

# Weak and Strong Necessity Modals

Or: On linguistic means of expressing a “primitive concept OUGHT”\*

Alex Silk  
a.silk@bham.ac.uk

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“‘Ought’ and ‘Must’ — they are contemptible auxiliaries.”  
George Eliot†

## Abstract

This paper develops an account of the meaning of ‘ought’, and the distinction between weak necessity modals (‘ought’, ‘should’) and strong necessity modals (‘must’, ‘have to’). I argue that there is nothing specially “strong” about strong necessity modals per se: uses of ‘Must  $\phi$ ’ can be given their familiar semantics/pragmatics, predicating the (deontic/epistemic/etc.) necessity of the prejacent  $\phi$  of the actual world (evaluation world). The apparent “weakness” of weak necessity modals derives from their bracketing whether the necessity of the prejacent is verified in the actual world. ‘Ought  $\phi$ ’ can be accepted without accepting that the relevant considerations (norms, expectations, etc.) that actually apply, given the facts, verify the necessity of  $\phi$ . I call the basic general account a *modal-past approach* to the weak/strong necessity modal distinction (for reasons that become evident). Several ways of implementing the approach in the formal semantics/pragmatics are critically examined. The proposed account systematizes a wide range of linguistic phenomena: it generalizes across flavors of modality; it elucidates a special role that weak necessity modals play in discourse and planning; it captures contrasting logical, expressive, and illocutionary properties of weak and strong necessity modals; and it sheds light on how a notion of ‘ought’ is often expressed in other languages. These phenomena have resisted systematic explanation. Examining the weak/strong necessity modal distinction sheds light on interesting general issues concerning context-sensitivity, mood, grammaticalization, attitude expression, and performativity. In closing I briefly suggest how clarifying distinctions among necessity modals may improve theorizing on broader philosophical issues.

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†Mary Garth, in *Middlemarch*, Bk. 2, Ch. 14. Shamelessly modified from the original.

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# 1 Introduction

A notion of ‘ought’ is central in many areas of philosophical discourse. “A primitive ought,” Gibbard tells us, “is the basic conceptual atom that gives normative concepts their special character” (GIBBARD 2006: 738). Yet, historically speaking, surprisingly little attention has been paid among philosophers to the distinctive features of the meaning and use of ‘ought’. ‘Ought’ is often treated as relevantly equivalent to a range of expressions of obligation and necessity. The eponym of Gibbard’s Professorial Chair, Richard Brandt, observed as much half a century ago: “Philosophers often use the following expressions as approximate equivalents: ‘It is X’s duty to do A’; ‘It is obligatory for X to do A’; ‘It would be wrong for X not to do A’; and ‘X ought to do A’” (1964: 374). Here, more recently, is Åqvist:

[D]eontic logic... is the logical study of the normative use of language and... its subject matter is a variety of normative concepts, notably those of *obligation* (prescription), *prohibition* (forbiddance), *permission* and *commitment*. The first one among these concepts is often expressed by such words as ‘shall’, ‘ought’ and ‘must’, the second by ‘shall not’, ‘ought not’ and ‘must not’... (ÅQVIST 2002: 148)

There has been extensive work in descriptive linguistics on discourse differences among Åqvist’s “normative-concept-expressing” words. For instance, it’s common to distinguish categories of so-called “weak” necessity modals such as ‘ought’ (‘should’, ‘be supposed to’) and “strong” necessity modals such as ‘must’ (‘have to’, ‘(have) got to’, ‘be required to’).<sup>1</sup> Even holding the reading of the modals fixed, ‘Ought  $\phi$ ’ can be followed by ‘Must  $\phi$ ’, but not vice versa:

- (1) a. I ought to help the poor. In fact, I must.  
b. I must help the poor. #In fact, I ought to.

(2a) is consistent in a way that (2b) is not.

- (2) a. I should help the poor, but I don’t have to.  
b. #I must help the poor, but it’s not as if I should.

