

Modal Truth: Integrating the Metaphysics, Epistemology, and Semantics of the
Necessary and the Possible

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Abstract

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The integration challenge for modality states that metaphysical theories of modality tend to fail in one of two ways: either they render the meanings of modal sentences mysterious, or they render modal knowledge mysterious. I argue that there are specific semantic and epistemic constraints on metaphysics implied by the integration challenge and that a plausible metaphysical theory of modality will satisfy both of them. I further argue that no popular metaphysical theory of modality simultaneously satisfies both of the constraints. Therefore, a new metaphysical theory of modality is needed, one that can offer a clear response to the integration challenge. I attempt to supply the needed theory and show that it satisfies the constraints of the integration challenge. The overall result is an argument for a new and unique metaphysical theory of modality that I call constructionism.

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Introduction

This is a dissertation in metaphysics. I will ultimately be arguing for a particular theory of modal truth. However, I will suggest that discovering a correct theory of modal truth cannot plausibly be done without encountering related questions in semantics and epistemology, namely “Under what conditions is a modal proposition true?” and “Under what conditions is a modal belief justified?” In a sense, therefore, this is also a dissertation in philosophy of language, epistemology, and even, to some extent, meta-metaphysics.

But before the dissertation gets going, I would like to say a few words here about my approach to metaphysics. For me, the central question of metaphysics is not “What is the nature of the world?” or anything quite as grand as that. Instead, I think that the central focus of metaphysics is, or at least ought to be, “What *should we believe about* the nature of the world?” This is not to say that our focus in metaphysics should not be on the truth. It certainly should. The problem, I think, is that if we do not ask the central question of metaphysics in relation to truth *and* ourselves, then it is easy to see metaphysics as a fruitless and potentially hopeless endeavor. It is all too easy to think that we could never hope to answer a question like “What is the nature of the world?” from our epistemic vantage point. A much more promising approach to metaphysics, I think, is to think that metaphysical theory-choice amounts to choosing which theory is the most plausible from our epistemic position rather than trying to conceive the true nature of the world from some kind of God’s eye perspective. Therefore, what you will find in these pages amounts to a plausibility argument in favor of a particular theory of modal metaphysics. I will not try to argue from first principles or anything like that. Instead I will argue

that my favored theory is the most plausible theory available given our epistemic position. I think this is as good a reason as we can hope for to think that a metaphysical theory is true.

I would also like to say a few words about what I see as the division of labor between semantics, epistemology, and metaphysics. The part of semantics that will concern me in this dissertation is focused on the giving of truth conditions for sentences; and the part of epistemology that will concern me is the giving of justification conditions for beliefs. Where does that leave metaphysics? For me, metaphysics is in the middle. That is to say that part of what metaphysics should be doing is explaining how reality must be in order that we can say meaningful and true sentences about it and have justified and true beliefs concerning it. In so far as we believe that we can utter true sentences while also having true beliefs concerning some aspect of reality, we may want to explain what that reality is like such that those sentences and beliefs come out true. That is what metaphysics is for.

Now that the preliminaries are out of the way, let me try to give an intuitive sense of the problem that I will be addressing in this dissertation. Consider the following questions. How do we know when a false proposition is still possible, and how do we know when a true proposition is necessarily so? On the one hand, knowledge of possibility and necessity seems unproblematic, because typical examples seem to be so trivial. We are certain that the proverbial cat could have been on the mat even when it is nowhere near the mat, and we are certain that all bachelors must be unmarried. On the other hand, knowledge of possibility is mysterious when we consider that we do not have a very clear understanding of the truth conditions for these propositions. This puts us in an awkward position. We have no very clear idea of what exactly we are talking about when we use modal language, but somehow we know many claims with modal content. That is a

puzzle: how can we be justified in our modal beliefs when we have no clear idea what they are even all about?

One might think that we should look to the metaphysical theories of modality for answers, but unfortunately the situation is even worse than the initial presentation above may have made it seem. Most of the metaphysical theories of modality on the market have very little enlightenment to offer on this puzzle. This is because these theories tend to fall into one of two camps, each with their own narrow concerns. The modal realists, on the one hand, tend to focus on logical and semantic concerns, telling us that possible worlds are needed in our ontology to account for such things as the completeness and consistency of modal logic and to account for the meaning of various propositions concerning possibilities, counterfactuals, and the like. The modal idealists, on the other hand, tend to focus on psychological and epistemological concerns, telling us that modality is nothing more than a mental byproduct of our ordinary ways of thinking or talking about the world. I want to suggest that both of these approaches to modality are wrong-headed. If we are to hope to achieve a plausible metaphysical theory of modality, it must give equal consideration to the realm of language and to the realm of belief—to what we think we are saying when we use modal language and to the ways we are justified in our beliefs concerning modality. Thus, a major problem for developing a plausible metaphysical theory of modality is overcoming what has been called the integration challenge,¹ which, broadly speaking is a challenge to integrate metaphysics into a more complete philosophical view that includes semantic and epistemological considerations. This dissertation will focus on developing such a theory.

¹ Christopher Peacocke seems to have coined the name “integration challenge.” While we agree on certain aspects of integration challenges, my presentation is not identical to his. See his *Being Known*.

The plan for the dissertation is as follows. Chapter one will explain the integration challenge for modality; chapter two will consider and reject various ways of suggesting that the integration challenge is not the deep philosophical problem that it may initially appear to be; chapter three will consider popular metaphysical theories of modality in order to discover which among them has the resources to offer a plausible response to the integration challenge; and chapter four will develop the lessons of chapter three into a unique theory of modality, which I will defend.

1 The Integration Challenge for Modality

To present the integration challenge for modality, I will first consider the *locus classicus* of integration challenges, Paul Benacerraf's "Mathematical Truth." Benacerraf's integration challenge has become known, somewhat misleadingly, as Benacerraf's Dilemma.² Second, I will generalize Benacerraf's dilemma, revealing what I think is the general structure of an integration challenge. Third, I will apply the generalized integration challenge to the field of modality, thus elucidating the integration challenge for modality. Fourth, I will give two examples, analogous to Benacerraf's own examples, to help clarify the integration challenge and to display some of the difficulties involved in meeting it.

1.1 Benacerraf's Dilemma

According to Benacerraf, an adequate account of mathematical truth should be consistent with both a general account of truth and a general account of knowledge. Benacerraf contends that almost all theories of mathematical truth serve one of these theoretical masters at the expense of the other.

The trouble begins by noting that there is a syntactic similarity between quantified sentences in mathematics and quantified sentences of an ordinary, everyday sort. Here are Benacerraf's examples:³

- (1) There are at least three large cities older than New York.
- (2) There are at least three perfect numbers greater than 17.

² Benacerraf did not really present the problem as a dilemma, and it is not clear that anything would really be gained by presenting the problem in that particular logical form. It is more like a two-pronged challenge than a dilemma. The weight of tradition, however, compels me to continue to refer to the problem as "Benacerraf's dilemma."

³ "Mathematical Truth," 405.

These two sentences appear to have the same syntactic structure:

(3) There are at least three FG 's that bear R to a .

According to Benacerraf, the only adequate account of truth ever offered is Tarski's referential theory of truth,⁴ according to which sentences with the syntactic structure of (3) are true just in case the object in the domain of discourse named by a bears relation R to at least three objects in the domain that all have the properties named by F and G (with "at least three" understood as eliminable in favor of quantifiers, variables, and identity). Applying this semantic treatment to (1), reveals that it is true just in case the object named "New York" stands as the second member in the relation "older than" to at least three objects that are all both large and cities (or, better, large *for* cities). This, in turn, implies that there are such things as cities, one of which is called "New York" and some of which are large. Benacerraf suggests that since (2) has the same syntactic structure as (1), we should expect it to receive the same semantic treatment. We should, therefore, expect that (2) is true just in case the object named "17" stands as the second member in the relation "greater than" to at least three objects that are all both perfect and numbers (or, perhaps, perfect *for* numbers), which implies that there are such things as numbers, one of which is called "17" and some of which are perfect. Therefore, according to Benacerraf, the only adequate account of truth available—Tarski's—implies mathematical Platonism, the view that numbers are real existent objects.

Benacerraf's train of thought seems to be something like the following. First, a plausible theory of mathematical truth should conform to a general theory of truth for the language as a whole. Second, the only plausible general theory of truth available is Tarski's. Third, Tarski's

⁴ As presented in "The Concept of Truth in Formalized Languages," and reiterated in "The Semantic Conception of Truth and the Foundations of Semantics."

semantic theory, when applied to mathematical propositions, implies Platonism. Therefore, Platonism is the only plausible theory of mathematical truth. Benacerraf also suggests that syntactic structure is the appropriate guide to determining whether a given theory of mathematical truth is consistent with a general theory of truth for the language as a whole. This is made clear by his presentation of the examples (1) and (2). Because they have isomorphic syntactic structures, Benacerraf says that they should both be understood in accordance with the best available semantic theory for sentences with that shared structure. In other words, the names, predicates, variables, and quantifiers in each proposition should be understood to make the same contribution to the truth of each proposition.⁵ Additionally, because Tarski's referential theory of truth is the best available theory of truth in general any purported account of mathematical truth should treat the names, predicates, variables, and quantifiers in mathematical propositions just as Tarski treats them for all propositions. Any account of mathematical truth that suggests otherwise is implausible because we would have no reason to think that the account of truth it offers is really an account of truth rather than an *ad hoc* invention to support a pet theory. For Benacerraf, there is no reason to accept an account of truth for a subset of propositions in a language that is not consistent with the best account of truth for the language as a whole. Therefore, any account of mathematical truth must be consistent with Tarskian semantics, at least until some better theory of truth comes along to replace Tarski's. Benacerraf calls this the semantic constraint.

As illustrated above, taking this semantic constraint seriously seems to favor a Platonist account of mathematical truth, or "the standard account" as Benacerraf sometimes calls it.

⁵ "The truth conditions assigned to two sentences containing quantifiers should reflect in relevantly similar ways the contribution made by the quantifiers." ("Mathematical Truth," 404.)

According to Platonism, mathematical entities, like numbers and sets, are abstract mind-independent objects. As Benacerraf has shown, Platonism is consistent with Tarskian semantics, so it fairly obviously satisfies the semantic constraint. However, Benacerraf believes that Platonism suffers from a different problem. If Platonism is true, then it seems that we cannot know mathematical truths. Platonism suggests that mathematical objects, like numbers and sets, are abstract entities, but such things are causally inert, and we cannot know anything about entities that do not figure in the causes of our beliefs concerning them. Causal interaction with abstract, causally inert objects is impossible. So we cannot be justified in believing propositions about these abstract mathematical objects; the very idea of causally interacting with them is incoherent. Therefore, Platonism seems to imply that mathematical knowledge is impossible.

In the background of this argument is a version of the causal theory of knowledge,⁶ according to which “for *X* to know that *S* is true requires some causal relation to obtain between *X* and the referents of the names, predicates, and quantifiers of *S*.”⁷ The basic idea is that knowledge requires coming into possession of relevant evidence to support the truth of the belief, and coming into possession of the relevant evidence can only be accomplished if one comes into causal contact with the very things the belief is about. Without such a causal relation, there seems to be no reason to think that the belief’s formation was anything other than accidental, and a belief formed in such an accidental way cannot count as knowledge. For ordinary, everyday beliefs about objects in the external world, the causal requirement seems satisfied, since our senses presumably put us into causal contact with the objects of the ordinary, everyday world. For the mathematical objects posited by the standard Platonist account, the

⁶ See Goldman, “A Causal Theory of Knowing.”

⁷ “Mathematical Truth,” 412.

causal condition for knowledge is not obviously satisfied: there is no sense in which we are in casual contact with abstract mathematical objects. Worse yet, it does not even seem intelligible how there *could be* such a causal relation. If there are any abstract, mind-independent, causally inert, mathematical objects, then it seems quite beyond our epistemic abilities to know anything about them. Platonism manages to satisfy Benacerraf's semantic constraint, but it does so at the expense of failing to satisfy an equally important epistemic constraint.

Platonism may have failed to satisfy Benacerraf's epistemic constraint, but there are some accounts of mathematical truth that seem to manage to make mathematical knowledge intelligible. Benacerraf calls his examples of such accounts "combinatorial" because they account for mathematical truth in terms of the syntactic, or combinatorial, aspects of mathematical language. For example, a theory according to which mathematical truth consists entirely in provability from a set of axioms⁸ may satisfy the epistemic constraint because one need only be familiar with the axioms and to have actually come across a proof for a given mathematical proposition in order to have the causal contact necessary for knowledge of that proposition.⁹

But of course the combinatorial theories do not obviously satisfy the semantic constraint. They are simply not consistent with Tarskian semantics, which requires that the referents of the components of a mathematical sentence determine the overall truth of the sentence. Therefore, combinatorial theories will require some non-Tarskian semantic theory for the special case of

⁸ Gödel's incompleteness theorems have made the prospects for combinatorial theories rather dim, but perhaps there are ways to restore them by, for example, limiting the ideal of truth to something more modest, like truth-in-S, where S is the set of axioms in question. See Benacerraf's comments on this point at "Mathematical Truth," 406-7.

⁹ This is probably not exactly right. Presumably combinatorial theories imply that it is a *type* of proof rather than a particular *token* of that type of proof that accounts for the truth of the proposition in question. So being in causal contact with a token of a proof may not be quite enough in the end to satisfy the epistemic constraint. Let us put aside this potential worry so that we do not get too far away from the main point.

mathematics, which will leave us with no reason to accept that the truth conditions required by the combinatorial theories actually result in true propositions when satisfied. There is no reason to believe that the combinatorial truth conditions result in true sentences when they are satisfied.

Generally speaking, Benacerraf's dilemma is a challenge to create a theory of mathematical truth that is consistent with Tarski's referential theory of truth and that does not imply that we have no mathematical knowledge by the lights of the causal theory of knowledge. According to Benacerraf, no theory of mathematical truth has ever managed to do this. Of all of the available theories that have been offered, they have all managed to satisfy one of the constraints, at the expense of failing to satisfy the other. The challenge of Benacerraf's dilemma, therefore, is to discover a theory of mathematical truth that can satisfy both constraints simultaneously.

1.2 The Structure of an Integration Challenge

Now that Benacerraf's dilemma has been elucidated, my task is to uncover the general structure of an integration challenge using Benacerraf's dilemma both as a guide and as an illustration. Benacerraf's dilemma will prove useful in this capacity not only because of its historical importance, but also because it is difficult to state an integration challenge in a clear way without a clear illustration. Integration challenges have been occasionally discussed in many different areas of philosophy, but the presentation and focus of these various challenges can be quite diverse.¹⁰ It is therefore, worth exploring the general structure of integration challenges before attempting to apply it to modality. This task will prove to be both harder and easier by using Benacerraf's dilemma as our guide: harder because Benacerraf leans quite heavily on

¹⁰ For some examples, see Christopher Peacocke's *Being Known*, and Hartry Field's *Realism, Mathematics & Modality*.

particular semantic and epistemological theories, which may or may not be crucial for a statement of the challenge; and easier because Benacerraf's main insight, as I understand it, is often obscured in other presentations of an integration challenge. The first step toward the goal of uncovering the general structure of an integration challenge is to ask just what is the focus of the challenge: exactly what kind of theorizing is being constrained by the semantic and epistemic constraints?

The reason it is not clear just what kind of theorizing is being constrained by Benacerraf's two constraints is that the term "mathematical truth" is ambiguous. On the one hand, it might refer to the truth conditions for mathematical propositions. On the other hand, it might refer to mathematical reality—to what *satisfies* the truth conditions. Benacerraf himself is not clear on this distinction. By "mathematical truth," sometimes he means to indicate the *semantic* theory of mathematical truth conditions, and sometimes he means to indicate a *metaphysical* theory of mathematical reality. One particularly striking example of this ambiguity is Benacerraf's somewhat inconsistent use of the name "the standard account." When he first introduces the standard account, it is a purely semantic theory, which is typically, but not necessarily, conjoined with the metaphysical theory of Platonism.¹¹ He later uses "the standard account" and "the Platonistic account" interchangeably.¹² Consequently there is some confusion about just *what* is being constrained by the semantic and epistemological constraints. However, if we consider Benacerraf's two examples, Platonism and the combinatorial accounts, we can see that these are not merely semantic theories of the truth conditions for mathematical propositions; they are metaphysical theories of the nature of mathematical reality. Clearly Platonism is a

¹¹ "Mathematical Truth," 406.

¹² "Mathematical Truth," 410.

metaphysical theory, since it holds that mathematical reality consists of a realm of abstract mathematical objects. The combinatorial accounts are less clearly metaphysical; for they seem to say nothing more than that a mathematical sentence is true if and only if there is a proof for it (or some other favored syntactic property). However, this semantic theory alone does not fully capture the complete picture of the combinatorial accounts. As I suggested in the introduction, I think that the division of philosophical labor between semantics and metaphysics should be understood as tracking the distinction between saying what the truth conditions are (semantics) and saying how those truth conditions are satisfied (metaphysics). If this is right, then there is a clear metaphysical component to the combinatorial accounts. They suggest that a mathematical sentence is true if and only if there is a proof for it; that is the semantic component. But it is still left unsaid just how this truth condition is to be satisfied. In other words, the question “What counts as a proof—how must the world be such that a proof is created?” is still an open question that any combinatorial theory will have to address. An answer to this question, and others like it, will distinguish between the different combinatorial accounts. Both Platonism and the combinatorial accounts, therefore, are metaphysical theories as well as semantic theories. It is the metaphysical component of each of them that is the target of the semantic and epistemic constraints.

The question now is: just how do the semantic and epistemic constraints actually provide a challenge for metaphysical theory? Benacerraf’s dilemma is essentially a puzzle to develop a theory of mathematical reality that shows how Tarskian-style referential truth conditions can be satisfied by mathematical sentences while also showing how we can come into causal contact with this mathematical reality in such a way as to generate justified beliefs about it. To put the

point more generally, an adequate metaphysical account of mathematical reality should describe that reality in such a way that neither mathematical semantics nor mathematical epistemology is rendered impossible: the metaphysical theory must leave it intelligible both how mathematical language can be meaningful and how mathematical beliefs can be justified.

The other main problem for generalizing the integration challenge is that Benacerraf's constraints lean fairly heavily on particular theories of semantics and epistemology. His semantic constraint relies on Tarski's referential theory of truth, and his epistemic constraint relies on a causal theory of knowledge. But perhaps one or both of these two theories is just wrong. Is the dilemma resolved by simply denying one of these, or does the problem remain even if one or both of these theories is false? Considering these questions for each of the constraints, while remembering that the overall problem is ultimately a challenge for *metaphysical* theorizing, will help in the formulation of generalized versions of the two constraints. I begin with the semantic constraint.

1.2.1 The General Semantic Constraint

Benacerraf states his semantic constraint in three stages, each more specific than the previous stage. In the first (vaguest) stage, his suggestion is merely that there should be *some* reason to believe that a theory of mathematical truth is actually providing conditions of *truth*. According to this vague version, the semantic constraint is the “demand that any theory of mathematical truth...certifies that the property of sentences that the account calls ‘truth’ is indeed truth.”¹³ The second stage adds the assumption that the test for determining whether the truth conditions offered by a theory of mathematical truth are genuine conditions of truth is to

¹³ “Mathematical Truth,” 408.

ensure that they are consistent with the truth conditions for propositions in the rest of the language as determined by our best available theory of truth in general. The third stage adds the assumption that Tarski's referential theory of truth is the best available general theory of truth. The result is that Benacerraf's ultimate version of the semantic constraint requires that a metaphysical theory of mathematical reality be consistent with Tarskian semantic theory. But what if Tarski's theory is wrong? Or what if there is some other test for determining whether some purported truth conditions are genuine conditions of truth besides testing for consistency with truth for the rest of the language? Would Benacerraf's dilemma thereby be resolved?¹⁴

Let us first consider whether Tarski's theory is required for the semantic constraint. Intuitively, it seems quite limiting to require that metaphysics always conform to a predetermined semantic theory. Tarski's theory, for example, does not countenance the existence of facts, to which sentences can correspond, since his truth conditions are understood as functions from names and predicates to objects and properties respectively.¹⁵ So, a metaphysical theory, like logical atomism,¹⁶ which suggests that facts or states of affairs—not objects—are the constituents of the world, would be immediately ruled out under Benacerraf's semantic constraint. This seems more like enslaving metaphysics rather than merely constraining it. Surely, there should be room for metaphysical theories to spur semantic reform. If we require that all metaphysical theories conform to a pre-established semantic theory, whether that

¹⁴ Hartry Field has presented an integration challenge for mathematics by assuming a deflationary (or disquotational) theory of truth. However, even this theory of truth is not needed for the semantic constraint, as I understand it. See his *Realism, Mathematics & Modality*.

¹⁵ W. D. Hart points this out in his introduction to *The Philosophy of Mathematics, 2*.

¹⁶ As presented, for example, in Ludwig Wittgenstein's *Tractatus Logico-Philosophicus* and in Bertrand Russell's *The Philosophy of Logical Atomism*.

semantic theory is our best available theory or not, we significantly decrease the amount of creativity allowed to our metaphysicians, and that just seems too restrictive.

Still, it seems that Benacerraf is on to something. On the one hand, requiring metaphysics to conform to pre-established semantic theory seems limiting in a troubling way, but on the other hand, giving complete semantic freedom seems foolhardy. Semantics should *constrain* metaphysics in the sense that a metaphysical theory should be supported by reasons to believe that the truth conditions it offers are genuine conditions of truth, but semantics should not *constrict* metaphysics to the point that its results cannot be semantically innovative and surprising.

Let us suppose, then, for the sake of argument, that Tarski's theory is false. Is Benacerraf's dilemma thereby resolved? I think not. Consider Benacerraf's main complaint against the combinatorial theories:

[I]t should be clear why "combinatorial" views fail on my account. They avoid what seems to me to be a necessary route to an account of truth: through the subject matter of the propositions whose truth is being defined. Motivated by epistemological considerations, they come up with truth conditions whose satisfaction or nonsatisfaction mere mortals can ascertain; but the price they pay is their inability to connect these so-called "truth conditions" with the truth of the propositions for which they are conditions.¹⁷

Benacerraf never even mentions Tarskian semantics. His complaint against the combinatorial theories of mathematical truth is not really that they are inconsistent with Tarski's theory, or indeed with any other general theory of truth. His complaint is that combinatorial theories require a special semantics—an understanding of truth that is not applicable beyond the scope of the theory: "[We should] avoid...a double standard. If we reject the standard view, mathematical

¹⁷ "Mathematical Truth," 419.

inference will need a new and special account.”¹⁸ The problem with the combinatorial theories is that they require special semantic treatment for mathematical sentences; they require a semantic treatment that applies only to them and not to any non-mathematical sentences. As a result, we have no reason to accept that the truth conditions offered by those theories really are conditions of truth—conditions that, when satisfied, result in true sentences. Without linking the combinatorial theories’ purported truth conditions in some way to general truth conditions for the language as a whole, there seems to be no reason to accept that they are truth conditions at all.

So, despite appearances to the contrary, no particular semantic theory of truth in general is required for the semantic constraint. However, we still have the question about the test for determining whether some purported truth conditions are genuine conditions of truth. It is very hard to see how metaphysicians can give reasons to think that their truth conditions are genuine conditions of truth if not by showing how these purported truth conditions are consistent with the best available theory of truth in general. We have already shown that it is not plausible to restrict metaphysics to any particular semantic theory, as Benacerraf seems to do, but we have also seen that Benacerraf seems correct to think that semantics should constrain metaphysics in some way. How do we semantically constrain metaphysics without thereby enslaving metaphysics to semantics?

Obviously, every metaphysical theory will need an adjoining semantic theory; for it is not possible to say how truth conditions are to be satisfied without saying what those truth conditions are, but we should not let semantic considerations completely determine metaphysics. That way leads us headlong into a conflict with the epistemic constraint, as we have seen with the example of Platonism. Metaphysics should not be completely detached from semantics, which is not

¹⁸ “Mathematical Truth,” 411.

possible anyway, but it should also not be completely *determined* by semantics. There must be room for semantic creativity in our metaphysical theorizing, while at the same time, there should be some basic semantic constraint to make sure that metaphysical theorizing remains semantically grounded.

But how do we understand the semantic constraint if not by requiring that metaphysical theories adhere to some predetermined semantic theory? Looking at Benacerraf's examples, one may get the impression that Benacerraf thinks that a theory of mathematical truth must pay due respect to the syntactic structure of mathematical propositions, since his mathematical examples have the same syntactic structure as his non-mathematical examples, and he seems to say that they should be given the same semantic treatment because of this. If so, then perhaps the semantic constraint is simply that sentences with like syntactic structures should be given like semantic treatment: "There are at least three perfect numbers greater than 17" looks like quantification over a set of entities—numbers—so maybe the point is that we cannot ignore this syntactic fact in our ultimate theory of mathematical truth. This way of looking at Benacerraf's semantic constraint seems to suggest that since Platonism is the only theory that gives the same semantic treatment to quantified mathematical claims as to quantified non-mathematical claims, it is the only theory that satisfies the semantic constraint. Under this understanding of Benacerraf's semantic constraint, the combinatorial theories require a special semantics because they require some sort of semantic interpretation of quantified mathematical propositions that does not respect their syntactic similarity to quantified propositions of a non-mathematical sort.

But, again, what if that is just wrong? Why should we think that syntactic structure is any indication of semantic structure? Natural languages are notoriously misleading. The

conveniences of succinct communication are more often the prevailing guide to syntactic structure than the subtleties of meaning and truth. Moreover, there are often many different ways of expressing the same proposition with different syntactic structures. For example, “ $2 + 2 = 4$ ” and “The result of adding two to itself is four” are different sentences with different syntactic structures, but presumably they are semantically equivalent. These considerations suggest that Benacerraf’s semantic constraint may be misguided because it seems to require that semantics must always follow syntax, and that just seems obviously wrong.

But if syntactic similarity is not the guide for acceptable semantics, what is? How do we verify that the truth conditions are genuine conditions of truth (rather than special conditions) if not by comparing them with syntactically similar propositions in the rest of the language? The answer, I think, is that the basic underlying intuition of Benacerraf’s semantic constraint is simply that the purported truth conditions offered by a metaphysical theory must be applicable to propositions outside the scope of the theory. The reason that the combinatorial theories fail on semantic grounds is not because they are inconsistent with Tarskian semantics or even because they fail to require similar semantic treatment to syntactically similar sentences. They fail simply because the combinatorial theories themselves *say* that their truth conditions are special—that they do not apply to any non-mathematical propositions. If a theory requires such special truth conditions, then we have no reason to accept that the truth conditions it offers actually result in true propositions when satisfied. When there are so many theories on the market, why accept a theory that says that what it calls truth as it applies to its subject matter is not truth as it applies everywhere else?

One simple version of a combinatorial theory suggests that a mathematical proposition is true if and only if there is a proof for it. However, the existence of a proof is not a condition of truth for any non-mathematical propositions. We are, therefore, left with a pressing semantic question for the combinatorial theories, namely, “Why should we think that the existence of a proof is really a condition of truth for mathematical propositions since, *according to your own theory*, it is not a condition of truth for any other propositions? Unless you can show how the existence of proof *results in* a true mathematical proposition—how truth *applies* differently in this case—there seems to be no reason at all to accept your truth conditions.” This is the basic semantic challenge to the combinatorial theories, and it has absolutely nothing to do with Tarski’s theory of truth or with the syntactic form of mathematical propositions.

