

# ESSAYS ON THE SEMANTICS OF MODALITY

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# ABSTRACT OF THE DISSERTATION

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This is a dissertation on the semantics of modality and related topics. Each of the three chapters takes aim one of the most widely held assumptions concerning the semantics of modality. The assumption is criticized, and a replacement is developed to take its place.

In the first chapter I take up the idea that permission should be semantically analyzed as existential quantification over possibilities. I argue that we should instead adopt an analysis involving universal quantification. The difference between permission and obligation is not one of quantificational strength, but rather one of quantificational structure. I conclude by considering how these arguments might be generalized to every flavor of modality.

In the second chapter I continue with the topic of modal flavors, and I ask how we should differentiate these flavors. The traditional approach to flavor differentiation locates all flavor differences in the modal semantics: modal claims differ in flavor because they differ in meaning. I argue against this approach. I argue that the vast majority of flavor differences are not semantic differences.

In the third chapter I take up the idea, ubiquitous in philosophy and linguistics, that one can use Gricean pragmatics to explain away recalcitrant data concerning the acceptability of inferences. This move, already discussed at length in chapter one, is commonly employed in debates over the semantics of modality. I argue that many of these pragmatic

“rescues” are misguided. More specifically, I argue that when we can reformulate recalcitrant data in non-conversational terms (e.g., epistemological or metaphysical terms), then a pragmatic explanation of the data is out of place.

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# Chapter 0

## Introduction

I am interested in how modality is structured. The structure of modality is a big topic, and there are numerous ways to approach it. One could approach it via metaphysics, via the philosophy of mind, or via the philosophy of language, among other avenues. I take the language-based route. My data consists mostly of linguistic judgments. And more particularly, I focus on the English modal verbs: *can*, *may*, *might*, *ought to*, *should*, *have to*, and *must*.<sup>1</sup> But it is important to emphasize that this does not mean that my conclusions are limited to language. Linguistic judgments can shed light not only on how we *talk* about modality but also on modality *itself*.

I became interested in the semantic structure of modality during the fall of 2009, when I first encountered the so-called paradox of free choice permission in the formal semantics literature. The paradox's allure speaks for itself, as does the number of papers published on the puzzle over the past fifteen years. The canonical version of the paradox focuses on the interaction between deontic modality and disjunction. Why does an assertion of *Jordan may have an apple or a pear* allow us to infer *Jordan may have an apple* and allow us to infer *Jordan may have a pear*? In the first chapter, I argue that we can resolve

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<sup>1</sup>Clearly *ought to* and *have to* differ in some syntactic respects from *can*, *may*, *might*, *should*, and *must*. These differences will not concern me here.



this puzzle by developing a non-traditional semantics for permission. But the puzzle is not limited to deontic modality; it arises for most, maybe all, flavors of modality. For example, the puzzle arises for epistemic modality, teleological modality, bouletic modality, and ability modality. So I end the first chapter by considering how we might generalize my account of permission to these non-deontic flavors.

But once I started thinking about the different flavors of modality, it was difficult to stop. Philosophers and linguists are familiar with the list of these flavors. There are the flavors that philosophers tend to study more than linguists—logical, metaphysical, and nomological modality—as well as the flavors studied by philosophers and linguists alike: epistemic, deontic, teleological, bouletic, and ability modality, among others. I became interested in what distinguishes a deontic modal, say, from a teleological modal. The standard story, told by Kratzer and many others, is that this difference is a semantic one. A deontic modal differs from a teleological modal in what it means. A deontic modal has a meaning that deals with certain norms, and a teleological modal has a meaning that deals with certain goals. This difference in meaning is usually implemented via a contextual parameter. But, implementation aside, we can question the assumption that differences in flavor equal differences in meaning. I call this assumption *semanticism*, and I spend the second chapter arguing against it.

The third and final chapter examines the use of Gricean pragmatics to explain away recalcitrant data and thereby “rescue” a semantic theory. This pragmatic rescue strategy looms large in the first chapter, and in the third chapter I revisit it. I consider the strategy in very general terms, and I argue that in a wide range of cases it is misguided. I argue that if we can extract a problematic set of inferences from the realm of conversation, and recast these inferences in non-conversational terms (e.g., epistemological or metaphysical terms), then it follows that pragmatics won’t be of any help to us. That is to say, it follows that, with respect to these inferences, we cannot use a pragmatic story (a story that relies

essentially on the kinematics of conversation) to do any explanatory heavy-lifting.

The picture of modality that emerges out of my dissertation differs in striking ways from the traditional one. On a first-order level, the semantics for possibility has been revised and the relationship between possibility and necessity has been reconceptualized. On a slightly more “meta” level, the number of semantically relevant modal flavors has been drastically reduced, and the vast majority of flavor variation has been extracted from the semantics. And on a methodological level, a popular move, the pragmatic rescue strategy, has had its scope significantly curtailed.

# Chapter 1

## A New Semantics for Permission

According to the traditional account of permission, permission involves existential quantification over deontically accessible worlds. This idea is at the heart of standard deontic logic, and it has commanded near unanimous acceptance since its inception. The first goal of this chapter is to argue that, despite its popularity, the traditional account of permission should be rejected. It generates the paradox of free choice permission, and there is good reason to think that the traditional account cannot overcome this problem. The second goal of this chapter is to develop and defend a new account of permission, the universal account. The plausibility of the universal account has been obscured because the dynamic nature of permission has been neglected. When we appreciate the dynamic nature of permission—that is to say, when we recognize that a permission claim both depends on and influences the discourse within which it is asserted—it becomes clear that the universal account of permission is the best account of permission. These arguments generalize to many other varieties of possibility (epistemic, teleological, ability, and more). A radical rethinking of modal semantics is called for.

## 1.1 The Traditional Account of Permission

The traditional account of permission consists in two claims. The first claim is that permission is a kind of possibility. One way to make sense of this is to think of possibility using a legalistic metaphor. Something is logically possible just in case it conforms with the laws of logic. Something is physically possible just in case it conforms with the laws of nature. Something is morally permissible just in case it conforms with the laws of morality. Permission, like other forms of possibility, involves conforming with laws.

The second, more important, claim is that possibility is associated with existential quantification over possible worlds.<sup>1</sup> By introducing possible worlds and quantification, we can render formally tractable the “conformance with law” metaphor. It is possible that  $A$  just in case  $A$  is true at some accessible world. Put differently,  $\Diamond A$  is true just in case  $A$  is true at some accessible world. Different flavors of possibility correspond with different kinds of accessibility. It is logically possible that  $A$  just in case  $A$  is true at some logically accessible world, where a world is logically accessible just in case the actual laws of logic are respected there. It is physically possible that  $A$  just in case  $A$  is true at some physically accessible world, where a world is physically accessible just in case the actual laws of nature are respected there. It is morally permissible that  $A$  just in case  $A$  is true at some morally, or deontically, accessible world, where a world is deontically accessible just in case the actual laws of morality are respected there. Tradition tells a similar story about obligation and necessity. Obligation is a kind of necessity, and necessity is universal quantification over accessible worlds. Possibility and necessity differ with respect to quantificational force.

These possible-worlds analyses are not supposed to be conceptual or metaphysical reductions. We are not trying to conceptually or metaphysically reduce the modal or the

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<sup>1</sup>I will be bracketing the metaphysical question of what possible worlds need to be in order to play this theoretical role in our semantics.

normative. So we should feel free to use modal and normative notions on the right-hand-side of the biconditional. That is to say, we should feel free to use a metalanguage that contains modal and normative vocabulary.<sup>2</sup> The biconditionals that we are providing should be thought of as logical or semantic analyses. By introducing quantification, we can use the well-known inferential structure of quantification to cast light on the not-so-well-known inferential structure of modality and normativity.<sup>3</sup>

For brevity, let's call the deontically accessible worlds, the *permissible worlds*. Let  $P$  be the function that maps a world  $w$  to the relevant set of permissible worlds, which are the worlds that respect  $w$ 's rules and norms. Let  $A$  denote  $\{w : A^w = 1\}$ , i.e., the set of  $A$ -worlds, or the worlds at which  $A$  is true. We will be ignoring context for now because we can. In later sections, we will not be so lucky, and context will make an appearance. Using  $\Diamond$  to stand for the *it is permissible that* operator, we can now formulate what I will call *the traditional account*:

**Traditional Account:**  $\Diamond A^w = 1$  iff  $P(w) \cap A \neq \emptyset$

Informally,  $\Diamond A$  is true just in case the set of permissible worlds and the set of  $A$ -worlds have a non-empty intersection, which is another way of saying that there exists a permissible  $A$ -world. All traditional accounts of permission share this common existential core.

When it comes to evaluating an account of permission, two inference patterns loom large: the conjunctive inference pattern and the free choice inference pattern. An adequate account of permission needs to make sense of both of these. How does the traditional

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<sup>2</sup>This kind of setup is uncontroversial in the case of quantification. Every serious semantic analysis of quantification employs a metalanguage that itself contains quantification.

<sup>3</sup>This line of thought has a rich history. In philosophical logic, Rudolf Carnap pioneered the idea that we can understand modality as quantification over possible worlds, and Saul Kripke developed this idea into its modern form. See Carnap (1947) and Kripke (1963). Georg Henrik von Wright used modal logic and its quantificational interpretation to analyze normativity. See von Wright (1951). Angelika Kratzer applied this framework to natural languages. See Kratzer (1977).

account fare?

Let's start with the conjunctive inference pattern, which we can illustrate with (1) through (3). Typically, an assertion of (1) enables the audience to infer (2) and to infer (3). In some important sense, (2) and (3) follow from (1).

(1) Jordan may have an apple and a pear.

(2)  $\Rightarrow$  Jordan may have an apple.

(3)  $\Rightarrow$  Jordan may have a pear.

We can formalize the conjunctive inference pattern as follows:

**Conjunctive Inference Pattern:**  $\Diamond(A \wedge B) \models \Diamond A, \Diamond B$

These inferences seem justified, and this fact calls out for a linguistic or logical explanation. At this stage, we are just describing the data. It would be not only unnecessary, but misguided, to use theory-laden terms to describe the data, so I hope that I have been suitably informal. There are, of course, many different ways to explain why some claims seem to follow from others, and it is in such explanations that we will employ formal notions, such as the notion of a semantic entailment or the notion of a conversational implicature.

The traditional account of permission, for example, captures the conjunctive inferences as semantic entailments. (I will confine proofs to the footnotes.<sup>4</sup>) But what about the second inference pattern, the free choice inference pattern? The free choice inference pattern is structurally similar to the conjunctive inference pattern. The difference resides

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<sup>4</sup>*Proof:* According to the traditional account,  $\Diamond(A \wedge B)$  is true iff  $A \wedge B$  is true at some permissible world. If  $A \wedge B$  is true at some permissible world,  $A$  is true at some permissible world. And if  $A$  is true at some permissible world,  $\Diamond A$  is true. Hence, the truth of  $\Diamond(A \wedge B)$  guarantees the truth of  $\Diamond A$ . Similar reasoning shows the truth of  $\Diamond(A \wedge B)$  guarantees the truth of  $\Diamond B$ .

in the use of disjunction instead of conjunction. We can illustrate the free choice inference pattern with (4) through (6). Typically, an assertion of (4) enables the audience to infer (5) and to infer (6). In some important sense, (5) and (6) follow from (4).

(4) Jordan may have an apple or a pear.

(5)  $\Rightarrow$  Jordan may have an apple.

(6)  $\Rightarrow$  Jordan may have a pear.

We can formalize the free choice inference pattern as follows:

**Free Choice Inference Pattern:**  $\Diamond(A \vee B) \models \Diamond A, \Diamond B$

Philosophers steeped in modal logic might be taken aback by the free choice inferences. But do not let theory drive your intuitions. The data here are undeniable. If someone asserts (4), it does not matter whether Jordan takes an apple or a pear, she is obeying the rules. This is all that the free choice inferences amount to. Furthermore, note that the free choice inference pattern is compatible with the fact that  $\Diamond(A \vee B)$  fails to imply  $\Diamond(A \wedge B)$ . Just because Jordan may have an apple or a pear, it does not follow that she may have both. The problem of capturing the free choice inference pattern is the *problem of free choice permission*, and it has attracted a great deal of attention.<sup>5</sup>

Now for the bad news. The traditional account of permission fails to capture the free choice inferences as entailments.<sup>6</sup> And merely finding a way to add these entailments to the traditional account will not do. If we supplement the traditional account with the principle

<sup>5</sup>The earliest discussions of the problem include von Wright (1951), von Wright (1968), and Kamp (1973)

<sup>6</sup>*Proof:* Suppose that some permissible world is a *B*-world. Also suppose that no permissible world is an *A*-world. In this case,  $\Diamond(A \vee B)$  is true, but  $\Diamond A$  is false. Hence, the truth of  $\Diamond(A \vee B)$  does not guarantee the truth of  $\Diamond A$ . Hence,  $\Diamond(A \vee B)$  does not entail  $\Diamond A$ . Similar reasoning shows that  $\Diamond(A \vee B)$  does not entail  $\Diamond B$ .

that  $\Diamond(A \vee B)$  entails  $\Diamond A$  and entails  $\Diamond B$ , we can arrive at the absurd conclusion that if anything is permitted everything is.<sup>7</sup>

And things quickly get worse. Not only does the traditional account fail to capture the free choice inferences, but it incorrectly predicts that the reverse entailments hold. That is to say, the traditional account incorrectly validates the *reverse free choice inference*, according to which  $\Diamond A$  implies  $\Diamond(A \vee B)$ , for any  $B$ :<sup>8</sup>

**Reverse Free Choice Inference:**  $\Diamond A \models \Diamond(A \vee B)$

But just because Jordan may have an apple, it does not follow that Jordan may have an apple or a pear.

Are there any solutions to these issues? Is the traditional account salvageable?

## 1.2 A Pragmatic Rescue?

At this point one might suspect that pragmatics can come to the rescue. Perhaps all the traditional account needs is some Gricean reasoning to (i) derive the desirable free choice inferences as conversational implicatures and (ii) explain the infelicity of the reverse free choice inference.<sup>9</sup>

Two observations strengthen this suspicion. The first observation is that the free choice inferences can be canceled. Indicating ignorance or uncooperativeness blocks the

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<sup>7</sup>*Proof:* Suppose that something is permitted and let  $A$  be whatever this is. So,  $\Diamond A$  is true. According to the traditional account, there is some permissible  $A$ -world. Now let  $B$  be whatever you want it to be. Because  $A$  entails  $A \vee B$ , it follows that there is some permissible  $(A \vee B)$ -world. So  $\Diamond(A \vee B)$  is true. It follows from our supplementary principle that  $\Diamond B$  is true. But surely we do not want  $\Diamond A$  to entail  $\Diamond B$  for any  $A$  and  $B$ !

<sup>8</sup>*Proof:* Suppose that there is some permissible  $A$ -world. According to the traditional account,  $\Diamond A$  is true. Because  $A$  entails  $A \vee B$ , it follows there is some permissible  $(A \vee B)$ -world. So  $\Diamond(A \vee B)$  is true. Hence,  $\Diamond A$  entails  $\Diamond(A \vee B)$ .

<sup>9</sup>There are many attempts to do just this. See Kratzer and Shimoyama (2002), Alonso-Ovalle (2006), Schulz (2005), Aloni and van Rooij (2007), Fox (2007), and Geurts (2011).



free choice inferences. Consider (7) and (8). Neither gives rise to the free choice inferences, which is say that neither implies (9) or (10):

- (7) Jordan may have an apple or a pear, but I don't know which.
- (8) Jordan may have an apple or a pear, but I'm not telling you which.
- (9) Jordan may have an apple.
- (10) Jordan may have a pear.

Cancelability is a widely used diagnostic test when it comes to detecting conversational implicatures. The cancelability of an inference does not guarantee that it is a conversational implicature, but it does suggest that it is. So we have some reason to construe the free choice inferences as conversational implicatures.

The second observation is that free choice inferences “disappear” under negation. Consider (11):

- (11) Jordan may not have an apple or a pear.

Because negation prefers to take wide scope with respect to a deontic possibility modal, (11) is naturally interpreted as the negation of (4). But if the free choice inferences were entailments and therefore part of (4)'s truth-conditional content, then we would expect its negation, (11), to be true if Jordan may not have an apple but may have a pear (or, conversely, if Jordan may not have a pear but may have an apple). This is not, however, what we find. Typically, (11) implies both (12) and (13):

(12) Jordan may not have an apple.

(13) Jordan may not have a pear.

If free choice inferences were quantity or scalar implicatures, however, then their disappearance under negation would not come as a surprise. Just because *A* generates a scalar implicature that *B*, it does not follow that the truth of  $\neg B$  suffices for the truth of  $\neg A$ . For example, just because *Some students passed* generates a scalar implicature that *Not every student passed*, the truth of *Every student passed* doesn't suffice for the truth of *It is not the case that some student passed*.

So we have two reasons to construe the free choice inferences as conversational implicatures. And it would be nice if we could retain the traditional approach to permission. But, despite their initial promise, pragmatic approaches face serious difficulties.

Every pragmatic approach to free choice permission treats the free choice inferences as scalar implicatures. Scalar implicatures are so-called because they rely on a scale that ranks, in terms of logical strength, the different contents that the speaker could have asserted. In the right conditions, the fact that the speaker asserted a logically weak alternative means that he or she could not have felicitously asserted any of the logically stronger alternatives, since if he or she could have, he or she would have. The audience can at least infer that the speaker does not believe any of the logically stronger alternatives. In the right conditions, the audience can also infer that the speaker believes the negation of each logically stronger alternative; and, if the audience trusts the speaker's judgment, they can themselves conclude the negation of each logically stronger alternative.

It has proven incredibly difficult to specify when conditions are "right", but let us grant, for the sake of argument, that, in the case of free choice permission, conditions are such that we can get the pragmatic derivation off the ground. A speaker asserts *Jordan may have an apple or a pear*, and thereby chooses this over both *Jordan may have an apple*

and *Jordan may have a pear*. According to the traditional account of permission, what the speaker asserted is logically weaker than the two alternatives he or she choose not to assert. This means that the speaker could not have felicitously asserted either of the stronger alternatives, since if he or she could have, he or she would have. Hence, the audience can conclude that the speaker does not believe either of the stronger alternatives.