There are also conversational differences. Informally:

To say that one ought to take a certain option is merely to provide a nudge in that direction. Its typical uses are to offer guidance, a word to the wise (“counsel of

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<sup>1</sup>See, a.m.o., SLOMAN 1970, LEECH 1971, HORN 1972, WERTHEIMER 1972, HARMAN 1975, LYONS 1977, WOISETSCHLAEGER 1977, WILLIAMS 1981, COATES 1983, JONES & PÖRN 1986, MCNAMARA 1990, PALMER 1990, 2001, BYBEE ET AL. 1994, MYHILL 1995, MYHILL & SMITH 1995, HUDDLESTON & PULLUM 2002, WERNER 2003, COPLEY 2006, VON FINTEL & IATRIDOU 2008, RUBINSTEIN 2012, WHEELER 2013. I focus on modal verbs; see VAN LINDEN 2012 on weak vs. strong modal adjectives.

wisdom”), to recommend, advise or prescribe a course of action... In contrast, to say that one must take a certain option is to be quite forceful. Its typical uses are to command, decree, enact, exhort, entreat, require, regulate, legislate, delegate, or warn. Its directive force is quite strong. (MCNAMARA 1990: 156)

An interesting question for a paper — not this one (cf. SILK 2015b<sup>2</sup>) — is to what extent insensitivity to linguistic differences among ‘ought’, ‘should’, ‘must’, ‘have to’, etc. may be a source of philosophical malaise.<sup>3</sup> Here I would like to confine my attention to matters narrowly linguistic: what ‘ought’ — the eponymous expression of Gibbard’s favored “primitive concept OUGHT” — itself means. I focus in particular on the distinction in “strength” between ‘ought’ — and its weak necessity modal kin — and strong necessity modals such as ‘must’.

Although there has been growing recent interest in the semantics of ‘ought’, accounts are typically developed in ways which bracket differences among necessity modals. Existing formal accounts of the weak/strong necessity modal distinction have often been developed piecemeal with an eye toward a narrow range of data. Adjudicating among rival theories can be difficult, if not premature.

The aim of this paper is to provide a more comprehensive theoretical investigation into weak and strong necessity modals. Building on previous work (SILK 2012, 2013d) I develop an account of the meaning of ‘ought’ and the distinction between weak and strong necessity modals. The account systematizes a wide range of semantic and pragmatic phenomena: it generalizes across flavors of modality; it elucidates a special role that weak necessity modals play in discourse and planning; it captures contrasting logical, expressive, and illocutionary properties of weak and strong necessity modals; and it sheds light on how a notion of ‘ought’ is expressed in other languages. These phenomena have resisted systematic explanation.

Roadmap: §2 presents core data illustrating the effects of standing contextual assumptions on the relative felicity of weak vs. strong necessity modals. The examples in this section highlight what I regard as the fundamental difference between the class of weak necessity modals and the class of strong necessity modals.

§3 presents the basic account of the weak/strong necessity modal distinction. The central ideas are these. There is nothing specially “strong” about strong necessity modals per se: uses of ‘Must  $\phi$ ’ receive the usual semantics/pragmatics, predicating the necessity of the prejacent

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<sup>2</sup>For shame (here and throughout).

<sup>3</sup>Gibbard hedges his bets: “Ewing’s point is not that the English word ‘ought’ exactly captures the notion he has in mind. The word often suggests merely the weight of one set of considerations among others — whereas Ewing has in mind an ought that is all things considered. The word ‘must’ might be better for his purposes and mine [!?!?!], but it has its own flaws: it suggests greater urgency than Ewing’s ought would have when factors in a decision nearly balance out” (GIBBARD 2012: 14–15). (More on !?!?! later.)

$\phi$  of the actual world (world of evaluation).<sup>4</sup> The apparent “weakness” of weak necessity modals derives from their bracketing whether the necessity of the prejacent is verified in the actual world. ‘Ought  $\phi$ ’ can be accepted without accepting that  $\phi$  is necessary (deontically, epistemically, etc.). Weak necessity modals afford a means of entertaining and planning for hypothetical extensions of the context in which certain considerations (norms, values, etc.) apply, without needing to commit that those considerations aren’t defeated.