Platonism clearly satisfies this requirement because it has no need of special truth conditions that apply only to mathematical propositions. A Platonist can say something like “A mathematical proposition is true in pretty much the same way that a non-mathematical proposition is true: when the constants and quantified variables actually refer to entities that really have the indicated properties and relations.” This is how the Platonists can show that their truth conditions “fit in” to a more general understanding of truth, and it did not require any particular theory of truth or any particular syntactic tests. Combinatorial theories cannot pull off this trick simply because those theories themselves *say* that mathematical propositions are true in a special way. This kind of special truth condition is what the semantic constraint blocks.

I am now in position to present what I take to be basic underlying issue of the semantic constraint. As I have indicated, I think that Benacerraf is correct to think that there should be some semantic constraint placed on metaphysics for the simple reason that we need some reasons

to believe that the truth conditions offered by a metaphysical theory are genuine conditions of truth—conditions that when satisfied result in true propositions. However, I think Benacerraf constrains metaphysics too much when he requires conformity to specific semantic theories or even when he requires a specific syntactic test. We need to leave more room for metaphysics to surprise us and even to elicit semantic reforms. Therefore, what we need is an expression of the semantic constraint that restricts what sorts of truth conditions metaphysics can offer while not restricting metaphysics to any particular semantic theory. I believe that the simple requirement that the truth conditions be applicable beyond the scope of the theory captures the essence of the semantic constraint in such a way that metaphysics is not overly restricted by it.

Therefore, the general semantic constraint of the integration challenge, as I understand it,¹⁹ is that metaphysical theories should not require special semantics. In other words, whatever metaphysical theory is offered should not require a brand of truth that applies only to the subject matter of the theory. I, therefore, state the general semantic constraint as follows:

General Semantic Constraint: A metaphysical theory must provide an account of truth such that the truth conditions for propositions concerning the subject matter of the theory are also applicable to some propositions that do not concern the subject matter of the theory.

The semantic constraint is meant to constraint what kinds of truth conditions will be allowed by metaphysical theories without restricting metaphysics to any particular semantic theory or saying exactly what those truth conditions must be. Instead, metaphysics is constrained by semantics only in the sense that the metaphysical theory must link the truth conditions that apply within the theory to truth conditions that apply outside the theory.

¹⁹ I am not suggesting that Benacerraf would accept my interpretation of the semantic constraint.

Platonism fairly clearly satisfies the semantic constraint, not because it is consistent with Tarski's theory or even because it passes some syntactic test for acceptable semantics, but simply because it provides truth conditions that are clearly applicable to mathematical propositions and non-mathematical propositions alike. By contrast, combinatorial theories fail the semantic constraint not because they are inconsistent with Tarski's theory or even because they fail some syntactic test for acceptable semantics, but simply because their truth conditions only apply to mathematical propositions. Such a result makes the semantics of mathematics mysterious. That is the problem that the semantic constraint uncovers.

1.2.2 The General Epistemic Constraint

I now turn to the epistemic constraint. Unfortunately, this constraint is a bit more complicated, but Benacerraf's presentation shares some things in common with his presentation of the semantic constraint, which should help to make it somewhat easier to understand and generalize. Just like the semantic constraint, Benacerraf states his epistemic constraint in three stages, each more specific than the previous. In the first (vaguest) stage, his suggestion is merely that there should be *some way* to know whether the truth conditions offered by a theory of mathematical truth have been satisfied. According to this vague version, the epistemic constraint requires that "an account of mathematical truth...must be consistent with the possibility of having mathematical knowledge: the conditions of the truth of mathematical propositions cannot make it impossible for us to know that they are satisfied."²⁰ The second stage adds the assumption that whether or not it is possible to know that any purported truth conditions are satisfied should be determined by our best available general theory of knowledge. The third stage

²⁰ "Mathematical Truth," 409.

adds the assumption that the causal theory of knowledge is our best available general theory of knowledge. The result is that Benacerraf's epistemic constraint requires that any metaphysical theory of mathematical reality be consistent with the causal theory of knowledge. But, once again, what if the causal theory is wrong? Or what if there is some other way to determine whether some truth conditions can be known to be satisfied? Would Benacerraf's dilemma thereby be resolved? Once again, I propose to work backwards from Benacerraf's specific version of the epistemic constraint to the vague general version in order to uncover which of the stages of his presentation of the constraint are crucial to it.

According to Benacerraf's version of the causal theory of knowledge, S knows that P only if a causal relation obtains between S and the referents of the constituent names, predicates, and quantifiers of P. But why accept such a view? Once again, it seems that metaphysics is being restricted rather than constrained by this requirement. Just like with the semantic constraint, we should leave enough epistemological wiggle room in our metaphysical theorizing that the resulting theories can instigate epistemological insight and reform. If we insist on an epistemological theory at the outset, even if we are certain that it is the best available theory we have, we limit metaphysics unnecessarily.

So, let us suppose for the sake of argument, that the causal theory is false. Is Benacerraf's dilemma thereby resolved? I don't think so. For some historical evidence, consider the fact that support for the causal theory of knowledge has steadily waned since Benacerraf's paper was first published in 1973, but the influence of the challenge of Benacerraf's dilemma to the philosophy of mathematics (and to metaphysics and epistemology more generally) has not had the same

sharp decline in interest.²¹ This suggests that there is something deeper at issue in the epistemic constraint than simply the causal condition. It is not easy to say exactly what the problem is supposed to be, but if we look at Benacerraf's exact criticism of Platonism, it turns out that, just as we saw in Benacerraf's semantic criticism of the combinatorial theories, we again see no direct mention of any specific theory of knowledge:

It must be possible to establish an appropriate sort of connection between the truth conditions of *p*...and the grounds on which *P* is said to be known.... In the absence of this, no connection has been established between *having those grounds* and *believing a proposition which is true*. Having those grounds cannot be fitted into an explanation of *knowing p*. The link between *P* and justifying a belief in *P on those grounds* cannot be made. But for that knowledge which is properly regarded as justified true belief, then the link *must* be made.²²

Here Benacerraf only requires "an appropriate sort of connection" between the truth conditions and a justified belief. To be justified, according to this way of thinking, one must have some sort of "grounds" for one's belief, and those "grounds" have to be connected in the right sort of way with the truth conditions of that belief. But what sort of connection will do this job if not a causal connection? What will provide the *link*? Benacerraf's suggestion is that if the link is not causal, then the theory will require some mysterious "special faculty through which we 'interact' with [mathematical] objects."²³ Once again, Benacerraf is concerned with avoiding special-ness in theories of mathematical truth. The semantic constraint outlawed *special truth conditions*, and the epistemic constraint is meant to block *special justification conditions*. As we have seen, though, requiring a respect for the causal theory of knowledge seems unnecessarily limiting to metaphysics. So, perhaps we can understand the link between truth conditions and justification conditions in a more general way that does not require the link to be causal. In other words,

²¹ As reported in Penelope Maddy, "The Legacy of 'Mathematical Truth'," 62.

²² "Mathematical Truth," 414

²³ "Mathematical Truth," 416.

maybe we can specify the special-ness of the justification conditions without specifically requiring some sort of causal contact with whatever satisfies the truth conditions.

Since Benacerraf's epistemic constraint is focused on justification conditions (the "grounds" of belief), I think it will be more illuminating if we focus our discussion on justification in particular rather than on knowledge in general. It will also help to state in clear terms what Benacerraf's *linking* idea is supposed to be. How are truth conditions and justification conditions supposed to be related? I think the main idea is what I will call the linking thesis, which establishes a necessary condition for justification:

The Linking Thesis: S is justified in believing that P only if there is a reason for S to believe that the truth conditions for P are satisfied.

The linking thesis captures two main ideas implicit in Benacerraf's epistemic criticism of Platonism. The first idea is the basic epistemic assumption that some reasons to believe (the grounds of belief) are required for justification. The second idea is that the reasons to believe must be *linked* to the truth conditions—there must be reasons to believe that the truth conditions are satisfied. The linking thesis does not put any further requirements on the form that the reasons to believe must take. In particular, it does not require that a causal connection exist between truth and knower. It only requires that there be *some* reasons to believe that the truth conditions are satisfied without saying exactly what form those reasons must take. It is also worth noting that the linking thesis is neutral on the internalism/externalism debate in epistemology. It does not say whether S must be aware of the reason or whether they simply have to exist. It says that there must be some reasons without putting restrictions on what form those reasons must take or to whom they must be available. It simply says that whatever the

reasons are for a proposition they must be reasons to believe that the truth conditions for that proposition are in fact satisfied. This links the justification conditions to the truth conditions.

But now generating the epistemic constraint from the linking thesis, without a specific theory of knowledge in our pockets, is not obvious. As a first crack at it, maybe it should go something like this: a metaphysical theory cannot require truth conditions for which there are no reasons to believe they are ever satisfied. That sounds about right, but it will not do. The problem is that a metaphysician can always easily provide some reasons. This way of presenting the constraint does not block recourse to a special faculty to generate the reasons to believe. It does not really do the job of epistemically constraining metaphysics. If we do not constrain what reasons metaphysicians can offer for beliefs concerning the content of the theories they offer, they will have no clear way to defend their theory against the epistemic objection implicit in the epistemic constraint. Still, we do not want to require that the reasons conform to any particular theory of knowledge, since, as I have said, that would restrict metaphysics rather than constrain it.

The challenge of the epistemic constraint is for a metaphysical theory to show how knowledge of the realm covered by the theory is possible. So far, I have suggested that this means that the theory must provide truth conditions such that there are non-special reasons to believe that those truth conditions are sometimes satisfied. So, now we need to specify what will qualify the reasons to believe as non-special: what test must a metaphysical theory pass in order to qualify as having given reasons to believe that the truth conditions are satisfied that are clearly not special reasons? Just as with the semantic constraint, it is very hard to see how metaphysicians are going to be able to do this if not by showing how the reasons they offer are

consistent with the best available theory of justification in general. Once again, we want an epistemic constraint on metaphysics, so that the results of metaphysics will be epistemologically plausible, but we do not want to tie metaphysics down with a pre-ordained epistemological theory that will not give metaphysicians the creative freedom to be epistemologically innovative and surprising.

So, what is the test for determining whether the reasons offered for thinking that truth conditions have been satisfied are not special reasons? In order to answer this question, we must first consider a different question: is the epistemic challenge of Benacerraf's dilemma as it applies to Platonism supposed to be a challenge for Platonists to explain how *they know* their theory is true,²⁴ or is it a challenge for them to explain how *we know* mathematical truths *given that* Platonism is true?²⁵ Neither one of these options seems like much of a problem. If the former, then the epistemic constraint is simply asking Platonists for an argument for their theory, since it would only be asking for a reason to think that the theory itself is true. That is more than a reasonable request, but surely there is a much more polite and direct way to ask than by presenting convoluted dilemmas. If the latter, then the epistemic constraint does not seem fair, since it asks the Platonists to do epistemology rather than metaphysics. So, it seems that the epistemic constraint is either trivial or unfair. An answer to this problem will show the way forward to a statement of the epistemic constraint that blocks special justification conditions.

²⁴ This seems to be the interpretation of the epistemic constraint among those who think that Benacerraf's dilemma is solved by Quine's indispensability argument. I think this is a misunderstanding of the main thrust of Benacerraf's epistemic constraint, which is focused on justification for belief concerning the *content* of the theory, not beliefs concerning the theory itself. See Quine, "On What There is," and Putnam, "What is Mathematical Truth."

²⁵ David Lewis seems to interpret Benacerraf's epistemic constraint in this way. See *On the Plurality of Worlds*, 108-109.

The answer is that the focus of the epistemic constraint is *both* on belief in the theory itself *and* on beliefs concerning the content of the theory. The issue is that believing that a metaphysical theory is true may prevent one from being justified in one's beliefs concerning propositions concerning the subject matter of the theory. I do not know if Benacerraf would agree with this formulation, but I think that the ultimate underlying problem that the epistemic constraint presents for theories of mathematical truth could be put as follows. If someone, call that person S, believes that the theory is true, S thereby takes on a commitment to the truth conditions for mathematical propositions that the theory accepts; given this commitment, it must be shown how S has reasons to believe that those truth conditions are satisfied for S's justified mathematical beliefs. In this way, the epistemic constraint neither requires a reason to believe that the theory on offer is true, nor does it require an explanation for how beliefs covered by that theory are known. Instead it asks for an explanation for how it is possible *simultaneously* to believe the metaphysical theory *and* to have justified beliefs concerning the content of that theory. For a concrete example, my interpretation of Benacerraf's challenge to Platonism could be put as follows. Suppose that S is a Platonist, and that S believes, say, that there are at least three perfect numbers greater than 17. If S believes that Platonism is true, then S thereby believes that the truth conditions for the proposition that there are at least three perfect numbers greater than 17 is that there are at least three abstract mathematical objects that have the property of *being perfect* and that bear the relationship *greater than* to the abstract object named 17. That is to say that, by accepting Platonism, S is accepting the Tarskian semantic rendering of mathematical propositions. But if S believes that this is the truth condition for the belief in question, then it seems that S has no obvious reason to believe that this truth condition is

satisfied, since S has no means of determining whether these abstract objects actually have the indicated properties and bear the indicated relations. Direct inspection is obviously ruled out, and there is no obvious alternative means. If we think instead of what S's reasons probably are, we discover a much different source—counting, mathematical proof, and the like. Whatever the virtues these mathematical procedures might have for convincing S to accept the belief, they are not reasons to think that the Platonistic truth conditions are satisfied, because they do not provide a reason to think that some abstract objects have the indicated properties and relations.

Generalizing, the result is that anyone who believes that Platonism is true cannot also be justified in their mathematical beliefs—the belief in Platonism defeats any justification they may have otherwise had.²⁶ Or at least, a Platonist should explain how there is a reason for someone who accepts the theory to believe that the Tarskian truth conditions are satisfied. Lacking this, Platonism is an implausible theory on epistemic grounds.

I take it that the description in the foregoing paragraph expresses the underlying intuition of the epistemic constraint.²⁷ Therefore, I will understand the import of the epistemic constraint to be to constrain metaphysical theorizing to those theories that one can believe without defeating one's own justification for beliefs concerning the propositions covered by that very metaphysical theory. In other words, whatever truth conditions a metaphysical theory requires had better be the sorts of truth conditions that someone who accepts them can have a reason to believe have been satisfied in at least some cases. The challenge for a metaphysician is not “Tell us how *you* are justified in believing that your theory is correct;” it is “Tell us how *we* have reasons to believe that your truth conditions are sometimes satisfied.” The combinatorialist can

²⁶ For a similar treatment of Benacerraf's epistemic constraint, see Laurence Bonjour's presentation in *In Defense of Pure Reason*, 156-157.

²⁷ But, again, I am not at all certain that Benacerraf would accept my formulation.

say “we can tell that the truth conditions have been satisfied by simply seeing a proof, since the proof just *is* the truth condition.” However, the Platonist has no plausible response; the Platonist seems reduced to positing the existence of some special epistemic faculty for the purpose of determining when the truth conditions offered by Platonism are satisfied.

Now I can state the generalized epistemic constraint. We put the linking thesis together with the assumption that we have some justified beliefs concerning the propositions covered by a metaphysical theory:

General Epistemic Constraint: A metaphysical theory must provide an account of truth such that there are reasons to believe that the truth conditions for propositions concerning the subject matter of the theory are satisfied in at least some cases.

It must be possible for someone who believes that the so-called truth conditions are indeed conditions of truth also to have reasons to believe that those conditions are satisfied in at least some cases.

It might now be questioned why we should assume that we have any justified beliefs concerning the content of a metaphysical theory at the outset. Why not remain skeptical while we do our metaphysics? The problem with this thinking is that we generally only go in search of a metaphysical theory *after* we are reasonably convinced that knowledge of propositions concerning the subject matter of that theory is possible. If our intuitions have guided us far enough to send us in search of a metaphysical theory, then the intuition that knowledge within that realm is possible is already well established. A theory that undercuts the very intuitions that began the search for the theory in the first place is fairly implausible. This is not to say, of course, that we could not discover or decide that our initial intuitions were misguided or that we did not know what we thought we did, but we should do so only after a thoroughly extensive

search for a theory that does as little violence as possible to the intuition that knowledge is possible.

When I covered the semantic constraint, I indicated that what we need from a metaphysical theory is a reason to believe that the truth conditions are of an appropriate sort, that they are indeed conditions of *truth* rather than conditions of some other sort. For the epistemic constraint, we need a reason to believe that the truth conditions have been satisfied in at least some cases. The overall result of both of the constraints together, and so the main thrust of an integration challenge, is that a metaphysical theory is implausible if it requires truth conditions either that we have no reason to believe are actually conditions of truth or that we have no reason to believe have been satisfied in at least some cases.

It may be worth noting that applying the epistemic constraint to the justificatory aspect of knowledge rather than to knowledge in general results in a much more satisfying rendition of the epistemic constraint, according to which metaphysical theorizing is limited to those truth conditions that we have reason to believe are satisfied in at least some cases. But there is another benefit to applying the epistemic constraint to the justificatory aspect of knowledge rather than to knowledge itself: it makes it clearer how the semantic and epistemic constraints work together to constrain metaphysical theorizing. They work together because both of the constraints focus strongly on the notions of truth conditions and having reasons to believe. The semantic constraint limits metaphysical theorizing to presenting truth conditions that we have reason to believe are actually conditions of truth rather than conditions of another kind, and the epistemic constraint limits metaphysical theorizing to presenting truth conditions that we have reason to believe are satisfied in at least some cases. In so far as metaphysics is interested in describing how truth

conditions are satisfied, it must present those truth conditions so that they are clearly conditions of truth and so that we can clearly have reasons to believe that they have been satisfied. If the theory fails to satisfy the first condition, then it is implausible on the grounds that there are no reasons to accept the truth conditions it offers, and if it fails to satisfy the second condition, then it is implausible because it implies that we have no knowledge of the subject matter covered by the theory.

1.3 Applying the Integration Challenge to Modality

The constraints of the integration challenge as they apply to modality are now easy to state.

Semantic Constraint for Modality: A metaphysical theory of modality must provide an account of modal truth such that the truth conditions for modal propositions are also applicable to some non-modal propositions.

Epistemic Constraint for Modality: A metaphysical theory of modality must provide an account of modal truth such that there are reasons to believe that the truth conditions for modal propositions are satisfied in at least some cases.

The integration challenge requires those who would offer metaphysical theories of modality to do so in such a way that both modal semantics and modal epistemology are not rendered mysterious. As with mathematics, this dual constraint is by no means clearly satisfied by any popular metaphysical theory of modality.

It is important to note, however, that there are some assumptions implied by the integration challenge. If the following two-part assumptions are not true, then the integration challenge for modality is not really a genuine problem for modal metaphysics after all.

Semantic Assumption: Some modal sentences are both meaningful and true.

Epistemic Assumption: Some modal beliefs are both justified and true.

If it turns out that all modal sentences are meaningless, then the semantic constraint will not apply. If it turns out that no modal beliefs are justified, then the epistemic constraint will not apply. If it turns out that neither modal sentences nor modal beliefs are true, then the whole business of searching for a plausible metaphysical theory is hopeless to begin with.

Before moving on, though, I think it is worth noting that, in a sense, I am considering a more general version of Benacerraf's dilemma by tackling the integration challenge for modality, since mathematical propositions are usually understood to be a subset of the necessary truths. If I can resolve the integration challenge for modality, I may be in a position to resolve Benacerraf's dilemma as well, since, presumably, the theory will cover all mathematical truths as a subset of the necessary truths. In fact, I will present some ideas in the direction of resolving Benacerraf's dilemma in an appendix at the end of this dissertation.

1.4 Two Examples

Like Benacerraf, I will provide two examples, which should serve to illustrate the integration challenge for modality while also displaying some of the difficulties it presents to metaphysical theories of modality in general. These examples parallel Benacerraf's examples in two important ways: first, they are examples of theories that satisfy one of the constraints fairly easily but do not satisfy the other in any clear way; and second, one is a realist theory, and the other is an idealist theory. After presenting the examples, I will remark on the importance of these facts.

1.4.1 Possible World Realism

Like the philosophy of mathematics, the philosophy of modality has a clear champion to the title "the standard account." Unsurprisingly, it is also a realist account. According to possible

world realism, there are possible worlds, and these possible worlds account for modal truth. The accompanying semantics for possible world realism is possible world semantics:

“Possibly P” is true if and only if P is true in some possible world.

“Necessarily P” is true if and only if P is true in all possible worlds.

This semantic theory has been, and continues to be, extremely valuable to philosophers. It has been useful for elucidating modal, temporal, deontic, locative, and other intensional logics; it makes an appearance in philosophical explanations for such diverse phenomena as causation, time, morality, and personal identity. And its popularity is not difficult to understand. It fairly clearly establishes truth conditions for modal sentences that fit very nicely within an already established understanding of truth conditions in general. We could not ask for a clearer example of a theory that provides exactly what the semantic constraint requires. It does this by suggesting that truth just is *truth in* possible worlds. Modal truth is determined by the possible worlds that a proposition is true in, and *true in* applies to all truths, modal or otherwise. A proposition is true just in case it is *true in* the actual world, which is one of the worlds among all the possible worlds. Therefore, metaphysical theories of modality that rely on possible worlds semantics satisfy the semantic constraint fairly clearly.

The epistemic constraint will be the harder hurdle for possible world realism, and it is not hard to see why. All theories of possible world realism accept possible world semantics, but they are divided on how exactly to characterize possible worlds. However, no matter how one understands possible worlds, there is going to be an epistemic problem. To see why, suppose that S is a possible world realist. Now we ask, what reason can S have for believing that any particular modal belief is true? For example, consider the proposition “It is possible that talking

donkeys exist.” If S is a possible world realist, then S believes that this proposition is true if and only if “talking donkeys exist” is true in some possible world. How, though, can S have a reason to think that there is such a world? Unless there are talking donkeys in the actual world, direct inspection is ruled out, and there are no other obvious candidates to fill the role. If we ask about what S’s actual reasons are for thinking that talking donkeys could exist, we will likely hear a story about being able to conceive of or imagine such a thing, but conceiving and imagining of something do not seem like good reasons to think that something exists (whether in this world or any other). So, the reasons S actually has to believe that talking donkeys exist do not really provide reasons to think that the truth conditions supplied by possible world semantics have been satisfied. This violates the epistemic constraint.

These comments are not decisive, of course, but hopefully they give some idea of the difficulties that possible world realists have to confront in order to satisfy the epistemic constraint. We will return to possible world realism in chapter three, where I will take a look at what the possible world realists have said or could say about the epistemology of possible worlds.

1.4.2 Classical Conventionalism

For an example of a theory of modal truth that clearly satisfies the epistemic constraint but not the semantic constraint, we have classical conventionalism. There are many views that might be called broadly conventionalist, and I will have occasion to consider other such views in various places in this dissertation, but the view that I will call classical conventionalism is the view that was popular among the logical positivists and gets its best expression in A. J. Ayer’s classic *Language, Truth and Logic*. Ayer writes,

The principles of logic and mathematics are true universally simply because we never allow them to be anything else. And the reason for this is that we cannot abandon them without contradicting ourselves, without sinning against the rules that govern the use of language, and so making our utterances self-stultifying. In other words, the truths of logic and mathematics are analytic propositions or tautologies.²⁸

For Ayer, an analytic (or, more accurately, an analytically *true*²⁹) proposition is simply one whose truth “depends solely on the definitions of the symbols it contains,” whereas a synthetic proposition is one whose truth (or, to be accurate, falsity) “is determined by the facts of experience.”³⁰ The result is that the necessity (universality) of a true proposition is determined entirely by the rules of language use. As Ayer puts the main point of the classical conventionalist view, “We cannot deny [analytically true propositions] without infringing the conventions which are presupposed by our very denial, and so falling into contradiction. And this is the sole ground of their necessity.” For a classical conventionalist, necessary propositions are just the analytically true propositions, those whose truth is determined entirely by the conventions of language use. Just like with the combinatorial theories, this is a metaphysical theory as well as a semantic theory. The semantic theory says,

“Necessarily P” is true if and only if P is analytically true

“Possibly P” is true if and only if not-P is not analytically true.

The metaphysical component of classical conventionalism is the bit that explains how these truth conditions (analyticity) connect to reality, in this case, through the rules of language use. At least this is *my* understanding of the relationship between semantics and metaphysics. Ayer himself would surely disagree. Ayer was at pains to eliminate metaphysics all together. So, if my view of metaphysics is correct, his cause was probably hopeless. I see Ayer, not as a denier of

²⁸ *Language, Truth, and Logic*, 77.

²⁹ Analytically false propositions are impossible rather than necessary.

³⁰ *Language, Truth, and Logic*, 78.

metaphysics, but as a rival metaphysician with an alternative theory. In any case, this is not the place to debate meta-metaphysics.

The epistemic constraint is fairly easily satisfied by classical conventionalism: one need only be familiar in the right sort of way with the conventions of the language in which P is uttered in order to have reasons to believe that the truth conditions for “Necessarily P” and “Possibly P” have been satisfied. In fact, accepting classical conventionalism seems to make modal epistemology into a rather trivial matter: understanding modal truth within a language amounts to nothing more or less than understanding what language is being spoken. Once one knows the rules of the language, one automatically knows what the rules allow and what they do not. The sentences that must come out true under the rules of language use are analytically true and are, therefore, necessary; the sentences whose negations do not come out true under the rules of language use are not analytically true and are, therefore, possible.

But, of course, classical conventionalism does not obviously satisfy the semantic constraint because truth conditions understood as the conventions of language are not applicable to non-modal propositions. Ayer makes this point himself,

[T]he criterion by which we determine the validity of an *a priori* or analytic proposition is not sufficient to determine the validity of an empirical or synthetic proposition. For it is characteristic of empirical propositions that their validity is not purely formal. To say that a geometrical proposition, or a system of geometrical propositions, is false is to say that it is self-contradictory. But an empirical proposition, or a system of empirical propositions, may be free from contradiction, and still be false. It is said to be false, not because it is formally defective, but because it fails to satisfy some material criterion.³¹

The truth conditions for modal propositions required by classical conventionalism are special truth conditions because they are a completely different understanding of truth than truth conditions outside of modal contexts. It will be useful to compare classical conventionalism to

³¹ *Language, Truth, and Logic*, 90.

possible worlds realism. We have seen that possible worlds realism fairly clearly satisfies the semantic constraint because it does not require a special semantics. The truth conditions offered by possible worlds semantics apply also to non-modal sentences because it introduces the relation *true in* that holds between propositions and worlds and then reinterprets truth in general as *truth in* the actual world. So, possible world realism fairly clearly shows how the truth conditions for modal sentences fit within a more general theory of truth. Classical conventionalism does not so obviously satisfy the semantic constraint because it requires a special kind of truth that applies only to modal propositions. The truth conditions for non-modal propositions (some “material criterion”) are something quite different from those required for modal propositions (analyticity). So, classical conventionalism has a semantic problem. We can fairly ask, “Why should we accept these as conditions of *truth*?” to which we can expect that the classical conventionalist will have no useful reasons to offer since they cannot show how their truth conditions fall within a more general account of truth.

