**Deontic Questions, Discourse Relations, and Modal Interpretation**

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Under Review

One challenge for any semantics for modal expressions is to account for their flexibility. “Flexibility” here refers to the ability of a single modal sentence to take multiple readings. Consider, for example,

1. “Sobel must be in his office.”

(1) can take both epistemic and deontic readings. Imagine first that we are looking for Sobel and know that his office hours are now. Usually, he’s in his office during his office hours, but we haven’t checked today. We might conclude (1) as a way of saying, roughly, that given our information, he must be in his office. The modal here is evidential or epistemic. Now imagine instead that we are assessing Sobel’s teaching. We’re wondering whether he keeps his commitments to his students, so we’re wondering about what those commitments require.

Here (1) may be used to express an active requirement, given his promises to his students. In this case, (1) has a deontic reading. A contextualist will hold that the different readings are made available by differences in the contexts of utterance. Non-contextualists will need a different explanation. Perhaps in the two uses of (1) speaker judgments are sensitive to different indices. Perhaps (1) is ambiguous, with the two uses exhibiting different semantics clauses.

 A central source of data for all semantic theories are competent speaker judgements about cases. Testing a semantic theory for modals, then, requires

1. An account of what the difference is between the different uses
2. An account of how different uses determine the needed differences, and
3. An account of how speakers are sensitive to the proposed differences in the different uses.

For example, expressivist and relativist theories which hold that the difference in judgments is to be explained by a difference in the indices speakers are sensitive to will need to provide an account what determines which index speakers are sensitive to in the different cases and how speakers are sensitive to them.

 In this regard, contextualist theories enjoy an empirical advantage over these rivals. For the contextualist, the answer to (i) is a difference in the context of use. Answers to (ii) and (iii) may draw on the full range of resources independently available to explain context-sensitivity. The primary goal here, however, is not to assess the comparative merits of the range of semantic proposals on offer for modal expressions, but rather to develop an account of how contexts determine deontic modal propositions, on the assumption that some contextualist semantics is correct. As we’ll see in section 6, there is some reason to think elements of this account may be extended to cover epistemic or evidential modals as well.

 For concreteness, the discussion will be framed in terms of the canonical, Kratzerian semantics. One advantage of this is that the Kratzerian semantics is arguably the most plausible extant semantics for modals in English. A second advantage is that several rival contextualist theories share features with the canonical view, for example, treating modals as quantifiers sensitive to a set of parameter values. For this reason, the elements of the general account here may be compatible with alternative contextualist proposals.[[1]](#footnote-1)

 As we’ll see in section 6, on that account, contexts that determine a deontic modal proposition require two elements: a deontic question under discussion and a set of possibilities that stand in a Result discourse relation to the modal claim. These together will determine the parameter values the semantics requires. To get there, we’ll need a number of background elements on the table. Section 1 provides a brief overview of the canonical semantics and its treatment of deontic modals in particular. It also introduces the elements of contexts the account in 6 will draw on. To set up testing the claims here regarding the contextual requirements for deontic modals, section 2 introduces tests for presuppositions in general. Section 3 introduces what I’ll call “Ritualized Situations” which have a role to play in the section 4 discussion of how deontic questions may be implicitly accepted by contexts of utterance. Section 5 will introduce discourse relations and address the role they have to play in modal interpretation. Section 6 puts these elements together in an account of how contexts determine deontic modal propositions and offers some data in support of its extension to epistemic modals.

 A challenge for any contextualist account will be to explain how modals may be used discourse-initially, that is, in cases in which there is no prior discourse to guarantee that the needed contextual requirements have been met. In order to test the account here, I will focus on how to apply it in such cases.

**1.** **Deontic Modals, Contexts, and Conversational Scoreboards**

*The canonical view*

As we’ve seen, on the canonical view modal expressions function as quantifiers over sets of possibilities.[[2]](#footnote-2) Restrictions on the domain of quantification are supplied by the context of utterance. Modal expressions that have a deontic use (for example, “ought”, “may”, and “must”), like other modal expressions, have a two-fold restriction. First, context supplies a value for the *modal base*, *f*, a function from a world of evaluation, *w*, to a set of propositions. The *modal background* is the set of worlds at which every *f*(w) proposition is true. The value for *f* in the case of deontic modals is *circumstantial*. Roughly, the value for *f* tells us to look for the circumstances in *w* that share certain properties. The modal background, then, will be the set of worlds alike with respect to those *f*(w) circumstances obtaining.[[3]](#footnote-3) To illustrate: One common restriction is to those circumstances which fix an agent’s action-options in *w*, for example, her abilities, resources, and environment.

Second, the possibilities in the modal background are ranked in accordance with the degree to which they conform to some standard of ideality. That standard gets determined by the value for the *ordering source*, *g*. Like *f*, *g* is a function that takes a world of evaluation *w* as its argument and delivers a set of propositions as a value. Roughly, the value for *g* tells us to go to *w* and select the standard which has some property. The content of that standard is given by *g*(w)’s propositional value. The canonical view permits a wide variety of values for *g*. Such a value might select the rules of some club or the laws in some locality in *w*, for example. It may select some individual’s preferences or normative commitments in *w*. Or it may select the content of morality in *w*. Those worlds in the modal background that conform to *g*(w) to the greatest extent are ranked most highly. These most highly ranked worlds in the modal background make up the domain for the modal.[[4]](#footnote-4) Call a “deontic modal sentence” a sentence where the modal has a deontic use and takes widest scope. Also, call “the prejacent” the sentence the modal scopes over. A deontic necessity modal sentence is true when the prejacent is true at all of the most highly ranked worlds,[[5]](#footnote-5) while a possibility modal is true when it is true in at least one. To illustrate, imagine a doctor says to a patient while handing her a prescription,

1. Given your physical condition, in order to promote your health, you must/should take this.

Here, the circumstances restricting the modal’s domain will be those that fix the patient’s physical condition in *w*. These provide the value for *f*(w). The goal of health promotion provides the value for *g*. The value for *g*(w) will be what promotes the patient’s health in *w*. (2) will be true when all of the worlds compatible with the patient’s physical condition in *w* in which her health is maximally promoted are worlds in which she takes the prescription.