§4 examines data concerning how weak necessity is expressed cross-linguistically to motivate several formal implementations of the more informal §3-account. For reasons that will become clear, I call this family of accounts a *modal-past approach* to weak necessity modals and the weak/strong necessity modal distinction. Though I focus primarily on one specific version of this approach, more thorough comparisons are called for. I argue that the proposed treatment of the cross-linguistic data improves on the treatment in VON FINTEL & IATRIDOU 2008. The account gives precise expression to the informal idea that ‘ought’ is weaker than ‘must’, and captures various ways in which ‘ought’, unlike ‘must’, patterns with past-marked modal forms.

§5 shows how the formal semantics from §4 helps explain several puzzles concerning entailingness and performativity with ‘ought’ and ‘must’. Examining these puzzles will lead us to attend to a second dimension along which modals differ, regarding their tendencies to be used in (what I’ll call) an “endorsing” vs. “non-endorsing” way.

§6 recaps distinctive features of the proposed account in comparison with main competing approaches in the literature, before examining one such alternative in greater detail: the “collective commitment” analysis developed by Aynat Rubinstein (2012; also 2014, PORTNER & RUBINSTEIN 2012, 2016). Drawing on the discussion of endorsing/non-endorsing use from §5, I argue that the weak/strong necessity modal distinction crosscuts Rubinstein’s distinction between modals that presuppose collective commitment (in Rubinstein’s sense) and modals that presuppose a lack of such commitment.

§7 concludes and raises directions for future research.

A word on terminology: For familiarity I follow the literature in labelling the modals such as ‘ought’ and ‘should’ as “weak necessity” modals, and labelling the modals such as ‘must’, ‘have to’, ‘(have) got to’ as “strong necessity” modals. The expressions in each family pattern with one another in linguistically distinctive ways. However, the terminology of “weak necessity” and “strong necessity” shouldn’t mislead. I am not assuming that uses of the modals in the ‘ought’-family invariably convey a weaker felt conversational force, that the modals express different “kinds” of necessity, that they have a structurally analogous semantics, that they comprise a scale of logical/quantificational strength, or even that they stand in a truth-

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<sup>4</sup>I treat ‘ $\phi$ ’, ‘ $\psi$ ’, etc. as schematic letters to be replaced with declarative sentences. For convenience I sometimes refer to the possible-worlds proposition expressed by ‘ $\phi$ ’ by dropping the single quotes, using ‘ $\phi$ ’ as short for ‘ $[[\phi]]^c$ ’, where  $[[\phi]]^c = \{w: [[\phi]]^{c,w} = 1\}$ .

conditional entailment relation. For instance, a claim such as that strong necessity modals truth-conditionally entail weak necessity modals, which truth-conditionally entail possibility modals constitutes a substantive empirical hypothesis on my terminology. Indeed we will see reasons for questioning each of the above claims.

## 2 ‘Ought’ and ‘must’ in context

Descriptive and theoretical research on modals has highlighted various conversational differences among necessity modals. This section focuses on one such difference, concerning the effects of standing contextual assumptions on the relative felicity of weak vs. strong necessity modals. (Hereafter I typically use ‘ought’ as my representative weak necessity modal, and ‘must’ as my representative strong necessity modal.)<sup>5</sup>

A primary goal of conversation is to share and coordinate our expectations, values, goals, and plans. Sometimes we assert propositions outright. We commit to settling on their truth for the remainder of the conversation. But sometimes we don’t wish to impose such a strong restriction on the future course of the conversation. We may want to propose that someone is obligated to do something but be unsure about whether there might be competing norms at play that could outweigh or cancel her obligation. Or we may want to proceed as if some proposition is true while remaining open to the possibility that our apparent evidence for it is misleading. I suggest that the role of weak necessity modals is to afford a means of making such proposals and expressing such states of mind.