1.5 Conclusion: The Semantic Point of View Versus the Epistemic Point of View

So long as a metaphysical theory of modality fails to satisfy one or the other of the constraints, it cannot be regarded as an adequate theory. A theory that fails to satisfy the semantic constraint will be immediately faced with a semantic objection: why should we think that the theory is correct when there is no reason to think that the truth conditions it requires for modal sentences actually result in true sentences when satisfied? And a theory that fails to satisfy the epistemic constraint will be immediately faced with an epistemic objection: why should we think that the theory is correct when the theory itself seems to imply that knowledge of modality is *in principle* impossible for those that accept the theory?

An important overall lesson that we can learn from the integration challenge and these examples is that when a metaphysician begins with semantic considerations mainly in mind, the resulting theory will likely lean toward a realist point of view, like possible worlds realism, but when a metaphysician begins with epistemological considerations mainly in mind, the resulting theory will more likely lean toward an idealist point of view, like classical conventionalism. There is nothing wrong with either of these approaches *per se*, but one likely result is that the realist theories that develop will not pay due attention to epistemological concerns, and the idealist theories that develop will not pay due attention to semantic concerns. So, the realist theories are likely to turn out to be implausible on epistemological grounds, and the idealist theories are likely to turn out to be implausible on semantic grounds.

As a corrective, metaphysics must give equal consideration to semantic and epistemological concerns *from the very start*. If it does not, we will be faced eventually with one or the other of the objections implied by the constraints of the integration challenge. So, we must aim our metaphysical theories directly at both constraints from the very start. As for modality in particular, if we are to have any hope of achieving a plausible metaphysical theory, then we had better pay close attention both to modal language and to modal belief. Whatever modal truth amounts to, it had better turn out to be the sort of thing that can be informatively spoken of and justifiably believed in.

2 Dissolutions of the Integration Challenge

In this chapter, I will look at theories of modality that suggest that the integration challenge is misguided because it is founded on a faulty assumption. As a reminder, the assumptions required by the integration challenge for modality are:

Semantic Assumption: Some modal propositions are both meaningful and true.

Epistemic Assumption: Some modal beliefs are both justified and true.

If either of these assumptions is false, then the integration challenge is not a genuine problem for modal metaphysics. I will call theories that entail a denial of one or both of these assumptions *dissolutions* of the integration challenge. There are three families of such theories. The first family, which I will call modal eliminativism, includes theories that entail the denial of the semantic assumption because they suggest that all modal sentences are meaningless—that when we use modal language, we are just speaking non-sense because there are really no modal distinctions at all. The second family, which I will call modal skepticism, includes theories that entail a denial of the epistemic constraint because they suggest that no modal beliefs are justified—that we can only know how things are, not how they might be or must be. And the third family, which I will call modal expressivism, includes theories that entail the denial of both the semantic and the epistemic constraints because they suggest that no modal sentences or beliefs are true—that modal sentences and beliefs are not evaluable as either true or false because there are no modal facts at all. The aim of this chapter is to consider the main arguments in favor of these theories and to show that they are all implausible. The result will be to further

support the claim that the integration challenge is a genuine challenge for metaphysical theories of modality that is worth attempting to resolve.

2.1 Modal Eliminativism: Denying the Semantic Assumption

While many theorists are suspicious or skeptical about modality, very few have been so hostile as to hold modal eliminativism—the theory that modal language is meaningless. Ted Sider called it “a position of last resort, given the embedding of modality in ordinary and philosophical talk and practice.”³² Yet it is a position that some have taken. So it will prove worthwhile to consider it.

2.1.1 A Verificationist Argument

Verificationism seems like a good place to begin exploring the possibilities for modal eliminativism, since the verification criterion of meaning implies that any sentence that is unverifiable through observation is meaningless, and it is plausible to maintain that sentences containing modal language are unverifiable, for there are no obvious empirical methods for detecting the possibility of talking donkeys or the necessity of $2 + 2 = 4$. Historically, however, this has not been the argument of the verificationists. They have tended to be conventionalists about modality, preferring to maintain modal distinctions by finding them in the conventions of language rather than in the domain of the empirically verifiable. We have already encountered this classical conventionalist view in chapter one. Still, let us imagine an atypical verificationist, unimpressed by the analytic/synthetic distinction, who holds that statements with modal content are meaningless because they cannot be empirically verified. The benefit of imagining this position will, I hope, become clear.

³² “Reductive Theories of Modality,” 6.

Some standard objections to verificationism are now legendary, but the most legendary of all is that the verificationist principle is itself meaningless by its own criterion. In other words, we can sensibly ask whether the theory itself is verifiable, and the answer seems to be that it is not, for no observations could possibly give reasons for or against it. But if the theory is not verifiable, then by its own standards, it is meaningless. So goes the standard objection. But things are even worse than this for our imagined atypical verificationist because the verificationist principle has modal content. Verificationists distinguish between practical verifiability and verifiability in principle. Some sentences are not verifiable to anyone right now simply because of limited technology or lack of time. For example, “There are at least 1,000 inhabited planets in the Milky Way” cannot be verified simply because we lack the technology to check on all the other planets in the Milky Way, and even if we had the technology, the procedure required would take many lifetimes to actually accomplish. Such a sentence is not, therefore, *practically* verifiable. Still, the sentence is verifiable in principle, since it *could* be verified if we had the appropriate technology and enough time to carry out an appropriate method of verification.³³ With this clarification in place, the verificationist principle amounts to the claim that a sentence is meaningful if and only if it is *possible* for the sentence to be verified (by persons with the requisite technology, time, patience, etc.).³⁴ Hence, our atypical verificationist’s claim that statements with modal content are meaningless because unverifiable

³³ *Language, Truth and Logic*, 36.

³⁴ Ayer’s initial statement of the verificationist principle in *Language, Truth, and Logic* does not contain any overt modal content. One might think, then, that a version of the principle that avoided all modal language could be formulated. But this is not the case. The needed distinction between practical verifiability and verifiability in principle cannot be formulated without modal content, and so a verificationist argument for modal eliminativism fails. See *Language, Truth, and Logic*, 35.

has fallen prey to his own theory, since the verification principle is itself a statement with modal content and is, therefore, meaningless by its own lights.

Considering this argument for modal eliminativism has been so far a purely academic exercise, since no verificationist has ever (to my knowledge) put forward such an obviously flimsy argument. Still I hope that the exercise will prove valuable in so far as it helps to show us in what direction a more promising argument for modal eliminativism might be found. To see what I mean, consider a one-time popular response from the verificationists to the charge that the verificationist principle cannot explain its own meaningfulness, since it appears unverifiable. The response is that the principle is analytically true, and analytic truths require no verifiability to be meaningful: the question of its verifiability simply does not arise. Whatever the merits and demerits of this response, the analogous response to the charge that the *modal content* (rather than the truth) of the verificationist principle cannot be explained simply will not do. The trouble is that our imagined verificationist cannot appeal to the analytic/synthetic distinction, since doing so admits that there is some sense to modal distinctions. The response is only plausible if the appeal to the analytic/synthetic distinction is meant to show not only that the verificationist principle is true, but also that it is *necessarily* true. Such a response, though, is not available to the verificationist eliminativist. There seems to be, then, no way to account for the modal content of the verification principle itself without the analytic/synthetic distinction. But once one accepts that distinction, it is hard to see how to deny modal distinctions.

It seems, then, very unlikely that a modal eliminativist will hold the analytic/synthetic distinction. Of course, it is not as though the analytic/synthetic distinction and the necessary/contingent distinction must stand or fall together, but it is hard to see why one would

want to grant sense to the venerable analytic/synthetic distinction and also hold that modal language is meaningless, since part of what is supposed to be of interest in the analytic/synthetic distinction is that all analytically true statements are supposed to be necessarily true (in virtue of meaning alone) and all synthetic statements are supposed to be merely contingent (if true). The result is that any plausible line of argument for modal eliminativism will likely have to deny the analytic/synthetic distinction. We turn now to this line of argument.

2.1.2 Quine's Argument

No one has waged the war against modality more fervently than Quine. It is difficult to pin Quine down to a definite argument for the conclusion that modal language is meaningless, because his animosity toward modality built up slowly over time. I will, therefore, try to cobble together a complete argument for modal eliminativism from the various battlegrounds on which Quine fought for it.

I look first to "Three Grades of Modal Involvement" (1953). Here Quine divides the various ways modal language might be understood to contribute to the meaning of the overall sentence in which it occurs. According to Quine there are two different ways we could understand the contribution of modal language to meaning. One of these ways can be further divided into two different applications (Hence, the *three* grades). While Quine focuses his attention on uses of "necessarily," he believes that his criticisms can be easily modified for other modalities.³⁵

Let us begin with a straightforward example to help illustrate Quine's three possible interpretations.

³⁵ "Three Grades of Modal Involvement," 156.

(1) Necessarily, $8 > 7$.

Under one of Quine's interpretations of "necessarily," it functions as a predicate of statement names. Under this interpretation (1) could be rephrased as

(2) " $8 > 7$ " is necessary,

where " $8 > 7$ " is a name for the statement that 8 is greater than 7, and "is necessary" is a predicate that attaches to that name. So, (2) is true if and only if " $8 > 7$ " has a certain property called necessity.

Another way to understand "necessarily" in (1) is as a logical operator. Under this reading (1) could be rephrased as

(3) $\Box(8 > 7)$,

where \Box is a non-truth-functional necessity operator on the statement $8 > 7$. Quine, however, thinks that there are two different flavors to this interpretation of necessity. First, the logical operator might be understood as a *statement* operator, attachable to complete statements only. Second, the operator might be understood as a *sentence* operator, attachable to complete statements as well as to open sentences. The important difference is that if necessity is a sentence operator, then it is possible to quantify into its scope, but if it is a statement operator, then this is not possible. For example, if necessity is understood as a sentence operator, then from (3), by exchanging '8' for a free variable, we can obtain

(4) $\Box(x > 7)$.

Then by existential quantification, we could obtain

(5) $(\exists x)\Box(x > 7)$.

But if necessity is understood as a statement operator, this is not possible because the scope of the necessity operator in (4) contains a free variable—it is not a complete statement—so the necessity operator does not properly apply to it. If necessity is understood as a sentence operator, then free variables are allowed within its scope, but if it is understood as a statement operator, then free variables are not allowed within its scope.

The overall strategy of Quine’s argument for modal eliminativism is to show that none of these interpretations manages to properly define “necessarily,” and since these three interpretations are the only plausible interpretations available, we must conclude that modal language is meaningless. The rest of Quine’s argument, therefore, can be given in three stages, one for each of the interpretations.

Let us return to our example. Under the first interpretation of “necessarily,”

(1) Necessarily, $8 > 7$,

means

(2) “ $8 > 7$ ” is necessary.

(2) is true so long as the statement name “ $8 > 7$ ” actually names a statement with a certain property—the property of necessity. But what is this property? Quine seems to take it for granted—in keeping with the philosophical climate of his time, perhaps—that the only plausible way to understand the predicate “is necessary” is as a synonym for “is analytically true.” Quine writes, “A statement of the form ‘Necessarily ...’ is true if and only if the component statement which ‘necessarily’ governs is analytic,”³⁶ and “[N]ecessity [as a statement predicate] tends to be identified with what philosophers call analyticity; and analyticity, I have argued elsewhere, is a

³⁶ “Reference and Modality” 143.

pseudo-concept which philosophy would be better off without.”³⁷ And so we must look to Quine’s argument against analyticity to complete this stage of his argument.

This brings us to Quine’s famous circle of terms argument from “Two Dogmas of Empiricism.” According to Quine, the analytic/synthetic distinction is not tenable unless it can be appropriately defined, but any attempt to properly define it must rely on other terms whose definitions are equally mysterious; each could just as easily have been defined by analyticity.³⁸ In other words, any plausible definition of analyticity relies upon other terms whose definitions will rely on some already understood notion of analyticity. For example, one popular gloss of analyticity, essentially Frege’s,³⁹ is that a statement is analytically true if and only if it either is a truth of logic or can be transformed into a truth of logic by replacing words or phrases with their synonyms:

(3) All and only bachelors are unmarried men

is analytically true under this understanding of analyticity because it can be transformed into a truth of logic by replacing the word “bachelors” by its synonym “unmarried men”:

(4) All and only unmarried men are unmarried men.

The problem with such a suggestion, according to Quine, is the appeal to synonymy. One might think that to say that two linguistic forms are synonymous is simply to say that they can be exchanged for each other in any statement *salve veritate*, without altering the truth-value of the statement. However, if this is what synonymy amounts to, then any two linguistic forms with the same extension—“creature with a heart” and “creature with kidneys,” to use Quine’s example—will be synonyms, but they clearly do not have the same meaning. To fix this problem, Quine

³⁷ “Three Grades of Modal Involvement,” 169.

³⁸ “Two Dogmas of Empiricism,” 30-31.

³⁹ In *The Foundations of Arithmetic*.

claims that we must understand synonymy in such a way that to say that “bachelors” and “unmarried men” are synonyms is not just to say that they can be exchanged for each other *salve veritate* in *any* statement, but rather to say that they can be exchanged for each other in statements governed by the adverb “necessarily.” The reason that “creature with a heart” and “creature with kidneys” are not synonymous is because “creatures with a heart” cannot be replaced *salve veritate* either iteration of “creatures with kidneys” in

(5) Necessarily, all and only creatures with a heart are creatures with a heart.

Even if it is true that there are no creatures with a heart that do not also have kidneys and vice versa, this is surely only a contingent fact. However, in statements like,

(6) Necessarily, all and only bachelors are unmarried men,

“bachelors” and “unmarried men” *can* still be replaced for one another *salve veritate*. Analyticity is definable by synonymy; synonymy is definable by necessity; and necessity is definable by analyticity. The circle closes.

Therefore, if “necessarily” is understood as a predicate of sentence names, then it is meaningless on the grounds that it cannot be properly defined, since it is only definable in such a way that “analytic” will appear in the definiens of the definition and analyticity itself is not properly definable. After all, if the circle of terms argument works to show that the analytic/synthetic distinction is untenable, then it should work equally well to show that any of the other distinctions that find their way into the circle are just as bad off, and “necessarily” *does* appear in the circle. This completes the first stage of Quine’s argument for modal eliminativism.

The second way that “necessarily” might be understood is as a statement operator. Using “□” as the necessity operator,

(1) Necessarily, $8 > 7$

becomes

(3) $\Box(8 > 7)$.

We must remember, though, that this version of the necessity operator applies only to statements and not to open sentences. Under this interpretation, no free variables can appear within the scope of the operator.

Quine's argument against this operator is quite straightforward and direct. He argues that if we allow this operator, we must deny the principle of the substitutivity of identity in modal contexts, for while (3) is true, the following is not

(9) $\Box(\text{The number of planets} > 7)$.

The number of planets is indeed greater than 7 but surely this is a contingent fact only. However, since the number of planets is identical to 8,⁴⁰ the principle of substitutivity implies that “the number of planets” and “8” can be substituted for each other *salve veritate*. According to Quine this shows that \Box is referentially opaque: the terms within the scope of the operator cannot be taken as referential. Noting that quotation contexts are also referentially opaque—“ $9 > 7$ ” is necessarily true, but “the number of planets > 7 ” is not—Quine's final analysis of necessity understood as a statement operator is, “[I]f we do not propose to quantify across the necessity operator, the use of that operator ceases to have any clear advantage over merely quoting a sentence and saying that it is analytic.”⁴¹ Quine's opinion here seems to be a popular one among logicians. As Rudolph Carnap wrote, “Any system of modal logic without quantification is of

⁴⁰ I have updated Quine's argument to reflect the current definition of “planet”. In Quine's time, the definition of “planet” together with the available astronomical data suggested that there were nine planets. Of course the flexibility in the referent of “the number of planets” without a corresponding flexibility in the referent of “8” is precisely Quine's point.

⁴¹“Reference and Modality,” 156.

interest only as a basis for a wider system including quantification. If such a wider system were found to be impossible, logicians would probably abandon modal logic altogether.”⁴² This completes the second stage of the argument.

The third possibility is that necessity is a logical operator applicable both to statements and to open sentences. Unlike the statement operator just discussed, this operator would allow free variables within the scope of the operator.

Quine’s argument against this operator is a great deal more complex and subtle than his argument against the statement operator. Let us consider again our previous example

$$(4) \quad (\exists x)\Box(x > 7)$$

The necessity operator in (4) is a sentence operator because “ x ” appears free within its scope; the quantifier governing “ x ” is outside the scope of the necessity operator. Quine has two main objections to this operator. The first objection is that this operator requires a dubious metaphysical doctrine, Aristotelian essentialism, according to which some attributes of a thing are essential to it and other attributes are merely accidental. Quine offers very little by way of actual argument against this view, but he very clearly finds it to be intuitively implausible. In one place he calls it a “metaphysical jungle”⁴³ and in another place he claims that defending the view is “not a part of [his] plan. Such a philosophy is ...unreasonable.”⁴⁴

Quine seems to put more weight on his second objection. Let us modify our example.

Consider the open sentences

$$(10) \quad x = 8,$$

and

⁴² *Meaning and Necessity*, 196.

⁴³ “Three Grades of Modal Involvement,” 174.

⁴⁴ “Reference and Modality,” 156.

(11) There are exactly x planets.

These are two different ways of specifying the same number, namely 8. The problem is that replacing the x in

(12) $(\exists x)\Box(x > 7)$

with one of them results in a true statement, while replacing the x with the other results in a false statement. For while it is true that 8 is necessarily greater than 7, it is false that the number of planets is necessarily greater than 7. As Quine puts the point, “Necessary greatness than 7 makes no sense as applied to a number x ; necessity attaches only to the connection between ‘ $x > 7$ ’ and a particular method...of specifying x .”⁴⁵

There may, however, be a solution to this problem. Quine contends, “we can legitimize quantification into modal position by postulating that whenever each of two open sentences uniquely determines one and the same object x , the sentences are equivalent by necessity.”⁴⁶ We could require that “ $x = 8$ ” and “There are exactly x planets” are necessarily equivalent. In other words, we could require that all objects x conform to the following open sentence.

(13) $[(y)(Fy \equiv x = y) \cdot (y)(Gy \equiv x = y)] \supset \Box(y)(Fy \equiv Gy)$.⁴⁷

This says that if two predicates apply to the same object, then those predicates are necessarily equivalent. With this assumption in place, Quine argues that the necessity operator once again becomes meaningless. The argument is quite technical and proceeds as follows. Assume for the sake of argument that P is some true proposition and that $x = y$. The following are both obviously true.

⁴⁵ “Reference and Modality,” 149.

⁴⁶ *Word and Object*, 197.

⁴⁷ I borrow this formulation from Dagfinn Føllesdal, “Quine on Modality,” 148. Quine himself did not put the matter as neatly.

$$(14) \quad (y)((P \bullet x = y) \equiv x = y).$$

$$(15) \quad (y)(x = y \equiv x = y).$$

However, by substitution in (13), putting “ $(P \bullet x = y)$ ” for “ Fy ” and putting “ $x = y$ ” for “ Gy ”, we get the following.

$$(16) \quad \{(y)[(P \bullet x = y) \equiv x = y] \& (y)(x = y \equiv x = y)\} \supset \Box(y)[(P \bullet x = y) \equiv x = y].$$

From (14), (15), and (16) we get

$$(17) \quad \Box(y)((P \bullet x = y) \equiv x = y)$$

by universal instantiation, putting “ x ” for “ y ,” we get

$$(18) \quad \Box((P \bullet x = x) \equiv x = x),$$

which is logically equivalent to

$$(19) \quad \Box P.$$

From the assumption of P , we have now derived $\Box P$, and since $\Box P \supset P$ is an obvious truth of modal logic, the result is

$$(20) \quad \Box P \equiv P.$$

In other words, the necessity operator is meaningless; it adds nothing to the meaning of a statement.⁴⁸ This concludes the third stage of the argument.

The result of Quine’s overall argument is that no matter how we take necessity, either as a predicate of a sentence or as a logical operator, it is meaningless. This result extends easily to any other modal language since all modal language is interdefinable. To make this clear, suppose we take “ \Diamond ” as our possibility operator. We can define “ \Box ” as “ $\sim\Diamond\sim$ ”. By running the third stage of Quine’s argument with “ $\sim P$ ” instead of “ P ,” we get

⁴⁸ Perhaps this is too quick on Quine’s part. “ $\sim\sim P \equiv P$ ” is a truth of logic, but do we really want to say that “ $\sim\sim$ ” is *meaningless*?

$$(21) \quad \Box \sim P \equiv \sim P,$$

which, by definition, becomes

$$(22) \quad \sim \Diamond \sim \sim P \equiv \sim P,$$

which is logically equivalent to

$$(23) \quad \Diamond P \equiv P.$$

Similar considerations hold for the other stages of the argument. So, if Quine's argument is successful, then *all* modal language is meaningless.

There is a lot to complain about in Quine's argument. In the first stage of the argument, Quine assumes that the only sense to be made of necessity is in terms of analyticity, which is highly questionable and not supported by any arguments. In the second stage of the argument, it is not clear why denying the principle of substitutivity in modal contexts is a problem. All this shows is that singular terms behave differently in modal contexts than they do in non-modal contexts. In any event, I do not propose to engage with these two stages of Quine's argument since I believe, along with most other theorists about modality these days, that the appropriate interpretation of modality is as a sentence operator. So, the third stage of Quine's argument is what I will focus on.

It seems that Quine himself came to regard the third of stage of the argument as flawed less than a year after he wrote the argument in *Word and Object*.⁴⁹ The problem is that if the argument goes through, then not only is quantified modal logic doomed but so is any logical system that focuses on dividing the class of true sentences into proper subclasses. For example, if we interpret " \Box " as the epistemic operator "S knows that..." rather than the necessity operator,

⁴⁹ Reported by Føllesdal in "Quine on Modality", 209.

the result is that S knows every true sentence—knowledge is meaningless. Similar considerations hold for deontic distinctions, temporal distinctions, and many others. So, if this particular argument shows that modal distinctions collapse, then these other, more obviously plausible distinctions, collapse as well. As Dagfin Føllesdal put it, “Quine’s argument leading up to the collapse of the modal distinctions is simply too disastrous to be right.”⁵⁰

I therefore conclude that denying the semantic constraint on the grounds that modal distinctions are meaningless is an implausible view. The verificationist argument I considered is extremely flimsy at best, which shows that denying modal distinctions while maintaining the analytic/synthetic distinction is implausible, and Quine was unable to show, despite heroic efforts, that there are no modal distinctions.

2.2 Modal Skepticism: Denying the Epistemic Assumption

I turn now to a different kind of dissolution strategy. The dissolution strategy that entails a denial of the epistemic constraint holds that there are no justified modal beliefs. I will call this view modal skepticism. Modal skepticism obviously follows from modal eliminativism, since we surely cannot be justified in believing that something is possible or necessary if there are no distinctions between the possible, the actual, and the necessary to be made in the first place. But, I have already dealt with modal eliminativism in the previous section, so in this section I will be concerned with arguments for modal skepticism that do not rely on eliminativist sympathies. Also, I will not be concerned in this section with any version of modal skepticism that follows from a global skeptical view. The global skeptic holds that no beliefs at all are justified, so obviously modal beliefs are also unjustified if global skepticism is correct. However, this is not

⁵⁰ “Quine on Modality,” 179.

the place to consider such a view, since doing so would be better dealt with in a more complete discussion of skepticism in general.⁵¹ So, to be precise, the view that I am calling modal skepticism, and with which this section will be concerned, is the view that modal distinctions exist but that none of our beliefs about them are justified (even though some of our non-modal beliefs *are* justified).

Modal skepticism, understood in this way, is an extremely implausible view. One way to see its implausibility is to consider the work of David Hume. One of Hume's main lessons is that nomological (causal) necessity is to be understood as a byproduct of our customs and habits. This has led some Hume interpreters to suggest that Hume's view amounts to a kind of skepticism about nomological necessity.⁵² Whether Hume is a skeptic in this sense or not is of course a matter of considerable debate, which I have no intentions of trying to settle here. My point is just that if one wants to argue for nomological skepticism along Humean lines, then it seems a natural progression from there to skepticism regarding all modalities.⁵³ In fact, some have suggested that something like this is actually Hume's considered opinion, pointing to the following passage from the *Treatise*. "[T]here is but one kind of *necessity*, as there is but one kind of cause, and...the common distinction betwixt *moral* and *physical* necessity is without any foundation in nature."⁵⁴ Hume is most likely referring in this passage to the purported distinction between deontic and nomological necessity rather than a distinction between metaphysical and nomological necessity, but one might be tempted to read Hume as saying that his conclusions

⁵¹ Just as I assumed in the previous section that there was no need to consider global eliminativism—the view that *all* language is meaningless—in order to give adequate treatment to modal eliminativism.

⁵² For the record, I think this reading of Hume is mistaken, but this is not the place to enter into that debate.

⁵³ As Wilfred Sellars has written: "It should be noted that unqualified concept empiricism equally entails that we have no concept of logical necessity, not to mention conjunction, disjunction, negation and class-membership, though concept empiricists have not been quite as assiduous in pointing this out as they have been in scoffing at real connection." From "Is There a Synthetic A Priori?" 129.

⁵⁴ At 1.3.14.33. Italics in original.

regarding nomological necessity apply to all “kinds” of necessity, since there is really no distinction between the various “kinds”.⁵⁵ It is tempting, therefore, for one who reads Hume as a skeptic about nomological necessity, and is impressed by Hume’s custom-and-habit theory, to extend that thinking to all modalities. A major problem for reading Hume in this manner, however, is that, for Hume, part of what is supposed to distinguish relations of ideas from matters of fact is modal: the relations of ideas are necessary, and the matters of fact are contingent. If Hume’s considered view is that custom and habit are the source of all knowledge concerning modalities of all kinds, then his distinction between relations of ideas and matters of fact collapses, taking the distinction between the *a priori* and the *a posteriori* along with it.

Again, the point here is not to suggest an interpretation of Hume, but just to show that if we accept modal skepticism, perhaps for Humean-type reasons, then we are giving up on an awful lot: we cannot be justified in believing that there is a difference between what appear to be obviously necessary truths, like “all bachelors are unmarried”—Hume’s relations of ideas—and what appear to be obviously contingent truths like “some bachelors are lonely”—Hume’s matters of fact. Moreover, it is also hard to see how to maintain a distinction between the *a priori* and the *a posteriori*. If these points have merit, then it seems that modal skepticism will likely collapse into modal eliminativism. It is unlikely that modal skepticism will be acceptable to anyone; unless that person already has a prior commitment to modal eliminativism and wishes to see all modal distinctions collapse anyway.

⁵⁵ Robert Imlay reads Hume this way. See his “Hume on Intuitive and Demonstrative Inference.” For what it is worth, I do not find Imlay’s reading of Hume very plausible, mainly because Hume draws his distinction between relations of ideas and matters of fact partly in terms of logical modalities: the former are logically necessary and the latter are logically contingent. It seems that if belief in logical necessity were just as much a matter of custom and habit as belief in nomological necessity, then the distinction between relations of ideas and matters of fact could only be a difference in degrees rather than a difference in kind, despite what Hume says.