The scalar implicature story gives us the opposite of what we needed.<sup>10</sup> We needed to derive the free choice inferences as scalar implicatures. Instead, we concluded that the speaker lacks a belief in either of the free choice inferences. Indeed, if the traditional account of permission were right, it would serve as a counterexample to the standard scalar implicature story. Given the spectacular success of this story with respect to other constructions, we have a compelling reason to treat this entire line of thought as a *reductio* of the traditional account of permission. As soon as we look into the pragmatics of what is going on, we discover that the traditional account is even more of a nonstarter than we had originally thought.<sup>11</sup>

At the very least, these considerations militate in favor of our exploring other semantic approaches. Though, of course, any approach will have to explain the observations concerning cancelability and negation that were sketched at the beginning of this section. I take up cancelability and negation in section 1.7.

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<sup>10</sup>Klinedinst (2007) explores a similar worry.

<sup>11</sup>In the third chapter of this dissertation, I consider in very general terms attempts to use Gricean pragmatics to “rescue” semantic theories. I show why this strategy fails in a wide range of cases, including the case of free choice permission. But my argument leaves unscathed uncontroversial scalar implicatures, such as those that arise in connection with quantifiers.

### 1.3 A New Approach to Permission: The Universal Account

The traditional account of permission faces serious problems. And there does not appear to be any solution in the offing. What are its alternatives? In this chapter, I defend an alternative called the *universal account*. According to the universal account,  $\Diamond A$  is true if and only if every  $A$ -world is permissible. Possibility, like necessity, involves universal quantification. But, of course, possibility and necessity are still different. They no longer differ in terms of quantificational force, but they now differ with respect to quantificational structure:  $\Diamond A$  is true if and only if every  $A$ -world is permissible, while  $\Box A$  is true if and only if every permissible world is a  $A$ -world. Permission and obligation are no longer duals, but converses.<sup>12</sup>

The following is a first pass at formulating the universal account. Again let  $P$  be the function that maps a world  $w$  to the relevant set of permissible worlds, and again ignore

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<sup>12</sup>There are, of course, other semantic approaches to the problem of free choice permission. One might keep the traditional account of permission but modify the traditional account of disjunction. See Zimmerman (2000), Geurts (2005), and Barker (2010). Or one might modify the traditional account of permission but not follow me in adopting the universal account. See Aloni (2002) and Simons (2005). Both Aloni and Simons pursue approaches based on the idea that some lexical items denote sets of alternative semantic values, and that some operators are sensitive to these alternatives. There are problems with these approaches. One problem that arises for all of these approaches runs as follows. Free choice inferences can arise even when there is no disjunction within the scope of a deontic possibility modal. Indeed, free choice inferences can arise even when there is no alternatives-generating lexical item of any kind within the scope of a deontic possibility modal. My universal account of permission can accommodate this. These other semantics approaches cannot.

A distinct semantic approach that bears some similarity to mine involves analyzing permission in terms of a conditional. In the 1950's, Alan Ross Anderson and Stig Kanger independently provided "reductions" of deontic logic: deontic modal operators were analyzed in terms of strict implication and a special proposition  $\delta$ , where  $\delta$  is the proposition that all of the rules are being followed and no sanction is warranted. See Anderson (1956), Kanger (1957), and Anderson (1958). Anderson characterizes a notion of permission called strong permission. Roughly,  $A$  is strongly permissible iff  $A$  strictly implies  $\delta$ . Asher and Bonevac (2005) interpret free choice permission as strong permission, though they modify Anderson's characterization by employing a conditional that is weaker than strict implication. My view shares a number of features with such reductions. These conditionals are interpreted as involving universal quantification, and to that extent bear a superficial similarity to my universal account. The universal account, however, enjoys a number of advantages over such conditional reductions. The universal account takes on no commitments concerning the logic of conditionals, it is compatible with the very popular analysis, developed in Kratzer (1986), of conditionals in terms of modals, it appears more faithful to the actual syntax of English, and it has the resources to handle a wide range of perplexing and potentially troubling embedding data.

context for now. Also, let  $D$  be the domain of worlds under consideration.<sup>13</sup>

**Universal Account:**  $\Diamond A^w = 1$  iff  $(D \cap A) \subseteq P(w)$

Informally,  $\Diamond A$  is true just in case all of the  $A$  worlds in  $D$  are permissible. The universal account predicts the free choice inferences as entailments. If every  $(A \vee B)$ -world is permissible, then every  $A$ -world world is permissible, as is every  $B$ -world. Hence,  $\Diamond(A \vee B)$  entails  $\Diamond A$  and entails  $\Diamond B$ .

But the universal account fails to predict the conjunctive inferences as entailments. Suppose that every  $(A \wedge B)$ -world is permissible, but that some  $A$ -world is not permissible. In this case,  $\Diamond(A \wedge B)$  is true, but  $\Diamond A$  is not true. Hence,  $\Diamond(A \wedge B)$  does not entail  $\Diamond A$ . Similar reasoning shows that  $\Diamond(A \wedge B)$  does not entail  $\Diamond B$ .

Indeed, the universal account incorrectly predicts that the reverse entailments hold. If every  $A$ -world is permissible, then every  $(A \wedge B)$ -world is permissible. Hence,  $\Diamond A$  entails  $\Diamond(A \wedge B)$ . That is to say, the universal account incorrectly validates the *reverse conjunctive inference*, according to which  $\Diamond A$  implies  $\Diamond(A \wedge B)$ , for any  $B$ :

**Reverse Conjunctive Inference:**  $\Diamond A \models \Diamond(A \wedge B)$

Let's take stock. The traditional account captures the conjunctive inferences as entailments, but runs afoul of the free choice inferences. The traditional account fails to capture the free choice inferences as entailments, and incorrectly predicts the reverse free choice inference.

For the universal account, the situation is reversed. The universal account captures the free choice inferences as entailments, but runs afoul of the conjunctive inferences. The

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<sup>13</sup>In the next section we will refine this analysis by fleshing out what is meant by "under consideration".

universal account fails to capture the conjunctive inferences as entailments, and incorrectly predicts the reverse conjunctive inference.

As we have seen, the problems that the traditional account faces are highly difficult, if not impossible, to resolve. But as we will see, the problems that the universal account faces are fairly easy to resolve. We need merely appreciate the dynamic nature of permission and the ways in which a permission claim both depends on and influences the discourse within which it is asserted. In the next two sections, I rely on this discourse-shifting both to capture the conjunctive inferences and to block the reverse conjunctive inference.

## 1.4 Capturing the Conjunctive Inferences

The universal account of permission has trouble capturing the conjunctive inferences. That is to say, the universal account has trouble explaining why  $\Diamond(A \wedge B)$  implies  $\Diamond A$  and implies  $\Diamond B$ . Even if every  $(A \wedge B)$ -world is permissible, it does not follow that every  $A$ -world is permissible, and it does not follow that every  $B$ -world is permissible.

First, it should be noted that the conjunctive inferences do not always hold. Suppose that XYZ is a poisonous substance. Now consider (14) and (15):

(14) Jordan may feed Madison XYZ and the antidote to XYZ.

(15) Jordan may feed Madison XYZ.

Does (14) imply (15)? We find ourselves pulled in opposite directions. On the one hand, the conjunction is permitted, but the conjunct, considered in isolation, is not. So the inference does not appear to hold. On the other hand, if we have (14) firmly in mind when considering (15), this inference gains some plausibility. After all, Jordan may feed Madison XYZ, so

long as she *also* feeds her the antidote. This case is tricky, and our judgments are subtle. The traditional account, which treats the conjunctive inferences as entailments, lacks the finesse required to handle the data. We need a framework with more flexibility, one that can explain our ambivalence about cases such as these. The universal account is up to the task, so long as we appreciate the dynamic nature of permission.

When a permission statement is made, subsequent modal assertions are most naturally interpreted conditionally, as stating what would be the case were the prejacent true.<sup>14</sup> Consider (16) and (17):

(16) Jordan may have an apple. It might make her feel better.

(17) Jordan may have an apple. It would raise her blood sugar.

In both of these examples, the second sentence is interpreted conditionally, as stating what might or would be the case were Jordan to have an apple.<sup>15</sup>

How should we understand this effect? Recall that both the traditional account and the universal account appeal to a set of permissible worlds. And which worlds are permissible is context sensitive. For example, if we are presupposing utilitarianism, the permissible worlds are those at which utility is maximized. If, on the other hand, we are in a restaurant setting, the permissible worlds are those at which everyone under the drinking age refrains from ordering alcohol, everyone pays what they owe, and other restaurant norms are obeyed.

Importantly, though, a context does not *fully* determine the permissible worlds. It needs the world of evaluation to help. Roughly, the context determines *whose* rules are

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<sup>14</sup>The *prejacent* of a modal claim is the proposition scoped under the modal. For example, the prejacent of *Jordan may have an apple* is the proposition that Jordan has an apple.

<sup>15</sup>This idea is not new. The phenomenon whereby modals affect how we interpret downstream modals is just a species of the well-known phenomenon of modal subordination. See Roberts (1989).

relevant, but the world of evaluation determines what those rules are, and the world of evaluation determines the facts that allow us to apply those rules. For example, the context determines that the rules of a certain restaurant are relevant, but the world of evaluation determines that the restaurant has a minimum drinking age of twenty-one, as well as the fact that a particular customer is over the age of twenty-one.<sup>16</sup>

So how do the context and world of evaluation jointly determine which worlds are accessible? Kratzer has developed a picture of this process.<sup>17</sup> According to Kratzer's picture, the context associates each modal with two conversational parameters. The first conversational parameter is the modal base. The second conversational parameter is the ordering source. Restricting our attention to deontic modality, the modal base is a function that maps the world of evaluation to a set containing the descriptive, non-normative propositions that characterize the facts that we are holding fixed. The intersection of this set contains those worlds where all of these factual propositions are true. The set of permissible worlds is a subset of this intersection.

To determine *which* subset, we need to appeal to the ordering source. The ordering source maps the world of evaluation to an ordering over worlds.<sup>18</sup> This ordering ranks worlds according to how well they conform with the rules. The permissible worlds are those worlds in the modal base that are the most highly ranked. In other words, given a fixed factual background, the permissible worlds are those that the contextually operative rules deem “best”, or, more precisely, “not worse than any other”.<sup>19</sup>

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<sup>16</sup>Why have this division of labor between the context and the world of evaluation? One reason: We do not want it to be a necessary truth that Jordan may have wine. This truth is contingent *not* because we could have been in a different context in which a different system of rules were relevant. Rather, this truth is contingent, holding fixed whose rules are relevant, because those rules could have been different (prohibition might have continued) or because facts that tell us when to apply those rules could have been different (Jordan might have been much younger than she actually is, Kripkean concerns about essentiality of origins aside). For the historical context surrounding this division of labor between the context of utterance and the world of evaluation, see the classic papers on double-indexing, Kamp (1971) and Lewis (1980).

<sup>17</sup>See Kratzer (1977), Kratzer (1981), and Kratzer (1991).

<sup>18</sup>Technically, the ordering source maps a world to a set propositions that *determines* an ordering over worlds. We can safely ignore this extra complication.

<sup>19</sup>Throughout this dissertation I will be making the limit assumption, i.e., assuming that the ordering source can always pick out a set of “best” worlds.



Let  $f_c$  be the contextually determined modal base, and let  $g_c$  be the contextually determined ordering source, and let  $>_{g_c(w)}$  be the ordering that the ordering source maps  $w$  to. We can now define the set of permissible worlds. Let  $P_c$  be the contextually determined function that maps a world of evaluation to a set of permissible worlds. We can define  $P_c$  as follows:

**Permissible Worlds:**  $P_c(w) = \{u \in f_c(w) : \neg \exists v \in f_c(w) : v >_{g_c(w)} u\}$

Informally, a world is permissible just in case no world is ranked more highly than it by the ordering source. Within this framework, we can recast the universal account with more precision. Let  $A^c$  denote  $\{w : A^{c,w} = 1\}$ , i.e., the set of worlds at which  $A$ , relative to context  $c$ , is true.

**Universal Account:**  $\Diamond A^{c,w} = 1$  iff  $(f_c(w) \cap A^c) \subseteq P_c(w)$

Informally, this more sophisticated formulation of the universal account renders  $\Diamond A$  true just in case every  $A$ -world in the modal base is permissible.

Let's return to the problem of capturing the conjunctive inferences. As we have seen, a permission statement influences subsequent modal assertions. Within the Kratzerian framework just sketched, we can model this effect by positing that a permission statement constrains the modal base of a subsequent modal. The modal base of a subsequent modal determines a set of propositions that contains the prejacent of the initial permission statement.

Even when a permission statement is followed by another permission statement, this effect is present. The second permission statement is interpreted conditionally, as stating what would be permitted were the prejacent of the first sentence true. Consider the follow-

ing discourse:

(18) Jordan may have an apple. She may eat it with peanut butter.

Both sentences express claims about permission. The second claim, however, is interpreted conditionally, as telling us what Jordan can do if she were to have an apple. To implement this, we add the proposition that Jordan has an apple to the set of propositions determined by the modal base associated with *may* in the second sentence. The Kratzerian framework does not force us to make this move, but it is a natural one to make, and one that accounts for the data presented in this section.

Consider a further example involving this phenomenon. Around Arlington, Virginia one can find signs on parking meters that read:

(19) All may park. All must pay.

Of course, (19) does not imply that everyone without restriction must pay; it only implies that everyone *who parks* must pay. As in the previous example, the first modal statement (*All may park*) restricts the domain involved in the second modal statement (*All must pay*).

We now have the resources to capture the conjunctive inferences. Consider the following discourse:

(20) Jordan may have an apple and a pear. Jordan may have an apple.

Again, both sentences express claims about permission. And again, the second claim is

interpreted conditionally, as telling us what Jordan can do if she were to have an apple and a pear. To implement this, we add the proposition that Jordan has an apple and a pear to the set of propositions determined by the modal base of *may* in the second sentence. But note that this means the second sentence is trivially true. Thanks to the first sentence, we know that every apple-and-pear-world is permissible, and if in interpreting the second sentence, we restrict our attention to apple-and-pear-worlds, it trivially follows that every apple-world in this group will be permissible.

Reconsider the pair of sentences that we opened this section with:

(21) Jordan may feed Madison XYZ and the antidote to XYZ.

(22) Jordan may feed Madison XYZ.

When does an assertion of (21) allow the audience to infer (22)? Only when the assertion shifts the modal base in such a way as to eliminate the possibility of Jordan feeding Madison XYZ without the antidote. When is this inference blocked? When the modal base is not shifted in this way.

Let me briefly address two worries. According to the first worry, my explanation of the conjunctive inferences overgeneralizes, incorrectly licensing the inference from  $\Diamond A$  to  $\Box A$ . If an assertion of  $\Diamond A$  renders every world in the modal base an *A*-world, then, *a fortiori* every permissible world will be an *A*-world. The set of permissible worlds is, after all, a subset of the modal base. But now  $\Box A$  is true, provided we adopt the traditional account of obligation, according to which  $\Box A$  is true if and only if every permissible world is an *A*-world. This is a good objection, but it is not an objection to the universal account of permission or to my explanation of the conjunctive inferences. It is, rather, an objection to the traditional account of obligation. According to the traditional account of obligation, we are obligated to do whatever we are presupposing to be true throughout the modal base.

This is an objection that needs an answer, no matter which account of permission one adopts.

According to the second worry, my explanation incorrectly licenses the reverse free choice inference, i.e., the inference from  $\Diamond A$  to  $\Diamond A \vee B$ . An assertion of *Jordan may have an apple* both tells us that every *apple*-world is permissible, and renders every world in the modal base an *apple*-world. But every world at which Jordan has an *apple* is also a world at which she has an apple or robs a bank. So an assertion of *Jordan may have an apple or rob a bank* tells us that every (*apple*  $\vee$  *robbery*)-world is permissible, and renders every world in the modal base an (*apple*  $\vee$  *robbery*)-world. It trivially follows that every (*apple*  $\vee$  *robbery*)-world in the modal base is permissible, and hence the universal account will predict the truth of *Jordan may have an apple or rob a bank*.

It was one of the problems with the traditional account that it validates the reverse free choice inference. It would be a big cost if the story I've told in this section saddles the universal account with the same problem. Fortunately, we can avoid this consequence. Before asking whether every (*apple*  $\vee$  *robbery*)-world in the modal base is permissible, we need to make sure that the modal base contains both an *apple*-world and a *robbery*-world.<sup>20</sup> Presumably, it won't contain a *robbery*-world, and this will bring about an expansion of the modal base to include at least one *robbery*-world. And, relative to this new domain, the universal account will predict the falsity of *Jordan may have an apple or rob a bank*, since the newly added *robbery*-worlds won't be permissible.

To summarize, the universal account does not capture the conjunctive inferences as entailments. We can find contexts that simultaneously render  $\Diamond(A \wedge B)$  true and  $\Diamond A$  false. But this is actually good news. The universal account does capture the conjunctive inferences in a weaker sense that better captures the data: in many (though not all) contexts, a true and felicitous assertion of  $\Diamond(A \wedge B)$  would yield a context in which  $\Diamond A$  is true.

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<sup>20</sup>I'll motivate this move at length in the next section, where I employ a very similar move in order to block the reverse conjunctive inference.

## 1.5 Blocking the Reverse Conjunctive Inference

The universal account of permission incorrectly validates the reverse conjunctive inference. That is to say, the universal account incorrectly predicts that  $\Diamond A$  entails  $\Diamond(A \wedge B)$ . If every  $A$ -world is permissible, then it follows that every  $(A \wedge B)$ -world is permissible. But from the fact that Jordan may have an apple, it does not follow that she may have an apple and a pear. In the previous section, we appealed to discourse-shifting in order to capture the conjunctive inferences. Permission claims were seen as influencing the discourse in which immediately subsequent permission claims were interpreted. In this section, a different kind of discourse-shifting is explored.<sup>21</sup> A permission claim not only shifts the discourse in which immediately subsequent permission claims are interpreted, it also shifts the discourse in which it itself is interpreted.

The problem of blocking the reverse conjunctive inference is structurally similar to a problem facing the strict analysis of the (indicative) conditional. Consider the following garden-variety conditional:

(23) If Jordan attends the party, she will have fun.

According to the strict conditional analysis, a conditional is true iff, for every world  $w$  in a contextually determined domain, if the antecedent is true at  $w$ , then the consequent is true at  $w$ . So (23) is true iff, for every world  $w$  in a contextually determined domain  $D$ , if Jordan attends the party at  $w$ , then she will have fun at  $w$ .

But the strict conditional analysis faces an immediate problem. It validates an inference pattern known as antecedent strengthening. And antecedent strengthening is widely held to be invalid.

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<sup>21</sup>A kind of discourse-shifting already previewed in addressing the second worry considered in the previous section.