*Contexts and Conversational Scoreboards.*

Here I take the elements represented on conversational scoreboards to be what speakers need to track in order for communication to occur. Those elements jointly make up the context of utterance. They play three roles in facilitating communication, one static and two dynamic. On the static side, they represent what is jointly accepted for the purposes of the conversation. On the dynamic side, they first play a role in determining the content of an utterance. Second, they serve as that which is updated when an utterance is accepted by discourse participants.

For utterances of deontic modal expressions to interact with contexts in each of these ways, our scoreboards will need to register four elements. First, they will need a Common Ground, a set of propositions presupposed for the purposes of conversation. Following Stalnaker, call the set of worlds at which all of the Common Ground propositions are true “the context set”.[[6]](#footnote-6) Second, following Stojnic (2021), the propositions in the Common Ground will need to be ranked for prominence, where prominence reflects a degreed, joint attentional state. We may think of a conversation’s attentional state as differentiating between presuppositions that are directly relevant for what is currently under discussion and those that are backgrounded or not at-issue. For the discussion below, it will sometimes be handy to have a term for the set of worlds that make up all of the most prominent propositions. I’ll call this “the prominent context set”.

In addition, our contexts require Discourse and Domain Goals. A Discourse Goal is a goal that interlocutors jointly aim to satisfy in the course of the conversation. Questions Under Discussion (QUDs) are the type of Discourse Goal of central concern here. A Domain Goal is a goal, possibly extra-linguistic, that the satisfaction of a Discourse Goal is to serve. Such goals have an important role to play in the account of context-sensitivity of deontic modal sentences. More will be said about them in section 4.

To preview: On the account here, roughly, deontic questions serve to make the considerations relevant for determining their range of possible answers prominent. These considerations will be part of the Common Ground and will inferentially support deontic answers to those questions. Finally, this most prominent context set supplies the modal domain. Thus, among those considerations will be values for *f*(w) and *g*(w).

**2. Testing for Presuppositions**

 The account of how deontic modal sentences and contexts interact to determine propositions defended in section 6 rests on several claims about what requirements contexts need to meet in order for their use to be felicitous. These are presuppositional requirements, so testing these claims requires a test for the presence of presuppositions in the cases discussed. Follow-ups to an utterance may target what’s presupposed, rather than what’s said. Given this, that a follow up is felicitous without targeting what’s said is evidence that what is targeted is presupposed in a context.

 Kai von Fintel’s “hey, wait a minute…” test is designed to distinguish what’s said from what’s presupposed. Here’s his example.

(3) The mathematician who proved Goldbach’s Conjecture is a woman.

(3a) Hey, wait a minute. I had no idea that someone proved Goldbach’s Conjecture.

(3b) Hey, wait a minute. I had no idea that that was a woman.#[[7]](#footnote-7)

“Hey, wait a minute” is awkward as a follow-up that challenges what’s been said by an utterance. But it isn’t as a follow-up to what’s been presupposed. Thus, its felicity as a follow-up is evidence that what it targets is presupposed.

Similarly, affirmations and challenges to an assertion can serve as evidence that a Question Under Discussion is implicitly registered on the scoreboard. To see this, consider two friends talking about their friends’ recent conference travel. One says,

(4) Sefira went to the Central Division meeting.

Some possible replies are,

(4a) Sofya went there, too.

(4b) No, she didn’t! She missed her flight.

(4c) Wait, how do you know that? I heard she missed her flight.

(4d) Yes, Sofya told me that, too.

(4e) The Central Division has held meetings for more than fifty years.#

(4a-d) are all felicitous responses to (4). (4a) accepts (4) and offers additional information. (4b) rejects (4) and offers a justification for that rejection. (4c) is a challenge and (4d) accepts (4) while offering additional evidence in its support. (4e), in contrast, is not felicitous. An explanation of this pattern is that the assertion of “Sefira went to the Central Division meeting” puts the implicit question “who went to the Central Division meeting?” on the scoreboard and not “what is true of the Central Division?”[[8]](#footnote-8) Thus, which affirmations and challenges to an assertion are felicitous is evidence for which question is under discussion.[[9]](#footnote-9)

 As we’ll see, which follow-ups to an utterance are felicitous can more generally serve as evidence of what’s presupposed in a context of utterance. This will provide an independent source of evidence for some of the central claims here.

**3. Presuppositions, Ritualized Situations, and Normalizing Generalizations.**

Following Stojnic (2021), on the account here a set of possibilities made prominent in a context play a role in determining the domain of a deontic modal. In section 5, I’ll discuss the role discourse coherence relations have to play in making a set of possibilities prominent. Here I discuss the role of what I’ll call “Ritualized Situations”. As we’ll see in section 4, Ritualized Situations also have a role to play in putting an implicit discourse goal on the scoreboard. In 5, we’ll see in addition that they have a role to play in determining the discourse relations deontic modals stand in.

To see what a Ritualized Situation is in the reserved sense, consider this example from Kehler.

…consider yourself witnessing a complex scenario unfold, such as a team of firefighters preparing to fight a fire. You see people in uniforms running around frantically, yelling toward each other. Several are carrying one end of a hose, running to the back of a house. At the same time, another team is hooking the other end of the hose to a fire hydrant. This team opens the hydrant and also runs to the back of the house. *These actions all make sense to you because of what you know about firefighting and you readily make assumptions to allow for the situation to be interpreted as a fire-fighting event.[[10]](#footnote-10)*

The possession of background generalizations about how fire fighters fight fires ‘around here’ together with information about the actions witnessed makes this overall scenario intelligible as a fire-fighting event. Ritualized Situations in my sense are those that are intelligible in this way. They are situations organized or governed by rituals, rules, habits, practices, or laws. In Ritualized Situations, interlocutors share a number of background presuppositions about what the speech situation they are in is like, not just presuppositions about their particular circumstances, but presuppositions about what normally occurs in situations of the type they are in.