There is another potential problem with modal skepticism; it puts us in an awkward dialectical position. On the one hand, it is hard to see how one could give reasons to accept the view without begging the question. Deductive validity is usually understood as a modal concept: an argument is valid if and only if it is *impossible* for the premises to be true and the conclusion false.⁵⁶ So, it looks like the proponent of modal skepticism will not be able to accept the validity of *any* argument at all. If we cannot be justified in our beliefs concerning modality, then we cannot be justified in our beliefs concerning the validity of arguments. Inductive arguments appear to be no better off here, since inductive strength is also plausibly understood as a modal concept: an argument is strong if and only if it is *improbable* that the premises are true and the conclusion false. It is equally hard to see how one could argue *against* modal skepticism for similar reasons: any argument given against it would fall on deaf ears. If modal skepticism is true, then, it seems that the entire business of giving reasons—the centerpiece of philosophical inquiry—is in jeopardy. I suggest, then, that we look elsewhere for a plausible dissolution or resolution to the integration challenge, and return to modal skepticism only if nothing else works out. Nothing I have said here amounts to a conclusive objection to modal skepticism, of course, but I hope that it at least helps to make it clear why the view is, as John Hawthorne has put it, “offensive...to common sense.”⁵⁷

2.2.1 Moderate Modal Skepticism

But perhaps the above assessment of modal skepticism is too quick. Peter van Inwagen has put forward a view that he calls modal skepticism but which differs in important ways from

⁵⁶ There may be some understandings of validity that do not have this consequence (if validity is reducible to rationality, for example).

⁵⁷ “The Epistemology of Possible Worlds: A Guided Tour,” 186.

the skeptical view I have been considering thus far. He has admitted that the name was a poor choice, since he does not think that we have absolutely no modal knowledge. Actually he believes that we have a great deal of modal knowledge; it is just that the modal knowledge that we have is tied to the affairs of everyday life instead of manufactured in the mind of some philosopher. In other words, he is skeptical about knowledge of modal propositions common in philosophical discourse like “It is possible for there to be a perfect being” and “It is possible for zombies to exist” but not about knowledge of modal propositions that are more mundane like “It is possible that the furniture in the hall be rearranged” and “It is impossible for there to be liquid wine bottles.”⁵⁸ To distinguish van Inwagen’s view from the more extreme view canvassed in the last few paragraphs, I will call his view moderate modal skepticism.

The difficulty for moderate modal skepticism of course is drawing the distinction between those modal propositions for which justification is possible from those for which justification is not possible. Van Inwagen writes,

One way to get an intuitive grasp of what I mean...is to consider the analogy of distance. In my view, many of our modal judgments are analogous to judgments of distance made by eye. That is, they are analogous to judgments of the sort that we make when—just on the basis of how things look to us—we say things like, “That mountain is about thirty miles away” or “It’s about three hundred yards from that tall pine to the foot of the cliff.” Such judgments are not, of course, infallible, but in a wide range of circumstances they can be pretty accurate. There are, however, circumstances—circumstances remote from the practical business of everyday life—in which they are not accurate at all....[W]e are able to discern the modal status of some propositions in a way that, like our intuitive judgment of distance, is “non-inferential.”⁵⁹

For van Inwagen, the modal propositions that cannot be known are “remote from the practical business of everyday life,” but this does not give us much to go on. If this just means “those that have no impact on the way we live our lives,” then van Inwagen does not get the result he needs,

⁵⁸ “Modal Epistemology,” 67.

⁵⁹ “Modal Epistemology,” 69-70.

since one of the propositions that is supposed to be unknowable is that the existence of a perfect being is possible. But clearly such a belief has a great deal of impact on the lives of those who believe in God. So, if the distinction is to be drawn in this way, then the possible existence of a perfect being turns out to be knowable after all since it is certainly a belief that has an impact on the way believers live their lives. Unfortunately, van Inwagen does not give us much more to go on to determine how the distinction is to be drawn.

Fortunately, Peter Hawke has taken up van Inwagen's banner and provided something that looks more like a sharp line between justified and unjustified modal beliefs. According to Hawke, the modal beliefs that are justified—the “basic modal beliefs”—are those that follow from two principles: the actuality principle and the similarity principle.⁶⁰ The actuality principle is the intuitively obvious principle that if P is true, then P is possible. The similarity principle is: “If two things (situations, objects) are similar in some respects, then the possibilities (relevant to the similarities) concerning those things are likely to be the same.”⁶¹ According to Hawke, then, our basic modal beliefs are those that are justified either by direct appeal to actual experience or by analogy with actual experience. In this sense, the basic modal beliefs are close to the “practical business of everyday life.”⁶²

If van Inwagen/Hawke-style moderate modal skepticism is true, then the integration challenge is not completely dissolved, but it may count as a satisfactory answer to the integration challenge, depending on what we expect a metaphysical theory of modality to explain.

⁶⁰ “Van Inwagen's Modal Skepticism,” 360. I use “follow from” rather loosely here. Both Hawke and van Inwagen accept an account of Modal Epistemology inspired by Stephen Yablo's “Is Conceivability a Guide to Possibility?” according to which some specific imaginative procedures have justificatory force for possibility claims. The details of this theory are interesting, but not relevant here.

⁶¹ “Van Inwagen's Modal Skepticism,” 360.

⁶² Curiously, Hawke's two principles only justify beliefs concerning possibility, not beliefs concerning necessity. Does moderate modal skepticism imply that no beliefs of necessary truths are justified?

Obviously, moderate modal skepticism does not really deny the epistemic assumption in its fullest generality, since it holds that *some* of our modal beliefs are true and justified. It just turns out that there are fewer of them than we might have pre-theoretically expected. On the one hand, if our reason for taking the integration challenge seriously in the first place is a concern over the status of modal propositions typically made by philosophers, perhaps those dealing with the possibility of zombies or the necessity of a perfect being, then we might accept moderate modal skepticism as a dissolution to the integration challenge. It dissolves the challenge for the propositions that we care about without the implausible result that we have no modal knowledge at all. On the other hand, if our reason for taking the integration challenge seriously is that we are concerned to discover a complete metaphysical account of modality in general, then moderate modal skepticism is not a dissolution to the integration challenge. For my part, I am interested in the integration challenge in its fullest generality. It may turn out to be a pipe dream to expect to find a completely general account for modality, but that remains to be seen.

Still, moderate modal skepticism may be a step in the right direction, since it at least has the potential to ameliorate the integration challenge even if it cannot completely resolve it. The problem, though, is that it is very hard to see how even to *do* the business of philosophy without a great many modal claims. Perhaps we can save knowledge of validity so that at least some of the business of philosophy can proceed, but what, for example, is the status of thought experiments if moderate modal skepticism is true? What can a thought experiment show us if there are doubts about whether or not what the scenario depicts is even possible? Even someone as hostile toward modality as Quine did not completely avoid modal language in his philosophy. A quick perusal of Quine's *Word and Object* reveals a great many uses of modally-loaded

language: at one point Quine states his famous thesis of the indeterminacy of translation thusly, “manuals for translating one language into another *can* be set up in divergent ways, all *compatible* with the totality of speech dispositions, yet *incompatible* with one another” (italics added for emphasis).⁶³ Quine probably has an explanation for this, but this just shows how deeply entrenched modal language is in philosophical as well as in everyday discourse. Therefore, I claim that it is just as offensive to *philosophical* sense to deny modal knowledge in *philosophical* contexts, as it is offensive to *common* sense to deny it in *common* contexts. Therefore, moderate modal skepticism is implausible.

2.3 Modal Expressivism: Denying Both the Semantic and Epistemic Assumptions

I come now to the response that denies both of the two assumptions of the integration challenge on the grounds either that there are no true modal propositions or beliefs (i.e., they are all literally false) or that modal propositions and beliefs are not the sorts of things that can even be evaluated as either true or false (i.e., they are not truth-apt). The former strategy is nonexistent in the literature on modality although such a strategy has been suggested as solutions for integration challenges in other domains of investigation, most notably Hartry Field’s instrumentalist account of mathematics.⁶⁴ The latter strategy, however, has enjoyed a distinguished career in the philosophy of modality. According to this direction of thinking, the integration challenge is mistaken at its very foundation because it assumes that modal propositions are truth apt—subject to evaluation as either true or false—when they are not. For views in this family, instead of *describing* some fact, modal language only *expresses* something

⁶³ *Word and Object*, 27.

⁶⁴ In *Realism, Mathematics, and Modality*.

about the person who uses it. Therefore, I will call this view modal expressivism, although it has sometimes gone by the names non-factualism and non-cognitivism.

One immediate problem for modal expressivism presents itself. If modal propositions are not evaluable as either true or false, what are we to make of obviously valid arguments with modal content? For example, the argument “Necessarily, P; therefore, P” seems to be fairly obviously valid, but this makes no clear sense if the premise is not even the sort of thing that can be evaluated as either true or false. We should remember also that validity itself is plausibly a modal concept, so if modal expressivism is right, then it seems that claims about the validity of arguments cannot be evaluated as either true or false. One must wonder, then, what the status of modal logic, as well as logic in general, is going to be if modal expressivism is right. This seems to me to be a serious issue, and I have not seen an advocate of modal expressivism address it directly. However, let us put this issue aside for now and look more directly at the expressivist complaint against the semantic and epistemic assumptions of the integration challenge.

Modal expressivism can be roughly divided into two major camps. One camp thinks that modality is an expression of certain belief states and the other camp thinks that modality is an expression of certain rules of language. The former could be called projectivism, since it suggests roughly that modal belief is nothing more than projections of our own beliefs or belief-forming processes onto the world. The latter Amie Thomasson has recently⁶⁵ given the name normativism since it suggests roughly that modal language is nothing more than expressions of the norms of language use. Let me briefly describe each of these views before looking at a specific argument against modal truth.

⁶⁵ In “Norms and Necessity.”

Modal normativism has several supporters, including Robert Brandom⁶⁶ and Amie Thomasson.⁶⁷ The main motivation for the theory seems to be to maintain the spirit of conventionalism but purge it of some of its major problems. We have already encountered conventionalism in chapter one. I noted there that a major problem for conventionalism is that the conventions of language are obviously contingent, so conventions do not seem like the kind of thing that can be the truth conditions for necessary truths. So a proposition like “all bachelors are unmarried” seems to come out to be contingent rather than necessary. It may be true that the conventions of language dictate that “all bachelors are unmarried” turns out to be necessary, but the conventions themselves are not necessary—we could have picked other conventions.

As I see it, theorists who are attracted to the basic thrust of conventionalism but who are also impressed with the objection to the classical conventionalist view basically split into two camps as a reaction to the objection. The classical conventionalist view held the following two claims: (1) modal propositions are factual propositions, and so can be evaluated as either true or false, and (2) the truth or falsity of a modal proposition is determined by the conventional rules of language use. Some have preferred to deny both (1) and (2), but still maintain that language is important to understanding what modality is all about, and other theorists have preferred to maintain (1), but deny (2). The former strand is normativism, and the latter strand is a view that we will consider in the next chapter that Ted Sider has recently called Humeanism.⁶⁸ The normativists hold that modal sentences are neither true nor false. They are expressions of the norms of language use. Humeans hold that modal sentences have truth-values but that their truth-

⁶⁶ In *Between Saying and Doing: Toward an Analytic Pragmatism*.

⁶⁷ In “Norms and Necessity.”

⁶⁸ In *Writing the Book of the World*.

values are not determined by the conventions of language; their modal status is determined by the conventions of language.

The other expressivist view is projectivism. Modal projectivism is not a very common view in the literature on modality. Simon Blackburn has almost single-handedly promoted its cause. According to Blackburn, modal beliefs are projections of our own inner states, our “habits, dispositions, [and] attitudes,”⁶⁹ onto the world. This view is obviously inspired by Hume’s dictum that causal or nomological necessity is nothing more than our natural tendency to project our own customs and habits onto the world. For Blackburn, it seems that these customs and habits are also responsible for other modalities as well.

I have already considered in a sketchy way a similar approach to modality in the discussion of modal skepticism above. I suggested that by considering an extension of Hume’s view according to which all modal beliefs, and not just nomological beliefs, are a result of “spreading oneself onto the world,” we can see that modal skepticism is an implausible theory, but what I did not consider there is whether extending Hume’s custom-and-habit theory of nomological necessity to other kinds of modality might be taken to be a complete theory of modality in its own right rather than as a motivation for modal skepticism. This seems to be what Blackburn has in mind: modal language merely *expresses* one’s habits and dispositions, it does not *describe* any fact; it is therefore, not evaluable as either true or false.

But this is not exactly Blackburn’s view. Blackburn *does* think that modal propositions are evaluable as either true or false: “Their truth corresponds to correctness in [the habits, dispositions, and attitudes they express] by whichever standards they have to meet.”⁷⁰ This is a

⁶⁹ “Morals and Modals,” 55.

⁷⁰ “Morals and Modals,” 55.

second stage of Blackburn's view, which he calls quasi-realism. Quasi-realism attempts to explain how modal (and other) propositions become the bearers of truth-values, the objects of knowledge, etc. even though they do not describe any facts. While quasi-realism is interesting in its own right, only the first stage of Blackburn's view is relevant for my purposes, since it is critical of the approach to modality that leads us to the integration challenge. If projectivist expressivism is correct, then the integration challenge is dissolved whether or not the details of quasi-realism can be worked out. Therefore, I will focus on the projectivist component of Blackburn's view and ignore the quasi-realist component.

What are the arguments in favor of expressivism? There are a few different ones,⁷¹ but I want to focus on the one I take to be the most direct and powerful. It has become known as Blackburn's dilemma. According to Blackburn, the usual ways of thinking about modality succumb to a dilemma as follows. Suppose that a modal theory provides an explanation, Q, for a necessary truth, P. Now either Q will itself be a necessary truth, or it will not be a necessary truth. On the one hand, if Q is a necessary truth, then the explanation seems adequate, since a necessary truth can follow from a necessary truth, but in this case Q would not actually explain the necessity of P, since the necessity remains. On the other hand, if Q is not a necessary truth, then it seems that P is not really necessary after all, since it is fully accounted for by a contingent truth.⁷²

This dilemma suggests that the usual approach to the metaphysics of modality, which Blackburn calls the truth-conditions approach, is misguided. According to the truth-conditions approach, modal propositions are either true or false, and metaphysicians do their business by

⁷¹ Brandom presents a very complicated one in *Between Saying and Doing: Toward and Analytic Pragmatism*.

⁷² "Morals and Modals" 53.

searching around for what *makes* them true or false. But this procedure leads inexorably into the dilemma. If the truth conditions are themselves modally loaded, so to speak, then they do not help us understand modality, and if they are not modally loaded, then modality is actually undermined, not explained.

The expressivist solution to Blackburn's dilemma is to go between the horns. Expressivists give up on the truth-conditions approach and reinterpret modal language in a way that makes it clear that no assertion of a fact is actually being made. If Blackburn is right, then it looks like the truth-conditions approach to modality is misguided, and it should be clear that the integration challenge is based on the truth-conditions approach to modality. If modal sentences are not truth apt, then there is no sense in asking about the truth conditions for them.

What can be said in response to Blackburn's dilemma? First we should notice that not all explanations with modal content in the explanandum and no modal content in the explanans are objectionable. Consider the following explanations.

It is not necessary that $2 + 2 = 5$ because it is false that $2 + 2 = 5$.

It is possible that $2 + 2 = 4$ because it is true that $2 + 2 = 4$.

These seem like perfectly adequate explanations, and there is no modal content in the explanans of either one. But this seems too easy. Still, it suggests something important: if P is false, then $\Box P$ is *automatically* false, and if P is true, then $\Diamond P$ is *automatically* true. Obviously, a truth condition for $\Box P$ can only exist if there is also a truth condition for P , and no further truth condition is required for $\Diamond P$ when P is true.

I want to suggest that there is something wrong with the way that Blackburn has stated the dilemma. He asks for the truth conditions for $\Box P$, but this is not really the question that

metaphysicians of modality are looking for, or at least it is not what they *should* be looking for. Rather the metaphysics of modality is, or should be, focused on these two questions: (1) given that P is true, what accounts for the necessity of P, and (2) given that P is false, what accounts for the possibility of P? There is no real question about the truth conditions for the necessity of false propositions because there are none, and there is no real question about the truth conditions for the possibility of true propositions because these are just the truth conditions of P itself. So, what we should be after in a metaphysical theory of modality is an explanation for what accounts for some truths being necessary and for some falsehood being possible.

With this in mind, let us restate Blackburn's dilemma. The truth-conditions approach does not ask for the truth conditions of $\Box P$; it asks for the truth conditions for $\Box P$ *given that* P. Borrowing from probability theory, let us express " $\Box P$ given that P" as $(\Box P | P)$. So, the truth-conditions approach asks for an explanation for $(\Box P | P)$. Consider what happens to Blackburn's dilemma now when we look at a particular example. Let us take an easy and familiar example from mathematics: " $7 + 5 = 12$." Suppose that we have a plausible story about the truth condition for this proposition so that the metaphysicians of *mathematics* are satisfied. Still the metaphysicians of *modality* might not be satisfied; they might agree that we have established the truth condition for the mathematical proposition, but they might still be puzzled about the *necessity* of the proposition. They might still want to know what accounts for the *necessity* of " $7 + 5 = 12$ " even after we have established what accounts for its truth. In other words, they want to know the truth condition for $(\Box 7 + 5 = 12 | 7 + 5 = 12)$. How can we try to answer them?

One answer seems to jump right out; the metaphysicians of modality are just being obstinate. The truth condition for $\Box 7 + 5 = 12$ is just the very same truth condition for $7 + 5 =$

12. In symbols: $(\Box 7 + 5 = 12 \mid 7 + 5 = 12)$ because $7 + 5 = 12$. Whatever it is that makes $7 + 5 = 12$ true is the same thing that makes it necessary. But this will not do. The problem is that the form of this explanation— $(\Box P \mid P)$ because P —will clearly not hold in general. So, the explanation offered here has not yet explained what is special about the mathematical case such that an explanation of this form holds in general. It seems that the proposition is true because it is a certain *kind* of proposition: it is a mathematical proposition, and all mathematical propositions are necessary. As a first stab at a solution to the problem, then, we might put the explanation this way: $(\Box 7 + 5 = 12 \mid 7 + 5 = 12)$ because “ $7 + 5 = 12$ ” is a mathematical truth, and all mathematical truths are necessary. If this is an adequate explanation, then what accounts for the necessity here is a fact about the proposition (or the state-of-affairs, or the fact, or what-have-you) itself—that it has a certain property—it is *mathematical*. This establishes a general truth condition for $\Box P$: $\Box P$ is true if and only if P is true and P has a necessity-making property. What the metaphysician of modality is after is a description of this necessity-making property.

What about the truth conditions for the possibilities of false contingencies? We need a new example: “The number of planets is 12.” This is false, but it seems that it could have been true and not just because we could redefine “planet” (yet again). It is possible because the world could have been such that there are 12 planets in our solar system. Blackburn would say the explanation must take the form “ $\Diamond P$ because Q ,” but actually, if we are more careful, we should say that the explanation should take the form “ $(\Diamond P \mid \sim P)$ because Q ,” where Q gives the explanation for the possibility of P *given* the falsity of P . So to use our example, the question is: *given* that it is false that there are 12 planets in our solar system, what explains its possibility?

The answer is that we determine whether the truth condition for P has a certain possibility-making property. If it has that property, then P is possible.

The problem now is that when we ask whether the truth condition for P has a certain property we *are* asking once again for a truth condition: we are asking for the truth conditions for ΦQ , where Φ is the necessity-making property (or possibility-making property if we take possibility as the more primitive of the two), and Q is the truth condition for P. If we restate Blackburn's complaint with this new understanding of what sort of explanation the truth conditions approach is looking for, then we get something like this

$$(\Box P \mid P) \text{ because } \Phi Q \quad \text{and} \quad (\Diamond P \mid \sim P) \text{ because } \sim \Phi Q$$

Now the question is: does Blackburn's dilemma occur all over again? It looks like the explanandum has modal content and the explanans does not, so would an explanation in this form undermine modality? I think not. Consider the answer given by conventionalism: $(\Box P \mid P)$ because P is analytically true, and all analytically true propositions are necessary. For this theory, the necessity making property is analyticity; the truth of the proposition is established by the definition of the terms it contains, and then one appeals to the theory that all such propositions are necessary. In other words, P is true because it is analytically true, and it is necessary because necessity is a property of all analytically true propositions. For another example, consider the answer given by a certain kind of modal conceptualist: $(\Diamond P \mid \sim P)$ because P is conceivable, and all conceivable propositions are possible. Here conceivability is the possibility-making property.

Therefore, Blackburn's Dilemma does not show that the truth-conditions approach to modality is hopeless. The truth-conditions approach is not undermined by such expressivist scruples. This of course does not mean that modal expressivism is not a viable option. But if

modal expressivism is chiefly motivated by a criticism of the truth-conditions approach, along the lines of Blackburn's dilemma, then it is simply not well motivated. For expressivist scruples do not do as much damage to the truth-conditions approach to modality as they initially appear. We are, as yet, given no reason to abandon the truth-conditions approach in favor of expressivism.

2.4 Conclusion: Taking the Integration Challenge Seriously

One of the main goals of this chapter has been to try to motivate the idea that the integration challenge for modality is a genuine problem that should be taken seriously by all metaphysicians of modality. I have considered some powerful reasons to abandon it from Quinean eliminativism to modal skepticism to Blackburn's dilemma. In each case, I hope that I have given enough reason to doubt that those strategies are plausible. Of course, many philosophers have accepted these views for a variety of reasons, so what I have offered in this chapter should be construed merely as suggestive of ways to respond to these views. I hope, however, that the comments in this chapter have helped to make the integration challenge seem like a serious problem, worthy of attempting to resolve.

3 Resolutions to the Integration Challenge

In this chapter I survey popular metaphysical theories of modality that potentially can satisfy the constraints, while maintaining the assumptions, of the integration challenge. The discussion up to this point has been almost entirely negative. I have tried to show both that the integration challenge is a serious challenge (chapter one) and that it cannot plausibly be dissolved (chapter two). This chapter will survey the landscape of theories of modality looking for those that have the potential to resolve the integration challenge. The goal will be to cull the theories that are implausible—from the perspective of the integration challenge—from the more plausible ones. In the next chapter, I will take the lessons learned from this chapter and begin to further develop what I take to be the *most* plausible metaphysical theory of modality that resolves the integration challenge.

I argued in chapter one that to avoid the integration challenge we must give equal weight and concern to both semantics and epistemology in our metaphysics. However, one cannot do everything all at once, so I will have to work back and forth between the semantic constraint and the epistemic constraint as I examine the resolution strategies in this chapter. I must be careful with this, of course, because, as I also argued in chapter one, metaphysical theories of modality that start from semantic concerns tend to be realist theories that minimize epistemological concerns, and theories that start from epistemological concerns tend to be idealist theories that minimize semantic concerns. Therefore, I must start from either a semantic point of view or an epistemological point of view, while remaining cognizant of the dangers of letting that point of view bear too much of the metaphysical load. But before I turn to those theories, a few words are

in order about what exactly I will be looking for in these theories vis-à-vis the constraints of the integration challenge and how I will go about looking for it.

3.1 Satisfying the Constraints

First, let us remember the constraint of the integration challenge as they apply to modality.

Semantic Constraint for Modality: A metaphysical theory of modality must provide an account of modal truth such that the truth conditions for modal propositions are also applicable to some non-modal propositions.

Epistemic Constraint for Modality: A metaphysical theory of modality must provide an account of modal truth such that there are reasons to believe that the truth conditions for modal propositions are satisfied in at least some cases.

How will we go about seeking a theory that simultaneously satisfies both of these constraints?

For the semantic constraint, the answer is fairly straightforward; every metaphysical theory has a semantic adjunct to tell us what the truth conditions are. So, we will simply look at that adjoining semantic theory and apply the semantic constraint to it.

Unfortunately, the epistemic constraint is not so easy. As I suggested in my response to Blackburn's dilemma in the last chapter, the two crucial questions of modality are: (1) *Given that P is true*, what accounts for the truth of $\Box P$, and (2) *Given that P is false*, what accounts for the truth of $\Diamond P$? Obviously no false propositions are necessary, so there is no sense in asking about their necessity; and obviously all true propositions are automatically possible, so there is no sense in asking about their possibility. We want to focus our attention on false contingencies—propositions that are false but still possible, and on necessities, which obviously must be true. Therefore, as we consider the epistemic constraint, we need to ensure that we are focusing our attention in the right place. So, let us suppose that we already have a reason to believe that the

possibility propositions in question are false, and the necessity propositions in question are true. In other words, let us not ask simply, “How are we justified in believing that P is possible or that P is necessary?” Instead we should ask, “Given that we are already (somehow) justified in believing that P is false, how are we justified in believing that P is possible?” and “Given that we are already (somehow) justified in believing that P is true, how are we justified in believing that P is necessary?” In what follows, I will take it for granted that we already have a reason to believe the truth or falsity of the propositions in question; modal epistemology asks what, if any, are the *additional* reasons we have to believe that some of the false propositions are possible and some of the true propositions are necessary.

We must remember also that the epistemic constraint does not require a metaphysical theory of modality to provide a complete epistemology; it only requires that the purported truth conditions of a metaphysical theory are the sort of truth conditions that we can have reasons to believe have been satisfied. If we focus on possibility, the challenge that the epistemic constraint puts to a modal metaphysician can be stated like this: “We will grant that we are justified in believing that some propositions are false, and we will grant that some of these propositions are in fact possible. Now tell us what reasons we have to believe that the truth conditions you provide for these false-but-possible propositions are in fact satisfied?” And when we focus on necessity, the challenge can be stated this way: “We will grant that we are justified in believing that some propositions are true, and we will grant that some of these propositions are in fact necessary. Now tell us what reasons we have to believe that the truth conditions you provide for these true-and-necessary propositions are in fact satisfied?”

Now that we know what we are after, it will prove convenient to divide the resolution theories into two separate camps, the modal realists and the modal idealists. However, the term “modal realism” is somewhat ambiguous, so let me be clear about how I am using the term. “Modal realism” is sometimes used in a fairly broad sense to refer to any view that opposes modal expressivism (or modal non-cognitivism), which I considered in chapter two. Modal realism, in this sense, is simply the view that there are modal facts—that modal propositions are evaluable as either true or false—that they are something more than mere expressions of our own desires, or of the rules of language use, or some other such thing. But “modal realism” is also used in a narrower sense to refer to the family of views that hold that not only are there modal facts, but also that the relevant facts are mind-independent—they are not facts about minds. I will use “modal idealism” to refer to the family of views that maintain that there are modal facts, but that the relevant facts are mind-dependent—they are facts about minds. Both modal idealism and modal realism in the narrow sense are modal realist views in the more broad sense, since they both hold that there are modal facts. Where the modal realists (in the narrow sense) and the modal idealists disagree is on the nature of those facts: the modal realists say that they are mind-independent, and the modal idealists say that they are mind-dependent. This is the divide that I will be considering in this chapter. As we have already seen, idealists tend to lean heavily on epistemological concerns at the expense of semantics, while realists tend to do the opposite. To solve the integration challenge, we need to equalize the theoretical weight on both pillars. So, I will be on the lookout for theories with the potential to do this.