**Antecedent Strengthening:** *(if A)(C)* implies *(if A ∧ B)(C)*, for any *B*

Consider (23). Suppose it is true: for every world *w* in a contextually determined domain *D*, if *Jordan attends the party* is true at *w*, then *She will have fun* is true at *w*. Now if every attending-world in *D* is also a fun-world, then every attending-and-gets-violently-ill-world in *D* is also a fun-world. So the truth of (23) would guarantee the truth of (24):

(24) If Jordan attends the party and gets violently ill, she will have fun.

This is a problem. In this example the added conjunct (that Jordan gets violently ill) might strike us as a remote possibility, but counterexamples to antecedent strengthening need not rely on such remoteness. Suppose that Jordan has to limit her caffeine intake to fewer than 100 mg a day. Also suppose that cup of tea has 30 mg of caffeine and a cup of coffee has 80 mg. The following conditional is true.

(25) If Jordan has a cup of tea, she will be fine.

But (26) is false:

(26) If Jordan has a cup of tea and a cup of coffee, she will be fine.

And the added conjunct describes a rather mundane possibility.

Just as the universal account of permission has trouble blocking the inference from  $\Diamond A$  to  $\Diamond(A \wedge B)$ , the strict conditional analysis has trouble blocking the inference from *(if*

$A)(C)$  to  $(\text{if } A \wedge B)(C)$ . But now for the good news. The similarity between these two problems suggests that a defensive strategy that works in the case of the strict conditional analysis will also work in the case of the universal account of permission.

A popular strategy is to manipulate the domain of possible worlds over which the conditional quantifies.<sup>22</sup> According to this line of thought, the antecedent of a conditional influences the contextually determined domain of worlds. When someone asserts (25), we restrict our attention to the closest we can, just so long as Jordan has a cup of tea in at least one of these worlds. Informally implemented, the context supplies a collection of nested domains, totally ordered by inclusion. The innermost domain contains worlds that are, in salient respects, most similar to the actual world. And as we move through the larger domains, we progressively encounter worlds that differ more and more from the actual world.<sup>23</sup>

When a conditional is asserted, we start with the smallest domain, and consider progressively larger domains, stopping when we reach a domain that contains at least one world at which Jordan has a cup of tea. This is the domain that we use to determine the truth of the conditional.<sup>24</sup>

So when someone asserts (25), we consider the smallest domain that contains at least one world at which Jordan has a cup of tea. Plausibly, this domain contains no world at which Jordan has two beverages. Let's suppose that this is the case. With respect to this set, every world at which Jordan has tea is also a world at which she is fine. When someone asserts (26), we have to consider a larger domain, one that contains at least one world at which Jordan has a cup of tea and a cup of coffee. With regard to this new domain, it is not the case that every world at which Jordan has tea and coffee is also one at which she is

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<sup>22</sup>See Lewis (1973), von Fintel (2001), Gillies (2007), and Moss (2010) for discussion of this strategy.

<sup>23</sup>Trying to specifying this metric in more detail predictably leads to a host of very difficult problems. We can bracket such complications here.

<sup>24</sup>There is quite a bit more to it than this. For example, it is typically easier to move to a larger domain than it is to go back to a smaller domain. We can ignore these complexities.

fine, since there is at least one world (the world at which she has tea and coffee) at which she has 110mg of caffeine, which is too much for her to handle. So (26) is false.

Let's borrow this strategy to defend the universal account of permission. When someone asserts a sentence of the form  $\Diamond A$ , such as *Jordan may have an apple*, we start with the smallest domain in the contextually supplied collection, and we consider progressively larger domains until we reach one that contains a world at which  $A$  is true, a world at which Jordan has an apple. Plausibly, this domain only includes worlds at which Jordan limits herself to one piece of fruit. Let's suppose this is the case. If this assertion is true, then, within the confines of this determined domain, every world at which Jordan has an apple is permissible.

When someone asserts a sentence of the form  $\Diamond(A \wedge B)$ , such as *Jordan may have an apple and a pear*, we have to consider a larger domain, one that contains at least one world at which Jordan has an apple and a pear. With regard to this new domain, it is not necessarily the case that every world at which Jordan has an apple and a pear is permissible. More generally, there will be many contexts that render  $\Diamond A$  true, but would evolve into a context that would render  $\Diamond(A \wedge B)$  false, were  $\Diamond(A \wedge B)$  asserted.

This strategy is, in spirit, a dynamic one. By introducing a collection of nested domains, we are adding structure to our discourses. Possibility modals act on this new aspect of the discourse in a highly systematic way. And it is by way of this modal-discourse interaction that the reverse conjunctive inference is blocked. However, it is important to note that everything that I have said has been neutral with respect to implementation. Perhaps we need nothing other than Gricean pragmatics to capture this modal-discourse interaction.<sup>25</sup> Or perhaps this conservative approach is insufficient, and the dynamics of modal-discourse interaction will require conventional semantic constraints.

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<sup>25</sup>See Moss (2010) and Lewis (2012) for more on how one might develop a broadly Gricean account of a dynamic phenomenon. Moss (2010) focuses on conditionals. Lewis (2012) focuses on indefinites and pronominal anaphora.



## 1.6 Duality and $\Box$ Implies $\Diamond$

Traditionally, the connection between permission and obligation has been characterized by two inference patterns: (i) duality and (ii)  $\Box$  implies  $\Diamond$ . How much of this traditional connection can the universal account of permission preserve? I do not have the space to answer that question here. I will note, though, that it is unclear that we should even want to preserve all of the traditional connection between permission and obligation.

Let's start with duality. According to duality,  $\Box A$  is equivalent to  $\neg\Diamond\neg A$ , and  $\Diamond A$  is equivalent to  $\neg\Box\neg A$ . Historically, duality has played a crucial role in the development of modal logic. Every mainstream system of modal logic renders duality true. Most have rendered it definitionally true, which is to say that they use duality to define  $\Box$  in terms of  $\Diamond$ , or they use duality to define  $\Diamond$  in terms of  $\Box$ . Indeed, it was precisely because both modal notions and deontic notions appeared to vindicate duality that von Wright proposed treating deontic logic as a branch of modal logic.

But when it comes to natural language modality, it is not clear that we should want an unrestricted form of duality. Consider the following line of thought. Suppose that Jordan may have pancakes, but not eggs. In this case, because Jordan may have pancakes, it is false that Jordan must not have pancakes or eggs. That is,  $\Box\neg(\text{pancakes} \vee \text{eggs})$  is false. Hence,  $\neg\Box\neg(\text{pancakes} \vee \text{eggs})$  is true. By duality, we obtain  $\Diamond(\text{pancakes} \vee \text{eggs})$ . By the free choice inference pattern, we obtain  $\Diamond(\text{eggs})$ . But, by hypothesis, Jordan was not permitted to have eggs. Something has gone very wrong. Though precisely what has gone wrong is unclear. Is it the free choice inference pattern or duality that is the problem? Or maybe the combination?<sup>26</sup> We should be wary of trying to validate duality until we know what is going wrong.

Now let's consider the principle that  $\Box$  implies  $\Diamond$ . Historically, deontic logic has had this principle at its core. Together with duality,  $\Box$  implies  $\Diamond$  is equivalent to the principle

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<sup>26</sup>See Cariani (2011) for some reasons to reject duality.

that one cannot have conflicting obligations, i.e., that  $\Box A$  and  $\Box \neg A$  can never both be true. Furthermore, many popular non-deontic systems of modal logic, such as *T*, *S4*, *B*, and *S5* validate the principle that  $\Box$  implies  $\Diamond$ .

But when it comes to natural language modality, it is not clear that we should want an unrestricted form of the principle that  $\Box$  implies  $\Diamond$ . Consider the following line of thought. According to the traditional account of  $\Box$ ,  $\Box A$  entails  $\Box(A \vee B)$ , since if every permissible world is an *A*-world it follows that every permissible world is an  $(A \vee B)$ -world. According to the principle that  $\Box$  implies  $\Diamond$ ,  $\Box(A \vee B)$  implies  $\Diamond(A \vee B)$ . According to the free choice inference pattern,  $\Diamond(A \vee B)$  implies  $\Diamond B$ . By the transitivity of implication,  $\Box A$  implies  $\Diamond B$ . Something has gone very wrong. Though, again, precisely what has gone wrong is unclear. Is it the traditional account of  $\Box$ , the free choice inference pattern, or the principle that  $\Box$  implies  $\Diamond$  that is the problem? Or maybe some combination?<sup>27</sup> We should be wary of trying to validate the principle that  $\Box$  implies  $\Diamond$  until we know what is going wrong.

I think that, in order to avoid the problems raised in this section, we should restrict duality and the principle that  $\Box$  implies  $\Diamond$ . Furthermore, after these two principles have been properly restricted, I think that the universal account of permission can accommodate them. But these are issues that deserve a paper of their own.

## 1.7 Cancelability and Negation

In section 1.2, I discussed two observations that provide *prima facie* support for view that the free choice inferences are conversational implicatures. The first observation is that the free choice inferences are cancelable. The second observation is that the free choice inferences disappear under negation. However, as we also saw in section 1.2, pragmatic

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<sup>27</sup>See Jackson and Pargetter (1986) and Cariani (2011) for some reasons to reject the traditional account of  $\Box$ . Taking moral dilemmas seriously—as in, for example, Horty (2003)—gives us a reason to reject the principle that  $\Box$  implies  $\Diamond$ .

approaches to free choice permission face immediate, and in my mind insuperable, difficulties. But we still need to explain these two observations. In this section I show that the universal account is up to the task.

Recall that the universal account correctly predicts that (27) implies (28) and implies (29):

(27) Jordan may have an apple or a pear.

(28)  $\Rightarrow$  Jordan may have an apple.

(29)  $\Rightarrow$  Jordan may have a pear.

But the speaker can cancel these free choice inferences by indicating either ignorance or uncooperativeness:

(30) Jordan may have an apple or a pear, but I don't know which.

(31) Jordan may have an apple or a pear, but I won't tell you which.

I propose that *Jordan may have an apple or a pear* is structurally ambiguous between two readings. According to the first reading, the disjunction takes narrow scope with respect to the deontic possibility modal—we can represent this reading as  $\Diamond(\text{apple} \vee \text{pear})$ . We have been concerned exclusively with this reading so far in this chapter. According to the second reading, the disjunction takes wide scope with respect to the deontic possibility modal—we can represent this reading as  $(\Diamond\text{apple} \vee \Diamond\text{pear})$ . According to the universal account, this reading would not give rise to the free choice inferences. In most contexts, the first reading is preferred. But when a speaker adds *but I don't remember which* or *but I won't tell you which* he or she is resolving this structural ambiguity in favor of the second reading.

There are independent reasons for endorsing this explanation of the cancelability facts. Consider (32) through (34):

(32) Jordan has not had an apple or a pear.

(33)  $\Rightarrow$  Jordan has not had an apple.

(34)  $\Rightarrow$  Jordan has not had a pear.

Typically (32) implies (33) and (34). But these inferences can be canceled:

(35) Jordan has not had an apple or a pear, but I don't know which (she hasn't had).

(36) Jordan has not had an apple or a pear, but I'm not telling you which (she hasn't had).

Sentences (27)-(31) and sentences (32)-(36) bear a striking resemblance to each other. But when it comes to (32)-(36), it is clear that we should handle the data by appealing to structural ambiguity. We can interpret (32) as  $\neg(\text{apple} \vee \text{pear})$  or as  $(\neg\text{apple} \vee \neg\text{pear})$ . When we interpret (32) in the first (preferred) way, it entails (33) and (34). When we interpret (32) in the second way, it does not entail (33) or (34). In (35) and (36), by indicating ignorance and uncooperativeness, respectively, the speaker resolves the ambiguity in favor of the second interpretation. The similarity between (27)-(31) and (32)-(36) pressures us to search for a single story that can explain the cancelability data in both cases. My proposal allows us to provide such a story, i.e., the structural ambiguity story.

One way to resist my line of argument, though, is to resist the idea that the structural ambiguity story is the right explanation of why (32) typically implies (33) and (34) and why these inferences can be canceled as in (35) and (36). One might dislike the structural ambiguity story because it maintains that a sentence with one surface-level occurrence of

an operator (such as negation or a possibility modal) should sometimes be interpreted as containing two occurrences of the operator at the level of logical form. The plausibility of denying the structural ambiguity story will depend on the plausibility of the alternative explanation put forward in its place to explain the facts concerning (32)-(36). Here I will not address any specific alternative explanation. Rather, I will just present more data that the structural ambiguity story can easily handle, but that I suspect will prove too much for any alternative explanation to make sense of.

Whenever *or* appears to occur within the scope of any operator or quantifier, there is a reading according to which *or* takes wide scope with respect to the operator or quantifier. Consider (37) and (38):

(37) Everyone has had an apple or a pear.

(38) Everyone has had an apple or a pear, but I don't know which (everyone has had).

According to the structural ambiguity story, the preferred reading of (37) can be symbolized as  $\forall x(\text{apple}(x) \vee \text{pear}(x))$ , but in (38) we encounter the other reading, which we can symbolize as  $\forall x(\text{apple}(x)) \vee \forall x(\text{pear}(x))$ .

The same thing is happening with (39) and (40), where we think of *always* as a universal quantifier over times.

(39) Jordan always has an apple or a pear.

(40) Jordan always has an apple or a pear, but I don't know which (she always has).

We find the same thing happening with *and*.

(41) Someone did the dishes and took out the trash.

(42) Someone did the dishes and took out the trash, but I wonder whether the same person did both things.

According to the structural ambiguity story, the preferred reading of (41) can be symbolized as  $\exists x(\text{dishes}(x) \wedge \text{trash}(x))$ , but in (42) we encounter the other reading, which we can symbolize as  $\exists x(\text{dishes}(x)) \wedge \exists x(\text{trash}(x))$ .

Sometimes factual knowledge pressures us to resolve the ambiguity in a similar way. Consider (43):

(43) A woman is president in Brazil and Costa Rica.

Despite only one surface occurrence of the indefinite *a woman*, it is clear that the correct interpretation of the sentence involves two existential quantifiers, with conjunction taking wide scope.

Note that these last two examples do not involve *or*. If an alternative explanation to the structural ambiguity story relies on a property that *or* has but *and* does not, then this explanation cannot provide a unified account of all of the data.

Furthermore, as soon as we grant that the structural ambiguity story is needed to make sense of any one of these examples, we have accepted that a sentence with one surface-level occurrence of an operator or quantifier should sometimes be interpreted as containing two occurrences of the operator or quantifier at the level of logical form. At this point the cost of extending the structural ambiguity story to handle all of these examples is minimal.

Now that we've explained cancelability, let's move on to the observation that the free choice inferences disappear under negation.

Typically (44) implies (45) and implies (46):

(44) Jordan may not have an apple or a pear.

(45) Jordan may not have an apple.

(46) Jordan may not have a pear.

According to the universal account,  $\neg\Diamond(A \vee B)$  is true iff not every  $(A \vee B)$ -world is permissible, i.e., some  $(A \vee B)$ -world is not permissible. But this guarantees that merely that some  $A$ -world or some  $B$ -world is not permissible. It doesn't guarantee that all  $A$ -worlds and all  $B$ -worlds are not permissible.

Furthermore, we run into problems when we replace *or* with *and*. Typically (47) does not imply (48) and does not imply (49):

(47) Jordan may not have an apple and a pear.

(48) Jordan may not have an apple.

(49) Jordan may not have a pear.

But the universal account delivers these implications. According to the universal account,  $\neg\Diamond(A \wedge B)$  is true iff not every  $(A \wedge B)$ -world is permissible. But this guarantees that that not every  $A$ -world is permissible, and this guarantees that not every  $B$ -world is permissible.

First of all, note that this presentation of the data is simplistic: (44) does have a reading according to which (45) and (46) naturally follow. If someone thinks that Jordan may have an apple or a pear, I could correct him or her by saying *Jordan may not have*

*an apple or a pear. Jordan may have an apple, but she may not have a pear.* I do grant, though, that the more natural reading of (44) implies both (45) and (46). But the universal account can accommodate this reading, as well as the reading of (47) that doesn't imply (48) or (49).

Within a truth-conditional framework, negation is associated with complementation. Negation acts on a set of worlds, returning the complement of that set. We can maintain that when (44) implies neither (45) nor (46), negation is acting on the set of worlds associated with *Jordan may have an apple or a pear*. Furthermore, we can maintain that when (44) does imply (45) and (46), negation is acting on the set of permissible worlds, returning the complement of that set, or the set of impermissible worlds. On this reading, (44) is true iff every apple-or-pear-world is impermissible, which guarantees that every apple-world is impermissible, and guarantees that every pear-world is impermissible. This approach also explains why (47) doesn't imply (48) or (49). Just because every apple and pear world is impermissible, it doesn't follow that every apple world is impermissible, nor does it follow that every pear world is impermissible.

Because negation behaves similarly in the case of conditionals, this treatment of negation is independently motivated. When one tries to negate a conditional, typically the negation “prefers” to apply to the consequent, as opposed to the entire conditional. For example, if I assert *If Jordan is at the party, she's having fun*, and you insist that this is not the case, it is natural to interpret your response as equivalent to an assertion of *If Jordan is at the party, she's not having fun*.<sup>28</sup> If we are analyzing conditionals as universal quantifiers over possible worlds, as many theorists do, then we can say that negation prefers to apply to the second argument—the scope—of these quantifiers. The parallel with permission should be clear. On my account, we are analyzing permission statements as universal quantifiers over possible worlds, and I am suggesting that negation prefers to apply to the set of permissible

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<sup>28</sup>See Williams (2010) for a discussion of the intuitiveness and desirability of equating (i) negated conditionals and (ii) the corresponding conditionals with negated consequents. Stalnaker's well-known semantics for conditionals, developed in Stalnaker (1968) and Stalnaker (1980), vindicates this principle.



worlds, which happens to be the second argument—the scope—of these quantifiers.

## 1.8 Apparent Wide-Scope Disjunctions

I would like to consider one more puzzling piece of data. Both (50) and (51) give rise to the free choice inferences:

(50) Jordan may have an apple or a pear.

(51) Jordan may have an apple or Jordan may have a pear.

The fact that we can interpret (50) and (51) as equivalent is one of the great mysteries of the problem of free choice permission.<sup>29</sup> I propose that even though there are two *may*s in (51), there is some sense in which there is a single deontic possibility modal taking wide scope with respect to disjunction. That is, what looks like  $(\Diamond \text{apple} \vee \Diamond \text{pear})$  is really  $\Diamond(\text{apple} \vee \text{pear})$ .

