that there is an absolutely necessary being appeals to the claim that

(M\textsubscript{\gamma}) Anything that cancels some possibility cancels all possibility.

Accepting (M\textsubscript{11}) gives one strong reasons to doubt (M\textsubscript{\gamma}). Recall the “multiple cancelers” view from section 4.2, on which there are multiple beings, the nonexistence of any one of which would cancel some possibilities. If we accept (M\textsubscript{11}), then (M\textsubscript{\gamma}) entails that each of these cancelers is a ground of all possibility. But it is clearly conceivable that there are multiple cancelers, none of which exists absolutely necessary and none of which is a ground of all possibility. This gives us reasons to doubt (M\textsubscript{\gamma}). Of course, Kant takes himself to have shown that there cannot be multiple cancelers, but his argument rests on (M\textsubscript{\gamma}) and (M\textsubscript{11}); the assumption that there cannot be multiple cancelers cannot form part of the support for these claims.
Conversely, accepting (M7) gives one strong reasons to doubt (M11). If we accept (M7), then we are committed to thinking that, on the “multiple cancelers” view, each of the cancelers cancels all possibilities. But it is at least conceivable that each of the cancelers stands in a counterfactual relation to all possibilities, without standing in a causal or grounding relation to all possibilities. This gives us good reason not to assume that if there are multiple cancelers, each is a ground of all possibility. Since (M11) entails that if there are multiple cancelers, each is a ground of all possibility, this is a good reason to doubt (M11). This means that (M7) and (M11) are in tension. If one accepts (M11), one acquires further reasons to doubt (M7), and if one accepts (M7), one thereby acquires a reason to doubt (M11). Two of the central premises of Kant’s argument indirectly undermine one another.30

Kant’s argument for the existence of a unique absolutely necessary being is interesting in many respects. It relies on Kant’s distinctive conception of absolute necessity and of a real ground of possibility. However, Kant gives only weak arguments in favor of two of his central premises, and these two premises indirectly undermine one another. Thus, there are reasons to reject this argument independently of Kant’s later rejection of it in the Critical period. Even as a piece of “dogmatic” or “speculative” metaphysics, it is unsuccessful.31

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NOTES

1. Kant offered a similar argument in the 1755 work New Elucidation of the First Principles of Metaphysical Cognition. However, his view of the role God plays in grounding possibilities in 1755 is different from his view in 1763; consequently, I regard the New Elucidation argument as a distinct argument, rather than an earlier expression of the same argument. For a discussion of the differences between New Elucidation and Only Possible Ground, see note 23 below.

2. “All arguments for the existence of God must derive from one or other of two sources: either from the concepts of the understanding of the merely possible, or from the empirical concepts of the existent” (2:155). Kant’s argument and the ontological argument are of the former kind; cosmological and teleological arguments for God’s existence are of the latter kind. Citations to the works of Kant give the volume and page number in the Academy edition, Kants gesammelte Schriften, ed. Berlin-Brandenburg Academy of Sciences (Berlin: Walter de Gruyter, 1900–). Unless otherwise noted, translations are from the Cambridge


4. In the portion of the text I omitted, Kant writes: “Nor does it help if one seeks to evade the issue by maintaining that the quality in question is not regarded as true reality. The thrust of a body or the force of cohesion are, without doubt, something truly positive. Similarly, in the sensations of the mind, pain is never merely a deprivation” (2:85–86). This is directed against the logicist strategy of arguing that incompatible properties are logically complex and of explaining their incompatibility through some hidden logical incompatibility among their constituents. Specifically, the logicists argue that certain properties—like extension—are composed of limitations and negations of unlimited divine perfections. Kant is here arguing that (1) extension and thinking are positive properties, not limitations or negations, and (2) as such, cannot be logically incompatible; hence, (3) their incompatibility cannot be explained logically.

5. The distinction between logical and real possibility is one of the cornerstones of Kant’s modal metaphysics, both in the Critical period and the pre-Critical period. For more on Kant’s Critical modal metaphysics, see my “Did Kant Conflate the Necessary and the *A priori*?” *Noûs* (forthcoming).

6. Martin Schönfeld concurs on this point: the mere existence of extended bodies is not sufficient to ground the possibility of extension. See *The Philosophy of the Young Kant* (New York: Oxford University Press, 2000), 204. However, Schönfeld interprets this as the requirement that the property “extension” must exist, regardless of whether extended bodies exist: “for Kant, the material condition establishes the necessary existence of the complete set of properties” (204). However, Kant’s material requirement on possibility is the requirement that the properties (or determinations) that compose things must be possible, not that they must actually exist.


a substance follow from its complete individual concept. These are distinct doctrines; they are logically independent of one another. See Schönfeld, *The Philosophy of the Young Kant*, 205–6.