Call a “Normalizing Generalization” any generalization that obtains when things are as they normally are in some situation type.[[11]](#footnote-11) Ritualized Situations are governed by Normalizing Generalizations in this sense. For example, normally those that are dressed like fire fighters and act like fire fighters are fire fighters. Speakers who share a community will generally share as background presuppositions the Normalizing Generalizations needed to recognize a Ritualized Situation as the type of situation it is. A great many of the situations that we find ourselves in on any given day are Ritualized Situations, even when we encounter unusual events, like house fires. This means that interlocutors who strike up conversations, even when they are strangers, will share a rich store of presuppositions on which to draw to jointly pursue Discourse Goals.

Moreover, the joint recognition of signs that they are in a Ritualized Situation of a certain type will bring the associated Normalizing Generalizations to prominence. More carefully, Normalizing Generalizations are representable as the set of worlds in which things that are normally the case obtain. Call a “Normalizing Set of Worlds” the set at which all of what is normally the case in a Ritualized Situation obtains. Interlocutors’ recognition of the type of Ritualized Situation they are in will bring the associated set of Normalizing Worlds to prominence. As we’ll see below, these worlds brought to prominence will constrain the modal background for deontic modal utterances in Ritualized Situations.

**4. Discourse and Domain Goals**

 Successful discourses, those in which communication occurs, are organized into coherent structures. Discourse Goals are a fundamental source of coherence. These are the joint goals of the discourse itself. Discourses are organized by overall and sub-strategies for realizing overarching Discourse Goals.[[12]](#footnote-12) One role Discourse Goals play in modal interpretation is in determining a flavor of modality. Consider again

1. Sobel must be in his office.

What determines whether (1) takes an epistemic or a deontic reading? This will depend upon the context’s Discourse and Domain Goals. Are we looking for Sobel? Are we settling a question of what he is to do, given his teaching commitments? (1) will take different readings, depending on which of these goals is active.

 This suggests that whether a modal is deontic is a feature of its use: Deontic modals will be those which serve as answers to deontic questions. Our focus will be on deliberative and evaluative deontic questions. Deliberative questions are questions about what an agent should, must, or may do the answers to which are to help settle on a course of action. In other words, they are subquestions which serve to address the larger question of what an agent is to do. Answers to purely evaluative questions, in contrast, have no such practical upshot. Instead, those answers assess some state of affairs along some measure of ideality. To see the difference, consider first a doctor who hands a patient a prescription while saying

(5) You have to/should take this.

This is a deliberative use, identifying the course of action necessary to improve the patient’s health. Now consider a researcher studying the global distribution of food resources. Imagine she concludes,

(6) There should be less famine than there is.

(6) doesn’t settle on a course of action. Rather, it represents a possible state of affairs, that existing food resources are more equitably distributed and there is less famine than there actually is, as being more ideal than the actual distribution.[[13]](#footnote-13)

As we’ll see below, Discourse Goals also have a role to play in determining a modal’s domain. Given this, we need to say something about how Domain and Discourse Goals get added to conversational scoreboards. Since our examples involve assertions and assertions are answers to questions, we will focus on Discourse Goals that are questions. First, a question may be added to the scoreboard by being explicitly posed. But even when this is so, part of a question may be implicit, for example, when a shop assistant asks, “may I help you?” There are at least a couple of ways an implicit question may be added to a scoreboard. Since a survey of all such mechanisms is not the topic here, I’ll focus on only one such way. Perhaps the most puzzling kind of case is when an implicit question is registered prior to discourse. One way this can happen is when a question is part of the shared background presuppositions in a Ritualized Situation, as when a patient visits a doctor’s office. In such situations, it is presupposed that patients seek medical advice in order to improve their health. This makes the question “given the circumstances, what should the patient do to improve her health?” of immediate concern in the discussion between patient and doctor. Their shared background presuppositions about what type of situation they are in and about the Normalizing Generalizations that govern such situations puts this question on the scoreboard for their conversation before their conversation even begins.

We can test this claim by seeing which sorts of questions and assertions are felicitous discourse-initially. If this question is implicitly on the scoreboard prior to discourse, then assertions that serve to answer it and subquestions the answers to which would help answer that implicit question, should all be felicitous discourse-initially. In contrast, questions and assertions which don’t help answer that question should be infelicitous. This is what we find.

To see this, consider the following range of a doctor’s discourse-initial speech acts on first encountering a patient in an examination room.

(7) “What seems to be the trouble today?”

(8) “This is bad. It looks like you’ve got cellulitis.”

(9) [After examining the patient and handing them a prescription] “You have to/should

 take this” (This is (5) repeated.)

(10) “Do you play piano?”#

(11) “Our break room is comfortable.”#

(7)’s felicity is explained by its being a subquestion the answer to which would provide information relevant for answering an overarching question about how to promote the patient’s health. (8) provides information relevant for answering that overarching question. (9) answers that overarching question. Moreover, it is not felicitous unless it is interpreted as such. Finally, (10)’s infelicity is explained by its answer’s irrelevance for promoting patient outcomes. Similarly, (11) is infelicitous because irrelevant for pursuing that aim. Together, this suggests that the joint recognition of which Ritualized Situation interlocutors are in can add a question to the conversational scoreboard, even prior to discourse.