This move has two sources of independent motivation. First, consider (52) and (53):

(52) Jordan may have an apple and a pear.

(53) Jordan may have an apple and Jordan may have a pear.

Note that (53) has a reading according to which it implies (52). But it is unclear how we could generate this reading unless there is some sense in which a single deontic possibility modal is taking wide scope with respect to conjunction, and that what looks like  $(\Diamond \text{apple} \wedge$

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<sup>29</sup>Ciardelli et al. (2009) have developed a way to derive this equivalence within the framework of inquisitive semantics, but only with respect to epistemic modals. Their solution does not generalize to deontic modals or other modal varieties.

$\Diamond$ pear) is really  $\Diamond(\text{apple} \wedge \text{pear})$ . Whatever story explains why (53) has a reading according to which it implies (52) should also explain why both (50) and (51) have readings that generate the free choice inferences.

Second, consider (54) and (55):

(54) Jordan has to start earning more or she has to start spending less.

(55) Jordan has to start earning more or spending less.

Though these judgments are somewhat subtle, it is natural to interpret (54) as equivalent to (55).<sup>30</sup> That is to say, it is natural to interpret (54) as attributing a single disjunctive obligation to Jordan. But it is hard to see how to arrive at this interpretation without thinking that there is some sense in which there is a single deontic necessity modal taking wide scope with respect to disjunction, and that what looks like  $(\Box\text{earn-more} \vee \Box\text{spend-less})$  is really  $\Box(\text{earn-more} \vee \text{spend-less})$ . Again, whatever story explains all of this should explain why both (50) and (51) have readings that generate the free choice inferences.

## 1.9 Generalizing to Other Flavors of Modality

So far we have been dealing exclusively with permission, but the free choice inferences (as well as every other piece of data appealed to) also arise in connection with teleological, bouletic, and ability modality.<sup>31</sup> Teleological possibility concerns a set of goals and what is compatible with the achievement of those goals. Bouletic possibility concerns

<sup>30</sup>A similar interpretation of the data is found in Geurts (2005) and Dever (2009), though both authors note that these judgments are not universal.

<sup>31</sup>I'll call these inferences free choice inferences because, historically, that's what the structurally analogous inferences have been called in the context of permission. Note, however, that I am not thereby implying that there's necessarily a "free choice" involved. I just mean that in these cases the disjunction exhibits conjunction-like behavior.

a set of desires and what is compatible with the satisfaction of those desires. Lastly, ability modality concerns the capabilities and capacities of an agent and what is compatible with those capabilities.

To see that the free choice inferences arise in connection with teleological modality, consider (56)-(58):

(56) Jordan can take route A or route B [in order to get to Manhattan in time].

(57)  $\Rightarrow$  Jordan can take route A [in order to get to Manhattan in time].

(58)  $\Rightarrow$  Jordan can take route B [in order to get to Manhattan in time].

To see that the free choice inferences arise in connection with bouletic modality, consider (59)-(61):

(59) Jordan can have the Cabernet or the Merlot [given her preference for red wine].

(60)  $\Rightarrow$  Jordan can have the Cabernet [given her preference for red wine].

(61)  $\Rightarrow$  Jordan can have the Merlot [given her preference for red wine].

To see that the free choice inferences arise in connection with ability modality, consider (62)-(64):

(62) Jordan can run ten miles or swim one mile.

(63)  $\Rightarrow$  Jordan can run ten miles.

(64)  $\Rightarrow$  Jordan can swim one mile.

For these three modal flavors—teleological, bouletic, and ability—the universal account generalizes in a straightforward manner. Each flavor involves a modal base (the factual information being held constant) and an ordering source (a ranking based on either a set of goals, a sets of desires, or a set of capabilities, respectively). And a modal base and an ordering source is all we need to formulate the universal account, following the template laid out in sections 1.3 and 1.4.

In the remainder of this section I will briefly consider how the universal account could be extended to even more flavors of modality. This material is speculative. I hope it is on the right track, but if it turns out to be flawed, the rest of the chapter should remain unscathed.

Let's start with epistemic modality. Epistemic modality also goes in for the free choice inference pattern. Consider (65)-(67):

(65) Jordan might attend Princeton or Yale.

(66)  $\Rightarrow$  Jordan might attend Princeton.

(67)  $\Rightarrow$  Jordan might attend Yale.

But in the case of epistemic modality, the generalization of the universal account is not straightforward. In the case of deontic, teleological, bouletic, and ability modality, we have both a modal base, which generates a set of worlds, and an ordering source that ranks these worlds. This ranking generates a (typically proper) subset of worlds. We can now ask if every  $\phi$ -world in the set is also in the subset. With epistemic modality, however, we have only the modal base, which generates a set of worlds compatible with our evidence. There

is no need to rank these worlds.<sup>32</sup> So either there is no ordering source, or there is an empty ordering source, which implies that all of the worlds are equally ranked. Either way, the upshot is that there is no privileged subset of worlds.

I do not have a worked out way of applying the universal account to epistemic modality, but my suspicion is that we should just work with an empty ordering source. To say that Jordan might attend Princeton is to say that every epistemically accessible world at which she attends Princeton is epistemically accessible. There are many apparent problems with the move. I'll address only two of these problems here.

First of all, doesn't this view completely trivialize epistemic modal claims? Not quite. Claims of universal quantification presuppose existence. So by saying that every epistemically accessible Princeton-world is epistemically accessible, I imply that some epistemically accessible world is a Princeton world. It will sometimes be infelicitous to make epistemic modal claims, since this existence presupposition is non-trivial.

Secondly, doesn't this view fail to capture the free choice inference pattern? The claim *Every epistemically accessible world that is a Princeton-world or a Yale-world is epistemically accessible* presupposes that some Princeton-or-Yale-world is epistemically accessible, but that presupposition does not imply *both* (i) some Princeton-world is epistemically accessible *and* (ii) some Yale-world is epistemically accessible. So suppose that there is an epistemically accessible Princeton-world but no epistemically accessible Yale-world. In this case, an assertion of *Jordan might attend Princeton or Yale* would be felicitous even though an assertion of *Jordan might attend Yale* would not be. It looks like we're failing to capture the free choice inferences.

But universal quantification presupposes more than just existence. The claim *Every epistemically accessible world that is a Princeton-world or a Yale-world is epistemically*

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<sup>32</sup>Kratzer (1991) thinks we might want to rank these worlds in order to distinguish between strong epistemic necessity (expressed using *have to* or *must*) and weak epistemic necessity (expressed using *ought to* or *should*). This would not help me, though, since I am interested in epistemic possibility.

*accessible* presupposes that there exists a Princeton-world and presupposes that there exists a Yale-world. To see this, consider some structurally similar examples. The claim *Every student that received an A or a B was allowed to stay home on Monday* presupposes that some student received an A and presupposes that some student received a B. The claim *Every country that contributed to the fund or promised to do so in the future was invited to the meeting* presupposes that some country contributed to the fund and presupposes that some country promised to do so in the future. So an assertion of *Jordan might attend Princeton or Yale* requires both an epistemically accessible Princeton-world and an epistemically accessible Yale-world in order to be felicitous. Hence, if an assertion of *Jordan might attend Princeton or Yale* would be felicitous in a context, then so would an assertion of either *Jordan might attend Princeton* or *Jordan might attend Yale*. We can capture the free choice inferences after all.

Now let's turn to the flavors of modality prized by philosophers—logical, metaphysical, and nomological modality. Do these flavors go in for the free choice inference pattern? If they do, is the universal account the right way to make sense of this fact? Let's start with the first question. This question is not nearly as straightforward as it might seem. Many academic philosophers take it to be “obvious” that these flavors of modality do not go in for the free choice inference pattern. And I also used to assume this. But then I started noticing what appears to be free choice effects arising in connection with each of these flavors. Consider (68)-(70):

(68) It is metaphysically possible that Jordan wins the game or that Madison wins the game.

(69)  $\Rightarrow$  It is metaphysically possible that Jordan wins the game.

(70)  $\Rightarrow$  It is metaphysically possible that or that Madison wins the game.

These inferences strike me as intuitively compelling as any reviewed so far, and they involve metaphysical modality. Consider a similar example involving logical possibility.

(71) It is logically possible that Jordan wins the game or that Madison wins the game.

(72)  $\Rightarrow$  It is logically possible that Jordan wins the game.

(73)  $\Rightarrow$  It is logically possible that or that Madison wins the game.

And consider a similar example involving nomological possibility.

(74) It is nomologically possible that Jordan wins the game or that Madison wins the game.

(75)  $\Rightarrow$  It is nomologically possible that Jordan wins the game.

(76)  $\Rightarrow$  It is nomologically possible that or that Madison wins the game.

So we have established that, in at least some cases, logical, metaphysical, and nomological possibility go in for the free choice inference pattern. And this appears to be the rule, not the exception. Note how easy it is to construct additional examples, like the ones above, the exhibit the free choice inference pattern, but how difficult it is to construct examples that appear to contravene it. If these flavors of modality come with a modal base and an ordering source, we can formulate the universal account as we did with deontic, teleological, bouletic, and ability modality. If they don't, we can formulate the universal account as we did with epistemic modality.

## 1.10 Conclusion

The traditional account of permission fails to predict the free choice inferences as entailments, and incorrectly predicts the reverse free choice inference as an entailment. Pragmatic attempts to rescue the traditional account face a serious problem. Gricean principles appear to deliver the opposite of what is needed.

I have developed the universal account of permission, an alternative to the traditional account. The universal account captures the free choice inferences as entailments. Furthermore, the conjunctive inferences are accounted for, and the reverse conjunctive inference is blocked, as soon as we appreciate the dynamic nature of permission. Cancelability is explained in terms of structural ambiguity. Negated permission claims are explained by allowing negation to act directly on the set of permissible worlds. And the fact that the free choice inferences arise even when disjunction appears to take wide-scope with respect to the deontic possibility modal is explained in terms of an independently required mismatch between surface form and logical structure. And we can extend the universal account to many other flavors of modality, though how smoothly these extension proceeds depends on the specific flavor under consideration.

But there is still much work to be done. Primarily, we need to explore more fully the relationship between permission and obligation. Traditionally, the connection between permission and obligation has been characterized by two inference patterns: (i) duality and (ii)  $\Box$  implies  $\Diamond$ . It is an open question how much of this connection we should want to preserve, and it is an open question how much we can preserve after adopting the universal account. I suspect that we can preserve practically all that we want, but to show this is a project for another time.



## Chapter 2

# Modal Collapse

### 2.1 Introduction

There are different ways of being dangerous. An object might be toxic, for example, or it might possess sharp edges. Corresponding to these different ways of being dangerous, there are different reasons why we might ascribe the property of being dangerous to something: we might ascribe the property of being dangerous to something because it is toxic or because it has sharp edges. But we do not think that the expression *dangerous* has a wide variety of meanings, one corresponding to being toxic, another corresponding to having sharp edges, etc. The truth (or characteristic conversational function) of *This object is dangerous* does not depend on why it is dangerous.

Similarly, there are different ways of being injured (broken arm, sprained ankle, etc), and there are different reasons why we might ascribe the property of being injured to someone (because they have a broken arm, or because they have a sprained ankle, etc.). But we do not think that the expression *is injured* has a wide variety of meanings, one corresponding to having a broken arm, another corresponding to having a sprained ankle, etc. The truth (or characteristic conversational function) of *Jordan is injured* does not depend

on why she is injured.

Lastly, there are different ways in which something can or has to be the case, and there are correspondingly different reasons why we might believe or assert that something can or has to be the case. The central claim of this chapter is that we should think of *can* and *have to* (and other modal auxiliaries) as we think of *dangerous* and *injured*. Even though there are different ways in which something can or has to be the case, we should not take these differences and encode them in the semantics of *can* and *have to*.

From a semantic point of view, modals are flavorless. I am not denying that a wide variety of factors can justify a modal claim. The appropriateness of a modal claim can depend on any of the following: evidence, norms, rules, goals, desires, abilities. And this list is not exhaustive. What I am denying is that these factors are semantically relevant, i.e., that they affect the truth conditions (or characteristic conversational function) of a modal claim, either via ambiguity or context sensitivity or some other mechanism.

Though I will restrict this central claim. As Austin describes the rhetorical tactic in *Sense and Sensibilia*, "there's the bit where you say it and the bit where you take it back". It would be nice if, linguistically speaking, modality were wholly unified. And while I think that the number of semantically relevant modal flavors has been grossly overestimated, I do think that there is still at least one linguistic distinction of semantic relevance: the epistemic/root distinction. This distinction is motivated in linguistics by a wide range of syntactic and structural considerations. Fortunately, the arguments I develop leave this distinction intact, so my account dovetails nicely with the relevant syntactic and structural data.<sup>1</sup>

The plan for this chapter is as follows. I first present the traditional contextualist account of modal flavors, due primarily to Kratzer. According to this account, the flavor of a modal affects meaning by way of a contextual parameter. I focus on the claim that the flavor

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<sup>1</sup>Later in this chapter, when it is relevant, I will discuss the epistemic/root distinction and the considerations that motivate it.

of a modal affects meaning, a claim I call *semanticism*. I then consider the most widely used argument in favor of semanticism, the compatibility argument, and I show that this argument is much weaker than has been supposed. I then develop my own argument, the disagreement argument, against treating modals as admitting a wide range of semantically relevant flavors. I then develop my own account of modal flavors. According to my account, differences in modal flavor (save for the epistemic/root distinction) are extracted from the semantics. I consider some ways we could implement a flavorless modal semantics, and I discuss two additional puzzles that such a semantics allows us to solve.

## 2.2 The Traditional Account of Modality

Modality comes in a variety of flavors. I'll confine my attention to the following: epistemic, deontic, teleological, bouletic, and ability. Let me illustrate these with the modal verb *have to*.

- EPISTEMIC: If I'm inside (and not near a window), and someone walks in soaking wet and carrying an umbrella, I can assert *It has to be raining*. This claim appears to have something to do with my knowledge and evidence.
- DEONTIC: If I'm an employee and my boss orders me to finish a report, I can assert *I have to stay late*. This claim appears to have something to do with norms and rules.
- TELEOLOGICAL: If I'm trying to lower my blood pressure, I can assert *I have to eat less salt*. This claim appears to have something to do with my goals.

- BOULETIC: If I relish the taste of red wine, I can assert *I have to try this Bordeaux*. This claim appears to have something to do with my desires and preferences.
- ABILITY: If I seriously injured my ankle, I can assert *I have to use crutches when I walk*. This claim appears to have something to do with my abilities and capacities.

How should we explain this variation? This is the question at the center of Kratzer (1977). The story that I tell in this section is, in its essentials, the story that Kratzer tells in that paper. This story will provide the backdrop against which the rest of this paper plays out.

As Kratzer notes, the most flat-footed explanation of the modal variation illustrated above is that *have to* is lexically ambiguous. There are separate lexical entries for epistemic *have to*, deontic *have to*, etc. In a logically perspicuous language, there would be a different expression for each lexical entry, but natural languages fall short of this ideal. According to this line of thought, the relationship between epistemic *have to* and deontic *have to* is similar to the relationship between the financial institution *bank* and the river border *bank*. They are just different words that happen to exhibit orthographic similarity.

This explains how *have to* appears to mean different things. But it does not tell us what the different uses of *have to* have in common. Surely, epistemic *have to* and deontic *have to*, while different, have more in common than financial institution *bank* and river border *bank*. It is not completely accidental that epistemic *have to* and deontic *have to* are associated with the same expression.

There are two natural moves to make at this point. We could treat *have to* as polysemous or we could treat it as context sensitive. To treat *have to* as polysemous would be to treat epistemic *have to* and deontic *have to* as bearing the same kind of relation to each other as the anatomical *mouth* and the river *mouth* bear to each other. That is to say,

it would be to treat epistemic *have to* and deontic *have to* as meaning different things, but conceptually related in some way. This polysemy approach is suggestive, but, as far as I know, unexplored. The biggest worry is that polysemy is a poorly understood phenomenon. It would not be very illuminating to explain modal variation in terms of a poorly understood phenomenon.

Kratzer, and practically everyone following her, takes the second route, treating *have to* and the other modal expressions as context sensitive.<sup>2</sup> To use *have to* epistemically, as in *It has to be raining*, is to convey that a contextually supplied body of evidence entails something, e.g., that it is raining. To use *have to* deontically, as in *I have to stay late*, is to convey that a contextually supplied system of rules demands something, e.g., that I stay late.

More precisely, a modal claim contains three moving parts: (i) the modal expression itself, which is treated as a two-place propositional operator,<sup>3</sup> (ii) a contextual parameter, i.e., a contextually supplied set of accessible worlds,<sup>4</sup> and (iii) the prejacent, which is the proposition that the modal scopes over, e.g., the proposition that it is raining or the proposition that I stay late. The modal expression is always assigned the same denotation: that of the universal quantifier in the case of necessity modals (*have to*, *must*) and that of the existential quantifier in the case of possibility modals (*can*, *may*, *might*).<sup>5</sup> The contextually supplied set of accessible worlds serves as the restrictor of the quantifier associated with the modal. The prejacent serves as the nuclear scope.<sup>6</sup>

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<sup>2</sup>Although recently relativism has been gaining popularity. According to relativism, a context other than the context of utterance helps determine the meaning of a modal. I'll have a little more to say about relativism later on in this chapter.

<sup>3</sup>I will be treating propositions as sets of worlds, and I will freely talk about propositions and sets of worlds interchangeably. This is a simplifying assumption, one that most working semanticists are happy to make. It shouldn't cause any trouble.

<sup>4</sup>I am abstracting away from some details concerning exactly how the accessible worlds are determined. See Kratzer (1991) or see the details contained in the first chapter of this dissertation.

<sup>5</sup>Though in the first chapter of my dissertation I challenge the use of existential quantification to analyze possibility.

<sup>6</sup>For a more formal treatment, see the first chapter of this dissertation.

We can now explain what the different flavors of *have to* have in common. Namely, every flavor involves universal quantification. In addition, we can explain how the flavors differ. Different uses of *have to* are associated with different contextual parameters, and this affects the information *have to* conveys. For example, in some contexts, the contextual parameter is the set of worlds consistent with my evidence. This would give *have to* an epistemic flavor. In other contexts, the contextual parameter is the set of worlds in which certain rules are adhered to. This would give *have to* a deontic flavor.