3.2 Modal Idealism

I begin with modal idealism. According to modal idealism, the truth conditions for modal propositions are entirely mind-dependent: the truth of modal propositions is determined entirely by minds. A colorful way to put modal idealism is that if there were no minds in the world, there would be no modality in the world either: without minds there would just be the way things are; there would not be the way things could be or the way things must be. Modal reality is part of mental reality.

I already briefly considered one idealist account in chapter one—the classical conventionalist theory, which few or none accept anymore. In this section, I want to examine some of the more plausible idealist views. There are three major strands of modal idealistic thought that I will consider: the first is a view sometimes called conceptualism; the second is a view that Ted Sider has recently named Humeanism;⁷³ and the third is a view I will call Leibnizianism after its main proponent. All of these views suggest that the truth conditions for modal propositions are mind-dependent. The difference between these views can be captured by considering *which* minds each finds relevant to the determination of modal truth. For conceptualists, all minds (considered collectively), or as Nicholas Rescher put it, “mind-in-general,”⁷⁴ determines modal truth; for Humeans, any group of minds at all can agree to determine modal truth in their own way; and for Leibnizians, there is only one relevant mind—the mind of God.

3.2.1 Conceptualism

It is important at the outset to distinguish conceptualism from other theories with which it might be confused. In particular, there are many epistemological theories of modality that

⁷³ *Writing the Book of the World*, 268.

⁷⁴ “The Ontology of the Possible,” 171.

suggest that conceiving of a proposition implies, or is evidence for, or otherwise acts as a guide, to its possibility.⁷⁵ But modal conceptualism is a metaphysical theory rather than an epistemological theory. According to modal conceptualism, conceiving of propositions indeed guides our understanding of modal matters, but this is because possibility *just is* conceiving. Modal conceptualism holds that $\Diamond P$ is *made true* by our conceiving of P.

According to modal conceptualism, when one manages to conceive of a proposition, that proposition is *a fortiori* possible. But there is a problem; surely there are more possibilities than have been conceived in the history of the world. Perhaps conceiving of a proposition is a sufficient condition for its possibility, but it is clearly not a necessary condition of its possibility. So, conceiving cannot fully *constitute* possibility. Modal conceptualism's answer to this problem is that it is not the *actual* conceiving of a proposition that accounts for its possibility. Rather it is its *conceivability*, fact that the proposition *could* be conceived. Hence, the semantics required for conceptualism is something like:

“Possibly P” is true iff P is conceivable

“Necessarily P” is true iff not-P is not conceivable.

It is possible that talking donkeys exist because it is conceivable that they do, and it is necessary that nothing is both round and square because it is not conceivable that anything could share those properties. We will return to this semantic theory in a moment, because, of course, this is where this idealist theory is going to struggle to satisfy the semantic constraint. For now, let us consider the epistemology of conceptualism.

⁷⁵ See for examples, Yablo, “Is Conceivability a Guide to Possibility?” and Chalmers, “Does Conceivability Entail Possibility?”

If conceptualism is correct, then modal epistemology may seem like an extremely straightforward matter. What we manage to conceive is automatically possible. So, obviously we have a reason to think that the truth conditions established by conceptualism for modal propositions have been satisfied. There can be no clearer evidence of a proposition's conceivability than the actual conceiving of it. If we have managed to conceive of a proposition, then it is conceivable, and therefore possible according to modal conceptualism.⁷⁶ But things are not as straightforward as all that, for what exactly does it take to conceive of a proposition? Does one have to imagine witnessing the evidence for the truth of the proposition? Does one have to engage in conceptual analysis? Moreover, why should we accept that a report of having conceived of a proposition actually counts as a conceiving of that proposition? These are good questions, and fortunately we do not have to settle them here. Remember that the epistemic constraint does not require that a metaphysical theory of modality present a complete modal epistemology; the theory need only imply that we have some plausible reason to think that the truth conditions it offers for at least some modal propositions have been satisfied. Conceiving can be understood in a variety of ways that could potentially satisfy this requirement; imagining and conceptual analysis are just two. If we manage to actually conceive of a proposition, whatever that might mean, then that provides a reason to believe that that proposition is possible because actually conceiving is clear evidence of conceivability. Therefore, it looks like conceptualism will have little trouble satisfying the epistemic constraint.

⁷⁶ Accounting for justified beliefs concerning necessity, however, is a little trickier. It will not do simply to say that when we fail to conceive of a proposition, we are thereby justified in believing that the negation of that proposition is necessary. Perhaps we have just not thought it through enough; or perhaps we are just not clever enough to conceive of the proposition. Someone cleverer or more attentive might have better luck.

Now let us go back to the semantics of conceptualism. The main semantic problem with conceptualism is that conceivability is modally loaded, so to speak. It indicates an ability that may or may not *actually* be being used at any particular time by any particular person.⁷⁷ Whatever conceivability ultimately amounts to, the conceivability of a proposition is not determined by any particular person's actual conceiving; it is determined by the *possibility* of some particular person's actually conceiving of it. But this just sends us around in a circle: possibility is definitionally prior to conceivability but also metaphysically identical to it. The semantic theory, then, (partially) reduces to:

“Possibly P” is true iff P *can* be conceived.

“Necessarily P” is true iff not-P *cannot* be conceived.

Since there are modal concepts on both sides, this is a circular semantic theory, and a circular semantic theory has no hope against the semantic constraint. The semantic constraint requires truth conditions for which there are plausible reasons to believe are genuine conditions of truth. A circular semantics cannot provide *any* reasons to think that the truth conditions result in true sentences when satisfied simply because it cannot say what it takes to satisfy the conditions in the first place.

Nicholas Rescher has a response to this objection. He writes,

But are we not involved in a circle of some kind in saying that possibility resides in conceivability, something which in turn requires reference to the possible—to what *can be conceived*? Is not the qualification of possibility in terms of possibilities a nonproductive circumambulation? Not really. What we are saying is that the “reality” of certain possible states of affairs and things (that is, nonexistent possibilities) resides in the reality of possibility-involving *processes*.... We are saying that, when the-possibility-of-the-thing is its only “reality,” this “reality” inheres in a possibilistic intellectual process.

⁷⁷ One might suggest that God is conceiving of all possible propositions all the time, but this will not solve the epistemic problem for conceptualism, because the epistemic constraint requires a non-special epistemic faculty that we finite beings can actually use to justify our modal beliefs. God's knowledge of modality is not the issue.

Here actuality is indeed prior to possibility—the actuality of one category of things, namely, minds with their characteristic modes of functioning, underwrites the *construction* of the totality of nonexistent possibles that can be contemplated.⁷⁸

For Rescher the mental process of conceiving is the source of the “reality” of possibles. And this puts the actual existence of minds in its rightful place, metaphysically prior to possibilities. But, this does not really solve the semantic problem. There seems to be no way to remove the offending modal content from the semantic theory along the lines that Rescher’s remarks seem to indicate. Here is an attempt. Perhaps we modify the semantic theory to:

“Possibly P” is true iff there is a mental process that, when used, results in conceiving that P.

“Necessarily P” is true iff there is no mental process that, when used, results in conceiving that not-P.

Now there is no obvious modal content on the right-hand side. Still, this will not do. The problem now is with that term “when used.” What if some particular process is never actually used? Is the proposition that would have been conceived as the result of using that process not possible? That seems unlikely. So, the semantic theory, once again, has to be remodeled to say something more along the lines of

“Possibly P” is true iff there is a mental process that *can be used* to conceive that P.

“Necessarily P” is true iff there is no mental process that *can be used* to conceive that not-P.

And we are stuck in the circle again. It looks like getting out of this circle is hopeless. I therefore, conclude that conceptualism is not a plausible resolution of the integration challenge because it has no plausible way to satisfy the semantic constraint.

⁷⁸ “The Ontology of the Possible,” 174. Italics in original.

3.2.2 Humeanism

Humeanism is—obviously—another view inspired by Hume. There are many different ways that Humeanism has been developed. It is more like a family of theories than one definite theory. Sider has expressed it most clearly and directly,⁷⁹ but Sidelle,⁸⁰ and Peacocke,⁸¹ among others, probably accept something very much like it. The commonality among these theories is that they agree with the classical conventionalist view that modal truth is determined by facts about language. Remember, though, that classical conventionalism has a serious problem. The conventionalist says that a proposition is necessary if and only if it is analytically true. In other words, when a proposition's truth is entirely determined by the conventional meanings of the terms in the proposition rather than by the state of the world, then that proposition is analytically true, and therefore necessary. The main objection that has been directed at this theory is that linguistic conventions are themselves contingent. So it appears that conventionalism ultimately makes necessary truths into contingent truths.

The Humeans want to avoid this result but still maintain that the conventions of language determine modal truth. How, then, does Humeanism account for the conventional aspect of modal truth without falling prey to the argument that the selection of conventions turns necessary truths into contingent truths? Sider writes, “To say that a proposition is necessary, according to the Humean, is to say that the proposition is i) true; and ii) of a certain sort. A crude Humean view, for example, would say that a proposition is necessary iff it is either a logical or a

⁷⁹ Writing the Book of the World.

⁸⁰ In *Necessity, Essence, and Individuation: A Defense of Conventionalism* and in “Conventionalism and the Contingency of Conventions.”

⁸¹ In “Metaphysical Necessity: Understanding, Truth, and Epistemology,” and in *Being Known*.

mathematical truth.”⁸² The proposition “ $2 + 3 = 5$,” for example, is necessary according to this crude version of Humeanism, but not because the conventions of language dictate that it is *true*; its truth is independent of linguistic conventions. Instead, “ $2 + 3 = 5$ ” is necessary on this view because it is a truth of a mathematical sort, and the conventions dictate that the mathematical truths are necessary. In other words, what distinguishes Humeanism from the classical conventionalist view is that convention plays no part in determining *truth*; the conventions determine the *modality*, not the *truth*, of propositions. It is important to note, however, that Humeanism is open to many variations on what dictates our choice of members of the “certain sort” of propositions that will count as necessary. Perhaps the choice is merely conventional, but maybe the choice reflects something about the way that humans must conceptualize the world. In any case, *we* determine modality through the conventions of language.

The objection that the linguistic conventions are themselves contingent has no force against Humeanism because all that a selection of alternate linguistic conventions can accomplish is to change the set of sentences that the members of the linguistic community consider to be necessary. No selection of alternate conventions will bring it about that there is a married bachelor. All a change in conventions can do is bring it about that we no longer consider the *truth* that all bachelors are unmarried to be a necessary truth. The truth remains untouched by convention change, according to Humeanism. Convention change only results in modal change, not truth change.

The epistemology of Humeanism is fairly straightforward. We are justified in believing that nothing is a round square because we are familiar with the conventions of our language and those conventions dictate that nothing can have these two shapes at once. We are justified in

⁸² *Writing the Book of the World*, 269.

believing that talking donkeys could exist, because we are familiar with the conventions of our language, and those conventions do not rule out talking donkeys. Just like with the classical conventionalist view, knowledge of modality turns out to be knowledge of language. So, Humeanism fairly obviously satisfies the epistemic constraint.

How about the semantic constraint? Humeanism is a little bit harder to analyze semantically, as its accompanying semantic theory is not an easy one to figure. This is mainly because Humeanism comes in so many different varieties. Consider Sider,

The core idea of the Humean account, then, is that necessary truths are truths of certain more or less arbitrarily selected kinds. More carefully: begin with a set of *modal axioms* and a set of *modal rules*. Modal axioms are simply certain chosen true sentences; modal rules are certain chosen truth-preserving relations between sets of sentences and sentences. To any chosen modal axioms and rules there corresponds a set of *modal theorems*: the closure of the set of modal axioms under the rules. Any chosen set of modal axioms and modal rules, and thus of modal theorems, results in a version of Humeanism: to be necessary is to be a modal theorem thus understood.⁸³

So, any set of true sentences can be a set of necessary truths according to Humeanism. The choice between sets is arbitrary. Therefore, there is no specific semantic theory to pin on Humeanism. Still, Sider's presentation does suggest a kind of meta-semantic theory for all versions of Humeanism:

“Necessarily P” is true iff P follows from some arbitrarily selected set of axioms according to some arbitrarily selected set of rules.

“Possibly P” is true iff not-P does not follow from some arbitrarily selected set of axioms according to some arbitrarily selected set of rules.

The specific axioms and rules needed to give a complete semantic theory will be established by each specific version of Humeanism.

⁸³ *Writing the Book of the World*, 271.

If this is an adequate representation of the form of the semantic theory accompanying any particular version of Humeanism, then the theory does not satisfy the semantic constraint. Take any version of Humeanism, for example the crude version that holds that P is necessary if and only if P is either a mathematical or a logical truth. The modal axioms and rules in this case are the axioms and rules of logic and mathematics. The modal theorems, then, are just the members of the set of sentences that follow from these axioms in accordance with these rules; i.e., the set of logical and mathematical truths. The problem, of course, is that arbitrariness is built right in to the truth conditions. There cannot be reasons to believe that satisfying these truth conditions results in true modal propositions because the truth conditions themselves *say* that there are no reasons to choose the set of axioms and rules it suggests rather than some other set of axioms and rules. It seems that the very arbitrariness of Humean truth conditions for modal propositions leaves very little hope that any version of Humeanism will satisfy the semantic constraint. The semantic constraint requires that the truth conditions be applicable beyond the scope of the theory. The problem that the semantic constraint presents for Humeanism is that an arbitrarily selected set is, by definition, selected for no reason at all. This is central to the Humean strategy; if there were some reason to select one set of axioms or rules over another, then presumably those reasons would actually do the work of determining modal distinctions rather than the set of axioms and rules. But these truth conditions are not obviously applicable to any non-modal propositions. Therefore, Humeanism is not a plausible resolution to the integration challenge because it does not satisfy the semantic constraint.

3.2.3 Leibnizianism

We now turn to the final idealists theory, Leibnizianism. According to Leibniz, the truth conditions for modal propositions are determined by a single mind—the mind of God. All possible worlds exist in the mind of God, and God selects one of these possible worlds to be the actual world based on the criterion that the selected world be the best of all the possible worlds.⁸⁴ How does this theory fair against the integration challenge?

One thing to notice about Leibnizianism is that there is a sense in which it is a realist, rather than an idealist, view because even though it suggests that modal truth is mind-dependent, it is still independent of *our* minds. For this reason, Leibnizianism is unusual among the idealist views because it has very little problem satisfying the semantic constraint. Its troubles are instead with the epistemic constraint.

Leibnizianism satisfies the semantic constraint fairly straightforwardly because it relies on the familiar possible world semantics:

“Possibly P” is true iff P is true in some possible world.

“Necessarily P” is true iff P is true in all possible worlds.

As we already seen, any theory that relies on possible world semantics will fairly straightforwardly satisfy the semantic constraint. It is fairly clear how there are reasons to believe that these truth conditions will result in true sentences, because for those who accept possible world semantics, truth just is truth *in* a world: to be true is just to be true *in* the actual world, which is one among the members of the set of possible worlds.

So, let us move on to the epistemic constraint. The trouble for Leibnizianism is that “the actual world” is an ambiguous term. On the one hand, the actual world is just one among the other possible worlds in the mind of God. On the other hand, the actual world is the world

⁸⁴ *Philosophical Texts*, 275.

selected by God to be the special world that is actualized. The question is: what happens when the actual world is selected? Does it remain an idea in the mind of God that just takes on a special status, or does it become something else outside of the mind of God? In either case, the view has serious epistemic problems.

First consider the case in which the actual world is simply one among the other possible worlds, and God's choice is nothing more than to pick it out as special without anything really happening to it. In this case, Leibnizianism implies that the actual world, and everything in it, literally exists as an idea in the mind of God. But if so, then how are we to know that we are in the actual world rather than in some merely possible world? On this understanding of Leibnizianism, God's choice of one of these worlds to be the actual world makes no qualitative difference to the things (including us) that inhabit these worlds.⁸⁵ Whether we are in the actual world or in one of the other possible worlds is indistinguishable from our perspective. Robert M. Adams considers a response that tries to avoid this objection to Leibnizianism by suggesting that we might always be immediately acquainted with our own actuality,⁸⁶ but I must agree with David Lewis's assessment of this argument: the people in all those other possible worlds existing in God's mind have just as much evidence for their own actuality as we do.⁸⁷ From their point of view, they are in the actual world, and from our point of view, we are in the actual world. A theory that saves modal knowledge by sacrificing knowledge of actuality is very implausible.

Suppose instead that a Leibnizian suggests that the idea becomes something else through the process of actualization. The most plausible suggestion along these lines would be that the

⁸⁵ Donald Williams was probably the first to spot this difficulty for Leibniz. He writes, "[Leibniz] never intimates, for example, how he can tell that he is a member of the existent world and not a mere possible monad on the shelf of essence." "Dispensing with Existence," 752. Italics in original.

⁸⁶ "Theories of Actuality," 203.

⁸⁷ *On the Plurality of Worlds*, 93.

idea becomes something like a blueprint for an external creation—a world existing outside the mind of God based on the idea. In this case, the epistemological problem is that the other possible worlds are in the mind of God, and we are not in the mind of God. Presumably, we are in the external creation, not in the idea. So, it seems that to be justified in believing anything about these other possible worlds, we would have to be justified in believing that some idea is in the mind of God. If we are to be justified in believing, say, that it is possible that talking donkeys exist, under this interpretation of Leibnizianism, then we need a reason to believe that the idea of a talking donkey exists in the mind of God. How can we have a reason to believe that?

One possible answer might be that our minds are very much like the mind of God to a limited extent, and we have some ideas concerning possibilities in our minds. It is not exactly clear what it means for an idea to be *in* a mind for Leibnizians, but if it is possible for God to have ideas in His mind, then it seems that it should be possible for humans also to have ideas in our minds (whatever that might mean). So suppose that for some epistemic agent, S, there is an idea of a talking donkey in S's mind. A Leibnizian might suggest that the existence of this idea in S's mind counts as evidence that the very same idea exists in the mind of God, because any idea we can have must have been an idea that God has already had. The problem with this is that it is not at all clear that having an idea is a reason in general to think that an idea is possible, much less that it exists in the mind of God. Does S have an idea of a round square? It seems that even to be able to reject the possibility of a round square, one would have to have an idea of one. So it is plausible to think that the idea of a round square can exist in S's mind. If so, then having an idea in one's mind is not by itself evidence that the idea is possible, much less that the idea exists in the mind of God. If this version of Leibnizianism is going to satisfy the epistemic

constraint, much more will have to be said about what it takes for an idea to be in the mind (of God and of a person). The explanation will have to make it clear how only possible things are in the mind of God, and how ideas can be in our minds in a similar way such that they can count as evidence that the same ideas are also in the mind of God. Lacking such an explanation, this version of Leibnizianism fails to satisfy the epistemic constraint.

Hence, Leibnizianism is implausible. On the one hand, if the actual world (including us) is literally in the mind of God, then we have no reason to believe that we are in the actual world instead of some other possible world. On the other hand, if the actual world is something other than an idea of the actual world that exists in the mind of God, then we have no reason to believe that any of our ideas are contained in the mind of God, so we have no modal knowledge. In either case, Leibnizianism fails to satisfy the epistemic constraint.

Conceptualism, Humeanism, and Leibnizianism all failed to satisfy one of the constraints of the integration challenge. Conceptualism and Humeanism both fail to satisfy the semantic constraint, and Leibnizianism fails to satisfy the epistemic constraint. This is not to say, of course, that one of these theories could not be worked out to satisfy the constraints. But I hope that I have said enough about these theories to support my claim that the prospects for these theories in relation to the integration challenge are bleak. Let us, therefore, leave behind the idealist theories and turn our attention to realism.

3.3 Possible World Realism

We have already briefly encountered possible world realism in chapter one. I argued there that possible world realism easily satisfies the semantic constraint because possible world

semantics does not require special truth conditions for modal sentences. Here, again, is possible world semantics:

“Possibly P” is true if and only if P is true in at least one possible world.

“Necessarily P” is true if and only if P is true in all possible worlds.

It is easy to see how these truth conditions apply to non-modal sentences. In fact, possible world semantics is often stated with a qualification for the use of the word “actual:”

“Actually P” is true if and only if P is true in the actual world.

This is supposed to make it clear that *truth in a possible world* is not a special kind of truth condition. For a proposition to be actually true is just for it to be true in the actual world. For most possible world realists, “actually P” is just a variant way to say P,⁸⁸ so it will turn out that being true is just the same as being true in the actual world.

The epistemic constraint, however, is another matter entirely. To see what can be said about the epistemology of possible worlds, we will need to consider the two different varieties of possible world realism: possibilism and actualism. The possibilists and the actualists are divided on the question of the relationship between the actual world and the other possible worlds. The possibilists believe that the actual world is just one among the many different possible worlds; the actualists believe that there is really only one world—the actual world—but that possible worlds exist as some sort of abstract objects that are ultimately just part of the actual world. Each of these has a different epistemic problem brought out by considering the epistemic constraint.

3.3.1 Possibilism

⁸⁸ David Lewis is the notable exception here. For Lewis, the word “actual” is an indexical that refers to the world in which it is uttered. It is not simply a variant way to say “true.”

According to possibilism, possible worlds are worlds just like the actual world. David Lewis's specific version of possibilism, which is by far the most developed, suggests that possible worlds are worlds full of talking donkeys and even more fantastical (as well as mundane) things, all of which exist in the same sense that you and I and all our surroundings exist. For possibilists, there is no difference in kind between the other possible worlds and the actual world. The other possible worlds are just spatiotemporally isolated from us; we cannot interact with the things in those worlds, but they are no less real because of that. Since this is the most full-blooded version of modal realism, I will call it, following John Divers, genuine realism.⁸⁹

It is the spatiotemporal isolation of the other possible worlds that causes the epistemic problem for genuine realism. Since the other possible worlds are spatiotemporally isolated from the actual world—the world we inhabit—any epistemic agent in the actual world has no clear means of discovering what is happening in these other possible worlds. The epistemic problem presented to genuine realism by the epistemic constraint is that there are no reasons to believe that the truth conditions established by the theory are ever satisfied. There are no talking donkeys in the actual world, but surely there could have been. So, it should turn out that we are justified in believing that it is possible that talking donkeys exist. If genuine realism is true, though, the truth conditions for “it is possible that talking donkeys exist” involve the goings-on in other spatiotemporally isolated possible worlds. How can we tell whether or not there are talking donkeys in some other spatiotemporally isolated possible world? It seems that the isolation between the other worlds and us prohibits having any such reason. We certainly cannot inspect

⁸⁹ Sometimes Lewis's view is called concrete modal realism or extreme modal realism. Lewis himself just called his view modal realism, but this does not clearly distinguish it from other realist views.

those worlds: as Kripke is fond of putting it, possible worlds cannot be viewed through powerful telescopes.⁹⁰

If the other possible worlds are similar in kind to the actual world, we should expect that the justification conditions for modal beliefs are similar in kind to the justification conditions for non-modal beliefs. But our ways of knowing about the actual world involve a great deal of perceptual inspection, which is obviously not possible with spatiotemporally isolated possible worlds. So, it looks like Lewis will need some kind of special justification conditions for modal beliefs.

Lewis has a response to the epistemic objection. He is concerned mainly with the causal construal of the epistemic constraint, which I have shown in chapter one to be inessential to the main thrust of the integration challenge, but it is worth considering his response nonetheless.

Lewis writes,

I think it is true that causal acquaintance is required for some sorts of knowledge but not for others. However, the department of knowledge that requires causal acquaintance is not demarcated by its concrete subject matter. It is determined instead by its contingency....Our knowledge can be divided into two quite different parts. As best we can, I think by seeking a theory that will be systematic and devoid of arbitrariness, we arrive at a conception of what there is altogether: the possible worlds, the possible individuals that are their parts, and the mathematical objects, even if those should turn out to be pure sets not made out of the parts of the world. This conception, to the extent that it is true, comprises our modal and mathematical knowledge. But a conception of the entire space of possibilities leaves it entirely open where in that space we ourselves are situated. To know that, it is necessary to observe ourselves and our surroundings....Our *contingent* knowledge...requires causal acquaintance....Our necessary knowledge...does not require causal acquaintance.... It requires no observation of our surroundings, because it is no part of our knowledge of which possible world is ours and which possible individuals are we.⁹¹

⁹⁰ *Naming and Necessity*, 44.

⁹¹ *On the Plurality of Worlds*, 111-112.

Lewis's suggestion seems to be this: Our modal (and mathematical) beliefs are justified by a process of theory-seeking that is intent on systematicity and devoid of arbitrariness; our non-modal (and non-mathematical) beliefs are justified by observation. This amounts to a denial of the epistemic constraint, which requires that the justification of modal beliefs involve the truth conditions for those beliefs. Lewis's suggested justificatory process does not refer to those truth conditions at all. So, we can take Lewis's response as a potential reason to reject the epistemic constraint. If Lewis's response is successful, then the integration challenge has been misguided from the start. Our modal beliefs can be justified independently of a reason to believe that the truth conditions for those beliefs have been satisfied.

The problem with Lewis's response is that the justification conditions he is suggesting do not do the work that he needs them to do. He claims that discovering a theory of modality that satisfies certain theoretical virtues is what justifies our modal knowledge. But this is at the wrong level of knowledge, so the speak, to meet the integration challenge. Lewis seems to suggest that having a reason to believe that a theory of modality is true amounts to having a reason to believe that all modal beliefs implied by that theory are true. Fair enough, but genuine realism does not imply any particular modal claims. Accepting that there are possible worlds does not imply anything like the proposition that there are talking donkeys in some of these possible worlds. Essentially, Lewis conflates knowledge *of* a theory with knowledge *of the subject matter of* a theory. Perhaps genuine realism's ability to systematize and avoid arbitrariness in the desired way (if true) counts as a reason to accept that other possible worlds exist, but it does not count as a reason to believe that any of those worlds contain talking donkeys or anything like that. To think otherwise is to assume that our modal beliefs are already somehow justified and are

included in the data that we wish to systematize with metaphysical theory, which begs the question against the integration challenge. Therefore, Lewis's response does not constitute a reason to reject the epistemic constraint, and it seems unlikely that genuine realism has any other plausible way to satisfy it. We simply have no reasons for believing anything about the happenings in other spatiotemporally isolated possible worlds.

3.3.2 Actualism

This brings us to the other, more popular, tradition of possible world realism, actualism. According to the actualists, there is only one world: the actual world. However, actualists are still realists about possible worlds; they hold that possible worlds are some kind of abstract entities. So, they are a different kind of thing than the actual world.

Before we look at the actualist views in detail, however, I think it will be instructive to consider what Lewis himself considers to be the realist alternatives to his view. Lewis identifies three different realist competitors to his own theory. He calls them ersatz theories of possible worlds. According to ersatz versions of possible world realism, there is only one world, the actual world. Possible worlds are abstract entities that exist as a part of the actual world. The problem with this, though, from Lewis's point of view, is that the actual world is supposed to be among the members of the set of possible worlds. To account for this, ersatzers must show how it is that one among these ersatz possible worlds manages to represent (or substitute for) this world, while the others merely *misrepresent* this world. Lewis divides the ersatz theories into three categories according to how each explains how a possible world represents (or misrepresents) the actual world.