 Notice that the needed values for *f* and *g* in (9) are here supplied by the Discourse Goal. To be an answer to a question about what a patient should or must do to improve her health, given her options, a deontic modal claim must have a value for *g*(w)which ranks her options in accordance with how well they improve her health.[[14]](#footnote-14) The features of her circumstances that determine those options provide the value for *f*. More generally, a should- or must-question will not be deontic unless it is relative to some standard of ideality, provided, for example, by an agent’s preferences or goals or by the requirements of morality. And what is ideal at a world of evaluation *w* will depend upon *w*’s features.[[15]](#footnote-15) This suggests that deontic questions are themselves generally relative to values for *f* and *g*. Putting these considerations together, we now have one initial answer to the question of how deontic modal propositions are determined as a function of the context of utterance discourse-initially. Ritualized Situations can add a deliberative or evaluative discourse goal to a conversational scoreboard. And that deontic discourse goal constrains the range of propositions that can count as answers to it by supplying values for *f* and *g*.

Many situations in which deliberation or evaluation take place are Ritualized. Deliberations about how to treat a patient or how to extinguish a fire are Ritualized. Assessing someone’s record—an employee’s or a student’s—are Ritualized Situations in which evaluations take place. In each case, what these situations normally have in common will make prominent the circumstances and ideals which constrain deliberative and evaluative answers to deontic questions.

**5. Discourse Coherence Relations and Context-sensitivity**

*Discourse Coherence Relations*

Discourse relations are structures that organize a set of utterances into a coherent whole. As such, they obtain between utterances across a discourse. Here, our central concern is with a type of Cause-Effect relation. To see the effect such relations have on discourse, consider first *Explanation* relations. To illustrate, consider the contrast between the following pair:

(12) John took a train from Paris to Istanbul. He has family there.

(13) John took a train from Paris to Istanbul. He likes spinach.?[[16]](#footnote-16)

The discourse in (12) is felicitous because there is a coherent relation between the two sentences, namely, the second explains the first. (13), in contrast, is difficult to interpret because there seems to be no clear, coherent relation between the first and second sentences. One marker of an Explanation relation is the ability to felicitously connect sentences with “because”, as we find in (12), but not (13).[[17]](#footnote-17)

Explanation relations have their own effect on the scoreboard. In (12), the consecutive acceptance of both utterances adds that John’s having family in Istanbul explains his traveling there. Further evidence for this claim is provided by follow ups that target that relation, as in (12a).

(12a) Sure. But that’s not why he traveled there.

Kehler (2002) defines all Cause-Effect relations in terms of *normality*.[[18]](#footnote-18) Because it is presupposed that visiting family is a ‘normal’ reason for travel, the second sentence is interpreted as providing an explanation for the first. The generalizations that underwrite Cause-Effect relations are Normalizing Generalizations in my sense. In order for a Cause-Effect relation to have its characteristic effect on the conversational scoreboard, that scoreboard must already register the Normalizing Generalization that supports that relation.[[19]](#footnote-19) In (12), for example, the information that supports the explanatory connection must serve as a presupposition of the Explanation relation.

We can test this claim for (12) using von Fintel’s test. To do this, we see whether the Normalizing Generalization “people travel to visit their families” can be targeted with a “hey, wait a minute” follow up. And it can.

(12b) Wait a minute. You think people travel to visit their families? Not in my

 experience. A lot of people are estranged from their families.

Consider now an example of a different Cause-Effect relation, the *Result* relation.

(14) George is a politician. Therefore, he’s dishonest.

When two utterances stand in the *Result* relation, the second in some sense follows from the first. While “therefore” is an indicator of a Result relation, its appearance is not necessary for the relation to obtain. Three features of the Result relation will play a role in our discussion of deontic modals. First, like in the case of Explanation relations, Result relations presuppose the information that underwrites them. (14), for example, presupposes the Normalizing Generalization that politicians are dishonest.[[20]](#footnote-20) Second, in a Result relation the content of the first utterance is represented as a consideration that inferentially justifies the acceptance of the content of the second. When both utterances are accepted, this justificatory relationship is also registered on the scoreboard. Finally, putting these two considerations together suggests that the presupposed information together with the content of the first utterance are jointly treated as considerations which justify the acceptance of the content of the second. This information too is registered on the scoreboard.

 These claims can also be tested using von Fintel’s test.

(14a) Hold on. Why assume politicians are a particularly dishonest group?

(14b) Wait a minute. Why think George’s being a politician is a reason to think he’s

 dishonest?

These features of Result relations will prove significant in our discussion of deontic modals below. In section 5, I’ll suggest that utterances of modal sentences used deontically presuppose the considerations that inferentially justify them and that this presupposition has a role to play in determining modal interpretation. But first, we need to discuss recent work on discourse relations and modals more generally.

*Discourse Coherence Relations and Modals*

Una Stojnic (2021), drawing in part on the work of Craige Roberts (1989) and Mathew Stone (1997), argues that discourse relations have a role to play in determining modal interpretation. To begin, consider the phenomenon of modal subordination. Here’s an example.

(15) Suppose a wolf walked in. It would eat you first.[[21]](#footnote-21)

Modal subordination is a phenomenon whereby a set of possibilities introduced in discourse constrains the domain of a modal in subsequent discourse. Stojnic and Stone each argue that modal subordination involves a type of anaphoricity. In (15) the set of possibilities introduced in the first sentence constrains the domain of the modal in the second to those possibilities in which a wolf walks in. What underwrites this in (15) is a Narration relation between the first and second sentence. In such a relation, subsequent discourse continues to narrate a series of events begun in prior discourse.

To model modal subordination, Stojnic proposes that scoreboards register a ‘stack’ of possibilities ordered by conversational prominence.[[22]](#footnote-22) What suppositions like the first sentence in (15) do is add what’s supposed to the most prominent position in the stack. The domain of the modal in subsequent discourse is then constrained by the possibilities in that most prominent position.

Not all modal domains are constrained by prior discourse. Stojnic and Stone each argue that, like pronouns, modals exhibit referential or deictic uses in addition to anaphoric ones. Here’s Stone’s (1997) example drawn from Stojnic 2021:115.

(16) (Looking at a high-end stereo in an electronics store) My neighbors would kill me.