Start with an epistemic case. Suppose we are working on an art project and I ask you where the colored pencils are. Normally you put them in the drawer with the crayons but sometimes you accidentally put them on the shelf. In this scenario it’s more appropriate for you to use ‘ought’ in responding to my question, as in (3).

(3) *Me:* Do you know where the colored pencils are?

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<sup>5</sup>See RUBINSTEIN 2012 and SILK 2012 for emphasis in recent theoretical accounts (see also SWANSON 2016b). Rubinstein doesn’t consider epistemic examples, and she has an alternative take on the data; I examine her account in §6. See WOISETSCHLAEGER 1977: ch. 5 and MCNAMARA 1990: ch. 3 for related deontic examples and prescient early discussion of contextual differences between ‘ought’ and ‘must’. For extensive discussions in descriptive linguistics, see the references in nn. 1, 42, 48.

For reasons discussed in §§5–6, it’s important not to substitute other strong necessity modals (e.g. ‘have to’) for ‘must’ in examples, unless indicated otherwise; speakers who find ‘should’ more natural than ‘ought’ may substitute ‘should’ for ‘ought’ throughout. Judgments concerning some of the examples, here and in subsequent sections, may be vague for some speakers and may vary given subtle changes in context. This is part of what needs to be explained. The positive account in this paper will crystalize the informal reactions described in this section. I will use ‘?’ to indicate that using the marked item is dispreferred; thus ‘?’ marks a weaker infelicity than ‘#’.

*You:* They ought to (/should/?must/?have to) be in the drawer with the crayons.

Suppose, alternatively, that we are looking for the colored pencils together, and you have seen something that leads you to conclude that they are in the drawer. Perhaps you noticed that they weren't on the shelf, and this is the only other place you think they could be. In this scenario it's more natural for you to use 'must', as in (4).

(4) *Me:* Do you know where the colored pencils are?

*You:* They must (/have to/?ought to/?should) be in the drawer with the crayons.

Its following from our evidence that the colored pencils are in the drawer depends on today not being one of the atypical days when you accidentally put the colored pencils on the shelf. Using the strong necessity modal 'must' is preferred if, and only if, you know that conditions are normal in this way. What is illuminating is that you can use 'ought' even if you aren't in a position to judge that they are. Accepting your 'ought'-claim doesn't require us to presuppose that your evidence is indefeasible.

Similarly, consider a deontic case (see n. 5). Suppose I am considering whether to fight in the Resistance or take care of my ailing mother. I mention that the value of family, which supports my helping my mother over my fighting, is important, and you agree. But the issue is admittedly complex, and we haven't settled whether there might be more important competing values. Sensitive to this, you may find it more appropriate to express your advice that I help my mother by using 'ought' than by using 'must', as in (5).

(5) *Me:* Family is very important.

*You:* I agree. You ought to (/should/?must/?have to) tend to your mother.

But if we settle that family is of primary importance, as in (6), it can become more natural to use 'must' and for us to accept that I have to help my mother.

(6) *Me:* Family is most important — more important than country.

*You:* I agree. You must (/have to/?ought to/?should) tend to your mother.

My having an obligation to help my mother depends on the value of family being more important (or at least not less important<sup>6</sup>) in my situation than any competing value. Using 'must' is preferred if it's settled that this condition obtains. Parallel to the epistemic case, what is illuminating is that you can felicitously use 'ought' to express your advice that I help my mother without assuming that this precondition for my having a genuine obligation is satisfied. Accepting your 'ought'-claim needn't require us to presuppose that the value of family is more important than other potentially competing values.

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<sup>6</sup>I will bracket potential complications concerning incomparabilities and irresolvable dilemmas.