The first of Lewis's ersatz views is what he calls linguistic ersatzism, according to which possible worlds are maximally consistent sets of sentences or similar semantic constructions. According to Lewis the linguistic ersatzist views treat representation as a function of meaning. A maximally consistent set of sentences (or propositions, or states of affairs, etc.) represents a world via the meanings of the sentences (or propositions, etc.) in the set: they represent a world by describing it.⁹² The second of Lewis's ersatz theories is the pictorial theory. According to this theory, possible worlds represent a world in the same way that a picture or a statue represents the object depicted. They represent the world through isomorphism or resemblance.⁹³ The third ersatz view is the magical theory, according to which possible worlds represent in some primitive way that cannot be explained by reducing this form of representation to something else.⁹⁴

For each of these ersatz theories, Lewis complains that it cannot explain representation in a satisfactory manner: none of them can explain how it is that one possible world manages to get the world right while all the others get the world wrong. The details of his specific complaints against each of these different understandings of world representation are not relevant here, but I want to point out that no matter which of these different ersatz theories of world representation an actualist takes, "the actual world" turns out to be an ambiguous term. It could mean "the one and only existing world—everything that exists, considered in totality," or it could mean "the one and only representation, among all the available representations, that manages to get the world right."

⁹² *On the Plurality of Worlds*, 142.

⁹³ *On the Plurality of Worlds*, 166.

⁹⁴ *On the Plurality of Worlds*, 174.

To avoid confusions and to facilitate discussion, I propose a change in terminology. Believers in possible worlds are fond of describing possible worlds as “ways the world could have been.” Here are two examples, which are by no means atypical. Lewis writes, “I therefore believe in the existence of ‘ways things could have been’. I prefer to call them ‘possible worlds’.”⁹⁵ Plantinga writes, “A possible world is a *way things could have been*—a *total way*.”⁹⁶ Therefore, let us say that the term “way things could have been” captures the idea of the ersatz worlds the actualists require. To avoid the long-winded name “way things could have been,” I will simply call these “possible ways.” Actualists also believe that among these *ways things could have been* there is one special *way things are* that represents the actual world. Therefore, I will continue to use the term “actual world” to refer to the totality of all that exists, and I will use the term “way things are,” or “actual way” to refer to the representation of the actual world—the one and only possible way that represents the actual world however that may be understood by whatever brand of actualism happens to be under consideration.

These changes in terminology will, I hope, help to disambiguate the term “actual world.” It also has the added advantage of highlighting the actualist idea that possible worlds are not really worlds at all in the same sense that the actual world is a world. Why call them “possible worlds” if they are not really worlds? So, I should think that this change in terminology would be welcome to actualists.

To recast Lewis’s problem for actualist theories, he is concerned that the relationship between the actual way and the actual world cannot be worked out in a satisfactory manner. What will distinguish the various versions of actualism is its unique understanding of the

⁹⁵ “Possible Worlds,” 182.

⁹⁶ “Actualism and Possible Worlds,” 254. Italics in original.

relationship between the actual world and the actual way. According to John Divers, who has given us an impressive and exhaustive study of the literature on possible worlds, there are four main families of actualism, each with a different understanding of the relationship between the actual world and the actual way: Plantingan realism, book realism, nature realism, and combinatorial realism.⁹⁷ I will consider each of these theories in turn.

3.3.2.1 *Plantingan Realism*

According to Plantingan realism, named for its major proponent, Alvin Plantinga, possible ways are maximal and possible states of affairs. Some states of affairs obtain, such as Quine's being a distinguished philosopher, and some do not obtain, such as 9's being a prime number. Even those states of affairs that do not obtain still exist, according to Plantinga. These non-obtaining-but-still-existing states of affairs account for modal truth.

To say that a state of affairs, S, is maximal is just to say that, for every state of affairs, R, R is either included or precluded from S.⁹⁸ So the state of affairs, Quine's being a distinguished philosopher, is not maximal since there are many states of affairs that are neither included nor precluded from it; for example, 9's being a prime number. However, Quine's being a distinguished philosopher is possible, since it is included in at least one maximal and possible state of affairs, whereas 9's being a prime number is precluded from all maximal and possible states of affairs and is, therefore, impossible. It is, of course, impossible to completely specify a complete state of affairs, but that is what a possible world is, according to Plantingan realism.

For Plantinga, the relationship between the actual way and the actual world is identity. They are the same thing: "A possible world, therefore, is a state of affairs, and is hence an

⁹⁷ *Possible Worlds*, 172.

⁹⁸ "Actualism and Possible Worlds," 258.

abstract object. So...the actual world...is an abstract object.”⁹⁹ For Plantinga, it seems that the actual world just *is* the one and only possible and maximal state of affairs that obtains.

The epistemic question for Plantingan realism is: how can we have any reason to believe that some non-actual maximal state of affairs exists? Presumably, we are justified in believing certain things about the maximal state of affairs that obtains because that is just the actual world, and presumably our ordinary justificatory methods provide us with justified beliefs about that. The actual world/way does not include the state of affairs *some donkey's talking*, but, if Plantingan realism is correct, there is a non-obtaining maximal state of affairs that includes it. But what reason can we have for believing that there is any such maximal state of affairs? Maximal-ness seems to block having any such reason. In order to have a reason to believe that it is possible for talking donkeys to exist, we need some reason to believe that there is some non-obtaining maximal state of affairs consisting in *some donkey's talking*. However we might cash out this requirement, the need to have a reason to believe that the state of affairs is maximal seems to rule out ever being able to actually have such a reason. In order to have a reason to believe that Plantinga's truth conditions are satisfied, one needs to have a reason to believe that some non-actual maximal state of affairs exists, and any reason we might have to believe that some state of affairs exists, that state of affairs cannot help but come short of being maximal. We simply cannot *think* a whole world all at once.

But perhaps this is too quick. Maybe Plantinga can say that all we need is a reason to believe that the state of affairs itself exists in order to be justified in believing that it is possible. Forget about maximal-ness: a state of affairs can only exist as part of a maximal state of affairs, but that does not mean that we have to know which one it is a part of in order to know that it

⁹⁹ “Actualism and Possible Worlds,” 258.

exists. Instead, all we might need is a reason to believe that it exists (as part of *some* maximal state of affairs). After all, in order to be possible, a state of affairs need only exist.

Unfortunately, this does not really seem much better for Plantingan realism. What reasons could we have to believe that some state of affairs exists if it does not obtain. Whatever reasons to believe we have for our contingent beliefs concerning the actual world/way will be of no obvious help, since they only justify our beliefs concerning which states of affairs obtain rather than which states of affairs exist but do not obtain? In other words, these familiar justificatory methods can only help us distinguish the obtaining states of affairs from the non-obtaining states of affairs. What we need for modal epistemology is some reasons to distinguish the existent states of affairs from the non-existent. It is hard to see what those reasons could be.

3.3.2.2 *Book Realism*

Probably the most popular actualist theory of all is book realism. According to book realism, espoused by Carnap,¹⁰⁰ Jeffrey,¹⁰¹ Adams,¹⁰² and others, the actual way is a set of sentences or propositions that is both consistent and complete.¹⁰³ The actual way is the one and only complete and consistent set of sentences (or propositions, or statements, etc.) that accurately describes the actual world; the non-actual possible ways are all consistent and complete descriptions that fail to accurately describe the actual world. Consequently, the relationship between the actual way and the actual world, according to book realism, is the relationship between description and thing described. The actual way correctly describes the actual world and the other possible ways incorrectly describe it.

¹⁰⁰ In *Meaning and Necessity*.

¹⁰¹ In *The Logic of Decision*.

¹⁰² In "Theories of Actuality."

¹⁰³ Terminology varies widely among book realists. In Carnap's terminology, possible ways are state descriptions; in Jeffrey's terminology, they are complete consistent novels; and in Adams's terminology, they are world-stories.

Now let us consider book realism's chances against the epistemic constraint. According to book realism, P is possible if and only if there is at least one complete and consistent description of the actual world according to which P is true. So, to use the talking donkey example, book realism satisfies the epistemic constraint only if there is a reason to believe that a talking donkey exists in at least one complete and consistent description of the actual world. How could we have such a reason?

One answer immediately presents itself. We could just *actually* supply the needed description. The problem of course is that any actual description will not be complete, as complete descriptions are quite beyond human abilities to express. But this suggests a modification to the strategy. Perhaps providing a partial description will be enough to satisfy the epistemic constraint. As Kripke writes,

A possible world isn't a distant country that we are coming across, or viewing through a telescope. Generally speaking, another possible world is too far away. Even if we travel faster than light, we won't get to it. A possible world is *given by the descriptive condition we associate with it*. What do we mean when we say, "In some possible world I would not have given this lecture today?" We just imagine the situation where I didn't decide to give this lecture or decided to give it on some other day. Of course, we don't imagine everything that is true or false, but only those things relevant to my giving the lecture; but, in theory, everything needs to be decided to make a total description of the world. We can't really imagine that except in part; that, then, is a "possible world"....Possible worlds are *stipulated*, not *discovered* by powerful telescopes.¹⁰⁴

Kripke is not keeping modal semantics and modal epistemology clearly separated here,¹⁰⁵ so it is not entirely clear what he is getting at. Part of the main idea, however, seems to be that we are justified in our beliefs concerning possibilities to the extent that we can *stipulate* a partial

¹⁰⁴ *Naming and Necessity*, 44. Italics in original.

¹⁰⁵ In the fifth sentence, instead of saying, "What do we mean when we say..." perhaps Kripke's point would have been clearer if he had said, "What justifies our belief that..." I take it that all of Kripke's talk about what we imagine is meant to be epistemological (elucidating how modal beliefs are justified) rather than semantic (elucidating the meaning of "possible world").

description of such a world: stipulation, rather than discovery (through sense perception) is the justifying mechanism of modal beliefs. Suppose, then, that I tell a story in which my protagonist is a genetic engineer who has managed to genetically alter donkeys in such a way that a new breed of talking donkey is created. This imaginative little tale is a partial description according to which a talking donkey exists. Even though the story is not a complete description of the world (no *actual* story could be that), perhaps this story counts as *evidence* that there is a complete description according to which a talking donkey exists. After all, there does not seem to be any obvious reason to think that the partial description offered by my story could not be filled out to form a complete and consistent story. I cannot *actually* fill out the story in complete detail, but this does not mean that it could not be *theoretically* done. In fact, it is easy enough to capture the theoretical possibility of completing a partial description. I simply present the propositions that are to form the partial description (my story), and then I say “for all other propositions, P (besides those in the partial description), either P or not-P, but not both.” First I just *stipulate* my story; then I *stipulate* that the story is part of a complete description. Perhaps these stipulations together justify the belief that it is possible that talking donkeys exist.

Unfortunately, this resolution to the integration challenge will not do. The major difficulty is that there are no restrictions on stipulation to keep us from stipulating impossibilities. Even if stipulation were enough to provide a reason to believe that a partial description is part of a complete description, it is not a reason to believe that the complete description is *consistent*. As John Divers puts the point, “What is not in the gift of my stipulation...is that...a world is a *possible* world.”¹⁰⁶ If book realism is to satisfy the epistemic constraint, we need some reason to think that at least one of the completions of the partial story

¹⁰⁶ *Possible Worlds*, 273.

is consistent, and any reason we could have to believe that such a description exists presupposes that we are already justified in believing that the partial description is possible. This is because, according to book realism, possible ways are sets of propositions (or states of affairs, or some other such thing). So to have a reason to believe that a possible way is consistent is just to have a reason to believe that all of the members of the set are compossible. Therefore, in order to be justified in believing that a proposition is true according to some consistent complete description, one must already be justified in believing that the proposition is possible.

We cannot in general have a reason to believe that any given statement is a component statement in a complete and consistent world-story. This would require that we already have reason to believe that the story is a consistent story, which in turn presupposes the very thing at issue—that the proposition is possible. So book realism fails to satisfy the epistemic constraint, and is therefore not a plausible resolution theory.

3.3.2.3 Nature Realism

Another brand of modal realism is nature realism, espoused by Robert Stalnaker,¹⁰⁷ Peter Forrest,¹⁰⁸ and Bigelow and Pargetter.¹⁰⁹ According to nature realism, possible ways are world properties. The actual way is the one and only unique world-property that is instantiated, and the non-actual possible ways are non-instantiated world-properties. So, the relationship between the actual way and the actual world, according to nature realism, is the relationship between a property and a particular that instantiates that property.

¹⁰⁷ In “Possible Worlds,” and in *Inquiry*.

¹⁰⁸ In “Ways Worlds Could Be,” and in “Neither Magic nor Mereology: A Reply to Lewis.”

¹⁰⁹ In *Science and Necessity*.

According to nature realism, possible ways are world properties. Do we have any reason to believe anything concerning non-actual world properties? Surprisingly, I think it is plausible to answer this question in the affirmative. Let us suppose, what is plausible, that through familiar justificatory methods—sense experience, introspection, deduction, induction, etc.—we are provided with reasons to believe that the world is a certain “way.” For example, I see a brownish patch in my visual field when looking a certain direction while standing in my living room, and this (partially) provides me with a reason to believe that there is a tree outside my window (according to the actual way). Here then is a model (an extremely sketchy one, but still a model) of justified beliefs concerning a world nature; the actual way is a world nature just like the other possible ways, and we are agreeing that these familiar justificatory methods provide some reason to believe that certain things about *part* of the actual way are true.

The problem of course is that the actual way is actual, and the other possible ways are not actual. Perhaps these familiar justificatory methods have some epistemic force for beliefs concerning actuality, but they are seemingly of no value for justifying beliefs concerning uninstantiated world properties (the non-actual possible ways), since these are quite beyond the realm of immediate human experience. But maybe there is a way around this. It is plausible to suppose that these familiar justificatory methods together justify beliefs concerning portions of the actual way that are also quite beyond immediate human experience; beliefs concerning unobservables, and beliefs concerning generalizations, for example. So why can't they also justify beliefs concerning portions of possible ways, which are by definition extra-experiential. Remember that according to nature realism, possible ways exists as part of the actual world. So, perhaps our beliefs concerning them can be justified by some kind of induction or other

reasoning process similar to justification for beliefs concerning unobservables and generalizations.

To see how this might work, let us try it out on the example “talking donkeys exist.” According to nature realism, this is possible if and only if there is at least one world property according to which talking donkeys exist. But what reasons do we have to think that there is such a world property? Well, presumably we have a reason to think that donkeys exist (through familiar justificatory processes), and we have a reason to think that talking exists (again through those familiar processes), so we have a reason to think that both talking and donkeys separately figure into the actual world property. We do not have a reason to think that donkeys and talking *together* figure into the actual world property, but what if we mentally put these two things together: the concept of a donkey, and the concept of talking? Does that help justify the belief? The answer to this question might be affirmative if we add the following plausible assumption to nature realism: world properties are divisible into their constituent properties. If this is right, then the mental recombination of the concept of talking and the concept of donkey can provide a reason to think that the properties *talking* and *being a donkey* do indeed come together in part of a possible world property. If the actual world property is divisible into the properties *talking* and *being a donkey* and as long as this set of properties *can* coexist in the same thing, then presumably there is a possible world nature according to which they *do* coexist in the same thing. The act of succeeding in mentally recombining the concepts may provide a reason to think that the actual way *could* be so recombined. This is just a rough sketch of course, but I hope it is it clear enough for now that some sort of epistemological theory along these lines could be worked out. Hence, nature realism can potentially satisfy the epistemic constraint.

3.3.2.4 Combinatorial Realism

The final version of actualism is combinatorial realism, presented in Creswell,¹¹⁰ and Bigelow.¹¹¹ Surprisingly, even Quine toyed with the view at one point.¹¹² According to this view, possible ways are constructs composed of constituents of the actual world. It is hard to say just what possible ways are on this view. The main idea is that possible ways are composed of combinations of constituents of the actual world, but it is hard to know what to make of the combinatorial aspect of this account. Presumably, the possibility of, for example, talking donkeys is supposed to be accounted for by combining “talking” with “donkey.” Unless someone or something actually combines “talking” with “donkey” (How?!), there is nothing in the mind-independent world answering to the description “talking donkey”. The combinatorialist can go one of two directions. First, the combinatorialist might say that one need not *actually* combine the elements of the actual world, but only combine the elements mentally. But this is to give up on realism all together, so that will not do for combinatorial realism.¹¹³ I suggested something along these lines as a way to satisfy the epistemic constraint for nature realism. But in this case, it is being used as a metaphysical theory in its own right, which would end up giving up on realism. Second, the combinatorialist might say that it is not the *actual* combining of the constituents of the actual world, but the *combinability* of those elements that accounts for possibility. This at least still sounds like realism. The problem, though, is that there doesn’t seem to be a clear way to describe combinability without invoking the very matter at issue: it obviously begs the question to explain the combinability of “talking” and “donkey” by saying

¹¹⁰ In “The World is Everything that is the Case.”

¹¹¹ In “Real Possibilities.”

¹¹² In “Propositional Objects.”

¹¹³ There is indeed a fictionalist version of combinatorialism. See Armstrong, *A Combinatorial Theory of Possibility*, and Skyrms, “Tractarian Nominalism.”

that “talking” and “donkey” *can* coexist. But let us put aside these concerns. Combinatorial realism has an even bigger problem.

The problem with combinatorial realism is that it is not at all obvious what the relationship between the actual way and the actual world is supposed to be. On the one hand, perhaps the actual way is supposed to be identified with the actual world; perhaps possible ways are literally recombinations of the constituents of the actual world. But if this is the correct interpretation of combinatorialism, then it is really a variety of either genuine realism (if the actual world is composed of objects) or Plantingan realism (if the actual world is composed of states of affairs), since—to stay realist—combinatorialism would have to hold that for each combination of the constituents of the actual world, there is a world just like the actual world that is that way. In fact, Lewis himself sometimes seems to accept this brand of combinatorialism. I have already argued against both genuine realism and Plantingan realism. Adding a combinatorial element to it does not make it any more plausible. On the other hand, perhaps the actual way is related to the actual world in some other way besides identity. But if so, then either it will be one of the relationships already encountered in the elucidation of book realism and nature realism, and will therefore be a variation of one of those theories, or it will be some other relationship not already encountered, in which case an explanation of this relationship is needed if combinatorialism is going to be a viable alternative to the other actualist views. So we have a dilemma—combinatorialism is either a variation on one of the other actualist alternatives or an inadequate theory because the relationship between the actual way and the actual world is not fully explained. In either case, combinatorial realism does not satisfy the constraints of the integration challenge.

3.4 Conclusion: From Sketch to Theory

I conclude, therefore, that nature realism is the only plausible resolution to the integration challenge. The trouble with genuine realism is that the other possible worlds are spatiotemporally inaccessible to us, so we cannot tell what is going on in them. The trouble with Plantingan realism is that we have no way to distinguish non-existent states of affairs from existing ones, so we have no reasons for distinguishing between the possible and the impossible. The trouble with book realism is that it requires us to know when a proposition is part of a complete and consistent set, which is beyond anyone's ability to achieve. The trouble with combinatorial realism is that it does not distinguish itself from the other brands of realism to make it clearly a separate theory.

Of course there is a lot still to be said about exactly how the sketchy comments I have made in this chapter about nature realism will be worked out into a full metaphysical theory. So the task of the next chapter is to develop nature realism into a robust metaphysical theory of modality that clearly satisfies the requirements of the integration challenge. Satisfying the integration challenge in a clear way will thus count as a strong argument in favor of the view that will develop.

4 The Structure of the World and the Structure of Thought

It is time to stop playing defense and to start playing offense. In this chapter, I make good on my promise to develop a theory of modality that resolves the integration challenge. In the last chapter, I argued that a version of actualism called nature realism is the most promising theory of modality for resolving the integration challenge. So the theory that I will develop in this chapter will be a version of that theory. The trick will be to develop the theory in such a way that the problems of the other versions of actualism are avoided, and then to show that the resulting theory satisfies the constraints of the integration challenge.

4.1 The History of Nature Realism

As John Divers has pointed out, nature realism is the least developed of the realist views.¹¹⁴ How it gets developed will depend in large part on what we take world properties to be. I will develop my theory by first reviewing the short history of nature realism as it was developed in the literature. I will then point out the difficulties for the theory that emerge from the history and show how to avoid these problems by making a few changes of my own. My resulting theory will maintain much of the spirit of nature realism as it was developed in the literature, but it will diverge dramatically enough from that theory to deserve a name all its own. I will call it constructionism.

4.1.1 Robert Stalnaker

¹¹⁴ *Possible Worlds*, 177.

Robert Stalnaker was the first to suggest a specific version of nature realism.¹¹⁵ However, Stalnaker's version is not very detailed. He begins to develop the view as a response to Lewis's genuine realism. According to Stalnaker, Lewis gets some things right about possible worlds but other things wrong. To develop his view, Stalnaker finds four theses in Lewis's view, three of which Stalnaker agrees with but one of which he does not. The four theses are as follows.

- (1) Possible worlds exist.
- (2) Other possible worlds are things of the same sort as the actual world.
- (3) The indexical analysis of the adjective "actual" is the correct analysis.
- (4) Possible worlds cannot be reduced to something more basic.

According to Stalnaker, these four theses taken together imply Lewis's genuine modal realism, but we need not accept them all to develop a plausible theory of modality. Stalnaker himself accepts theses (1), (3), and (4), but denies thesis (2). The major mistake that Lewis has made, according to Stalnaker, has been to think that possible worlds are the same kind of thing as the actual world, which, as I have already pointed out, is the main move of the actualist. So, nature realism can be developed out of an attempt to maintain (1), (3), and (4), while denying (2).

Stalnaker's version of the theory that maintains (1), (3), and (4), while denying (2) is simply to make one change to Lewis's view. Stalnaker writes, "If possible worlds are ways that things might have been, then the actual world ought to be *the way things are* rather than *I and all my surroundings*. *The way things are* is a property or state of the world, not the world itself."¹¹⁶ This is precisely the reason that I have used the terminology of possible ways, to try to avoid the confusion caused by calling them possible worlds. If the actual world is one world among the

¹¹⁵ Although Peter Forrest claims that he sees glimpses of nature realism in Leibniz. "Ways Worlds Could Be," 15.

¹¹⁶ "Possible Worlds," 228.

possible worlds, then it is very natural to think that the possible worlds are the same kind of thing as the actual world, which then leads naturally into Lewis's genuine realism. Instead Stalnaker suggests that we maintain theses (1), (3), and (4), but deny that possible worlds are the same kind of thing as the actual world. Stalnaker also suggests here that the actual world (the actual way in my idiom) "is a property or state of the world," but again, he doesn't have much more to say about it. Fleshing out the theory from this point will require that we figure out what a property or state of the world is.

Hence, the major problem with Stalnaker's view is simply that it lacks detail. He tells us that these things called *ways the world could be* exist, but does not give us much information about what sort of things these are. Of course, Stalnaker believes that they cannot be reduced to something else (thesis 4), so we cannot complain that he has not reduced them to something more familiar, but it still seems that he could make them better understood. Lewis also thinks that possible worlds cannot be reduced, but to those who demand further clarification, Lewis says, "If asked what sort of thing they are, I cannot give the kind of reply my questioner probably expects: that is, a proposal to reduce possible worlds to something else. I can only ask him to admit that he knows what sort of thing our actual world is, and then explain that possible worlds are more things of that sort."¹¹⁷ Whatever we might think of Lewis's explanatory strategy here, it is not a strategy available to Stalnaker. He cannot say, "I ask him to admit that he knows what sort of thing *the way the world is* is, and then explain that *the ways the world could have been* are more things of that sort." This is completely unhelpful since *the way the world is* is no better understood than *the ways the world could be* are. Therefore, to make Stalnaker's view plausible, we must develop a better understanding of what *the way the world is* (the actual way) is.

¹¹⁷ *Counterfactuals*, 85.

We can start with what the actual way is *not*. Whatever it is, it is neither a set of sentences, nor a state of affairs. If it were either of these, the resulting theory would be a version of book realism or Plantingan realism, neither of which, as I argued in the previous chapter, satisfies the epistemic constraint. So, if nature realism is to be a unique and plausible theory, then the actual way is neither a set of sentences nor a state of affairs. So what is it? Stalnaker simply says that it is “a property or state of the world.” That is not especially enlightening.

4.1.2 Peter Forrest

Peter Forrest has a more specific answer. Drawing on the work of David Armstrong,¹¹⁸ Forrest has developed Stalnaker’s rough ideas into a more robust theory. Forrest develops his theory by suggesting modifications to Lewis’s genuine realism. He suggests that for every Lewisian possible world, there is what he calls a world nature, by which he means “the property which is the conjunction of all its (natural) non-relational properties.”¹¹⁹ Therefore, the actual world nature, according to Forrest’s theory, is the conjunction of all of the natural, non-relational properties that the actual world instantiates. But Forrest says that a single set of natural, non-relational properties and relations can be conjoined in many different ways each of which forms a different property, some of which may be world natures and others of which may not be. So, for Forrest, there is more to the actual world nature than just the conjunction of all of the natural, non-relational properties of the actual world; these properties must also be conjoined in the right way. Therefore, understanding the actual world nature will also require a theory of structural composition for properties together with a means for determining which of these structural compositions counts as a world nature and which do not.

¹¹⁸ In *A Theory of Universals*.

¹¹⁹ “Ways Worlds Could Be,” 15.

According to Forrest, world natures are composed of natural, simple properties and relations. The properties and relations are simple in the sense that they are not reducible to other properties and relations. Although Forrest does not explain in detail what he means by a natural property, presumably he has in mind something like Lewis's notion of natural properties and relations as the properties and relations that "carve at the joints" of reality.¹²⁰ Forrest writes, "*Vermillion*, or rather some determinate shade of vermilion, might turn out to be a natural property. So might *being a proton*. But *being grue* and similar hybrids are not." *Being grue* (being green before the year 2100 and being blue afterwards)¹²¹ is not a natural property because it presumably fails to "carve at the joints" of reality, and *being (some determinate shade of) vermilion* is a natural property because it presumably does "carve at the joints."

The meat of Forrest's theory is what he calls primitive operations of composition. These are intended to explain the way in which the simple, natural properties and relations can be composed into more complex properties and relations in a structural (non-mereological) way.

The first operation Forrest calls *taking the product*. Forrest explains it as follows.

If R is an m -adic property or relation and S is an n -adic one, then $R \times S$ is the $(m+n)$ -adic relation which holds between $x_1, \dots, x_m, y_1, \dots, y_n$ just in case R holds between x_1, \dots, x_m and S holds between y_1, \dots, y_n .¹²²

To use Forrest's example, suppose that G is some determinate shade of green and that H is some determinate shade of blue. The product $G \times H$ will be the determinate relation of color contrast that holds between x and y just in case x is that determinate shade of green and y is that

¹²⁰ Ways Worlds Could Be," 15. See also Lewis, "New Work for a Theory of Universals," and Ted Sider, *Writing the Book of the World*.

¹²¹ A popular example from Nelson Goodman. See *Fact, Fiction, and Forecast*.

¹²² Ways Worlds Could Be," 17.

determinate shade of blue.¹²³ So the product of any two properties results in a relation—that unique relation that holds between two objects whenever they instantiate these two properties. It should be carefully noted, however, that the product operation is not symmetric; $R \times S$ is not the same relation as $S \times R$, but its converse.

The next operation is contraction. The idea behind contraction is that two or more relata in a single relation can be identified with one another.¹²⁴ Again to use one of Forrest's examples, *knowing oneself* is a property, but it is the contraction of the *knowing* relation. It is a contraction in the sense that in the relation *knowing*, the two places of the relata are identified with one another to produce the property *self-knowing*. In other words, *S has self-knowledge* can be understood as *S knows S* with the two relata *contracted* into one. More generally, to form a contraction of a relation, one just identifies two or more of the relata with one another.