According to Stojnic, the modal in (16) has its domain restricted by a set of possibilities made prominent “in the speech situation”.

“[(16)] doesn’t mean that the neighbors would kill the speaker unconditionally, come what may; they would do so only provided that the speaker buys the stereo in question.”[[23]](#footnote-23)

Assuming this is correct, how does this speech situation make *that* set of possibilities prominent? Why, for example, does the speech situation not make prominent the possibilities in which the speaker steals, rather than buys the stereo?

 Using the “therefore” test, we could see the set of possibilities in which the speaker buys the stereo standing in a Result relation to those in which his neighbors kill him. Prima facie, that would provide an explanation for why the possibilities in which the speaker buys the stereo constrain the domain of the counterfactual. The relevant mechanism would parallel the way the Narration relation explains the modal subordination in (15).

 Passing the “therefore” test can’t explain why this speech situation should make the buying-possibilities uniquely prominent, however. After all, the possibilities in which the speaker steals the stereo and those in which his neighbors kill him could equally stand in a Result relation. Part of the puzzle here is that, unlike in (15), the possibilities which stand in a discourse coherence relation to the modal in (16) have not been explicitly put on the scoreboard. Somehow, they must already be there, prior to the interpretation of the latter.

 I suggest that the restricting possibilities made prominent in the speech situation in (16) are background presuppositions about what the world is like, just as in the case of Explanation relation exhibited in (12) and the Result relation exhibited in (14). Some of those presuppositions are Normalizing Generalizations. Window shopping is a Ritualized Situation. People who window shop usually spend time looking at items they would like to own. It is more common to own an object by purchasing it than stealing it. People who enjoy high-end stereo equipment enjoy music and those who enjoy music sometimes enjoy playing it loudly. Few neighbors tolerate loud neighbors.

The explanation for why the possibilities in which the speaker buys rather than steals the stereo are made prominent in this speech situation, then, is that it is already presupposed that people tend to buy rather than steal their possessions. These possibilities (together with the others presupposed, including that they are looking at high-end stereo equipment), in turn, stand in a Result relation to the counterfactual: [Were they to obtain], the speaker’s neighbors would kill him.[[24]](#footnote-24)

Here, too, these claims can be tested by seeing which follow-ups are felicitous. Consider, for example,

(16a) No, they wouldn’t. You’re too responsible to play it loudly.

(16b) Yeah, you would play it real loud, wouldn’t you?

(16c) No, they wouldn’t. Your neighbors are too chill to care if you played it loudly.

(16a) and (16b) each target a presupposition of the Result relation: that the speaker would play the stereo loudly. (16c) targets the presupposed applicability of the generalization that neighbors do not tolerate loud noise.

 In addition, consider the contrast between,

(16d) Sure. *If* you bought it. But you’re not going to buy that stereo, are you?

(16e) Sure. *If* you stole it. But you’re not going to steal that stereo, are you?#

In contrast to (16d), (16e) sounds odd or surprising. That’s because (16d), but not (16e), targets a presupposition of the counterfactual.

 Finally, a follow-up can felicitously target the Result relation itself.

(16f) Well, sure. But not for that reason. Your neighbors already hate you.

Spelling this all out a bit,

1. The counterfactual in (16) stands in a Result relation to the set of considerations which inferentially support it.
2. These considerations are registered on the scoreboard prior to discourse in the form of a set of background presuppositions.
3. Those presuppositions are shared due to interlocutors’ mutual understanding of the type of Ritualized Situation they are in.
4. Given the Normalizing Generalizations that govern situations of that type, these presuppositions will include that, if the speaker were to own the stereo, he would own it by purchasing it.
5. These presuppositions also constrain the domain of the modal. As Stojnic observes, the speaker’s neighbors wouldn’t kill him come what may, but only under the assumption that he buys the stereo and plays it loudly.

 As we’ll now see, these features of this example, the presence of a Result relation, of a Ritualized Situation, and of Normalizing Generalizations, also have a role to play in domain determination for deontic modals.

**6. Deontic Modals and Context-sensitivity**

*The Proposal*

 Here we’ll start with the idea that these features, as well as Discourse Goals, have a role to play in deontic modal interpretation. Later we’ll explore evidence supporting the idea that the presence of a Result relation is required for such interpretation.

 *Discourse Goals*

 First, recall from section 4 the role Discourse Goals play in determining deontic propositions. As demonstrated by,

1. Sobel must be in his office,

Discourse Goals have a role to play in determining whether a modal sentence takes a deontic or epistemic reading. We’ve seen that there are at least two types of deontic Discourse Goal, namely, answering deliberative and evaluative questions. Deliberative questions, recall, are questions about what an agent should, must, or may do the answers to which are to help settle on a course of action. Answers to purely evaluative questions, in contrast, have no such practical upshot. Instead, their answers assess some state of affairs along some measure of ideality.

 We’ve also seen that both types of deontic question have values for *f* built into them. Deliberative questions are relative to an agent’s options. Those options are relative to her circumstances. Similarly, evaluative questions are relative to the states being assessed. Where those states fall on some measure of ideality will be relative to the features of those states—what circumstances they are alike and unalike with respect to. Further, deontic questions also have standards for ideality built into them. What should the doctor prescribe, in order to promote her patient’s health? How much famine should there be, relative to the goal of minimizing famine? In these ways, deontic questions determine readings of the deontic modal statements that serve as their answers by supplying values for *f* and *g*.

 Since deontic questions play a crucial role in this account of how deontic propositions are determined in contexts, a story about how deontic questions are added to the scoreboard is required to complete that account. Section 3 has already provided an answer for the most puzzling type of case—implicit questions registered prior to discourse. Questions can be among the presuppositions registered prior to discourse in Ritualized Situations. Presupposed questions are those accepted for conversational purposes as guiding the discourse. As we’ve seen, many situations in which deliberation or evaluation take place are Ritualized. One example has already been discussed. Patient visits to doctors are Ritualized Situations typically governed by Normalizing Generalizations. Patients visit doctors to seek medical advice. They seek medical advice to improve their health. These generalizations put Domain and Discourse Goals on the scoreboard in the form of presuppositions. The question presupposed is not ‘what must/should/may the patient do simpliciter?’ but ‘what must/should/may the patient do to improve her health, given her circumstances?’