Cases such as (3)–(6) highlight what I regard as the fundamental difference between the class of weak necessity modals and the class of strong necessity modals. It's typical to gloss epistemic notions of necessity as concerning what follows from one's evidence (knowledge, information), and deontic notions of necessity as concerning what is obligatory.<sup>7</sup> Yet we can accept your epistemic 'ought'-claim in (3) without settling that conditions are relevantly normal, and thus without settling that our evidence implies that the colored pencils are in the drawer; and we can accept your deontic 'ought'-claim in (5) without settling that family is the most important relevant value, and thus without settling that I have an obligation to help my mother. In this sense, accepting 'Ought  $\phi$ ' needn't commit one to accepting that  $\phi$  is necessary (epistemically, deontically, etc.).

Three remarks: First, whether 'ought' or 'must' is preferred "depends on context" in the sense of depending on whether certain preconditions for the prejacent to be necessary (in the above sense) are accepted: In (3)–(4), how you express your attitude toward the proposition that the colored pencils are in the drawer depends on your views about the (in)defeasibility of the relevant evidence; in (5)–(6), how you express your advice that I help my mother depends on the status in the context of the value of family vis-à-vis other potentially relevant values. This role of standing contextual assumptions on the relative felicity of 'ought' and 'must' has been inadequately appreciated in theoretical accounts (see n. 5 for notable exceptions).<sup>8</sup>

I said that 'ought' is preferred in contexts such as in (5) where it isn't settled that the precondition for me to have a genuine obligation is satisfied; yet it is worth observing that 'must' may be appropriate in certain contexts. If you can be presumed a normative authority on the issue and use 'must', I may accommodate by accepting that the value of family takes precedence. This isn't an isolated phenomenon. Suppose that Alice, a young teenager, is considering with her mother, Martha, whether to take the A train or the C train to a concert. The A train is quicker, but the C train is safer. Martha regards the safety of her child as paramount. Although the primacy of safety isn't common ground, Martha can felicitously say:

(7) You must take the C train, not the A train.

The (teleological) necessity of Alice's taking the C train depends on the goal of traveling safely taking priority over the goal of traveling quickly. Given Martha's authority in the context,

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<sup>7</sup>See, a.m.o., LYONS 1977, COATES 1983, PALMER 1990, 2001, SWEETSER 1990, BYBEE ET AL. 1994, VAN DER AUWERA & PLUNGIAN 1998, NUYTS 2001, HUDDLESTON & PULLUM 2002.

<sup>8</sup>For instance, the semantics for 'ought' in FINLAY 2009, 2010, LASSITER 2011, and SWANSON 2011 have no obvious mechanism for capturing this effect of context on uses of 'ought' vs. 'must'. VON FINTEL & IATRIDOU 2008 mentions a possibly relevant role for context (pp. 139–140), but the issue isn't investigated (I return to their account in §4). See RUBINSTEIN 2012: §2.2 for a similar critique of previous comparative and domain restriction approaches to weak necessity, along with extensive broader critical discussion. I examine Rubinstein's alternative take on conversational differences between 'ought' and 'must' in §6.



she expects Alice to accommodate her assumption this condition is satisfied. Such contexts notwithstanding — contexts in which the speaker doesn't have or doesn't wish to exercise the relevant authority — 'ought' will be preferred.

Second, I couched the main conclusion above by saying that accepting 'Ought  $\phi$ ' doesn't conventionally commit one to accepting that  $\phi$  is necessary (epistemically, deontically, etc.). This doesn't amount to the trivial claims that 'ought' is weaker than 'must', or that accepting 'Ought  $\phi$ ' doesn't commit one to accepting 'Must  $\phi$ '. One *might* analyze the examples by positing concepts of distinctive *kinds* of necessity, and explaining accepting 'Ought  $\phi$ ' as accepting that this weaker kind of necessity holds of  $\phi$ : one might posit and formalize a concept of weak epistemic necessity such that accepting in (3) that it's a weak epistemic necessity that the colored pencils are in the drawer doesn't require accepting that today is relevantly normal and the evidence implies that the colored pencils are in the drawer; and one might posit and formalize a concept of weak deontic necessity (weak obligation) such that accepting in (5) that I have a weak obligation to help my mother doesn't require accepting that the value of family isn't defeated. However, such a move isn't forced upon us. An alternative is to stick with the single familiar notions of necessity — e.g., understanding epistemic necessity in terms of following from a body of evidence, and deontic necessity in terms of being obligatory and following from a body of norms (n. 7) — and try saying that 'Ought  $\phi$ ' can be accepted without accepting that  $\phi$  is necessary, period. The aim of this paper is to examine the prospects for this latter approach. (We will return to comparisons with the former approach throughout the following sections.)