The last operation is projection. Forrest writes, "Consider an n -adic relation R . Suppose a_1, \dots, a_n are related by R . Then as a consequence, the sum of $a_1 + \dots + a_n$ has a property, namely being the sum of parts related by R . I call this the (monadic) *projection* of R ."¹²⁵ The (monadic) projection of a complex *relation* is the *property* of being the mereological sum of parts related by that relation. For example, suppose that B is the property of *being a ball*, and R is the property of *being red*. The product $B \times R$ is the relation that holds between any ball and any red thing. By contraction, the two relata are identified, and the projection of the resulting contraction is the property of *being a red ball*.

To see how all of these operations work together to demonstrate a form of structural composition, I will add a few more symbols to Forrest's. First, to express that a relation is n -adic,

¹²³ Ways Worlds Could Be," 17.

¹²⁴ Ways Worlds Could Be," 18.

¹²⁵ Ways Worlds Could Be," 18. Italics in original.

I will use n different numbers in subscript after the capital letter representing the relation. For example, O_1 might be the property *being an oxygen atom*, and $B_{1,2}$ might be the dyadic relation *being bonded to*. The point of the numbers is not just to show how many relata are in the relation, but they will also prove to be a convenient way to express the operation of contraction, which should be apparent from the following examples.

Step 1: Start with *natural* properties and relations (ones that “carve at the joints”).

O_1 is the natural property *being an oxygen atom*.

C_1 is the natural property *being a carbon atom*.

$B_{1,2}$ is the natural dyadic relation *being bonded to*.

Step 2: *Form a product* of the natural properties and relations.

$O_1 \times O_2 \times C_3 \times B_{4,5} \times B_{6,7}$

(The seven different numbers show that this is a heptadic relation.)

Step 3: *Contract* some (or all) of the relata.

$O_1 \times O_2 \times C_3 \times B_{1,3} \times B_{2,3}$

(Changing the subscript numbers indicates that relata with the same number are identical. In this example, the relation has been contracted from a heptadic relation to a triadic one.)

Step 4: *Project* the resulting product into a single property.

The sum (1+2+3) has the property *being carbon dioxide* (O—C—O).

To see how different properties can be structurally composed of the same natural properties and relations, consider an alternative to Steps 3 and 4.

Step 3a: *Contract* some (or all) of the relata.

$$O_1 \times O_2 \times C_3 \times B_{1,2} \times B_{2,3}$$

(The only difference between this and the previous Step 3 is that the contraction has been done in a slightly different way—the second and fifth relata in the heptadic relation have been identified instead of the third and fifth relata.)

Step 4a: *Project* the resulting product into a single property.

The sum (1+2+3) has the property *being (unstable) C—O—O*.

By contracting the products in various ways, we can demonstrate how the same properties and relations can be structurally composed in different ways. The very same properties and relations are involved in both *being carbon dioxide* and in *being (unstable) C—O—O*, but the *way* they are composed is not. Forrest's operations give us a means by which to understand and to demonstrate such structural differences in complex properties and relations.

Forrest needs more than this, though, because not all structural properties that can be defined by the operations are world natures. For example, the projection of the property $C_1 \times S_1$, where C_1 is the property *being cubic* and S_1 is the property *being spheroid*, had better not be a world nature, since it is clearly not possible for any single thing to have the property *being both cubic and spheroid*. Forrest needs a way to divide the structural properties into world natures and non-world natures.

According to Forrest, world natures are those structural properties that are capable of instantiation by themselves. That is to say that a world nature needs no further properties added to it in order for it to be instantiated. This, by itself, is not an adequate way to make the needed distinction, since it includes the modally loaded word "capable." So Forrest needs a modally neutral way to indicate which structural properties are capable of instantiation by themselves and

which are not. Forrest's solution is to introduce the concept of a *completion*.¹²⁶ The completion of a property, P, is the property *having no other properties other than P and itself*. As an example, the completion of *being blue* is the property *being blue and having no other property*. This turns out not to be a world nature because it cannot be instantiated: anything that is blue must, at least, also have some shape or other. Still, *being blue* is a conjunct of many complex properties that have completions, like, say, the property *being a blue box that weighs 1 pound, has square sides, has a hinged lid, has...etc*. Impossible properties, like *being completely blue and completely red*, have no completions and are not conjuncts of any complex properties that have completions. For Forrest, a world nature is simply a completion—any completion. Properties that are not completions are not world natures.

Forrest needs one more bit of machinery to make his theory work. Lewis's semantics for modal propositions requires a relation between propositions and worlds called *true in* (or sometimes *true at*). For example, P is possible, according to Lewis, if and only if, there is at least one possible world such that P is *true in* that world. For Forrest's theory to offer a plausible alternative to Lewis's theory, then Forrest must replace this relationship because there are no worlds for Forrest's proposition to be *true in*. Forrest's solution is simple. He merely changes the terminology from *true in* to *true under*. If a proposition is *true in* a world, then it is also *true under* the nature of that world. So, possible world semantics is reinterpreted as world nature semantics:

- (i) "Possibly P" is true if and only if P is true under some world nature.
- (ii) "Necessarily P" is true if and only if P is true under all world natures.

¹²⁶ Ways Worlds Could Be," 19.

But of course, if *true under* is going to do the work that Forrest requires, it had better get the actual world nature—the way *this* world is—right. Therefore,

(iii) “Actually P” is true if and only if P is true.¹²⁷

Nature realism is finally starting to take shape. It began with Stalnaker’s idea that modal realism can be maintained without regarding possible worlds as the same kind of thing as the actual world. We can think of them as *ways the world could be* rather than as full-blooded worlds à la Lewis. The actual world is capable of instantiating any one of these world natures.¹²⁸ The one that it instantiates is the actual world nature, and all the others are merely possible world natures. Forrest further developed Stalnaker’s theory by showing how we can understand possible ways as complex structural properties, suggesting the concept of a completion, and providing a modal semantics.¹²⁹

There is, however, a serious problem for Forrest’s version of nature realism. Forrest claims that an advantage of his theory over Lewis’s is that it makes a categorical distinction between the actual and the possible, the actual is particular and the merely possible is universal.¹³⁰ This is in keeping with the actualist spirit of nature realism as presented by Stalnaker. However, this is going to cause a serious problem for Forrest’s version of nature realism. The problem is that if his semantic theory is correct, then what are we to make of certain obvious modal-logical principles, like “P implies Possibly P” and “Necessarily P implies P?” Consider some true proposition, P. According to Forrest’s semantic theory, if P is true, then

¹²⁷ *Ways Worlds Could Be*,” 16.

¹²⁸ I think that, for Forrest, we are supposed to think that the actual world is some kind of underlying “I know not what” that instantiates the actual world nature, but *could have instantiated* any one of the other world natures.

¹²⁹ John Bigelow and Robert Pargetter also endorse a version of nature realism in *Science and Necessity*, so they deserve mention in the history of the theory. However, as far as I can tell, they have not developed the theory beyond what Forrest has presented.

¹³⁰ *Ways Worlds Could Be*,” 22.

“Actually P” is true. However, it does not follow from this that “Possibly P” is true, since it does not follow from “Actually P” that P is true under at least one world nature. Nothing in the semantic theory suggests that a true proposition must be true under any world nature.

Presumably, Forrest thinks that any proposition that is true is true under the nature of the actual world, but his semantic theory makes no mention at all of the nature of the actual world. We would expect Forrest’s theory to say “Actually P” is true if and only if P is true under the actual world nature, but instead it says “Actually P” is true if and only if P is true. Since Forrest believes that actuality is particular and possibility is universal, this seems to imply that “Actually P” is true in a different way than “Possibly P.” In other words, it looks like *being true* is a different property from *being true under the actual world nature*. If so, then Forrest’s theory fails to satisfy the semantic constraint. Being true under a world nature is a special kind of truth that does not apply to non-modal propositions.

The problem, as I see it, is once again that the actual world has not been properly distinguished from the *way* the actual world is. To see this more clearly, let us look again at the four theses that Stalnaker finds in Lewis and that sparked the creation of nature realism in the first place:

- (1) Possible worlds exist.
- (2) Other possible worlds are things of the same sort as the actual world.
- (3) The indexical analysis of the adjective “actual” is the correct analysis.
- (4) Possible worlds cannot be reduced to something more basic.

Stalnaker says that his theory denies (2) but maintains the other three. However, maintaining that possible worlds (world natures in Forrest’s terminology) are different in kind from the actual

world has led to the semantic problem noted earlier: since truth *in* the actual world is different than truth *under* world natures, certain obvious modal-semantic theses do not follow, notably “P implies Possibly P” and “Necessarily P implies P.” Again, this is because a proposition’s truth *simpliciter* does not imply a proposition’s truth *under* any world nature, and a proposition’s truth *under* all world natures does not imply its truth *simpliciter*.

There is one obvious way around this issue. It is simply to accept that being true under a specific world nature (i.e., the one instantiated by the actual world, the actual world nature) is all that truth amounts to. Let me show how this helps to clarify and solve the difficulty for Forrest’s version of nature realism. So here are Stalnaker’s four (and a half) theses again with a change in terminology to match Forrest’s.

- (1) World natures exist. (True)
- (2a) Other world natures are things of the same sort as the actual world. (False)
- (2b) Other world natures are things of the same sort as the actual world nature. (True)
- (3) The indexical analysis of the adjective “actual” is the correct analysis. (True)
- (4) World natures cannot be reduced to something more basic. (True)

If we take “actual world” to mean “I and all my surroundings,” then it is false that world natures are the same sort of thing as the actual world, but if we take it to mean “the way the world is,” then it is true that world natures are the same sort of thing as the actual world (or, more clearly, the actual *way*).

Still, this is supposed to be a version of actualism, so Forrest will have to accept this thesis:

P is true iff P is true under the actual world nature.

Now Forrest gets the results “P implies possibly P” and “Necessarily P implies P.” This clarification may seem innocuous. In fact, Forrest might simply say that this was too obvious to bother mentioning, but what I want to show now is that this clarification shows that Forrest’s specific version of nature realism is implausible.

To showcase the problem for Forrest’s theory, we must think a little harder about the actual world nature. The actual world nature is understood to be a structural property, and so the other world natures are structural properties as well. What distinguishes the actual world nature from the non-actual world natures is that the actual world nature is instantiated and the others are not instantiated. All of these world natures exist, whether they are instantiated or not, and, since this is an actualist view, they are all part of the actual world.

Now here comes the trouble. Forrest’s explanation for his version of nature realism relied on an analogy between Lewis’s *true in* (a possible world) and his own *true under* (a world nature). However, the analogy does not really work.¹³¹ For Lewis, propositions are true in the other possible worlds in just the same way that propositions are true in the actual world, but once Forrest removes all of the other possible worlds, save the actual world, the only world nature that propositions can be true under anymore is the actual world nature, because that is the only world nature that is instantiated. The other world natures are merely properties. How can anything be true under (or in) a mere property? Consider a Lewisian world with just a single talking donkey in it. According to Lewis, “talking donkeys exist” is true in this world, and according to Forrest, “talking donkeys exist” is true under the nature of this world. Being true at and being true under coincide, but now take the world away and just consider the remaining nature, which would simply be the property *being a talking donkey and nothing else*. How can the proposition

¹³¹ This objection was suggested to me by Cass Weller.

“talking donkeys exist” be true under this property? It is just a property; there is no talking donkey there at all. Without instantiation, the world nature is left “dangling,” and a dangling property cannot account for truth.

But maybe Forrest can get around this problem. Suppose that he modifies the semantic theory to accommodate this worry:

“Possibly P” is true if and only if there is a world nature such that if it had been instantiated, P would have been true.

“Necessarily P” is true if and only if all world natures are such that if they had been instantiated, P would have been true.

Now there is no problem of propositions being true under dangling properties. However, the price to pay for this result is too high. The semantic theory now includes counterfactual claims, which are usually understood as modal claims. Lewis, for example, has suggested that the analysis of counterfactual claims comes down to truths about how “close” possible worlds are to one another.¹³² If this is close to the correct analysis of counterfactuals, then this modification to Forrest’s semantics will be clearly unacceptable. Still, it might turn out that the correct analysis of counterfactuals does not rely on possible worlds. Even if this is the case, though, the modified theory clearly does not satisfy the semantic constraint. The truth conditions for non-modal propositions will certainly not involve anything like the counterfactuals needed for the modified semantic theory. So, this semantic theory requires special truth conditions that do not apply to non-modal propositions, which fails to satisfy the semantic constraint.

4.2 Constructionism

¹³² In *Counterfactuals*.

I want to suggest a different solution to Forrest's problem, one that takes nature realism in a completely different direction; a direction I think changes the view so drastically that it becomes a different, but related, theory altogether. For reasons that will become increasingly clear, I call the resulting view constructionism. The idea is simple; deny the existence of non-actual world natures. There is just the world and the way that the world is. That's it. If we can get modal truth out of this, then there is no reason to accept the existence of all these merely possible world natures and all of the problems that attend them. This is the view that I intend to defend.

Under constructionism, there are no possible worlds, no ways that the world could have been, no non-actual world natures. Instead there is just the world and the way that it is, the actual world nature. Instead of all of the non-actual world natures, modal truth is accounted for by a proper part of the actual world nature, what I will call the necessary world nature. Intuitively, the necessary world nature is that part of the actual world nature that could not have been otherwise. On my account, it turns out that there is no such thing as a *way that the world might have been*. Instead there is only the *way that the world is*, and part of this is the *way that the world must be*. The necessary world nature, on this view, is not a thing over and above the actual world nature. Instead it is a part of the actual world nature. Possibilities are simply those propositions that are not ruled out by the necessary world nature.

I now need to fill out the details of this theory and also show how it satisfies the constraints of the integration challenge. Fortunately, doing the latter will go a long way toward doing the former. Therefore, I will go right for the constraints of the integration challenge at this point.

4.2.1 Necessary way Semantics

I begin with the semantic constraint. According to constructionism, it turns out that there is no such thing as a non-actual world nature. Instead what accounts for modality is the actual world nature, which is naturally divided in two parts, the necessary and the non-necessary. Possibilities are simply understood to be those propositions that are not ruled out by the necessary part. Therefore, instead of possible world semantics, I need something that might be called necessary way semantics:

“Necessarily P” is true if and only if P is true under the necessary way.

“Possibly P” is true if and only if not-P is not true under the necessary way.

Although my particular theory will take “the necessary way” to refer to the part of the actual world nature that is necessary, I put the semantic theory in these more general terms so that it is clearer that it is open to multiple interpretations, just like possible world semantics. For example, a conventionalist might accept necessary way semantics but claim that the necessary way is arbitrarily selected by our determination to use words in the ways that we do, or a conceptualist might accept it but claim that the necessary way is some kind of conceptual construct. In other words, acceptance of necessary way semantics no more forces one to be a realist about the necessary way than acceptance of possible world semantics forces one to be a realist about possible worlds. Part of the point of giving the semantic theory in these more general terms will be to more clearly show how constructionism satisfies the semantic constraint.

The question, of course, is what distinguishes the necessary part of the actual world nature from the contingent part? For constructionism, the necessary way is understood simply as the structure of the actual world nature. Necessary way semantics requires that the actual way be divisible into a necessary part and a contingent part. Constructionism accepts that the actual way

is a complex structural property, which can be understood as having both structure and content. I suggest, therefore, that the content of the actual world nature—the properties—are the contingent part, and the structure itself is the necessary part. In other words, constructionism is the view that the actual world nature has a necessary structure and that all modal truth can be accounted for by this structure. This is not to say that the actual world nature can actually be divided into these parts. Obviously, there can be content without structure, and there can be no structure without content.

So the specific version of necessary way semantics that constructionism accepts is

“Necessarily P” is true if and only if P is true under the structure of the actual world nature.

“Possibly P” is true if and only if not-P is not true under the structure of the actual world nature.

What does it mean for a proposition to be true under a structure? Intuitively, the idea is that the structure of the actual world nature can preclude the existence of certain combinations of properties. Nothing can be both round and square is a necessary truth because “Nothing can be both round and square” is true under the structure of the actual world nature, which means that the structure of the actual world nature precludes the co-instantiation of the properties *being square* and *being round*. It is possible that talking donkeys exist because “Talking donkeys do not exist” is not true under the necessary world nature, which means that the structure of the actual world nature does not preclude the co-instantiation of the properties *being a donkey* and *talks*. This is the core idea of constructionism.

For constructionism to satisfy the semantic constraint, it must be shown that it does not require special truth conditions—conditions that are not applicable outside the scope of the

theory. To do this, I want to compare constructionism with Lewis's genuine modal realism. Lewis's theory satisfies the semantic constraint fairly straightforwardly because possible world semantics suggests that sentences with modal content can be naturally translated into quantified sentences with no modal content, and Lewis believes that possible worlds are just like the actual world. Therefore, Lewis's theory satisfies the semantic constraint because it maintains that truth *just is* truth in possible worlds, and that the contribution made to truth by the modal operators is just to establish which worlds the proposition is true in. So no special semantics is required for Lewis; he provides a theory that clearly shows how the truth conditions of modal propositions are a kind of truth condition. I claim that constructionism has the same semantic advantage as Lewis's theory. According to constructionism, to be true is just to be true *under* the actual world nature, and to be necessarily true is just to be true *under* a part of the actual world nature (the necessary world nature). This clearly shows how modal truth is a species of truth. Truth *just is* truth under a world nature.

Realists of all stripes tend to think that the truth of a proposition involves some sort of correspondence between that proposition and the actual world. I am suggesting a slightly different kind of realist theory of truth. I suggest instead that the truth of a proposition amounts to a correspondence between that proposition and the actual world nature rather than the actual world itself. In other words, truth *just is* truth under the actual world nature. If this much is accepted, then constructionism satisfies the semantic constraint because no special semantic theory is required. The general theory of truth it requires is simply:

P is true iff P is true under the actual world nature.

And necessary way semantics simply extends this basic semantic theory to show the contribution that modal operators make to truth under the actual world nature: they mark the distinction between the structure of the actual world nature and its content. Therefore, constructionism satisfies the semantic constraint of the integration challenge.

4.2.2 Way-View Epistemology

We now turn to the harder constraint to satisfy for a realist theory, the epistemic constraint. In the previous chapter, we saw that the major epistemic difficulty for an actualist theory is that actualists have to define possible worlds as somehow complete entities (book realism) or maximal entities (Plantingan realism). The reason for the completeness requirement is that actualists who accept possible worlds need a way to distinguish possible worlds from entities that are similar but not possible. For example, book realism holds that possible worlds are consistent and complete sets of propositions. It is important for book realists to define possible worlds in this way because they must distinguish those sets of propositions that are possible worlds from those sets of propositions that are not possible worlds. Therefore, they maintain that the sets that are possible worlds are those that are consistent (in order that they are *possible*) and complete (in order that they are *worlds*). The completeness requirement causes an epistemic problem because in order to have a reason to believe that the truth conditions for a modal belief have been satisfied, one would have to have a reason to believe that a proposition is a member of a complete set. But how can we have such a reason? It seems that any such reason would have to be quite a powerful thing because it would not only have to be a reason to believe that the proposition in question is a member of a set of propositions, but it would also have to be a reason to believe that the set of which it is a member is complete. This would seem to require

the epistemic agent to know every proposition in the set, which is clearly asking too much. The limitations on human cognition seem to eliminate the possibility of justified modal belief from the start.

Constructionism does not have this problem. The actual world nature is complete, but the necessary part of the actual world nature is not complete in any sense because it is just the structure of the actual world nature. Being justified in one's modal beliefs, therefore, will not require having a reason to believe that the proposition in question is part of some complete or maximal set. So, it will not have the usual problem that actualist versions of possible world realism have. This is because constructionism is a realist theory of modality but it is not a realist theory of possible worlds.

Constructionism has managed to avoid the problem of completeness that plagues other actualist theories, but it still must be shown how exactly it satisfies the epistemic constraint. As a reminder, here is the epistemic constraint again.

Epistemic Constraint for Modality: A metaphysical theory of modality must provide an account of modal truth such that there are reasons to believe that the truth conditions for modal propositions are satisfied in at least some cases.

For constructionism, the specific epistemic question is, "What reasons can we have for believing that some propositions are true under the necessary world nature such that those reasons are also applicable to non-modal beliefs?"

Before I attempt to answer this question, it will be important to remember what sort of answer we are looking for. First, we are only looking for a rough sketch of a rough epistemological theory. We are not looking for a complete epistemology. That asks too much of metaphysicians. Second, we are only looking for a rough sketch of a *modal* epistemology. The

questions of modal epistemology are “How do we know when something that is false is nevertheless possible, and how do we know when something that is true is also necessary?” So, I will assume that there are some reasons to think that some propositions are true, and that some are false. What I want to sketch is a rough view of how we can come to have reasons to believe that some true propositions are necessary and that some false propositions are possible. Given constructionism, therefore, the search is for reasons to believe that some propositions that are true under the actual world nature are also true under the necessary world nature (necessary propositions), and that some propositions that are false under the actual world nature have negations that are also false under the necessary world nature (contingently false propositions).

Let us start with an example. Consider the proposition that nothing can both be a cube and be a sphere. According to constructionism, what accounts for the truth of this proposition is that it is true under the actual world nature. What accounts for its necessity is that it is true under the necessary part of the actual world nature, the necessary world nature. What this means is that the co-instantiation of the properties *being a cube* and *being a sphere* is precluded by the structure of the actual world nature. So, it is not only true under the actual world nature; it is true under the part of the actual world nature that could not have been otherwise—the structure. To have a reason to believe that this proposition is necessary, we will need some reason to believe that it is true under the structure of the actual world nature.

To show how this may be done, I need to introduce a mental analogue to the actual world nature.¹³³ I will call this a way-view. I doubly hesitate to call this a “world-view” for fear either

¹³³ The theory that I will sketch shares some affinities with Hector-Neri Castañeda’s guise theory. However, what I offer is merely a sketch rather than a full-blown theory of the interplay between language, belief, and the world. Castañeda’s guise theory is a non-representational, direct-realist theory, for example, whereas the theory that I am sketching is open about whether or not it is representational. For my part, I find direct realism implausible, but we

that it will be confused with certain social constructs and personal biases or that it will be construed as possible-world-like. It is neither. A way-view is way-like; it is structurally composed of mental analogues to properties, which I will call, with some trepidation, concepts.¹³⁴ A way-view, then, is a complex conceptual structure analogous to structural properties. I claim that every epistemic agent has a way-view.

The rough intuitive idea behind a way-view is that it is essentially a conception of the world. Each of us has a way-view that is constantly in flux as we develop various concepts and relationships between concepts throughout our lives using all of our various epistemic faculties (whatever those may be). To be clear, though, a way-view is not a web of beliefs à la Quine.¹³⁵ It is better understood as a complex structural concept formed from simpler concepts (the content) joined together in a particular way (the structure). It is from this scaffold of concepts that we develop our attitudes about the world, including beliefs, hopes, and desires. A way-view is epistemically prior to belief. How exactly propositional attitudes are developed from a way-view is a matter for complete epistemology, so I will leave this for further thought and study. For now, all I need is a rough idea of how beliefs arise from a way-view.

I will say that S believes that P only if P is *accepted under S's way-view*. I hope this way of talking is suggestive. The idea is that for S to believe P is for it to *seem* to S that P is true under the actual world nature. S's way-view is S's own particular *conception* of the actual world

need not enter into that debate here. See Castañeda's "Thinking and the Structure of the World," and *Thinking, Language, and Experience*.

¹³⁴ I hesitate to use the term "concept" because it has a checkered past in philosophy, but I think it best captures the intuitive idea behind way-views. They are to be understood as complex mental structures. It seems to me that, from an intuitive standpoint, concepts are the best candidates to fill this role because, presumably, complex concepts can be "built up" out of simpler concepts in a structural way.

¹³⁵ As in "Two Dogmas of Empiricism," for example.

nature.¹³⁶ So, I will say that for it to *seem* to S that P is true is just for P to be *accepted under S's* way-view. Being *accepted under* is the mental analogue to being *true under*. That gives us a rough sketch of way-views and how beliefs are developed from them.

With way-views, I intend to show how constructionism satisfies the epistemic constraint. To do so, I will need a theory of belief formation. I only need to show that there are some reasons to believe that the truth conditions for constructionism are satisfied in some cases. So, a theory of belief formation will not be fully developed here. My intent is only to give enough detail to make the view seem plausible and to show how it, together with constructionism, helps to satisfy the epistemic constraint.

Just like structural properties, concepts can be mentally constructed into more complex structural concepts, and they can also be mentally deconstructed into less complex concepts. I suggest that the justification of belief begins here. I claim the following necessary condition on justified true belief: an epistemic agent, S, is justified in believing P only if P is acceptable under S's way-view. Of course, S does not have to actually accept P in order to be justified in believing it, but S must be in a position to believe it, given S's way-view, even if S does not actually do so. To fill out the details of this, I will need a rough sketch of what it is to accept a belief under a way-view.

The main idea is that we focus on various parts of our way-views in order to determine what to believe. We start from our own personal way-views, and then we mentally deconstruct the concepts within it to consider whether to accept a belief or not. In general, we must focus our attention on parts of a way-view because a way-view is just too big, so to speak, to think about

¹³⁶ Or maybe it just *is* the actual world nature if we accept some form of direct realism instead of representationalism.

all at once. Let us consider our usual example. Suppose that S believes that talking donkeys do not exist. I suggest that at least part of what it is for S to believe this is that S's way view does not include the concept *being a talking donkey*. It is important to remember that concepts, as I am using the term, are analogues of properties, not objects. This is why the concept that S is considering is *not* the concept *donkey*; it is the concept *being a donkey*. There is no such thing in S's way-view as the concept *donkey*. Concepts are property-like, not object-like. The concept *being a donkey* is a complex structural concept composed of many other concepts. Since S's way-view does not include the concept composed of both of the properties *being a donkey* and *talks*, S thereby accepts that talking donkeys do not exist under S's way-view, and thereby, believes that talking donkeys do not exist.

More is needed, though, to justify S's belief that talking donkeys do not exist. What is needed is some reason to believe that the relevant parts of S's way view are getting the actual world nature right. Now this will require some epistemological theory that will take us over the infamous "gap" between belief and reality, and I regret to say that I have nothing special to add to that debate. That is the business of complete epistemology, not metaphysics. To satisfy the epistemic constraint I only need to show that we *can* have a reason to believe that the truth conditions required by constructionism are satisfied. Therefore, I do not intend to give a complete epistemological theory of way-view construction. I will just make two claims about what the epistemology will have to include. First, it will include the following necessary condition on justified beliefs: S is justified in believing that P only if S has a reason to believe

that the part of S's way-view under which P is accepted is an accurate representation¹³⁷ of the part of the actual world nature that satisfies the truth conditions for P. Second, it will include the claim that the objects of perception are structural properties rather than objects. These will both be needed to show how constructionism satisfies the epistemic constraint. Here is a rough sketch of how I imagine the epistemology coming together. S has a reason to believe that the part of S's way-view that includes *being a donkey* is an accurate representation of the actual world nature because S has perceptually interacted with the relevant parts of the actual world nature. When we see a donkey, all we are really perceptually interacting with is a complex structural property, part of which we might call *being a donkey*.