 *Discourse Relations*

 We’ve just seen that deontic questions are posed against a background of presuppositions regarding circumstances and ideals and that these may be supplied even prior to discourse in Ritualized Situations. As we’ll now see, drawing on the lessons from section 5, those presuppositions stand in Result relations with the deontic answers to those questions.

 To see this, first recall some of the central features of Result relations. Result relations are relations of inferential justification that presuppose the Normalizing Generalizations that underwrite them.[[25]](#footnote-25) Putting these together, in a Result relation, a Normalizing Generalization and a proposition, perhaps expressed, perhaps presupposed, inferentially justify a proposition. The two examples, reiterated below, illustrate each of these cases respectively.

(14) George is a politician. Therefore, he is dishonest.

(16) [I bought the stereo]. My neighbors would kill me.

 Now consider again the doctor who, upon completing her examination, hands her patient a prescription saying,

(5) You have to/should take this

In addition to the Normalizing Generalizations mentioned above, it is presupposed that the physician has made her examination and correctly diagnosed the patient’s condition. These together inferentially justify (5). In other words, they and (5) stand in a Result relation.

 As with (16), here too we find evidence for the presence of these presuppositions from which follow-ups are felicitous and infelicitous. Here the patient may respond,

(5a) Oh, I’m not here because of that rash. I’m looking for pain medication.

And a consulting physician may say,

(5b) Wait a minute. You didn’t check the patient’s blood pressure.

Both follow-ups target elements of the presupposed inferential basis for (5). (5a) targets the presupposition that the patient is there to treat the condition the doctor has diagnosed, while (5b) targets the presupposition that the doctor’s diagnosis is correct.

 Finally, the Result relation itself may be the target of a follow-up. To see this, note that a consulting physician may also reply to (5) with

(5c) You can’t conclude that. You haven’t yet checked the patient’s blood pressure.

Putting these considerations together, the proposal here is that conversational scoreboards representing the contexts in which deontic modal sentences are asserted felicitously must meet several conditions. First, they require a deontic question under discussion. Deontic questions are relative to a modal base, *f*, and ordering source, *g*. They don’t have the form *what must/should/may be the case similiciter?* They have the form *what must/should/may be the case, given a set of circumstances and some measure of ideality?* Second, the assertion of a deontic modal sentence carries a Result relation requirement. That requirement is met when some Common Ground propositions inferentially support that question’s answer. Third, those considerations will be the propositions that are the values for *f*(w) and *g*(w).

 This can be modeled in the general framework of Stojnic (2021). To do so, we add the hypothesis that questions are a part of a conversation’s focus when they are under discussion. They make the Common Ground propositions that are relevant for their answers a part of conversational focus. Propositions which are of current conversational concern are those that are most prominent. So, the subset of the Common Ground that inferentially support answers to deontic questions will make up the most prominent possibilities in a context. Those possibilities in turn make up the modal’s domain.

*The Evidence*

In section 4, we saw some evidence that the assertion of a deontic modal sentence presupposes a deontic question and that deontic questions are relative to the propositional values for *f*(w) and *g*(w). We’ve also seen, in the extended discussion of (5), reason to think in that case that a Result relation obtains between those propositions and (5). What we have yet to see is reason to think that such a Result relation is always present in the case of the felicitous assertion of a deontic modal sentence.

 To locate evidence for this claim, let’s start by considering evidence for similar proposals in the literature. Stone’s (1994) proposal for epistemic *must* draws on Palmer’s intuition that “the notion of deduction or inference from known facts is the essential feature of [epistemic] *must*.”[[26]](#footnote-26) He develops this idea by suggesting that epistemic *must* requires a salient argument or generalization, A, which justifies the modal’s prejacent. Rett (2016) generalizes the core of Stone’s account, arguing that both epistemic and deontic modal utterances carry an inferential requirement. On her proposal, the truth-conditions for an epistemic or deontic use of *must* are only defined when the context includes a set of considerations which inferentially justify the modal’s prejacent. While similar, the Result requirement for deontic modals proposed here differs in two respects. First, following Stone, on Rett’s proposal, the modal picks up the argument or generalization on which it depends anaphorically from some element (a ‘kernal’) of the Common Ground. My proposal (following Stone (1997) and Stojnic (2021)) is a requirement on both anaphoric and deictic uses, as illustrated in (5).Second, while on Stone’s and Rett’s proposals, the salient considerations support the prejacent, on my Result requirement, they support the entire modal claim. To explore the plausibility of a Result requirement, let’s first see whether it fits with Rett’s data. Then we’ll consider whether there is evidence that supports such a requirement over Rett’s and Stone’s.

 Two sources of evidence Rett cites are (i) that the truth-value of an epistemic *must* claim can vary, depending upon which generalization is salient and (ii) that an epistemic *must* claim can be false, even when its prejacent is true. Here is her example.

(17) a. A1: A (recently) struck match is a hot match (unless it was wet when struck).

 b. A2: Something that has (recently) been boiled is hot and wet.

Consider a context in which its presupposed that the match has been boiled then struck.

(18) The match must be hot

will strike us as false if A1 is presupposed, true if A2 is.

To illustrate (ii), consider now the following exchange.

(19) A: The match was struck, so it must be hot.

 B: Well, no. It is hot because it was boiled. It didn’t light.[[27]](#footnote-27)

Here A’s claim is defeated because the considerations that support it, A1, are defeated. This is so even though the modal’s prejacent is true.

 Rett also notes that, in the case of epistemic *must*, an inferential requirement passes von Fintel’s “hey, wait a minute” test for presuppositions. Here’s her example.