Third, the features of 'ought' and 'must' described above aren't specific to particular readings of the modals. An adequate account of the weak/strong necessity modal distinction should generalize across flavors of modality.

In saying that the uses of 'ought' and 'must' in (3)–(4)/(5)–(6) have the same type of epistemic/deontic reading, I am not assuming that the modals receive the same interpretation, stand in entailment relations, or are used with the same apparent force (see §1). For instance, in calling the uses of the modals in (3)–(4) "epistemic" I am not assuming that they are factive, that they determine a reflexive accessibility relation or modal base representing what one knows, or even that they convey the same kind of doxastic attitude toward the prejacent (contrast YALCIN 2016). What is important about the uses is that they both directly address the question of where the colored pencils are. Likewise in calling the uses of 'ought' and 'must' in (5)–(6) both "deontic" I am not assuming that they are "performative," impose obligations, or have the same directive force. What is important about the uses is that they both directly address the practical question of what I am to do. A principal aim in what follows is to develop a semantic+pragmatic theory that captures how your use of 'ought' in (3) addresses where the colored pencils are, given that it doesn't commit us to accepting that the colored pencils are in fact in the drawer; and captures how your use of 'ought' in (5) ad-

dresses what I am to do, given that it doesn't commit us to accepting that I actually have an obligation to help my mother.

### 3 The analysis: Preliminary

Informally put, the core of the basic approach is this: There is nothing specially “strong” about strong necessity modals per se. Strong necessity modals can be given their usual semantics/pragmatics: ‘Must  $\phi$ ’ is true iff  $\phi$  is necessary (in the relevant sense, i.e. epistemically, deontically, etc. (§2)),<sup>9</sup> and uses of ‘Must  $\phi$ ’ predicate the necessity of  $\phi$  of the actual world — just as ‘May  $\phi$ ’ is true iff  $\phi$  is possible, and uses of ‘May  $\phi$ ’ predicate the possibility of  $\phi$  of the actual world. The apparent “weakness” of weak necessity modals, we might try saying, derives from their bracketing the assumption that the necessity of  $\phi$  need be verified in the actual world. Accepting ‘Ought  $\phi$ ’ needn't commit one to accepting that the actual circumstances verify the necessity of  $\phi$ . Weak necessity modals afford a means of coordinating on the implications of our values, norms, etc. without having to settle precisely how they weigh against one another in particular circumstances, and while remaining open to new evidence about how they apply.

The following sections develop one approach to capturing these ideas about the meaning and use of ‘ought’ and ‘must’. I begin by fleshing out the basic proposal within a standard premise semantic framework for modals. The next section examines how the preliminary account developed here may be implemented more precisely in the formal semantics and pragmatics.

As usual, I follow KRATZER (1977, 1981, 1991) in treating modals as semantically associated with a parameter/variable determining a set of premises (propositions) (see also VAN FRAASSEN 1973, LEWIS 1973, 1981, VELTMAN 1976). Since modals can occur in intensional contexts, premise sets are indexed to a world of evaluation. What context supplies that determines the reading of a modal is the family of world-indexed premise sets  $(P_w)_{w \in W}$ , or *premise frame*: a function  $P$  from worlds  $w$  to premise sets  $P(w)$ . (Kratzer calls premise frames ‘conversational backgrounds’.)