However, perception is surely just one among many other faculties that provides reasons to believe that a way-view is accurate. Like I have said, that is a task for complete epistemology to work out. I hope, however, that the idea of a way-view can spark new directions in epistemology that may help. The point is that our way-views are partly a product of long interaction with the actual world nature. That gives us some reasons to think that our way-views are accurately representing it. Of course, it is possible that we are getting the actual world nature wrong (perhaps because of some lingering skeptical hypothesis), but I think that this is not the epistemic issue here. I do not have any argument that will get us over the epistemic gap between belief and world. I merely claim that *if* perception (and other familiar epistemic faculties) provides reasons to believe that we are justified in some of our beliefs concerning the external world, *then* this is best understood as providing reasons to believe that our way-views are accurate representations of the actual world nature. If I am right about that and I can show how

¹³⁷ I have stated this condition in representationalist terms. If some version of direct realism turns out to be the correct epistemological theory, then replace "is an accurate representation of part of the actual world nature" with "is part of the actual world nature."

modal beliefs are justified in this same model of justification, then I claim that I will have shown how we can have reasons to believe that the truth conditions required by constructionism are satisfied, and, therefore, that constructionism satisfies the epistemic constraint.

Way-view epistemology is, therefore, a minimal epistemological theory that gives two necessary conditions for justified belief:

Way-View Epistemology: S is justified in believing that P only if (1) P is acceptable under part of S's way-view, and (2) S has a reason to believe that S's way-view is an accurate representation of the actual world nature.

For ordinary beliefs about the external world, I hope this will strike most people as consistent with commonsense. Commonsensically, we are justified in our beliefs concerning the external world when we have reasons to believe that the *way the world is* is basically the *way* that we believe it is. I think of way-view epistemology as a means of cashing out this commonsense talk of *ways* in our thinking about knowledge of the external world.

I now need to explain how way-view epistemology applies to modal beliefs. As I have already suggested, it will essentially be a variation on the theory as it applies to external world beliefs. Let us start with possibility first; then we will look at necessity. Suppose that S not only believes that talking donkeys do not exist but also believes that they *could have*. How is S justified in believing this? First S focuses on the concepts *being a donkey* and *talks* within S's way-view. Nothing else in the way-view is relevant. Because S believes that talking donkeys do not exist, the concept *being a talking donkey* does not exist in S's way-view, as we have already seen. The trick now is to figure out how to justify the belief that the property *being a talking donkey* could exist in the actual world nature even though it does not. This is how it goes. S simply mentally constructs the needed property; S combines the concept *being a donkey* with the

concept *talks* and adds this to S's way-view. Having done this without difficulty, S can accept that talking donkeys exist under this reconstructed way-view, and consequently can believe that talking donkeys could have existed. In other words, S *conceives* of a talking donkey, which for way-view epistemology means that S constructs the needed concept from the concepts available in S's way-view to form a new structural concept. This new concept is added back into the way-view to create a hypothetical way-view, under which S accepts that "talking donkeys exist."

That is half the battle for justifying beliefs concerning possibilities. For the other half, I need to show how this basic idea of deconstructing and reconstructing parts of a way-view can be used to provide a reason to think that the truth conditions for a belief concerning possibility have been satisfied. We have seen that in order for a proposition to be true under the structure of the actual world nature, it must not be precluded by the structure—it must not be ruled out by the structure of the actual world nature.

So what I need is to show how the acceptability of the belief that talking donkeys exist under S's reconstructed, hypothetical way-view provides S with a reason to believe that "talking donkeys exist" is *not* precluded by the structure of the actual world nature. The second condition of way-view epistemology is now relevant, but first remember that we are assuming that S already has a reason to believe that talking donkeys do not exist because we are asking about what justifies S's belief that talking donkeys *could have* existed even though they do not. To focus modal epistemology in the right place, we assume that S already has a reason to believe that talking donkeys do not exist. We want to figure out what justifies S in believing that talking donkeys could have existed despite the fact that they do not.

Now we apply the second condition of way-view epistemology. Here are the conditions again:

Way-View Epistemology: S is justified in believing that P only if (1) P is acceptable under part of S's way-view, and (2) S has a reason to believe that S's way-view is an accurate representation of the actual world nature.

I have shown how the first condition is satisfied through the process of deconstruction and reconstruction of a way-view. What we need now is some reason for S to believe this newly constructed way-view (with talking donkeys) is an accurate representation, not of the actual world nature, but of the *way* the actual world nature *could have been*. For constructionism, however, there is no entity answering to the name "way things could have been." So, what S really needs is a reason to believe that what the reconstructed way-view represents (the actual world nature plus the property *being a talking donkey*) is not precluded by the structure of the actual world nature.

I claim that S's ability to reconstruct the way-view to *make* the concept of *being a talking donkey* provides the reason to believe that the co-instantiation of *being a donkey* and *talks* is not precluded by the structure of the actual world nature. If S is able to reconstruct S's way-view in the needed way, then that is a reason to believe that the structure of S's way-view does not preclude that particular reconstruction. Furthermore, if S has a reason to believe that S's way-view is an accurate representation of the actual world nature, then having a reason to believe that the structure of S's way-view does not preclude the reconstruction also counts as a reason to believe that the structure of the actual world nature itself does not preclude the corresponding reconstruction. Therefore, S has a reason to believe that "talking donkeys do not exist" is not true

under the structure of that actual world nature, which is the truth condition for possibility claims given by constructionism.

Things runs basically the same for beliefs concerning necessity, but there is a little twist. Let us take as our example S's belief that nothing can be both a cube and a sphere. Remember that we are assuming that S already has some reason to believe that it is true that nothing is *in fact* both a cube and sphere. We are asking about what reasons S can have for thinking that this is also necessary. This time it is the first necessary condition in way-view epistemology that is going to give us problems. Here is way-view epistemology once again:

Way-View Epistemology: S is justified in believing that P only if (1) P is acceptable under part of S's way-view, and (2) S has a reason to believe that S's way-view is an accurate representation of the actual world nature.

What makes a belief of necessity acceptable under a way-view? We are assuming that S has a reason to believe that it is true that nothing is both a cube and a sphere. So, S need not attempt to construct a way-view under which this belief is acceptable because S's current way-view already does this job. What is needed here is a reason to believe that the structure of the actual world nature precludes the property *being a cube and a sphere*. Consequently, S needs to be in a position to believe that the structure of S's way-view precludes the concept *being a cube and a sphere*. What kind of reconstruction of S's way-view must S perform to be in a position to accept this?

Here is my suggestion. S attempts to reconstruct S's way-view in such a way that the proposition that something is a both a cube and a sphere is accepted under it. In this case, S needs to construct the concept *being a cube and being a sphere* somewhere in S's way-view. The most straightforward way to do this would be either to consider some concept that includes *being*

a cube and then try to add the concept *being a sphere* to it, or to consider some concept that includes *being a sphere* and then try to add *being a cube* to it. In either case, the added concept does not usurp the concept already in place but is just added to it. Anyone who attempts to do this will, of course, be frustrated by the attempt. It is this cognitive frustration, I suggest, that is the source of S's reason to believe that it is necessarily true that nothing is both a cube and a sphere. The attempt to reconstruct the way-view such that the proposition that something is both a cube and a sphere is true under it results in something that S can no longer accept as a way-view. It is not just that S cannot see how such a reconstructed way-view could represent the actual world nature; the problem is that S cannot see how it could represent *at all* because it simply cannot be constructed. The needed reconstruction would lose the power to represent altogether for S. This, I submit, is a reason for S to believe that the analogous part of the actual world nature cannot be reconstructed in the analogous way, and therefore, that it is precluded by the structure of the actual world nature.

This will surely be seen to be a contentious claim, so a few more words are in order. There is an ever-expanding literature on conceivability and its relation to justified modal belief.¹³⁸ I do not intend to enter into that debate here. Again, I only need a rough sketch of an epistemological view. However, I will say that I think that the issue here is not just that S finds it impossible to form the needed concept. The best that a failure to conceive could show is that S is *not* justified in believing that something could be a round square, when what we want to show is that S is justified in believing that something could *not* be a round square. The scope of the negation makes a big difference. I suggest that the failure of S to construct the needed concept is

¹³⁸ A nice collection of recent work can be found in Tamar Gendler and John Hawthorne, *Conceivability and Possibility*.

not merely a failure of imagination or a failure of conceiving. I suggest that instead of thinking of S's inability to construct the needed concept as a failure of conceiving, we think of it as a success of understanding. The situation is not just that S cannot construct the needed concept; it is that S "sees" that the concept cannot be constructed. The conceptual frustration involved in being unable to construct the needed concept is akin to "seeing" that 10 divided by three will result in an infinitely long decimal expansion. Once we do a couple of rounds of long division on $10 \div 3$, we "see" that it will never end, so we stop and declare the answer to be roughly 3.33. S is not just cognitively frustrated, but is also cognitively inspired by the failed attempt. To my mind, this is the foundation of the *a priori*, but this takes us far beyond what is needed to satisfy the epistemic constraint, so I will say no more about it here. Once again, though, I hope that way-view epistemology can be a source of inspiration for further thought and study along these lines.

If all of this seems plausible, and I hope it does, then I claim that S has a reason to believe that the proposition that nothing is both a cube and a sphere is necessarily true. S already has a reason to believe that it is true under the actual world nature and the way-view that would provide a reason to believe that is false under the actual world nature could not be created. So, S has a reason to believe that there is no such reconstruction of the actual world nature into one under which it is true that something is both a cube and a sphere. Therefore S has a reason to believe that the proposition that nothing is both a cube and a sphere is true under the structure of the actual world nature.

The argument for constructionism is now complete. I have argued that constructionism is the most plausible metaphysical theory of modality, and I have done that by showing how it satisfies the constraints of the integration challenge while also arguing that no other theory on the

market can plausibly do so. I take it that this is a good reason to accept constructionism. Of course, there are many details that still need to be worked out, and the theory has suggested new avenues of research in both semantics and epistemology (and maybe even modal logic) that I believe are worthy of further investigation. Before I close this dissertation, however, I want to consider briefly three quick objections that might be brought against constructionism.

4.3 Objections and Responses

First, why accept such a drastic departure from contemporary metaphysics of modality, knowing the explanatory power of possible worlds? Well, I have gone a long way, I hope, in this dissertation to make this seem like a plausible move. However, there is one more thing I would like to say in favor of constructionism from the point of view of common sense and ordinary language. Lewis argued in favor of possible worlds by touting their power to explain ordinary beliefs and language concerning modality. I claim at least as much for constructionism. Consider Lewis's argument:

It is uncontroversially true that things might have been otherwise than they are. I believe, and so do you, that things could have been different in countless ways. But what does this mean? Ordinary language permits the paraphrase: there are many ways things could have been besides the way that they actually are. On the face of it, this sentence is an existential quantification. It says that there exist many entities of a certain description, to wit, "ways things could have been", I believe permissible paraphrases of what I believe; taking the paraphrase at its face value, I therefore believe in the existence of entities which might be called "ways things could have been." I prefer to call them "possible worlds."¹³⁹

I can argue for constructionism in much the same way by making just a few changes:

It is uncontroversially true that some things *must* be the way that they are. I believe, and so do you, that there are countless ways that things could not have gone differently. But what does this mean? Ordinary language permits the paraphrase: there is a way that things must be in addition to the way that they are. On the face of it, this sentence is a

¹³⁹ "Possible Worlds," 182.

particular proposition. It says that there exists two entities of a certain description, to wit “the way things are” and “the way things must be.” I believe that things could not have been different in countless ways; I believe permissible paraphrases of what I believe; taking the paraphrase at its face value, I therefore believe in the existence of entities that might be called “the way things are” and “the way things must be.” I prefer to call them “the actual world nature” and “the necessary world nature.”

I, therefore, claim the same ordinary-language and intuitive benefits for necessary way semantics that Lewis claims for possible world semantics.

Another potential objection to constructionism is that it seems that possible worlds realists should be able to satisfy the epistemic constraint in the same way that I have, by positing the existence of way-views and using these to offer reasons to believe that certain propositions are true in other possible worlds. But that doesn't really work. The reasons that they cannot do this is that being able to mentally manipulate one's way view to create a reconstructed way-view will not give one a reason to think that some proposition is a member of a complete (or maximal) set or state of affairs or that anything in particular is going on in some other spatiotemporally isolated concrete possible world. This move works for constructionism precisely because one's way-view is partly *determined* by the necessary world nature. It is a part of the actual world nature, which we have interacted with in the creation of our way-view. If there is interaction between the actual world nature and us, then there has to be interaction between the necessary world nature and us simply because the necessary world nature is a part of the actual world nature. Way-views can provide reasons to believe that the truth conditions for constructionism have been satisfied because a way-view is determined (partly) through experience with the actual world nature. By interacting with the actual world nature, we discover, not only its content, but also its structure.

Another potential objection to constructionism is: why isn't this just conceptualism?¹⁴⁰

To show how constructionism satisfies the epistemic constraint, I have suggested what amounts to a conceivability test for justifying beliefs concerning possibility. But I argued against conceptualism in chapter three on the grounds that it could not satisfy the semantic constraint. Haven't I fallen into the very trap I have been at pains to avoid in this entire dissertation? It looks like I may have caught the epistemic constraint, but while I wasn't looking, the semantic constraint got away from me again.

The answer is no. Conceptualism, we must remember is a metaphysical theory that says that possibility just *is* conceivability. As I argued in chapter three, this does indeed fail the semantic constraint. What I have suggested is a conceivability test for *justifying* modal beliefs. I have not suggested that modality *is nothing but* conceivability. I am only suggesting that modal beliefs are justified by conceiving (in the sort of way I have suggested). There is nothing in the epistemic constraint that restricts such conceivability tests for justifying modal beliefs.

4.4 Conclusion: The Promise of Constructionism

The overall argument of this dissertation is for the conclusion that constructionism is the only plausible theory that can resolve the integration challenge. I developed nature realism into this theory, and showed how it can satisfy the constraints of the integration challenge. I also argued that no other popular theory of modality is able to resolve the integration challenge, and therefore that constructionism is the most plausible metaphysical theory of modality.

There are, however, some lingering issues that I would like to address before ending this dissertation. First, there is the issue of iterated modalities. What does constructionism have to say

¹⁴⁰ This objection was suggested to me by Ann Baker.

about how to understand stacked modal operators, like $\diamond\diamond P$, $\square\square P$, $\square\diamond P$, and $\diamond\square P$? Second, there is the issue of restricted modalities, such as nomological and deontic modalities. What does constructionism have to say about, for example, the *natural* necessity of “Every action has an equal and opposite reaction” or the purported *moral* necessity of “No one should ever lie?” Third, there is the issue of the metaphysics of properties. What does constructionism imply about the nature of universals and particular properties and relations? I do not intend to try to resolve these issues or even go on at great length about them, but I want to say a few words about each of them to suggest the trajectory I expect each inquiry to follow in future research.

The main problem with iterated modalities is that it is very hard to understand what is being said when modalities fall within the scope of one another. What exactly does it mean to say, “It is possible that it is necessary that it is possible that men walked on the moon?” Still, a complete theory of modality has to be able to make sense of such statements. For constructionism, I suspect that the solution to such puzzles will be to accept the modal-logical system called S5. According to S5, iterated modalities always collapse into the operator with the narrowest scope. So, for example, $\square\diamond P$ is true if and only if $\diamond P$ is true, and $\diamond\square P$ is true if and only if $\square P$ is true. The “stacked” modalities are simply lopped off, leaving the operator with narrowest scope (the one “closest” to the proposition) in place. Here is an intuitive argument to show why I think this will turn out to be the correct logic of iterated modalities under constructionism.

It turns out, I think, that it is easiest to think about this issue by considering impossibilities and possibilities rather than necessities and possibilities. For constructionism, an impossible proposition is one whose negation is true under the structure of the world nature. To

make the issue here more intuitive I will say that an impossible proposition is *ruled out* by the structure of the world: the structure of the world (regardless of its content) is such that the proposition is false. Conversely, I will say that a possible proposition is *not ruled out* by the structure of the world: the structure of the world (regardless of content) is *not* such that the proposition is false.

Given the intuitive language of ruling out, I think that the following is a plausible logical principle: when a proposition is not ruled out, that proposition's being ruled out is itself ruled out. In other words, if P is not ruled out, then "P is ruled out" is ruled out. If that turns out to be right, then constructionism implies that if P is possible, then "P is impossible" is impossible. To put this in symbols: $\Diamond P \rightarrow \sim\Diamond\sim\Diamond P$ (or $\Diamond P \rightarrow \Box\Diamond P$), which is the characteristic theorem of S5. Therefore, I think it is plausible to expect that the correct modal logic implied by constructionism is S5, and therefore, that all iterated modalities will simply collapse into the modal operator with narrowest scope.

For the issue of restricted modalities, I suspect that they will be accounted for by different structures. In this dissertation, I have been referring to a particular kind of modality without specifically naming it. I have done this for two reasons: for the sake of simplicity, and because of an ongoing debate about the purported distinction between logical necessity and metaphysical necessity.¹⁴¹ There are, however, many different kinds of modality. If constructionism is correct, how are these other modalities determined? I think that more than likely different types of structures determine the different types of modality. For example, I suspect that nomological necessity is determined by what might be called the *physical* structure of the world, as opposed

¹⁴¹ For what it's worth, I think that logical necessity is not the same as metaphysical necessity. For me, logical necessity is determined by the structure of way-views and has a normative component: it is how we *should* reason. Metaphysical necessity is determined by the structure of the world: it is how the world *must be*.

to the *metaphysical* structure, which is what I have been considering without naming it throughout this dissertation. The physical structure will obviously be contained within the metaphysical structure since the metaphysical structure is the entire structure of the world. So, I suspect that a substructure of the structure of the world determines nomological necessity. “Every action has an equal and opposite reaction” is not metaphysically necessary because it is not precluded by the ultimate structure of the world, but it is nomologically necessary because it is precluded by a substructure (the physical structure) of that ultimate structure. Similar reasoning applies to certain other modalities, like temporal and locative modalities, as well. Deontic modality, however, presents a problem because it is a matter of considerable debate whether or not morality is determined by facts about the world, or by facts about persons. If “No one should ever lie” is a moral truth (which is far from obvious), then it is an open question whether this obligation is determined by the world or determined by persons. Therefore, it is unclear whether the structure of the world or the structure of way-views determines deontic modalities. Either way, I expect that the structure of either the world itself or human way-views determine this kind of modality.

Lastly, there is the issue of the metaphysical status of properties and relations. Is the actual world a structure of universals or a structure of particular properties and relations? For Peter Forrest, the world natures are composed of universals. But now that I have modified his view by doing away with the non-actual world natures, it is not clear whether this idea should be retained. For my part, I suspect that constructionism will remain neutral on this issue, simply because it is the structure rather than the content of the world that determines modality. Neither the content within the structure of the world nor the way that we conceptualize that content has

any obvious impact on the structure itself, and therefore it is unlikely to matter to constructionism which view is correct.

But one might object here that the content makes a difference to the structure because there is no structure without content. So, we will have to determine just what is being structured in order to have a full understanding of the structure itself. Fair enough. So, let me just say that I suspect that the content within the structure of the world can be understood in either way and it will not make any difference to constructionism. I doubt that it will matter to constructionism whether the true ontology admits universals or not. Here is why I think this. Consider the proposition “Nothing can be both a sphere and a cube.” According to constructionism, this is a necessarily true proposition because the structure of the world precludes an object from being both spherical and cubic. But is this a prohibition against any particular object having its own particular properties, “spherical” and “cubic,” at the same time, or is it a prohibition against the universals “spherical” and “cubic” occupying the same space and time? I think it depends on how you look at it logically. On the one hand, we could understand “Nothing can be both a sphere and a cube” as $\sim(\exists x)(Sx \ \& \ Cx)$ [It is not the case that there is something that is both spherical and cubic.], which suggests a prohibition against a particular thing having certain particular properties. On the other hand, we could understand the proposition to mean $(x)(Sx \rightarrow \sim Cx)$ [Everything is such that if it is spherical, then it is not cubic.], which suggests a prohibition against these two properties (as universals) ever coming together in the same space and time. These two expressions are logically equivalent, but which one we focus on seems to make a difference to how we conceptualize properties and relations. Therefore, I suspect that the debate over universals is a logical debate based on how we conceptualize the world rather than a

metaphysical debate based on how the world actually is. So, constructionism will probably remain neutral on whether or not universals exist.

Appendix: Benacerraf's Dilemma Revisited

Although the aim of this dissertation was not to solve Benacerraf's dilemma, I developed the integration challenge for modality by reference to it, and so I feel that a few comments about how I think it can be resolved are in order. In addition, as I indicated in chapter one, there is a sense in which a metaphysical theory of modality *contains* the metaphysics of mathematics, since presumably mathematical propositions are to be understood as necessary. Therefore, a plausible theory of modality should have something to say about mathematical truth. I want to suggest in this short appendix how I believe that a plausible solution to Benacerraf's dilemma might be worked out on the foundation of constructionism.

Let us state the constraints of the integration challenge as they apply to the metaphysics of mathematics:

Semantic Constraint for Mathematics: A metaphysical theory of mathematics must provide an account of mathematical truth such that the truth conditions for mathematical propositions are also applicable to some non-mathematical propositions.

Epistemic Constraint for Mathematics: A metaphysical theory of mathematics must provide an account of mathematical truth such that there are reasons to believe that the truth conditions for mathematical propositions are satisfied in at least some cases.

A plausible metaphysical theory of mathematics must respect each of these constraints, but of course, the realist theories are going to have more difficulty with the epistemic constraint, and the idealist theories are going to have more difficulty with the semantic constraint. Since constructionism is a realist theory, it will be the epistemic constraint that will be the bigger hurdle to clear. So I will go the easy way first.

According to constructionism, the actual world nature is a complex structural property. A true mathematical proposition, therefore, must be true under this complex structural property. If we consider each of Benacerraf's two examples, Platonism and combinatorialism, we can easily see that neither of these views is going to work with constructionism. Platonism requires a realm of abstract number-objects to satisfy its truth conditions, and the necessary world nature is not composed of any such things; it is composed of properties. Combinatorial theories require proofs (or some other linguistic/syntactic structures) to satisfy its truth conditions, and again, the necessary world nature is not composed of such things. What we need are truth conditions for mathematical propositions that require structural properties.

Fortunately, a view of mathematical truth that requires properties as truth conditions is already at hand. Penelope Maddy has developed a view of mathematical realism called set theoretic realism, according to which numbers are properties of sets.¹⁴² I suggest that if we add this view to constructionism, the resulting theory solves the integration challenge for mathematics. In fact, one of the main motivations that Maddy had for developing the view is to use it to solve Benacerraf's dilemma.¹⁴³

Now I just need to show how this theory satisfies the constraints. Consider a simple arithmetic example: $5 + 7 = 12$. The truth condition for this proposition will be something like: " $5 + 7 = 12$ " is true if and only if the property *having 5 members* and the property *having 7 members* added together are equal to the property *having 12 members*. So, we have three properties and the suggestion that some relationship holds between them. But what is this relationship? I suggest that *being added together* can be understood as nothing more than

¹⁴² *Realism in Mathematics*, 86-98.

¹⁴³ *Realism in Mathematics*, 36-50.

Forrest's operations of *forming a product*, *contraction*, and *projection*. Forrest showed how these operations could be used to construct a world nature from natural properties. If numbers are natural properties, then presumably, they can be used in much the same way to *construct* other properties. Here is how the operations would be carried out in this case:

Step 1: Start with *natural* properties and relations.

5_1 is the natural property *having 5 members*.

7_1 is the natural property *having 7 members*.

(Remember that the subscripts are just placeholders to show that these are one-place properties.)

Step 2: *Form a product* of the natural properties and relations.

$5_1 \times 7_2$

(The two different subscripts now show that this is a two-place property.)

Step 3: *Contract* some of the relata.

$5_1 \times 7_1$

(Changing the subscript shows that the two-place property has been contracted into a one-place property.)

Step 4: *Project* the resulting product into a single property.

The result is the property *having (5 plus 7) members*.

Deconstructing 12 can account for the fact that the result of these operations is the same as the property having 12 members in the appropriate way. We simply *deconstruct* the property *having 12 members* into constituent parts: 12_1 is the property $5_1 \times 7_1$. Since one of these deconstructions of *having 12 members* is *having (5 plus 7) members*, it follows that $5 + 7 = 12$.

This brief sketch of the semantics of set theoretic realism plus constructionism should make it fairly clear how the theory would satisfy the semantic constraint. Mathematical propositions do not require special truth conditions. Their truth conditions are understood as constructions of properties of the actual world nature. They are true in the same way that non-mathematical propositions are true. That should give a good start toward satisfying the semantic constraint.

Now I turn to the harder constraint to satisfy. If set theoretic realism plus constructionism is the correct view of the metaphysics of mathematics, then in order for S to be justified in believing that some mathematical proposition is true, S will need some reason to believe that certain complex structural properties exist. The main idea behind satisfying the epistemic constraint will be to show how if the arithmetic proposition $5 + 7 = 12$ is accepted under a way-view, and there is a reason to believe that that way-view is an accurate representation of the actual world nature, then that counts as a reason to think that the proposition is true under the actual world nature. This will work if one's way-view is developed in the right sort of way from experience with the actual world nature. Part of what it is to believe $5 + 7 = 12$ is to accept it under one's way-view. To be justified in this belief, one must have a reason to believe it. The story goes like this: we basically do the mental analogue of the construction and deconstruction we just did for the semantic constraint. We attempt to construct and deconstruct the needed structural concepts to satisfy the truth condition for $5 + 7 = 12$. In this case, we both construct the concept $(5 + 7)$ and also deconstruct the concept 12 .

Step 1: Start with concepts.

5_1 is the concept *having 5 members*.

7_1 is the concept *having 7 members*.

Step 2: *Form a product* of the concepts.

$$5_1 \times 7_2$$

Step 3: *Contract* the relata.

$$5_1 \times 7_1$$

Step 4: *Project* the resulting product into a single concept.

The result is the concept *having (5 plus 7) members*.

That is half the job. The other half is to deconstruct the concept 12_1 (*having 12 members*) into $5_1 \times 7_1$. Since one of the mental deconstructions of 12_1 is $5_1 \times 7_1$, performing these mental operations provides a reason to believe that the truth conditions for $5 + 7 = 12$ are satisfied. These operations will provide the needed reasons so long as we have a general reason to believe that the way-view is an accurate representation of the actual world nature because (presumably) the way view is partly determined through interaction with the actual world nature over time.

While it is not needed to solve Benacerraf's dilemma, if it is desirable also to show that S is justified in believing that $5 + 7 = 12$ is not only true but *necessarily* true, then S will have to rely on the techniques described in chapter four. Essentially, S will try to construct the negation of $5 + 7 = 12$, and finding this to be an impossible task, will be provided with the needed reason to believe that $5 + 7 = 12$ is not only true but necessarily so.

I hope that these brief comments are at least suggestive of the way that set theoretic realism plus constructionism can provide a plausible metaphysical theory of mathematics that resolves Benacerraf's dilemma. Of course, much more work will need to be done to work out the details, but I believe that the project shows promise.

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