Furthermore, sometimes this parameter, rather than being contextually supplied, is explicitly assigned a value via part of the sentence. Consider the sentence *In view of Jordan's rules, Mary has to take off her shoes before she comes inside*. The initial phrase *In view of Jordan's rules* specifies the parameter associated with *has to*. In this case, the context needn't step in to do that job. Indeed, Kratzer marshals this data in support of her contextualist account. According to Kratzer, we already need a *have to* with an unfilled parameter that gets its assignment from *in view of* phrases. Considerations of economy pressure us to think that this is the only *have to*. When no explicit linguistic assignment of a flavor is present, the context supplies the parameter with a value.

The lexical ambiguity account, the polysemy account, and the traditional contextualist account all assume that we should locate the variation in modal flavor at the level of semantics, i.e., that epistemic *have to* and deontic *have to* make different contributions to the semantic content of a sentence. I will call this assumption *semanticism*. Kratzer's view can be thought of as the combination of semanticism (the claim that flavor differences are semantic) and contextualism (the claim that the context of utterance fixes flavor).

## 2.3 The Compatibility Argument

So far the only argument that we have encountered for the contextualist approach to modality has been very indirect. It proceeds roughly as follows. Semanticism is true: that is to say, the same modal auxiliary (e.g., *have to*) can mean many different things. This semantic variation can be explained in terms of lexical ambiguity, polysemy, or context sensitivity. Lexical ambiguity would leave unexplained what the different meanings have in common. Polysemy is poorly understood and best avoided. Therefore, context-sensitivity wins out via a process of elimination. But how are we to justify semanticism, the premise that modals exhibit semantic variation?

It is difficult to find an argument for this semanticism. Typically it is just assumed. But when an argument is forthcoming, it tends to have the following structure. A conversation is described in which a modal statement is appropriately made and then what appears to be the negation of that modal statement is also appropriately made. This state of affairs, it is maintained, would only make sense if the two modals had different meanings.

Consider this example from Kment (2012):

CAESAR: You're lucky that I'm still here. The doors were unlocked. I could have left the palace.

CLEOPATRA: True. But then again, you couldn't have left the palace. That would have been wrong, given that you promised to meet me here.

But this example hardly proves the point. It is awkward and hard to make sense of, and we are not left with the feeling that Caesar's *could* and Cleopatra's *couldn't* are compatible with each other.

One might maintain that the two *coulds* are compatible and that the felt awkwardness is due to something other than incompatibility. I've only encountered one plausible story along these lines. According to this story, it needs to be fairly clear which flavor the context is picking out for a modal, and very quick transitions from one flavor to another are infelicitous if the speed of the transition inhibits this clarity. This story, however, just isn't general enough to apply to the Caesar-Cleopatra case. The entire case is set up to make perfectly clear the flavor of each *could*. And, yet, the feeling of incompatibility remains.

Furthermore, even if we could find a case that exhibits compatibility between *could* and *could not* without any awkwardness, it is not clear semanticism would follow. Enough ingenuity allows one to construct such a compatibility case with almost any expression. Consider the following dialogue centering on *rich* and *not rich*:

PAUL: You're lucky that I'm rich. My parents will give me however much money I desire.

MARY: True. But then again, you aren't rich. Since the money belongs to your parents.

I will concede that this example also exhibits some awkwardness, though no more than the Caesar-Cleopatra case. Are we to conclude from this example that *rich* has different flavors having to do with one's parents? Surely, we are not.

Note that the compatibility argument, as presented here, involves two claims both containing the same modal verb, in this case *could*. Let us call an argument of this form a *mere negation compatibility argument*, since the only salient difference between the two claims is the addition of a negation.



We can also construct compatibility arguments involving different modal verbs. Let us call an argument of this form a *modally substantive compatibility argument*. For example, consider the following exchange:

CAESAR: You're lucky that I'm still here. The doors were unlocked. I could have left the palace.

CLEOPATRA: True. But then again, you had to not leave the palace. That would have been wrong, given that you promised to meet me here.

Notice that instead of *couldn't*, we use *had to not*. This argument is modally substantive because it assumes something substantive about modal semantics, i.e., that *could  $\phi$*  and *had to not  $\phi$*  are incompatible. This assumption is, in this case, not too controversial. Indeed, it is widely, though not universally, accepted that claims involving possibility modals (*can*, *could*, *may*, *might*) are incompatible with the corresponding claims involving strong necessity modals (*have to*, *must*) and narrow-scope negation (*have to  $\neg\phi$* , *must  $\neg\phi$* ).

Before ending this section, though, we have to note that it is possible to derive some persuasive instances of the compatibility argument, especially when we have the modally substantive version in our arsenal. Consider *Jordan has to pay a fine, though she might not*.

The upshot is this. It is surprisingly difficult to develop cases that exhibit compatibility, i.e., cases containing two modals such that (i) the modals would conflict if they had the same flavor but (ii) don't conflict in this case because they have different flavors. But it is not *impossible* to construct such a case. So our approach to these data should reflect this complexity, i.e., reflect both the difficulty and the possibility. But before we try to develop a theory that accounts for this complexity, let us consider an argument that leads us in the

opposite direction.

## 2.4 The Disagreement Argument

When it comes to recent discussions concerning the semantics of modality, explaining the appearance of disagreement has loomed large. The case of epistemic modality, in particular, has received a lot of attention. Consider the following illustration. If my evidence is compatible with Jordan's being upstairs, I can appropriately assert *Jordan might be upstairs*. However, if you overhear, and your evidence is incompatible with Jordan's being upstairs, you can appropriately respond *No, Jordan cannot be upstairs*. According to the traditional account, my assertion is true just in case Jordan's being upstairs is compatible with my evidence, and your assertion is true just in case Jordan's being upstairs is incompatible with your evidence. But then what explains the appropriateness of your beginning your assertion with *No*, which seems to signal disagreement.<sup>7</sup> Surely, you are not disagreeing with my assessment of my own evidence.

The problem is that, according to the traditional account, we are talking past each other in much the same way we would be talking past each other if I asserted *I am hungry* and you asserted *I am not hungry*. In the case described in the previous paragraph, I am making a claim about my evidence, and you are making a claim about your evidence, and it is difficult to see how disagreement could arise in such a case. Theorists can respond in two ways. First, one can attempt to save the traditional contextualist account of modality by saying something interesting about assertion and disagreement.<sup>8</sup> For example, maybe you can disagree with me even when you agree with the content of my assertion; more particularly, maybe you can disagree with me in virtue of believing that my body of evidence is incomplete or misleading. Second, one might abandon the traditional contextualist account

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<sup>7</sup>As discussed in von Fintel and Gillies (2008), the use of *No* in this fashion is not decisive evidence of disagreement. But it is pretty good (albeit defeasible) evidence.

<sup>8</sup>See Bjornsson and Finlay (2010) for such an attempt to save a specific contextualist theory.

of modality and develop a different theory. For example, one might endorse relativism, according to which the same assertion can be true relative to one context of assessment and false relative to another.<sup>9</sup> On relativism, you disagree with my assertion because it is false relative to your context of assessment (even though it is true relative to my own).

So far the disagreement literature has centered on single-flavor disagreement. That is to say, the focus has been on cases of disagreement that arise when two people both make epistemic claims. In this chapter I want to explore cross-flavor disagreement. I want to consider disagreement that arises when one person makes a modal claim of flavor *A* and another person makes a modal claim of flavor *B*.

Consider the following case of cross-flavor disagreement:

**Case 1 (COCONUT CAKE).** Suppose that Jordan is at a restaurant and orders the buffet. She is allowed to have anything from the dessert table, including the coconut cake. She is, however, allergic to coconut. Now suppose we are thinking about dessert and someone asserts (77). It is appropriate for me to respond with (78):

(77) Jordan can have a piece of the coconut cake. The buffet rules specify that everything on the desert table is fair game.

(78) No, she can't. She's allergic to coconut.

The traditional account of modality cannot make sense of this exchange. My response, (78), is clearly intended contradict (77). Note how I begin my assertion with *No*. But, according to the traditional account, these two assertions are compatible. Let  $S_1$  be a set containing all and only those worlds in which the restaurant's rule are obeyed. The first assertion conveys the information that there is a world in  $S_1$  at which Jordan has the

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<sup>9</sup>See MacFarlane (2003), Egan et al. (2005), Stephenson (2005), and Lasersohn (2005), among others.

coconut cake. Let  $S_2$  be a set containing all and only those worlds in which Jordan's actions stay within the realm of her abilities. The second assertion conveys the information that there is no world in  $S_2$  at which Jordan manages to eat a piece of coconut cake. The important point is that, according to the traditional account, these two assertions convey information about completely different sets of worlds, and therefore fail to conflict. The traditional account fails to predict the disagreement.<sup>10</sup>

Let's consider a second case:

**Case 2 (FINAL EXAM).** Suppose Jordan (excusably) misses a final exam and is scheduling a makeup. The university rules specify that all makeups must occur on either Thursday or Friday. Also, Jordan will be undergoing major surgery during all of Friday, and there is no way that the surgery can be rescheduled. Now suppose we are talking about this situation and someone asserts (79). It is appropriate for me to respond with (80):

(79) Jordan can take the exam on Friday. The university rules specify that either Thursday or Friday is acceptable.

(80) No, she can't. She's having major surgery all day Friday.

Again, the traditional account cannot make sense of this exchange. It is clear that an account of modality, such as the traditional account, should be able to explain these cases of cross-flavor disagreement. The cluster of related notions surrounding disagreement—consistency, compatibility, cohesiveness, etc.—are ones that a semantic theory is concerned

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<sup>10</sup>One might worry about this line of thought for the following reason: One can respond to *Jordan can have a piece of coconut cake* with *No, she's allergic*, but we presumably would not want these two claims to be incompatible. This worry highlights the trickiness of inferring from the felicity of *No*-claim to an incompatibility claim. In this example, *No* is only felicitous because her allergy is taken as a reason why she can't have the cake. If her allergy isn't bad enough to matter, then her allergy wouldn't be taken as a reason why she can't have the cake, and asserting *No, she's allergic* would not be a felicitous response. In other words, the apparent incompatibility of *No, she's allergic* is just parasitic on the genuine incompatibility between *Jordan can have a piece of coconut cake* and *She can't have a piece of coconut cake*.

with.

I think the answer we should give here is the flat-footed one. What seems like straightforward contradiction just is straightforward contradiction. When I say that Jordan can have a piece of coconut cake, having in mind the buffet rules, and someone tells me she cannot, having in mind Jordan's allergy to coconut, we disagree for the simple reason that I've asserted  $\phi$  and my interlocutor has asserted  $\neg\phi$ , where  $\phi$  is *Jordan can have coconut*. The fact that we had different flavors in mind just doesn't affect what we respectively asserted. Consider an analogous case. Suppose I say that Jordan is rich, having in mind her very nice house, and someone tells me she's not rich, having in mind Jordan low income and crushing debt. In this case, we disagree for the simple reason that I've asserted  $\phi$  and my interlocutor has asserted  $\neg\phi$ , where  $\phi$  is the proposition that Jordan is rich.

Furthermore, we can make a similar point with questions and answers. Consider the following case:

**Case 3 (BEER).** Suppose that Jordan is still at the restaurant, but currently away from the table. The rest of the group wants to order her a beer. Someone asks (81).

(81) Can Jordan have a beer?

The following answers all address this question:

(82) Jordan can't have a beer because she is under the drinking age.

(83) Jordan can't have a beer because she gave up alcohol for Lent.

(84) Jordan can't have a beer because she's allergic to gluten.

The traditional account of modality cannot make sense of this scenario. All of these answers, each involving a different flavor, speak to the same modal question. But, according to the traditional account, the *can* in (81) must receive a flavor, and then a response invoking the same modal flavor could serve as an answer, but any response invoking a different modal flavor could not serve as an answer.<sup>11</sup>

It is clear that an account of modality should be able to explain this case. Semantics is concerned with questions and what counts as an answer to a question. Though this case doesn't involve disagreement, I will group it with the "disagreement argument" for expository ease.

Again, I think the answer we should give here is the flat-footed one. What seems like straightforward talking about the same thing just is straightforward talking about the same thing. If we're wondering whether Jordan can have a beer, and I say she can't, having in mind her age, and you say she can't, having in mind her gluten allergy, we've said the same thing. Again, the fact that we had different flavors in mind doesn't affect what we respectively asserted. Consider an analogous case. If I say Jordan is rich, having in mind her high income, and you say she's rich, having in mind her high wealth, we've said the same thing.

It is interesting to contrast the disagreement argument (against semanticism) with the compatibility argument (in favor of semanticism). In a sense, these arguments are inverses. The compatibility argument finds a case involving two allegedly compatible modal claims, and maintains that this compatibility would be impossible unless the modals dif-

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<sup>11</sup>One might modify the traditional account by holding that sometimes it is indeterminate which flavor a modal takes on. This suggestion is developed at length in von Stechow and Gillies (2011). They attribute the initial inspiration to a remark made by Kratzer at a University of Massachusetts Amherst linguistic colloquium in December 2003. The rough idea is that a modal can "put into play" a "cloud" of different propositions, each proposition corresponding to a different way of resolving some contextual parameter. Denial can target any of these propositions. This is an interesting idea, one that I can't do justice to here. I will say, though, that when such "indeterminacy" is the rule, rather than the exception, it is worth exploring the idea that, instead of indeterminacy with respect to some contextual parameter, what we really have is a semantically more general meaning than we thought. This is the line I take in this paper. It is at least the simpler story.

ferred in respect of meaning. The disagreement argument finds two allegedly incompatible modal claims involving different flavors, and maintains that this incompatibility would be impossible if the difference in flavor amounted to a difference in meaning.<sup>12</sup>

We have reached a stalemate. Cases involving compatibility will fuel the compatibility argument and pressure us to impose semantic variation onto modals. Cases involving cross-flavor incompatibility will fuel the disagreement argument and pressure us to remove flavor differences from the semantics. What are we to do?

If we prefer the compatibility argument and the traditional account, we will insist that the cases involving cross-flavor disagreement are the exceptional and unusual cases, and we can attempt to explain them away. Perhaps the disagreement involved should be construed as a “meta” argument over which flavor matters most. Or perhaps conversational participants cannot shift flavors too quickly. If, on the other hand, we side with the disagreement argument, we will insist that the cases involving the compatibility of a modal claim and its negation are exceptional and unusual.

I think that both the compatibility argument and the disagreement argument are on to something. The answer, I maintain, is to radically reduce the number of modal flavors we locate in the semantics. This reduction will allow us to explain why it is so difficult to construct persuasive compatibility cases, and it will allow us to explain the possibility of cross-flavor disagreement cases. On my proposal, there is merely one flavor distinction present in the semantics, and that is the distinction between epistemic and root modality.

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<sup>12</sup>As with the compatibility argument, the disagreement argument can take different forms. It has a mere negation form and a modally substantive form. I’ve developed it in its mere negation form, and this form is stronger because it avoids reliance on claims concerning the semantic interaction of possibility and necessity.

## 2.5 The Epistemic/Root Distinction

The distinction between epistemic and root modality is an entrenched and much-discussed distinction in linguistics. I take this well-worn distinction, and I put it to a new use: namely, I use it to carve up the wealth of complex data furnished by the compatibility argument and the disagreement argument.

Epistemic modality is familiar from the philosophical literature, and “root” modality is a category that essentially encompasses everything other than epistemic modality, i.e., deontic modality, teleological modality, bouletic modality, ability modality, etc.<sup>13</sup> Syntactic and structural considerations are usually used to motivated this grouping, which may appear quite gruesome at first. Let us briefly consider these considerations.<sup>14</sup>

First, whenever we have two modals in a sentence, one epistemic and the other root, the epistemic modal tends to take wide scope with respect to the root modal. For example, (85) can only be interpreted as stating that it is epistemically possible that Jordan is obligated to help madison tomorrow. We are not permitted to interpret the wide scope modal as deontic and the narrow scope modal as epistemic.

(85) Jordan may have to help Madison tomorrow.

Second, epistemic modals tend to take wide scope with respect to quantificational subjects, whereas root modals tend to take narrow scope. For example, (86) is most naturally interpreted with *might* scoping over *everyone*, but (87) is most naturally interpreted with *can* scoping under *everyone*. That is say, (86) is most naturally interpreted as stating

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<sup>13</sup>A single modal verb—for example, *could*—can be epistemic in some sentences and root in others. It would be epistemic in the sentence *That could be Jordan at the door*, and it would be root in the sentence *Jordan could have a cookie*. So this is a distinction that groups uses of modal verbs, as opposed to modal verbs themselves.

<sup>14</sup>My exposition here roughly follows that of Hacquard (2011). See this survey article for a little more depth on the epistemic/root distinction.



that it might be the case that everyone comes to the party (as opposed to stating that for each individual  $x$ ,  $x$  might come the party). But (87) is most naturally interpreted as stating that for each individual  $x$ ,  $x$  can lift the dumbbell (as opposed to stating that everyone together can lift the dumbbell).

(86) Everyone might come to the party.

(87) Everyone can lift that dumbbell.

Third, epistemic modals tend to take wide scope with respect to negation, whereas root modals tend to take narrow scope. For example, (88) is most naturally interpreted as stating that it is epistemically possible that Jordan is not upstairs, but (89) is most naturally interpreted as stating that it is not permissible for Jordan to have chocolate.<sup>15</sup> Notice how the negation moves in the paraphrases.<sup>16</sup>

(88) Jordan might not be upstairs.

(89) Jordan may not have chocolate.

Fourth, epistemic modals tend to take wide scope with respect to tense, whereas root modals tend to take narrow scope. For example, (90) is most naturally interpreted as stating that it is compatible with our current evidence that Jordan turned the library book in yesterday, but (91) is most naturally interpreted as stating that it was compatible with Jordan's abilities as of yesterday, that she ran a mile. With respect to (90), the relevant body

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<sup>15</sup>Throughout this section I'll be providing paraphrases that invoke specific modal flavors. This might seem at odds with the spirit of the rest of the paper. But all I'm doing here is presenting the structural considerations used to motivate the epistemic/root distinction. Don't take these paraphrases too seriously.

<sup>16</sup>Though, this generalization isn't as robust as the others. *Jordan may not have chocolate* involves a modal scoping under negation, but *Jordan must not have chocolate* involves a modal scoping over negation, even though in these sentences both *may* and *must* are root modals.

of evidence is our current evidence at the time of the utterance. With respect to (91), the relevant abilities are those that Jordan possessed yesterday.<sup>17</sup>

(90) Jordan might have turned the library book in yesterday.

(91) Jordan could have run a mile last night [given her abilities].