10. Wolff also grounds possibility in God’s intellect: “Because God represents all worlds through his intellect (§953) and, thereby, everything that is possible (§953), the intellect of God is the source of the essence of all things and His understanding is what makes something possible, in that it produces these representations. Namely, something is possible precisely because it is represented by the divine understanding” (*German Metaphysics*, §975). Baumgarten follows Wolff and Leibniz in grounding possibility in God’s intellect: “God cognizes the essences of finite things in the most distinct manner possible. Consequently, insofar as the essence of things is represented in God’s intellect, they depend on him and are eternally in him” (A.G. Baumgarten, *Metaphysica* (Halle, 1779), reprinted (Hildesheim: Georg Olms, 1963), §650. I have also consulted *Metaphysik*, cited in n3, above. Immediately after writing that the essences of finite things depend on God, Baumgarten refers to his definition of ground. For Baumgarten, as for Leibniz and Wolff, God is the ground of possibility. To be possible is to be an object of God’s understanding. All three thinkers—Leibniz, Wolff, and Baumgarten—accept that possibilities must be grounded in an actually existing substance, God.


13. Andrew Chignell identifies Crusius as anticipating Kant’s view that possibilities must be grounded in actuality but argues that Kant does not agree with Crusius that possibilities must be grounded in the powers of substances. See Chignell, “Kant, Modality and the Most Real Being,” *Archiv für Geschichte der Philosophie* 91 (2009): 157–92, at 181 (and note 41 on that page). In note 15 below, I defend my interpretation against Chignell’s objections.

14. Ian Logan mistakenly conflates Kant’s view that all possibilities are “determinations or consequences” of the powers of existing substances with the view that all possibilities are actualized. Kant held the former view but adamantly opposed necessitarianism. See Logan, “Whatever Happened to Kant’s Ontological Argument?” *Philosophy and Phenomenological Research* 74 (2007): 346–64, at 352, 356.

15. Andrew Chignell anticipates and rejects my Crusian reading of Kant. He gives two arguments. First, he claims that basing possibility on God’s powers—as, I have claimed, Kant does—would commit Kant to a form of voluntarism he explicitly rejects. First of all, grounding possibility in God’s power (his potential will) is not the same as grounding it in his (actual) will; I am not claiming that what is possible depends on what God *does* choose but on what he *has the power to choose*, and that depends on his nature. There is nothing voluntarist about
Kant's conception of possibility. Second, the antivoluntarist passages Chignell cites to support his interpretation are not directed against Crusius but against Descartes. To an eighteenth-century audience, Kant's claim that "the will makes nothing possible" (2:100) would immediately bring to mind Descartes' infamous doctrine of the creation of the eternal truths by God. Chignell's second argument against this "Crusian" reading of Kant is that it analyzes one modal notion—real possibility—in terms of another irreducibly modal notion, the notion of what God's powers can produce. However, this is only an objection if Kant intends to offer a reductive analysis of modality. I see no reason to think that Kant does intend a reductive analysis of modality, unless we assume that explaining some set of modal facts requires reducing them to nonmodal facts. I see no reason to think that Kant made that assumption. In fact, as I argue elsewhere, Kant is committed to holding that there is at least one modal fact irreducible to a nonmodal fact, namely, that God is possible. Why cannot Kant also hold that there are an important set of irreducible modal facts concerning God, facts about the possible range of operation of his powers? See Chignell, "Kant, Modality and the Most Real Being," 181 (and the second two footnotes on that page); and see section 2.4 of my "Kant's Modal Metaphysics" (PhD diss., Princeton University, 2008) for a defense of the claim that, for Kant, there is no ground of God's possibility.

16. I do not mean to suggest that Kant believed that there are beings whose existence follows with real necessity from the existence of an absolutely necessary being; I see no evidence that he did. I am merely pointing to the conceivable existence of such beings in order to render more distinct the concept of "absolutely really necessary existence."