(20) A: (Watching people enter with wet umbrellas) It must be raining outside.

 B: Hey, wait a minute. They’re washing the roof right now. So, you can’t conclude

 that for sure.

As she notes, deontic *must* also passes von Fintel’s test for the presence of presupposed inferential support. To see this, imagine our doctor is accompanied by a consulting physician. As before, after examining the patient’s skin condition, she hands her a prescription saying

(5) Doctor: You have to/should take this [medication NN].

The consulting physician may reply:

(21) Consultant: Hey, wait a minute. You can’t conclude that—you don’t know what

 other medications the patient is taking.

Here are two examples illustrating (i) and (ii) for deontic *have to* or *must*. Consider first truth-value dependence on a salient argument.

(22) A3: Medication NN ceteris paribus cures condition XX and patient has XX

 A4: Medication NN ceteris paribus exacerbates condition YY and patient has YY

Our truth-value judgment for (5) depends upon whether A3 or A4 is presupposed. To find a case in which the modal is false, while the prejacent is true, consider

(23) Doctor: The patient has XX, so she must take NN.

 Consultant: Well, no. You can’t conclude that. MM also cures XX. She’s going to

 take NN because that’s what you’ll prescribe.

 Finally, Rett observes that data from inversion exclamatives also supports an inferential requirement. Exclamatives are exclamations with non-declarative form. Inversion exclamatives are those in which subject and auxiliary are inverted. As she notes, inversion exclamatives are infelicitous when the speaker’s strongest evidence for their content is inferential. While some modals permit inversion, deontic and epistemic *must* and *may* do not. Here are some of Rett’s examples:

(24) a. (Wow.) Can Sue dance! *Ability*

b. (Wow.) Would Sue like to win the race! *Future subjunctive.*

(25) a. (Wow.) Must/may Sue be the murderer!# *Epistemic.*

 b. (Wow.) Must/may Sue complete the assignment on time!# *Deontic.[[28]](#footnote-28)*

Next, notice that a Result requirement also fits with Rett’s data. First, passing von Fintel’s “hey wait a minute” test in (21)shows that inferentially supportive considerations are presupposed in the case of deontic *must* claims. It does not distinguish between the claim that those considerations support the prejacent and the claim that they support the entire modal claim. This is also true in the epistemic case, (20). Likewise with the data from inversion exclamatives. That datum also supports the hypothesis that there is some kind of inferential requirement on epistemic and deontic *must* and *may*. It does not support the more specific claim that what requires inferential support is the prejacent as opposed to the entire modal claim. This is true in both the deontic and epistemic cases.

 Further, that the truth of a deontic *must* claims varies depending upon which supporting generalizations are presupposed, as we saw in (22) and (5), equally fits with the idea that those generalizations support the entire modal claim and not merely the prejacent. This is also true of the epistemic case, ((17) and (18)).

 Finally, that a deontic modal claim may be false, while the prejacent is true when the supporting considerations have been defeated does not suggest that those considerations support the prejacent. Indeed, the failure of those considerations is a reason that the doctor can’t conclude that the patient must take NN in (23). Their defeat does not speak to the question of what the patient will or won’t do. This patterns with the epistemic case. The boiling of the match in (19) defeats the claim that the match must be hot, not the claim that it is hot. This is some reason to think those considerations support the entire modal claim, not the prejacent.

 So far, we have seen that Rett’s evidence for her proposal is at most equally good evidence for the claim that both deontic and epistemic modals carry a Result requirement. The next question is whether there is any further data that more clearly supports a Result requirement over Stone’s and Rett’s inferential requirements. One such datum are cases in which the modal is true when the prejacent is false. In the deontic case, these are easy to find. Here’s one example, adapted from Rett: Bill and Sue are driving across country tomorrow. Only Sue has a driver’s license.

(26) A: “Bill doesn’t have a license, so Sue must do the driving tomorrow.”

 B: “You’re right. Given what the laws require, she must. But she’s not going to.

She hates driving.”

Here the salient considerations—that Bill and Sue are traveling by car and that only Sue is legal to drive—support the modal and are affirmed by B’s follow up even when the prejacent—that Sue will drive—is defeated. This suggests that those considerations support the entire modal, not the prejacent.

 On the assumption that epistemic and deontic *must* pattern together, it would be good to find a parallel epistemic case. One challenge here is that some argue that *must ϕ* entails *ϕ*.[[29]](#footnote-29) If correct, there will not be such a case. However, perhaps this connection between *must ϕ* and *ϕ* is a defeasible generalization rather than an entailment. Here is one example suggesting this. Imagine we are debating what practical rationality requires in cases in which our evidence is very misleading. Does rationality require that our actions accord with the truth or with our evidence? In such a context, the following supposition sounds perhaps a bit odd, but not incoherent.

(27) Suppose Sobel must be in his office, but he’s not. Is it rational to check?

An epistemic parallel to (26), then, might be the following: Imagine B knows where Sobel is, but A does not. B is helping A work out a good guess as to where he might be on the basis of what A knows.

(28) A: Sobel must be in his office.

 B: You’re right. Given your information, he must be. But he’s not. He’s skipping

 his office hours.

 Some purely evaluative uses also support a Result over a prejacent-supporting inferential requirement. Consider again,

(6) “There should be less famine than there is.”

Recall that such uses may take unrealistic modal bases, as in (6). Here a non-actual possibility—that there is less famine than there actually is—is represented as more ideal than the actual one. The considerations presupposed—that food could be more equitably distributed, that the planet is able to sustain the production of more calories, generalizations about how many calories are needed to sustain human life—support the entire modal claim. They do not and cannot support the otherwise incoherent prejacent, *there is less famine than there is*.