I want to flag that, the honoree for this volume notwithstanding, the proposed account and formal implementations of the weak/strong necessity modal distinction are ultimately neutral on matters of expressivism (contextualism, relativism, invariantism) — e.g., whether particular values for relevant parameters such as premise frames figure in the derivation of semantic content, and whether they are supplied by the context of utterance or a posited context of assessment; whether notions of truth or content are given a fundamental explanatory role in explaining the semantic properties of sentences (in general, or for certain readings of

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<sup>9</sup>I will often omit this parenthetical, but it should be understood.

‘ought’ or ‘must’ sentences); whether a postsemantic definition of truth-in-a-context plays any interesting theoretical roles (in general, or for certain readings of ‘ought’ or ‘must’ sentences); what type of psychological state of mind is (conventionally) expressed by certain uses of ‘ought’ or ‘must’ sentences; and so on. For expository purposes I speak simply of “context” (neutral between context of use or a posited context of assessment), and relativize parameters such as premise frames simply to worlds. The implementations could be adapted straightforwardly along alternative relativist/expressivist lines.<sup>10</sup>

It is non-trivial precisely how the considerations which seem intuitively relevant in interpreting modals are represented in the formal objects utilized in the compositional semantics. To fix ideas it will be helpful to have a particular interpretation of the formalism at hand (following SILK 2017b; see also SILK 2015a, 2016a: §5.6). Premise frames afford a natural way of encoding the contents of bodies of norms, preferences, etc. Suppose you want to go for a run given that it’s sunny, that you aren’t injured, that you didn’t just eat a burrito, and so on. The content of your preference can be encoded in a (bouletic) premise frame that assigns a premise set that includes the proposition that you go for a run to worlds in which it’s sunny, etc. Similarly we might represent a norm to donate to charity with a (deontic) premise frame that assigns a premise set that includes the proposition that you donate to charity to worlds in which you have a job, the means of supporting your family, and so on. Call a conditional norm, preference, expectation, etc. a *consideration*. A contextually supplied premise frame  $P$  encodes the content of a body of considerations. The premises in an indexed premise set  $P(w)$  represent what follows from a body of considerations — what is enjoined by a body of conditional norms, what is preferred in light of a body of conditional preferences, what is the case in light of a body of evidential relations, etc. — given the relevant circumstances in  $w$ .

For example, the normative import of a value of charity might be encoded in a deontic premise frame  $P_d$  with properties such as in (8) — for relevant worlds characterized with respect to whether or not you have a Job and the means of supporting your family, there are Reputable charitable organizations, and there is a local Soup kitchen; and where  $d$  is the proposition that you donate to charity,  $u$  is the proposition that you undermine local aid organizations, and  $h$  is the proposition that you help at a local soup kitchen.

$$\begin{aligned}
 (8) \quad P_d(JRS) &= \{d, h, \dots\} \\
 P_d(\bar{J}RS) &= \{u, h, \dots\} \\
 P_d(JR\bar{S}) &= \{d, \dots\} \\
 P_d(\bar{J}R\bar{S}) &= \{h, \dots\} \\
 &\vdots
 \end{aligned}$$

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<sup>10</sup>See, e.g., GIBBARD 1990, 2003, STEPHENSON 2007, YALCIN 2007, 2011, DREIER 2009, WILLER 2010, SILK 2013c, 2015a, 2016a, MACFARLANE 2014, SWANSON 2016a. For taxonomies based on the various issues, see SILK 2013c, 2016a: Appendix, 2017c, 2017d, PLUNKETT & SHAPIRO 2015. See also n. 11.

The normative importance of helping those in need is reflected in  $P_d$ 's assigning a premise set that includes  $h$  to worlds where there is a local soup kitchen. The normative importance of charitable giving is reflected in  $P_d$ 's assigning a premise set that includes  $d$  to certain worlds where available aid organizations are reputable. However, the latter norm isn't unconditional: it applies only in worlds where you can support your family, and where the organizations will put the donations to good use. The relative importance of supporting your family over helping others is reflected in  $P_d$ 's assigning a premise set that doesn't include  $d$  to worlds such as  $\bar{JRS}$  where the aid organizations are trustworthy but you don't have a job.