All of these considerations motivate the idea that the epistemic/root distinction is an important one. A comprehensive account of the distinction should be capable of explaining why epistemic modals and root modals interact so differently with respect to scope-taking expressions. I will not attempt to develop any such account here. As I stated at the beginning of this section, my observation is that the epistemic/root distinction correctly carves up the wealth of complex data furnished by the compatibility argument and the disagreement argument.

When an epistemic modal and a root modal are used together, the claims are compatible, as far as modal semantics is concerned. Consider:

(92) Jordan has to return the library book tomorrow, even though she might not.

However, when an epistemic modal and its negation are used together, we find conflict or disagreement. Consider:

(93) Jordan might be upstairs, and it's not the case Jordan might be upstairs.

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<sup>17</sup>von Fintel and Gillies (2008) present a counterexample to the claim that epistemic modality always scopes over tense. Hence, my use of the wiggly word “tend” in making these claims.

Similarly when a root modal and its negation are used together, we find conflict or disagreement.

(94) Jordan may return the library book tomorrow, even though she can't.

And modally substantive analogues of these observations are easy to formulate.

The only modal distinction of semantic difference is the epistemic/root distinction. Further distinctions, including all further flavor distinctions, don't make a semantic difference, since if they did make a semantic difference, then we would expect to see radically different sets of compatibility and disagreement data.<sup>18</sup>

## 2.6 What The Answer Is Not

To recap, we've shown that the number of semantically relevant modal flavors has been drastically overestimated. Indeed, our current working hypothesis is that there is one semantically relevant modal distinction, the distinction between epistemic and root modality. Before proceeding, I think it is important to emphasize what I am not claiming when I claim that all flavor distinctions (besides the epistemic/root distinction) are semantically inert.

First of all, I am not making a claim about metaphysical reduction. For example, some metaethicists think we can reduce deontic modality to teleological modality. That is to say, some metaethicists think that deontic modality just is a kind of teleological modality. I'm not making any such claim. I'm being completely agnostic as to how the varieties of

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<sup>18</sup>There is some precedence for reducing the number of modal flavors. Braun (2012), for example, argues that *might* is entirely flavorless from a semantic point of view. He removes all flavor differences from the semantics and relocates them in the pragmatics, and he is motivated by data concerning indirect discourse (more specifically, collective and quantified says-that ascriptions).

modality relate to each other metaphysically.

Second, I am not claiming that it is impossible to focus on a single flavor of modality and study that. To return to my opening analogy involving the expression *injured*, a doctor can focus on broken arms and not sprained ankles. So if a metaphysician wants to focus on a metaphysical modality, or an epistemologist wants to focus on epistemic modality, or a metaethicist wants to focus on deontic modality, nothing I have said is incompatible with such a project.

Third, what I have said is compatible with the claim that there are expressions that semantically encode a single flavor of modality. In addition to the expression *is dangerous*, the English language is home to the expression *is toxic* and *is sharp-edged*. Similarly, in addition to the expression *is injured*, the English language is home to the expression *has a broken arm* and *has a sprained ankle*. Similarly, in English, we have *is allowed to* which latches onto deontic possibility, and *is able to* which latches onto ability modality. This is consistent with my view.

Fourth, and trickiest, I am not denying that some modal verbs prefer some flavors, and other modal verbs prefer others.<sup>19</sup> Indeed, there is a horrendously complex wealth of data concerning such idiosyncrasies. Here is a small sample: *might* cannot take on deontic readings, *can* cannot take on epistemic readings unless embedded under negation, but *could* can take on epistemic readings. What could possibly explain these oddities? My theory cannot, but neither can the traditional contextualist account. So this consideration doesn't give one a reason to prefer the traditional contextualist account to my account.

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<sup>19</sup>The idea that a flavorless theory cannot account for this fact was recently developed by Yanovich into an objection against Braun's flavorless semantics for *might*. See Braun (2012) for the original view, Yanovich (2013) for the criticism, and Braun (2013) for the rejoinder. Yanovich's main objection relies on diachronic considerations and the fact that modal meanings change over time. I'll just be focusing on the synchronic issue.

## 2.7 Two Possible Semantic Implementations

If there's no semantic difference between a deontic modal and teleological modal, then we need a semantic theory of these expressions that renders them semantically identical.

In this section I briefly sketch two positive proposals that would fit this bill. Of course, there could very well be other, more plausible, positive proposals that do justice to the insight that most modal flavors are semantically inert. All the better for the insights developed in the previous sections.<sup>20</sup>

The core idea that I want to pursue here is that epistemic modals influence that the worlds are epistemically live, and root modals influence the worlds that are practically live. To say that a world is epistemically live is to say that it is a way the world might be, and to say that a world is practically live is to say that it is a world that the conversational participants might try to actualize.<sup>21</sup>

Whether or not something is epistemically live depends on the evidence that the interlocutors have and on what the interlocutors know. Whether or not something is practically live depends on the rules that have authority over them, the goals they have, the desires they have, the abilities they have, etc.<sup>22</sup>

We can statically implement this idea in the following way. When it comes to epis-

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<sup>20</sup>Furthermore, I should note that in order to keep things simple I will be sketching these theories using the orthodox account of possibility, according to which possibility involves existential quantification over worlds. However, I could in principle, at least as far as root possibility is concerned, formulate these theories in conformance with the universal account developed in the first chapter of this dissertation.

<sup>21</sup>What I have to say in this section—and the idea that some expressions either describe or act upon on aspects of the conversational context—will bear vague connections to an incredibly large swath of the recent philosophy of language and formal semantics literature. See, for example, Kamp (1981), Heim (1982), Veltman (1985), Groenendijk and Stokhof (1991), Veltman (1996), Yalcin (2007), and Willer (2013). Since I'm just sketching directions along which a flavorless semantic theory of modality could be developed, I won't worry about too many details here.

<sup>22</sup>It is interesting to note that the abilities someone has will also affect which worlds are epistemically live. Indeed, roughly speaking, the modalities that restrict the world in a more "objective" and less person-dependent way—i.e., logical, metaphysical, nomological, ability—will, if appreciated by the participants in the conversation, go into determining which worlds are epistemically live.

temic possibility, Jordan might make it to the party just in case it is an epistemically live option that Jordan makes it to the party. When it comes to epistemic necessity, Jordan has to be at the library just in case every epistemically live option is one such that Jordan is at the library.

Slightly more formally, let  $E_c$  be the contextually supplied set of epistemically live worlds. We can formulate epistemic modality as follows.

**Epistemic Possibility:**  $\Diamond A^{c,w} = 1$  iff  $(E_c \cap A^c) \neq \emptyset$

**Epistemic Necessity:**  $\Box A^{c,w} = 1$  iff  $E_c \subseteq A^c$

Similarly, when it comes to root possibility, Jordan can go to the party just in case it is an practically live option that Jordan goes to the party. When it comes to root necessity, Jordan has to stay at the library just in case every practically live option is one such that Jordan stays at the library. Let  $R_c$  be the contextually supplied set of practically live worlds. We can formulate root modality as follows.

**Root Possibility:**  $\Diamond A^{c,w} = 1$  iff  $(R_c \cap A^c) \neq \emptyset$

**Root Necessity:**  $\Box A^{c,w} = 1$  iff  $R_c \subseteq A^c$

To make this compatible with the ideas developed in the first chapter of this dissertation, instead of holding that something is root possible just in case it occurs in at least one practically live world, hold that something is root possible just in case every relevant world at which it occurs is practically live.

Furthermore, if we prefer dynamic theories to static theories, we can dynamically

implement this idea in the following way. When it comes to epistemic possibility, to assert that Jordan might make it to the party is to check to make sure it is an epistemically live option that Jordan makes it to the party. If the test is passed, i.e., if this possibility is an epistemically live option, then the context survives unchanged; if the test is failed, i.e., if this possibility is not an epistemically live option, then context turns into the defective context. When it comes to epistemic necessity, to assert that Jordan has to be at the library is to check to make sure that every epistemically live option is one such that Jordan is at the library. As before, if the test is passed, i.e., if every epistemically live option renders the prejacent true, then the context survives unchanged; if the test is failed, i.e., if some epistemically live option renders the prejacent false, then context turns into the defective context. We can formulate the relevant versions for root modality by substituting “practically live” for every preceding instance of “epistemically live”.

Slightly more formally, let's model a context  $c$  as an ordered pair  $\langle E, R \rangle$  consisting of a set of epistemically live worlds,  $E$ , and a set of practically live worlds,  $R$ . Let's assume for simplicity that we aren't dealing with any iterated modalities and that nothing except modals interact with the context.

**Epistemic Possibility:**  $\langle E, R \rangle[\Diamond A] = \langle E, R \rangle$  iff  $(E_c \cap A) \neq \emptyset$ , and  $= \emptyset$  otherwise

**Epistemic Necessity:**  $\langle E, R \rangle[\Box A] = \langle E, R \rangle$  iff  $E_c \subset A$ , and  $= \emptyset$  otherwise

We can do the same thing with root modality.

**Root Possibility:**  $\langle E, R \rangle[\Diamond A] = \langle E, R \rangle$  iff  $(R_c \cap A) \neq \emptyset$ , and  $= \emptyset$  otherwise

**Root Necessity:**  $\langle E, R \rangle[\Box A] = \langle E, R \rangle$  iff  $R_c \subset A$ , and  $= \emptyset$  otherwise

Again, we can modify the clause for root possibility in such a way as to render it compatible with the universal account developed in the first chapter of this dissertation.

## 2.8 Relocating the Flavors

We have considered some ways to develop flavorless semantic theories. But where have the flavors gone? Where should we locate them?

I think in answering these questions we should return to our opening analogies. There are different reasons why something might be considered dangerous (maybe it's toxic; maybe it has sharp edges), and there are different reasons why someone might be considered injured (maybe she has a broken arm; maybe she has a sprained ankle). Similarly, there are different reasons why something might be considered epistemically ruled out (we can see that it is false; we are told by a reliable source that it is false), and there are different reasons why something might be considered practically ruled out (it is incompatible with an authoritative norm; it is incompatible with our goals; it is not within the realm of our abilities, etc). If nothing epistemically rules something out, then it is epistemically live. If nothing practically rules something out, then it is practically live.

Just as we wouldn't want to infer from this that *dangerous* has multiple meanings, and just as we wouldn't want to infer from this that *injured* has multiple meanings, we similarly don't want to infer from this that epistemic modals have different meanings, or that root modals have different meanings.

To recap: I've argued against semanticism, and instead put forward the view that the epistemic/root distinction is the only flavor-like distinction of semantic relevance. I've also developed some possible ways of implementing this view. In the next two sections, I discuss some bonus advantages of these implementations, thereby contrasting these implementations favorably with the traditional contextualist account.



## 2.9 Bonus: An Explanatory Challenge

The traditional contextualist account of modality is a step forward when compared to the lexical ambiguity account. The traditional contextualist account explains what the different uses of *have to* have in common. Even when the flavor varies, the universal quantification of *have to* remains constant. But the traditional contextualist account fails to explain what the different *flavors* have in common. What is *their* shared core?

Let me illustrate this concern. When reviewing the different modal verbs we find in natural language, we encounter epistemic modals, i.e., modals associated with our evidence, and we encounter deontic modals, i.e., modals associated with rules, and we encounter teleological modals, bouletic modals, ability modals, and more. But why do we not encounter curiosity modals, i.e., modal verbs associated with what we are curious about?

Put slightly differently, according to the traditional contextualist account, the context provides us with a set of accessible worlds. The accessible worlds are sometimes those worlds that are consistent with our evidence. The accessible worlds are sometimes those worlds in which certain rules are adhered to. But why can't the accessible worlds be those worlds such that I am curious whether the actual world is one of them? If a modal verb is essentially a quantifier that relates a contextually supplied sets of worlds to the prejacent, then why doesn't a modal verb ever relate a "curiosity" set to the prejacent? If a modal claim is a way to convey information about a set of worlds, then why can a modal claim be used to convey information about the worlds that I'm curious about?

Here is one final way to make the same point. In natural language, we encounter what, on the face of it, appears to be an oddly gruesome variety of modal flavors. We encounter, among others, epistemic, deontic, teleological, bouletic, and ability. It is hard to see what they have in common. What explains why we see this odd set of flavors as

opposed to some other set? It would be nice if our semantic theory of modality offered us an explanation. The traditional contextualist account does not.

It is not clear that this is something that the traditional contextualist account should have to explain. More generally, it is unclear when an observation or pattern calls out for linguistic explanation and when it does not. But we can at least say this. If an account of modality can explain why we see the set of modal flavors we do, then this explanatory power will constitute a *pro tanto* reason to prefer this account to the traditional contextualist account.<sup>23</sup>

My account has the resources to explain this diversity. Anything that constrains which worlds count as live can serve as a flavor. Anything that doesn't relate to which worlds count as live cannot serve as a flavor.

## 2.10 Bonus: The Overgeneration Problem

Consider the following two cases:

**Case 4 (INCOMPLETE EVIDENCE).** Suppose that Jordan discovers that there is a bird in her backyard. She reasonably believes that the bird in her backyard might fly away. But we know that the bird is a penguin and that penguins cannot fly. Why can't I assert *The bird in Jordan's backyard might fly away* in order to convey the proposition that, for all Jordan knows, the bird will fly away? It is easy to imagine a situation in which Jordan's evidence

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<sup>23</sup>Here's an analogy to make the point clearer. In natural language semantics, according to the widely accepted generalized quantifier theory, determiners denote relations between sets. But why are only some relations between sets possible semantic values for determiners? For example, why are all such relations conservative, i.e., such that the relation relates set A to set B if and only if it relates set A to the intersection of set A and set B? This is an idiosyncratic restriction, but one that is manifested quite robustly cross-linguistically. See Barwise and Cooper (1981) and Keenan and Stavi (1986). Even if it is not obligatory for a theory of generalized quantification to explain this restriction, it will certainly be a theoretical advantage to explain this restriction. A theory that explains this restriction will, all else equal, be superior to a theory that fails to explain it.

is just as salient as our evidence. In such a case, if I were to assert *The bird in Jordan's backyard might fly away* shouldn't the audience charitably interpret Jordan's evidence as determining the accessible worlds?

**Case 5 (RULE-MAKING TODDLER).** Suppose that a toddler makes up a rule that his babysitter is prohibited from limiting his ice cream consumption. Why can't I tell the babysitter *You have to let the toddler have as much ice cream as he wants* in order to convey the proposition that, according to the toddler's rule, the babysitter is prohibited from limiting the toddler's ice cream consumption? In a context where the toddler's rules are especially salient, it is unclear why I can't make such deontic claims in order to convey information about these rules.

In both of these cases, there is a salient aspect of the context that could provide us with an ordering source that would render the relevant assertion true. But this doesn't happen.<sup>24</sup> It is important to appreciate how odd this is. Garden-variety context sensitive expressions are much more amenable to charitable interpretation.

Consider deictic pronouns. Suppose two males make themselves salient by running into a classroom dressed up as animals. One of them is dressed up as a lion, and the other one is dressed up as a goat. If I exclaim *He's wearing an expensive goat costume* the audience will charitably select a referent for my use of *he*. In this case, they will charitably interpret *he* as referring to the salient male who is wearing the goat costume. They won't interpret *he* as referring to the salient male who is wearing the lion costume.

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<sup>24</sup>Well, it almost always doesn't happen. There are some atypical contexts in which we can "project" ourselves into the shoes of someone else and say what might or must be the case from their point of view. See von Fintel and Gillies (2008) for such an example. According to this example, Pascal and Mordecai are playing Mastermind, and after getting some hints from Mordecai, Pascal asserts *There might be two reds*. Mordecai, knowing the solution, can say *That's right. There might be*. And by this he can mean that, given Pascal's evidence, there might be two reds. Mordecai's assertion is compatible with his knowing that there aren't, in fact, two reds. But why isn't this kind of thing easier to come by? Why does it require such delicate attention to the details of the context? As I'll argue, other context-sensitive expressions can latch onto salient parameter values with much greater ease.

Or consider quantifier domain restriction. Suppose there are a few adult teachers and twenty preschoolers. A few of the preschoolers are supposed to be taking a nap. The rest are supposed to be listening to a story. Now consider how we would interpret assertions of the following two sentences:

(95) Everyone is enjoying the story.

(96) Everyone is sleeping soundly.

With respect to the first sentence, we would naturally interpret *everyone* as ranging over the preschoolers who are listening to the story. With respect to the second sentence, we would naturally interpret *everyone* as ranging over the preschoolers who are supposed to be taking a nap. In this context, there are multiple salient domains, such as (i) the teachers and the students, (ii) the teachers, (iii) the students, (iv) the students who are listening to the story, and (v) the students who are supposed to be sleeping. When a quantifier is used, the audience charitably selects the domain that would render the quantificational statement true.

Recall that in INCOMPLETE EVIDENCE, there is a salient body of evidence (Jordan's evidence) that would render true my assertion of *The bird in Jordan's backyard might fly*. But the audience typically cannot interpret my assertion against this body of evidence. Furthermore, in RULE-MAKING TODDLER, there is a salient rule system (that of the toddler's) that would render true my assertion of *You [the babysitter] have to let the toddler have as much ice cream as he wants*. But the audience typically cannot interpret my assertion against this rule system. Why are these charitable interpretations blocked?

I think it is clear that a semantic theory of modality should be able to answer, or at least say something about these issues. A semantic theory is in the business of specifying meanings. If a semantic theory is using the context to help determine meaning, it better tell

us something about how this happens if the theory is going to be predictive.

Again, my account has the resources to rein in this overgeneration. Jordan's (incomplete) evidence doesn't constrain which worlds are epistemically live, and so we can't use Jordan's evidence to justify a modal claim. Jordan misleading evidence just doesn't matter to us when we're considering which worlds might be actual. The toddler's rules don't constrain which worlds are practically live, and so we can't use the toddler's use to justify a modal claim. We just don't care about the toddler's rule system when we're deliberating about what to do.

## 2.11 Conclusion

Modality comes in flavors; on that everyone can agree. But what exactly is the difference between one flavor and another? The dominant view, popularized by Kratzer, is that every possible difference in flavor (and there countless many) manifests itself as a difference in meaning. This is the view I reject. The shortcomings of the compatibility argument, as well as the possibility of cross-flavor disagreement, undermine this traditional account. These data instead support the view that, while the epistemic/root distinction has a semantic dimension, every other flavor difference is not semantic in nature. I've developed a positive proposal that accounts for this insight, and I've shown has this proposal allows us to solve two puzzles. The first puzzle concerns why we see the modal flavors we see. The second puzzle concerns an overgeneration worry that would arise if Kratzer's traditional contextualist account were correct.