**7. Conclusion**

Here I’ve argued, first, that the content of a deontic modal assertion is determined in context by the deontic question it answers. These questions are themselves relative to parameter values for *f* and *g*, values the modal must inherit to serve as an answer. We’ve seen some evidence for these claims in the results of the presuppositions tests discussed in section 4. Second, I’ve argued that the values for *f*(w) and *g*(w) are propositions which inferentially support the entire modal claim. This is captured by the Result requirement on deontic modals. On that requirement, the felicitous assertion of a deontic modal statement requires that elements of the Common Ground inferentially support its content. In section 6, we’ve seen that the hypothesis that there is such a requirement on both deontic and epistemic modals can be given on grounds quite independent of the other details of the proposal here.

 The greatest challenge for such an account is to explain the felicitous, discourse-initial use of deontic modal sentences. In such cases, there is no prior discourse to register a deontic question or supportive considerations on the conversational scoreboard. One common type of case in which this can occur are Ritualized Situations in which deliberation or evaluation occurs. As our presupposition tests suggest, in such situations, deontic questions are part of what is presupposed between interlocutors when they each recognize the type of situation they are in. These questions make their propositional values for *f*(w) and *g*(w), also presupposed in such contexts, prominent. Together, those propositions determine the modal domain in the usual way. In this way, appeal to Ritualized Situations can explain the most puzzling case of modal interpretation for a contextualist—discourse-initial uses.

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1. See, for example, Cariani, Kaufmann, and Kaufmann (2013), Cariani (2016), Rett (2016), and Stojnic (2021). [↑](#footnote-ref-1)
2. There may be reasons separable from the issues here, to hold that it is something more fine-grained than possibilities, such as situations, that modals quantify over. We may set this issue aside. [↑](#footnote-ref-2)
3. Kratzer 1991, 2012. [↑](#footnote-ref-3)
4. Kratzer 1991, 2012. [↑](#footnote-ref-4)
5. These truth-conditions don’t distinguish between weak and strong necessity modals. However, how best mark to that distinction is not at issue here. [↑](#footnote-ref-5)
6. Stalnaker (2002). [↑](#footnote-ref-6)
7. von Fintel 2004: 271. [↑](#footnote-ref-7)
8. Roberts (2004, 2012) argues that prosodic stress has a role to play in determining which question will be implicitly put on the scoreboard. When the stress is on the subject as in (4), for example, the implicit question will be one denoting the set of answers that differ only in the replacement of the subject. [↑](#footnote-ref-8)
9. Many thanks to Ishani Maitra for discussion of this test. [↑](#footnote-ref-9)
10. Kehler 2002:11, my emphasis. [↑](#footnote-ref-10)
11. What is it for something to normally be the case? This may vary to some extent with conversational purposes. For concreteness, I’ll assume that it is a statistical notion requiring a comparison class. For example, *that politicians are dishonest* may underwrite the explanation in

 George is dishonest. He’s a politician

even if most politicians are honest. Here being a politician increases the likelihood of being dishonest, even if the likelihood of being dishonest, given one is a politician is low. [↑](#footnote-ref-11)
12. Roberts (2012). [↑](#footnote-ref-12)
13. For more on this distinction, see Dowell (*forthcoming*). [↑](#footnote-ref-13)
14. In the classical framework, an option will be represented by the set of worlds *w’* in the modal background alike with respect to which action-option an agent performs in w’. These options may be ranked by an appropriate value for *g*(w), for example, by ranking each world *w’* by the extent to which the action an agent performs in *w’* fulfills her commitments in the world of evaluation, *w*. [↑](#footnote-ref-14)
15. This will be so even relative to a priori and necessary moral requirements. For example, if it turns out that some form is consequentialism is true, what is best in *w* will depend upon the features of *w* that determine which actions and policies cause which outcomes. [↑](#footnote-ref-15)
16. Kehler 2002: 2. [↑](#footnote-ref-16)
17. Ibid.: 21. [↑](#footnote-ref-17)
18. Ibid. 21-22. [↑](#footnote-ref-18)
19. There are exceptions to this claim, for example, when events have unusual explanations. To illustrate, consider an unusual conversational context in which two close friends are discussing the recent travels of a third friend, John. The basis for their friendship is their shared love of good food and willingness to travel to indulge their tastes. When they meet, they regularly trade information where to find the finest, freshest ingredients. They have recently learned of a farmer in Istanbul who has a secret which allows him to grow highly coveted spinach, only available locally. In that case, the second sentence in (13) is easily read as explaining the first, even though the explanation does not depend upon some defeasible generalization about what is typically the case.

 More generally, what gives rise to an Explanation or some other Cause-Effect relation is in part supporting background presuppositions. Often shared background presuppositions will include Normalizing Generalizations. But, perhaps particularly with interlocutors well-known to each other, those presuppositions may be more particular and specialized. [↑](#footnote-ref-19)
20. See also Kehler 2002:21. [↑](#footnote-ref-20)
21. Stojnic 2021:114 as drawn from Roberts (1989). [↑](#footnote-ref-21)
22. Ibid. 113-114. [↑](#footnote-ref-22)
23. Ibid. 115. [↑](#footnote-ref-23)
24. This is so at least in out of the blue contexts in Ritualized Situations. Specific presuppositions about the speaker’s situation (e.g., what his neighbors are like) may serve as the needed background presuppositions in cases in which interlocutors are familiars. [↑](#footnote-ref-24)
25. But see footnote 19 for exceptions to this generalization. [↑](#footnote-ref-25)
26. Palmer 1986:59. [↑](#footnote-ref-26)
27. Rett 2016:208. [↑](#footnote-ref-27)
28. Though it does not undermine Rett’s argument, it is interesting to note that metaphysical *must* and *may* seem to pattern in the same way that epistemic and deontic *must* and *may* do. Consider, for example,
 #(Wow.) Must water be H2O!

and

 #(Wow.) May tigers be albino!

This is perhaps some reason to think that these metaphysical modals also carry an inferential requirement. [↑](#footnote-ref-28)
29. See, for example von Fintel and Gillies (2010). [↑](#footnote-ref-29)