18. Martin Schönfeld overlooks the importance of Kant's conception of absolute necessity when he interprets the definition of absolute necessity as the following premise in Kant's argument: "The negation of possibility is impossible" (The Philosophy of the Young Kant, 201). Kant is giving a definition of absolute necessity, not just necessity. Furthermore, Schönfeld's presentation elides what is distinctive about Kant's conception of absolute necessity: it is not merely impossible that nothing is possible, but the absolutely impossible is that which "cancels" all possibility. I have interpreted "cancellation" in counterfactual terms. Andrew Chignell follows Schönfeld in conflating absolute necessity with necessity tout court and neglecting what is distinctive in Kant's idea of a "cancellation" of possibility; see Chignell, "Kant, Modality and the Most Real Being," esp. 167.

19. As the title of the work indicates, Kant considers his argument not a Beweis but a Beweisgrund that can serve in a Demonstration. For the differences in these technical logical terms, see Chignell, "Kant, Modality and the Most Real
Being,” 160–61. For our purposes, what matters is that Kant intends his argument to be sound, with independently plausible premises that do not undermine one another. I will argue that it fails the second criterion.

20. The traditional structure of Kant’s argument is noted by Logan, “Whatever Happened to Kant’s Ontological Argument?” 353.

21. In Chignell’s reconstruction of the argument, the analogue of this premise is the characteristic axiom of modal system S5: if it is possible that \( p \), then it is necessarily possible that \( p \). While it is tempting to see Kant’s argument as premised on this axiom, I think it is ultimately misguided. First of all, Chignell ignores the distinction between necessity and absolute necessity, but I will assume that by the “box” he means “absolute necessity.” But Kant defines the absolutely necessary as that which cancels all possibility, and so the S5 axiom is not suited to capture his notion of absolute necessity, nor his principle that (absolutely) necessarily, something is possible. As I show below, Kant does claim that anything whose nonexistence cancels some possibility is absolutely impossible. However, as I show in subsection 4.4, this claim is in tension with his other crucial premise that only a first real ground of all possibility can be absolutely necessary. Thus, introducing the claim that everything that is possible is necessarily possible at the very outset of Kant’s argument misrepresents its structure. See Chignell, “Kant, Modality and the Most Real Being,” 166, 167. For more on the difference between “necessarily, something is possible” and “all possibilities are necessarily possible” see Adams, “God, Possibility and Kant,” 433.

22. Cf. Martin Schönfeld’s discussion of this portion of the argument in The Philosophy of the Young Kant, 201–6.

23. In New Elucidation, Kant appears to have held the view that all of the unlimited positive realities from which possibilities are composed are coinstantiated by God: “it is, accordingly, a requirement for their [the realities’] absolute necessity that they should exist without any limitation, in other words, that they should constitute an Infinite Being” (1:395). However, as I have argued, in Only Possible Ground Kant’s view is that God grounds some possible properties in virtue of instantiating them and some in virtue of being capable of producing them.


25. The short answer is that nothing grounds the possibility of God, or his infinite attributes. For more on this, see section 2.4 of my “Kant’s Modal Metaphysics.”


27. There are a number of passages from the metaphysics lectures in which Kant explicitly disavows the picture on which God grounds all fundamental realities by instantiating them. See 28:132–33, 781–82, and 917.

28. In the final sections of his paper, Chignell goes on to claim that Kant’s Critical rejection of the theistic proof in Only Possible Ground was motivated in part by an awareness that he had failed to prove that all the maximal and
fundamental properties that compose God’s essence are really compatible, not merely logically compatible; see Chignell, “Kant, Modality and the Most Real Being,” 188–91. But, as the quoted passage shows, Kant was already aware of this point in 1763—it constituted his main reason not to endorse the view of God that Chignell attributes to him.

29. It might be objected that God’s omnibenevolence is not a substance but a mode of a substance and that there can be no such counterfactual relationship between the existence of God and the existence of any distinct substance. At best, this supports (M_{11}) restricted to substances: all absolutely necessary substances are grounds of possibility.

30. Robert Adams makes essentially the same point in “God, Possibility and Kant,” 433.

31. I am grateful to a number of people over the years whose comments helped improve this paper. I presented versions of this paper to the dissertation seminar at Princeton, as well as a graduate seminar at U. Mass Amherst; I’m grateful to both audiences for their comments. Mark Johnston, Béatrice Longuenesse, and Des Hogan all commented on earlier versions of this paper. Karl Schafer and Jeffrey Tlumak, the editor of this journal, helped me on several important points. Brad Cokelet deserves my special thanks for helping me make the paper clearer and pointing out a number of infelicitous expressions.