## **Chapter 3**

# **The Reformulation Argument**

### **3.1 Introduction**

If a semantic theory makes incorrect predictions, defenders often attempt to rescue the theory by appealing to Gricean pragmatics. The hope is that we can rescue the theory as long as we can use pragmatics to explain away the incorrect predictions. This pragmatic rescue strategy is one of the most popular moves in philosophy of language, philosophical logic, and formal semantics. In the first chapter of this dissertation, I discussed this strategy in connection with the problem of free choice permission. In this chapter I consider the strategy in much more general terms. I argue that this strategy fails whenever the incorrect predictions at issue can be recast in epistemological or metaphysical terms. This general “reformulation argument” undermines a wide variety of pragmatic rescue attempts.

### **3.2 The Semantic/Pragmatic Distinction**

In this section I introduce and illustrate the semantic/pragmatic distinction. In formal semantics, one of the central goals is to explain why an assertion conveys the information

that it does, i.e., why an assertion enables audience members to draw certain inferences.<sup>1</sup>

To illustrate with an example, an assertion of (97) enables audience members to infer (98):

(97) Jordan flew to South Korea and she tried kimchi.

(98) Jordan flew to South Korea.

The standard explanation of this fact relies on the semantics of *and*, i.e., the conventional and truth-conditional meaning of *and*. It is part of the conventional and truth-conditional meaning of *and* that the truth value of an entire conjunction depends on the truth value of each conjunct. If each conjunct is true, then the conjunction is true. If either conjunct is false, then the conjunction is false. Thus, if the conjunction *Jordan flew to South Korea and she tried kimchi* is true, the conventional and truth-conditional meaning of *and* guarantees that *Jordan flew to South Korea* is also true. An assertion can convey many pieces of information solely by virtue of its conventional and truth-conditional meaning. We say that the content of the assertion *semantically entails* these pieces of information.<sup>2</sup>

But semantic entailment isn't everything. In addition, a typical assertion of (97) enables audience members to infer (99):

(99) *First* Jordan flew to South Korea and *then* she tried kimchi.

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<sup>1</sup>Following the dominant trend in linguistics and formal semantics, I will use the term *inference* in an idealized sense. As Harman (1986) has emphasized, when it comes to the rationality of the inferences we make, many factors come into play. I focus on as few of these factors as I can. Namely, I focus on those factors concerning semantics and pragmatics, i.e., those concerning meaning and conversation.

<sup>2</sup>There are many ways of characterizing semantic entailment. One might, for example, adopt a dynamic approach, according to which one claim semantically entails another just in case the assertion of the former claim necessarily creates a context in which it would be appropriate to assert the latter claim. See van Benthem (1996) for a discussion of different ways of characterizing semantic entailment in dynamic terms. For our purposes in this chapter, a simple static characterization in terms of truth-conditional content suffices.

But this temporal information does not seem to come from the truth-conditional meaning of the assertion. This temporal information demands a pragmatic, as opposed to a semantic, explanation. In this case, the pragmatic explanation appeals to the fact that a cooperative speaker narrates events in the order in which they occurred. When someone asserts *Jordan flew to South Korea and she tried kimchi*, audience members assume that the speaker is being cooperative, and conclude that first Jordan flew to South Korea and then Jordan tried kimchi.

Paul Grice pioneered the idea that the rules of conversation help determine the inferences that audience members can make.<sup>3</sup> We can mean more than we literally say, and we often accomplish this feat by taking advantage of the rules of conversation. According to Grice's terminology, an assertion of *Jordan visited South Korea and she tried kimchi* conversationally implicates that first Jordan flew to South Korea and then she tried kimchi. Grice has a lot to say about what the rules are: roughly, the rules are that speakers should strive to say things that are true, informative, and relevant, and that speakers should strive for clarity of expression.<sup>4</sup>

When it comes to explaining why an assertion conveys a certain piece of information, we now have two distinct explanatory strategies to work with. First, we could develop a semantic explanation, which would show that the piece of information arises out of the conventional and truth-conditional meaning of the assertion, i.e., that the piece of information is semantically entailed. Second, we could develop a pragmatic explanation, which relies on the presumption that the speaker is being cooperative and the fact that cooperation requires adherence to a set of rules. According to a pragmatic explanation, the piece of information at issue is conversationally implicated.<sup>5</sup>

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<sup>3</sup>Grice presented these ideas in his William James Lectures, which he delivered at Harvard in 1967. I will be citing the copy of these lectures contained in Grice (1989).

<sup>4</sup>See Grice (1989, 26-27).

<sup>5</sup>At this juncture, two points should be briefly addressed. First, there is a large literature on how exactly the semantic/pragmatic distinction should be drawn. I hope to avoid making any controversial remarks on this front. For an in-depth, and admittedly some opinionated, discussion of this literature, see King and Stanley (2005). Second, Grice, and subsequent theorists, have thought that there are, even beyond semantic entailment



Let's illustrate the semantic/pragmatic distinction with a second example. An assertion of (100) enables audience members to infer (101):

(100) Most spicy foods contain capsaicin.

(101) Some spicy food contains capsaicin.

Here we should offer a semantic explanation. An assertion of *Most spicy foods contain capsaicin* conveys that some spicy food contains capsaicin because of the conventional and truth-conditional meaning of the quantifier *most*. According to this conventional and truth-conditional meaning, the claim *Most As are B* is equivalent to the claim *More than half of all As are B*. If more than half of all spicy foods contain capsaicin, then some spicy food contains capsaicin.

In addition, a typical assertion of (100) enables audience members to infer (102):

(102) Not every spicy food contains capsaicin.

Here a semantic explanation is inappropriate. This information is not part of what is conventionally and truth-conditionally asserted. The claim that *Every A is B* entails *More than half of all As are B*. Because *every* entails *most*, *most* should not entail *not every*. If it did, then by the transitivity of entailment, *every* would entail *not every*. So in this case, a pragmatic explanation is called for.

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and conversational implicature, additional ways for an assertion to convey information. An assertion might presuppose a piece of information, for example, or it might conventionally implicate it, where *conventional* implicatures differ from the *conversational* implicatures that we have been discussing so far. In this chapter, I will confine my attention to semantic entailment and conversational implicature, bracketing presupposition, conventional implicature, and any other ways of exchanging information.

Cooperative speakers, all else equal, prefer to make more informative, as opposed to less informative, assertions. The more information, the better. When someone asserts *Most spicy foods contain capsaicin*, we can conclude that he or she does not believe that every spicy food contains capsaicin. If the speaker had believed this more informative alternative, then he or she would have asserted it.<sup>6</sup> Hence, either the speaker is ignorant with respect to the more informative alternative, or the speaker believes that the more informative alternative is false. If we assume that the speaker is knowledgeable about the topic, then we can dismiss the idea that the speaker is ignorant with respect to the more informative alternative, and we can conclude that the speaker knows that the more informative alternative is false.

At the core of a pragmatic explanation is the idea that speakers tend to be cooperative and therefore adhere to certain rules concerning how a conversation should take place. Crucially, one cannot develop a pragmatic explanation without referencing a speaker, an audience, a conversation, and the rules of conversation. It is this fact that causes trouble for many attempts to develop pragmatic explanations of linguistic phenomena.<sup>7</sup>

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<sup>6</sup>You might worry that one can believe a proposition yet not feel confident enough in its truth to assert it. Assuming a knowledge norm for assertion and a knowledge norm for belief, such a scenario couldn't happen if the relevant person were adhering to these norms. If you prefer a stronger norm for assertion or a weaker norm for belief, then the problematic scenario could arise even if the relevant person were adhering to these norms. In such a case, I suspect you could reformulate my example in slightly different terms to bypass the worry. At any rate, this issue is orthogonal to the main argument I will develop later in this chapter.

<sup>7</sup>In linguistics, there is a trend towards conceptualizing pragmatics as involving covert syntactically realized operators. These operators, by way of convention, transmit "pragmatic" information. I have in mind the work of Chierchia (2004), Chierchia (2006), and Fox (2007), among others. On this conception of pragmatics, a pragmatic explanation need only involve an operator and this operator's conventional role; it need not reference a speaker, an audience, a conversation, and the rules of conversation. In this chapter, I will be setting aside such grammatical approaches to pragmatics. There are many foundational worries one might raise about this project, but here is not the place to raise them. For my present purposes, I will merely focus on traditional pragmatics, and the use of traditional pragmatic explanations in philosophy. Such explanations are ubiquitous.

### 3.3 Pragmatic Explanations as Rescue Attempts

In this section I describe an argumentative strategy that I will call the *pragmatic rescue strategy*. The pragmatic rescue strategy is one of the most widely used moves in philosophy of language, philosophical logic, and formal semantics. The main claim of this chapter is that this strategy is extensively overused. In the next section I develop the reformulation argument, which shows that, in a wide range of cases, the pragmatic rescue strategy is misguided.

A semantic theory makes claims concerning the conventional and truth-conditional meaning of an expression. In the previous section, we relied on the traditional semantic theory of *and* in order to give a semantic explanation of why an assertion of *Jordan flew to South Korea and she tried kimchi* conveys the information that Jordan flew to South Korea. Similarly, we relied on the traditional semantic theory of *most* in order to give a semantic explanation of why an assertion of *Most spicy foods contains capsaicin* conveys the information that some spicy food contains capsaicin.

A semantic theory should capture our judgments concerning which inferences are acceptable and which are not. Let's refer to intuitively acceptable inferences as *intuitive inferences*, and let's refer to intuitively unacceptable inferences as *counterintuitive inferences*. We can evaluate a semantic theory along two dimensions. First, how many intuitive inferences does the theory correctly predict? In this case, the more the better. Second, how many counterintuitive inferences does the theory incorrectly predict? In this case, the fewer the better. It would be a point in favor of a theory if it predicts that an assertion of *A and B* enables us to infer *A*. It would be a strike against a theory if it predicts that an assertion of *A or B* enables us to infer *A*.

So a semantic theory can make two kinds of incorrect predictions. It can fail to predict an intuitive inference, or it can incorrectly predict a counterintuitive inference. When a

theory makes an incorrect prediction, this mismatch between prediction and fact can be dealt with in one of two ways. First, the theory can be revised in such a way as to avoid the incorrect prediction and bring the theory into alignment with the facts. Second, the pragmatic rescue strategy can be used to show that the incorrect prediction is something that we can live with after all.

How exactly does the pragmatic rescue strategy work? Suppose that, intuitively, an assertion of *A* conveys the information that *B*. But also suppose that a semantic theory fails to predict this intuitive inference. This is, on the face of it, bad news for the semantic theory. Employing the pragmatic rescue strategy in this case would involve arguing that an assertion of *A* conversationally implicates that *B*. This would give us a pragmatic explanation that accounts for the intuitiveness of the inference. Or suppose that a semantic theory predicts a counterintuitive inference, i.e., predicts that an assertion of *C* conveys the information that *D*, even though an assertion of *C* appears to do no such thing. Employing the pragmatic rescue strategy in this case would involve arguing that after an assertion of *C*, an assertion of *D* would be infelicitous, i.e., would violate the rules of conversation. This would give us a pragmatic explanation that accounts for the counterintuitiveness of the inference.

The pragmatic rescue strategy enjoys a long and distinguished history. For practically every debate concerning the meaning of an expression, there are multiple pragmatic rescues on offer. The main claim of this chapter is that, in a wide range of cases, the pragmatic rescue strategy is misguided. I develop a general argument, called the reformulation argument, in support of this claim.

### 3.4 Illustrating the Reformulation Argument: The Material Conditional

In this section I introduce the reformulation argument against the pragmatic rescue strategy. I introduce it by way of a case involving Grice's notorious material conditional analysis of the indicative conditional.<sup>8</sup>

The material conditional analysis of the indicative conditional is a semantic theory concerning the indicative *if...then...* construction. According to the theory, an indicative *if...then...* statement is true just in case either the antecedent (the *if...* clause) is false or the consequent (the *then...* clause) is true. This material conditional analysis is simple and truth-functional, and it makes a number of correct predictions. For example, it validates modus ponens: *A* and *if A, then B* together guarantee the truth of *B*. It also validates the so-called direct argument: *A or B* guarantees the truth of *if not A, then B*.

But the material conditional analysis also makes a number of incorrect predictions, historically referred to as the *paradoxes of material implication*. For example, according to the material conditional analysis, the truth of (103) guarantees the truth of (104):

(103) Oswald killed Kennedy.

(104) If Oswald didn't kill Kennedy, a Martian did.

The truth of (103) guarantees the falsity of (104)'s antecedent. And, according to the material conditional analysis, the falsity of (104)'s antecedent guarantees (104)'s truth. But surely we do not want the truth of (103) to guarantee the truth of (104). This is an incorrect prediction for the material conditional analysis.

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<sup>8</sup>See Grice (1989, 58-85).

Grice attempts to explain away incorrect predictions such as this one by way of pragmatic rescue. According to Grice, the truth of (103) does guarantee the truth of (104). But, even though (104) is true, I cannot felicitously assert it. For if I were to assert the conditional, I would misleadingly implicate that, for all I know, Oswald might not have killed Kennedy. A pragmatic story as to how this implicature gets generated runs as follows. According to the material conditional analysis, the conditional *If Oswald didn't kill Kennedy, then a Martian did* is truth-conditionally equivalent to the disjunction *Either Oswald killed Kennedy or a Martian did*. Hence, according to the material conditional analysis, the claim *Oswald killed Kennedy* is strictly more informative than the conditional *If Oswald didn't kill Kennedy, then a Martian did*, since it is strictly more informative than the truth-conditionally equivalent disjunction. So if I know that Oswald killed Kennedy, then I should just assert this instead of asserting the strictly weaker conditional. Given that I asserted the less informative claim, I must have not been in a position to assert the more informative claim. And I would not be in a position to assert this more informative claim because, for all I know, Oswald might not have killed Kennedy.

But there is good reason to think that this pragmatic rescue fails, regardless of exactly how the pragmatic derivation is spelled out. We can see this by reformulating the problematic inference at the level of rational commitment. Suppose that I believe that Oswald killed Kennedy. If the material conditional analysis is right, this means that I am rationally committed to believing that if Oswald didn't kill Kennedy, then a Martian did.<sup>9</sup>

But I am not rationally committed to this. In fact, it appears quite rational to believe that Oswald killed Kennedy while *disbelieving* that if Oswald didn't kill Kennedy, then a Martian did. Furthermore, there does not seem to be any way for a pragmatic explanation to help. My beliefs and rational commitments have nothing to do with speakers, audiences,

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<sup>9</sup>At least as long as we make the assumption that rational commitment is closed under logical consequence. If this assumption is too strong for your tastes, practically any reasonably weakened principles along these lines will do the work I need it to do. Furthermore, one might worry that our intuitions in these cases track conditional beliefs, as opposed to beliefs in conditionals. To address this worry, we could assume that a belief in a conditional implies a conditional belief.

conversations, or the rules of conversation. If we assume that we want a similar explanation both at the level of assertion and at the level of rational commitment, then the pragmatic story is not the right story about what is going on at the level of assertion, since it cannot apply at the level of rational commitment.

I am not the first to notice that, when it comes to the level of rational commitment, pragmatics cannot rescue the material conditional analysis:

But the difficulties with the truth-functional conditional [i.e., the material conditional analysis] cannot be explained away in terms of what is an inappropriate conversational remark. They arise at the level of belief. Edgington (1995, 245)

But this move to pragmatics [endorsed by Grice and others in defense of the material conditional analysis] seems to be wide of the mark if the problem we are interested in is an epistemological one. These kinds of solutions distinguish between what is valid (a semantic notion) and what is felicitous (a pragmatic notion);  $\phi$  might entail  $\psi$  even though an utterance of  $\psi$  is not always felicitous in the presence of  $\phi$ . This sort of distinction is, no doubt, crucial for understanding language use. But our concern is an epistemic one—we are concerned only with what the rational epistemic commitments of agents are, quite apart from what they may or may not say about those commitments. If holding  $\phi$  commits us to  $\psi$ , then if we accept that  $\phi$  it is clear that  $\psi$  is one of our epistemic commitments regardless of the pragmatic facts about potential utterances of  $\psi$ . Gillies (2004, 591)

The scope and importance of this line of thought has been drastically underestimated. It can be generalized along two dimensions. First of all, there is no need for us to limit our attention to conditionals. What we have is a general way of reformulating linguistic problems as epistemological ones.<sup>10</sup> Secondly, there is no need for us to limit ourselves to epistemology. We just need to reformulate the problematic inferences in non-conversational terms. Epistemology is non-conversational, but there are other non-conversational domains. I will illustrate this with the case of free choice permission.

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<sup>10</sup>Speaks (2008) applies something similar to the epistemological reformulation strategy to names, definite descriptions, and quantifier domain restriction.

### 3.5 Generalizing the Reformulation Argument: Free Choice Permission

As discussed at length in the first chapter, an assertion of (105) typically enables audience members to infer (106) and to infer (107):

(105) Jordan may have tea or coffee.

(106) Jordan may have tea.

(107) Jordan may have coffee.

If we are at a restaurant, and I assert (105), then regardless of whether Jordan chooses tea or coffee, her action is in conformance with my assertion. This inference pattern is called the *paradox of free choice permission*. It is “paradoxical” because the traditional semantic theory of permission fails to predict it. The traditional theory of permission makes an incorrect prediction in this case, since it fails to predict these intuitive inferences.<sup>11</sup> Could the proponent of the traditional theory of permission employ the pragmatic rescue strategy? Perhaps an assertion of (105) conversationally implicates (106) and (107). This has proven to be a popular approach.<sup>12</sup>

But this pragmatic approach is bound to fail. We can apply the reformulation argument to free choice permission by taking the problematic inferences and reformulating them in epistemological terms. My belief that Jordan may have tea or coffee rationally

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<sup>11</sup>Why does the traditional semantic theory of permission fail to predict these inferences? In brief, because the traditional semantic theory treats permission as existential quantification (over “deontically accessible” possibilities), and existential quantification does not distribute over disjunction. Just because there is a bar or a cafe downtown, it does not follow that there is a bar downtown. See the first chapter for many more details.

<sup>12</sup>It has been defended in Kratzer and Shimoyama (2002), Alonso-Ovalle (2006), Schulz (2005), Aloni and van Rooij (2007), Fox (2007), and Geurts (2011). Some of these approaches are quite sophisticated, and go beyond the Gricean framework with which most philosophers are familiar. These complexities need not concern us here.



commits me to the belief that Jordan may have tea and rationally commits me to the belief that Jordan may have coffee. If I believe that Jordan may have tea or coffee, but fail to believe that she may have tea, then I am guilty of irrationality. How would a pragmatic explanation account for these facts concerning belief and rational commitment? The fact the free choice inferences can be reformulated in non-conversational terms shows that the pragmatic rescue strategy is misguided.

Furthermore, in this case we can just as easily reformulate the problem in metaphysical terms. The mere fact that Jordan may have tea or coffee guarantees that Jordan may have tea and guarantees that Jordan may have coffee. But just as whether or not a belief rationally commits one to something has nothing to do with speakers, audiences, conversations, or the rules of conversation, neither does whether or not a mere fact guarantees something. Again, if we think that we need a similar explanation at each of these levels—the level of assertion, the level of rational commitment, and the level of mere facts—then a pragmatic story will have no role to play, since it cannot apply at the level of rational commitment or the level of mere facts.

So we are faced with three questions:

- Why does an assertion of *Jordan may have tea or coffee* convey the information that Jordan may have tea and the information that Jordan may have coffee?
- Why is an agent who believes that Jordan may have tea or coffee rationally committed to believing that Jordan may have tea and rationally committed to believing that Jordan may have coffee?
- Why does the mere fact that Jordan may have tea or coffee guarantee that Jordan may have tea and guarantee that Jordan may have coffee?

A pragmatic explanation can address only the first of these three questions. A pragmatic explanation takes advantage of the fact that there is a speaker obeying the rules of conversa-

tion in order to make things as easy as possible for his or her audience. When problematic inferences are extracted from the realm of conversation, when they no longer have anything to do with assertion or discourse, there is no way to get pragmatic reasoning off the ground.

I am assuming that the answers to these three questions should be very similar. Because a pragmatic explanation is out of place with regard to the second and third question, this assumption implies that a pragmatic explanation is out of place with respect to the first question. Hence, if problematic inferences can be reformulated in non-conversational terms, e.g., epistemological or metaphysical terms, then they cannot be explained away pragmatically.

### **3.6 The Upshot**

Whenever we can reformulate problematic inferences in either epistemological or metaphysical terms, then a pragmatic rescue is out of place. A pragmatic rescue relies essentially on the fact that an assertion is made in a conversation with a speaker and an audience, and that there are rules concerning how a conversation should take place. This entire conversational structure is absent when we are considering the epistemological issues surrounding beliefs and the rational commitments that accompany them. Similarly, this conversational structure is absent when we are considering the metaphysical issues surrounding facts and what they guarantee. If problematic inferences emerge at these epistemological and metaphysical levels, then we cannot use a pragmatic explanation to resolve them at the level of assertion. This reformulation argument drastically undermines the flexibility and usefulness of the pragmatic rescue strategy, one of the most popular strategies in philosophy of language, philosophical logic, and formal semantics. I will consider two additional examples in this section to illustrate the reformulation argument's scope.

### 3.6.1 Counterfactuals With Disjunctive Antecedents

Consider counterfactuals with disjunctive antecedents. An assertion of (108) enables audience members to infer (109):

(108) If Jordan were to drink tea or coffee, then she would feel energized.

(109) If Jordan were to drink tea, then she would feel energized.

Most semantic theories of counterfactuals fail to predict this intuitive inference.<sup>13</sup> Some theorists propose explaining this inference as a conversational implicature, as opposed to a semantic entailment.<sup>14</sup> But this move loses plausibility when we observe that my belief that Jordan would feel energized if she were to drink tea or coffee rationally commits me to the belief that Jordan would feel energized if she were to drink tea. Similarly, the mere fact that Jordan would feel energized if she were to drink tea or coffee guarantees that Jordan would feel energized if she were to drink tea. This inference survives the ascent to the level of rational commitment and the ascent to the level of mere facts. Hence, it cannot be explained in conversational terms, since rational commitment and mere facts have nothing to do with conversation.

### 3.6.2 Ross's Paradox Concerning Obligation

Consider Ross's paradox concerning obligation.<sup>15</sup> An assertion of (110) enables audience members to infer (111):

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<sup>13</sup>For example, the two most influential semantic theories concerning counterfactuals—those contained in Stalnaker (1968) and Lewis (1973), respectively—fail to predict this inference. Loewer (1976) emphasizes just how devastating this problem is for the Lewisian theory of counterfactuals.

<sup>14</sup>See, for example, Bennett (2003, 168-170).

<sup>15</sup>See Ross (1941).

(110) Jordan must mail the letter or burn it.

(111) Jordan may burn the letter.

One aspect of Ross's paradox is that the traditional semantic theory of obligation fails to predict this intuitive inference.<sup>16</sup> Some theorists propose explaining this inference as a conversational implicature, as opposed to a semantic entailment.<sup>17</sup> But this move loses plausibility when we observe that my belief that Jordan must mail the letter or burn it rationally commits me to the belief that Jordan may burn the letter. Similarly, the mere fact that Jordan must mail the letter or burn it guarantees that Jordan may burn the letter. This inference survives the ascent to the level of rational commitment and the ascent to the level of mere facts. Hence, it cannot be explained in conversational terms, since rational commitment and mere facts have nothing to do with conversation.

### 3.7 Some Conversational Implicatures That Survive

One might worry that the reformulation argument is too powerful. Does the reformulation argument show that there are no conversational implicatures whatsoever? Fortunately, it is not that powerful. In this section I consider three kinds of conversational implicatures that survive the reformulation argument.<sup>18</sup>

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<sup>16</sup>Why does the traditional semantic theory of obligation fail to predict this inference? Because the traditional semantic theory treats obligation as universal quantification (over “deontically accessible” possibilities). This contrasts with the traditional treatment of permission as existential quantification. Universal quantification, existential quantification, and disjunction do not interact in the way they would need to in order to have *Jordan must mail the letter or burn it* entail *Jordan may burn the letter*. This is because  $\forall x(Fx \vee Gx)$  does not entail  $\exists xGx$ .

<sup>17</sup>See, for example, von Fintel (2012).

<sup>18</sup>This section is not intended to be an exhaustive list. Other kinds of conversational implicatures survive as well.

### 3.7.1 Particularized Conversational Implicatures

“Particularized” conversational implicatures, ones that rely on one-off features of the particular conversational context, remain unscathed. Consider Grice’s famous handwriting case.<sup>19</sup> According to a variant of this case, if a professor is asked to evaluate the philosophical ability of Jones, and all the professor says in response is that Jones has good handwriting, this implicates, by way of glaring omission, that Jones is a bad philosopher. Does the reformulation argument undermine this pragmatic explanation? It does not. My belief that Jones has good handwriting does not rationally commit me to the belief that he is a bad philosopher. And the mere fact that Jones has good handwriting does not guarantee that he is a bad philosopher. The inference does not survive the ascent to the level of rational commitment or the ascent to the level of mere facts. Hence, there is nothing untoward about using pragmatics to explain what is going on at the level of assertion.

### 3.7.2 The Exclusivity of Disjunction

Even many generalized conversational implicatures survive.<sup>20</sup> Consider the exclusivity of disjunction, i.e., the fact that asserting a disjunction such as *A or B* often conveys the information that *not both A and B*. The traditional semantic theory of *or* fails to explain this inference, and historically it has been explained pragmatically. Does the reformulation argument undermine this pragmatic rescue? It does not. My belief that Jordan is asleep or at work does not rationally commit me to the belief that she is not both asleep and at work. Similarly, the mere fact that Jordan is asleep or at work does not guarantee that she is not both asleep and at work. The exclusivity inference does not survive the ascent to the level of rational commitment or the ascent to the level of mere facts. Hence, there is nothing

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<sup>19</sup>See Grice (1989, 33)

<sup>20</sup>A generalized conversational implicature depends only on general facts that are common to all, or almost all, conversations. Accordingly, generalized conversational implicatures are much more robust than particularized conversational implicatures. Slight changes to the context of utterance tend not to disrupt generalized conversational implicatures, though they can easily disrupt particularized conversational implicatures.

untoward about using pragmatics to explain what is going on at the level of assertion.

### 3.7.3 Scalar Implicatures Involving Quantifiers

Or consider the scalar implicatures that arise with *some*.<sup>21</sup> When I assert *Some spicy food contains capsaicin*, this typically conveys that not every spicy food contains capsaicin. The traditional theory of *some* fails to explain this inference, and historically it has been explained pragmatically. Does the reformulation argument undermine this pragmatic rescue? It does not. My belief that some spicy food contains capsaicin does not rationally commit me to the belief that not every spicy food contains capsaicin. Similarly, the mere fact that some spicy food contains capsaicin does not guarantee that not every spicy food contains capsaicin. The inference does not survive the ascent to the level of rational commitment or the ascent to the level of mere facts. Hence, there is nothing untoward about using pragmatics to explain what is going on at the level of assertion.

## 3.8 Addressing Three Objections

In this section I briefly address three objections to the reformulation argument.

### 3.8.1 Reformulations are Still Linguistic

According to this first objection, the epistemological and metaphysical reformulations still primarily involve linguistic questions concerning assertions. Consider the case of free choice permission. The proponent of a pragmatic rescue thinks that we should develop a pragmatic explanation of why an assertion (112) enables audience members to infer (113)

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<sup>21</sup> A scalar implicature is one based on the principle that speakers tend to prefer more informative assertions to less informative assertions. We already encountered a scalar implicature when we considered an assertion of *Most spicy foods contain capsaicin*.

and to infer (114).

(112) Jordan may have tea or coffee.

(113) Jordan may have tea.

(114) Jordan may have coffee.

According to the reformulation argument, a pragmatic explanation of this type would fail to explain why the belief that Jordan may have tea or coffee rationally commits one to the belief that Jordan may have tea and rationally commits one to the belief that Jordan may have coffee. A pragmatic explanation of this type would also fail to explain why the mere fact that Jordan may have tea or coffee guarantees that Jordan may have tea and guarantees that Jordan may have coffee.

But a possible rejoinder runs as follows. When we wonder why the belief that Jordan may have tea or coffee rationally commits one to the belief that Jordan may have tea and rationally commits one to the belief that Jordan may have coffee, what we are really wondering is why an assertion of (115) enables audience members to infer (116) and to infer (117):

(115) Agent *S* believes that Jordan may have tea or coffee.

(116) Agent *S* is rationally committed to the belief that Jordan may have tea.

(117) Agent *S* is rationally committed to the belief that Jordan may have coffee.

So what we are really asking is how do the constructions “*S* believes that ...” and “*S* is rationally committed to...” function.

Similarly, according to this line of objection, when we wonder why the mere fact that Jordan may have tea or coffee guarantees that Jordan may have tea and guarantees that Jordan may have coffee, what we are really wondering is why an assertion of (118) enables audience members to infer (119) and to infer (120):

(118) It is a fact that Jordan may have tea or coffee.

(119) It is a fact that Jordan may have tea.

(120) It is a fact that Jordan may have coffee.

So what we are really asking is how does the construction “It is a fact that...” function.

This strategy struggles to keep everything linguistic. Instead of construing the epistemological and metaphysical reformulations as about epistemology and metaphysics, this strategy insists that these reformulations are about linguistic constructions: “S believes that...” and “S is rationally committed to”, in the case of the epistemological reformulation, and “It is a fact that...”, in the case of the metaphysical reformulation.

This objection depends on skepticism about our ability to direct our attention to specific questions. Certainly it seems that I have the power to wonder why a belief comes with certain rational commitments. But this objection insists that my efforts to direct my attention to this topic fail. This objection insists that what I am really wondering is how “S believes that...” and “S is rationally committed to” function linguistically. Similarly, certainly it seems that I have the power to wonder why a fact guarantees something. But this objection insists that my efforts to direct my attention to this topic fail. This objection insists that what I am really wondering is how “It is fact that...” functions linguistically. I find this skepticism completely unpersuasive. Why think that our inquiries are confined to lin-



guistic questions? Not all epistemology is about epistemic language. Not all metaphysics is about metaphysical language.

### **3.8.2 Pragmatics Can Appropriately Apply to Non-Linguistic Domains**

According to this second objection, the epistemological and metaphysical reformulations really do concern non-linguistic domains, but pragmatics, or something close enough, can intelligibly be applied to these domains.

Douven (2012), for example, has argued that belief and acceptance are subject to some pragmatic considerations. As he puts it:

At the root of Grice's thinking was the insight that when uttering a sentence we often convey more information than what is contained in the sentence's semantic content. Due to this—Grice convincingly argued—even a patently true sentence may be unassertable. For, truth being solely a matter of semantic content, by asserting a true sentence one may still “suggest,” or “implicate,” something false, thereby possibly misleading one's audience. I will argue that much the same holds for what we can accept: a sentence may be unacceptable even if its truth is patent to us. More specifically, the claim will be that whether a sentence is acceptable is not merely a matter of our having evidence for it, or good reasons for believing it is true, or anything of that sort, but also of whether it satisfies certain further conditions, conditions that are akin to (some of) Grice's celebrated conversational maxims. Douven (2012, 35)

In the case of assertion, pragmatic considerations keep the conversation running well; they facilitate information-exchange among the conversational participants. In the case of belief, according to Douven (2012, 38), we obey pragmatic considerations in order to avoid misleading our future selves. Using this principle, we can construct pragmatic explanations at the level of belief. If this is on the right track, then perhaps we could give similar pragmatic stories at both the level of assertion and the epistemological level of rational commitment.

This is a fascinating idea, one that deserves attention, but for the purposes of this chapter it suffices to point out that no pragmatic story could be told with respect to the

metaphysical reformulation in terms of mere facts. The epistemological reformulations involve agents (since they involve believers with rational commitments). Agents have goals, and there are principles that they should adhere to in order to further these goals, and some of these principles might (i) concern belief and (ii) resemble Gricean principles. But the metaphysical reformulations do not even involve agents. They just involve facts.<sup>22</sup>

### 3.8.3 Pragmatics Corrupts our Intuitions about Non-Linguistic Domains

According to this third objection, the epistemological and metaphysical reformulations really do concern non-linguistic domains, and it is misguided to apply pragmatics to these non-linguistic domains, but our intuitions concerning these domains are corrupted or infected by pragmatic considerations.

According to this line of thought, our intuitions about the belief that Jordan may have tea or coffee, and our intuitions about the rational commitments that accompany this belief, are corrupted by our intuitions about what an assertion of *Jordan may have tea or coffee* would conversationally implicate. Furthermore, our intuitions about the fact that Jordan may have tea or coffee, and our intuitions about what this fact guarantees, are similarly corrupted. Because pragmatic considerations corrupt these intuitions, and because the reformulation argument depends on these intuitions, the reformulation argument fails.

First of all, it is important to note that this objection depends on a skepticism concerning the purity and reliability of our intuitions. This kind of skepticism threatens to undermine the methodology employed throughout most of philosophy, and it is not a kind of skepticism that we should appeal to lightly.

Secondly, and more conclusively, this objection renders mysterious the fact that some

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<sup>22</sup>If these facts concern agents, that is completely incidental.

alleged conversational implicatures *do* survive the reformulation argument (as discussed in section 3.7). If our epistemological and metaphysical intuitions are corrupted by our intuitions about assertions and the inferences that these assertions enable us to make, then what explains the fact that some inferences reappear in the epistemological and metaphysical reformulations and some do not. In other words, what could explain the difference between (i) the inferences that arise with respect to the paradox of free choice permission, counterfactuals with disjunctive antecedents, and Ross's paradox, on the one hand, and (ii) the inferences that arise with respect to Grice's handwriting case, the exclusivity of disjunction, and the scalar implicatures associated with *some*, on the other hand?

### 3.9 Reconciling the Diagnostics for Detecting Conversational Implicatures

In this section I note an exciting open problem, one that I plan to pursue in future work. The reformulation argument provides us with a partial diagnostic for determining whether a given implied piece of information is a conversational implicature: if the implication survives the reformulation in epistemological or metaphysical terms, then it is not a conversational implicature. But how does this diagnostic interact with the now-classic diagnostics such as cancelability, reinforcingability, and detachability?<sup>23</sup>

First of all, we can safely ignore detachability, since it lumps together semantic entailments and conversational implicatures; its purpose is to differentiate conversational and conventional implicatures. But our question still remains with respect to cancelability and reinforcingability.

According to the cancelability diagnostic, semantic entailments cannot be canceled by the addition of further information, but conversational implicatures can be. For example,

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<sup>23</sup>Grice (1975) first discusses cancelability and detachability. Sadock (1978) first discusses reinforcingability.

after I assert (121), nothing I subsequently say (short of a full-blown retraction) can cancel the implication that some spicy food contains capsaicin.

(121) Most spicy foods contain capsaicin.

On the other hand, after I assert (121), I can subsequently assert (122) in order to cancel the implication that not every food contains capsaicin.

(122) Indeed, every spicy food contains capsaicin.

This is taken to be evidence that (121) semantically entails that some spicy food contains capsaicin, but only conversationally implicates that not every spicy food contains capsaicin.

According to the reinforcing diagnostic, semantic entailments cannot be felicitously reinforced, but conversational implicatures can be. For example, it is infelicitous to assert (123):

(123) Most spicy foods contain capsaicin. And some spicy food contains capsaicin.

But it is felicitous to assert (123):

(123) Most spicy foods contain capsaicin. But not every spicy food contains capsaicin.

Again, this is taken to be evidence that (121) semantically entails that some spicy food

contains capsaicin, but only conversationally implicates that not every spicy food contains capsaicin.

Now we can return to the question of what to do when our newly developed diagnostic, cast in terms of reformulation, conflicts with the cancelability diagnostic or the reforcability diagnostic. And the answer is that we can only decide on a case-by-case basis.

Sometimes, the cancelability diagnostic gives us a false positive because the addition of further information, instead of canceling an implicature, actually resolves structural disambiguation.<sup>24</sup> Furthermore, often the reforcability diagnostic actually supports the reformulation diagnostic. Indeed, in the case of free choice permission, counterfactuals with disjunctive antecedents, and Ross's paradox concerning obligation, the application of the reforcability test seems to suggest that these inferences are not conversational implicatures, the same verdict as the reformulation diagnostic. The upshot is this. Sometimes the diagnostics will agree. Sometimes they might disagree. When they disagree, we should look at the specific case and see if there is any reason to think that one of the diagnostics is misfiring.

### 3.10 Conclusion

The reformulation argument shows that the pragmatic rescue strategy—one of the most widely used strategies in philosophy of language, philosophical logic, and formal semantics—is misguided in a wide range of cases. By recasting problematic inferences in non-conversational terms—by reformulating them in epistemological or metaphysical terms, for instance—we can demonstrate that these problematic inferences are not to be explained away pragmatically.

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<sup>24</sup>See section 7 of the first chapter.

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