With this way of conceptualizing premise frames at hand, let's return to the semantics and our diagnoses of the §2-examples. I give strong necessity modals their usual semantics of necessity. Bracketing several complications that won't be relevant for our purposes, 'Must  $\phi$ ' is true at  $w$ , given a contextually supplied premise frame  $P$ , iff the prejacent proposition  $\phi$  follows from  $P(w)$ , as in (9) (n. 4).<sup>11</sup> The truth of 'Must  $\phi$ ' depends on the value of  $P$  at the evaluation world. Assuming that the evaluation world is the actual world  $w_{@}$  — or at least a world which, for all that is presupposed in the conversation, might be the actual world — asserting 'Must  $\phi$ ' commits one to accepting that  $\phi$  follows from what the relevant considerations enjoin given the facts,  $P(w_{@})$ .

$$(9) \quad \llbracket \text{Must } \phi \rrbracket^{c,w} = 1 \text{ iff } \bigcap P_c(w) \subseteq \llbracket \phi \rrbracket^c \quad (\text{preliminary})$$

$$(10) \quad \text{A sentence } S \text{ is } \textit{accepted} \text{ in } c \text{ iff for every } w \in c, \llbracket S \rrbracket^{c,w} = 1$$

What distinguishes weak necessity modals, I have said, is that they bracket whether the necessity claim is verified in the actual world. We can adopt the following constraint on a semantics and pragmatics for 'ought', for some relevant body of considerations  $P$ :

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<sup>11</sup>Kratzer's (1981, 1991) semantics uses two premise sets: a "modal base"  $F(w)$  that represents a set of relevant background facts in  $w$ , and a (possibly inconsistent) "ordering source"  $G(w)$  that represents the content of some ideal in  $w$ . Making the limit assumption (LEWIS 1973: 19–20), 'Must  $\phi$ ' is true at  $w$  iff  $\phi$  follows from every maximally consistent subset of  $F(w) \cup G(w)$  that includes  $F(w)$  (equivalently (LEWIS 1981), iff every  $\lesssim_{G(w)}$ -minimal world in  $\bigcap F(w)$  is a  $\phi$ -world.) These complications won't be relevant here; I simplify by treating modals as evaluated with respect to a single finite, consistent premise set. (E.g., nothing will turn on one's views about the limit assumption, or orthogonal debates about so-called "weak vs. strong" semantics for epistemic 'must' (i.e. whether epistemic 'must' takes a non-empty ordering source).) As noted above, I remain neutral here on matters broached in debates about expressivism; the formalism could be adapted straightforwardly along alternative contextualist/relativist/expressivist/invariantist lines for certain types of readings (e.g. epistemic, deontic), as by relativizing premise frames to additional parameters, distinguishing types of contexts, etc. (cf. SILK 2016a: 31–32, 68, 144–145, 221–224; 2017c: 210–211). Depending on the purposes at hand I sometimes treat the interpretation function  $\llbracket \cdot \rrbracket$  as a function from expressions, contexts, and worlds to extensions, and sometimes as a function from expressions and contexts to intensions; and I slide between equivalent set- and function-talk. Any subscripts on premise frames are used simply to indicate the intended contextually determined assignment. The familiar definition of acceptance in (10) blurs the distinction between contexts and the context sets (STALNAKER 1978) they determine.

(11) It's not the case that: 'Ought  $\phi$ ' is accepted in  $c$  only if for every  $w \in c$ ,  $\cap P(w) \subseteq \llbracket \phi \rrbracket^c$

In a manner to be made precise, uses of 'Ought  $\phi$ ' present the possibility that  $\phi$  follows from the relevant considerations given certain circumstances, but without committing that such circumstances actually obtain or that the considerations actually apply. (We will examine specific ways of capturing this, and addressing what accepting 'Ought  $\phi$ ' *does* commit one to, shortly.)

Let's apply the preliminary analyses thus far to our cases from §2. Recall the epistemic modal examples in (3)–(4), reproduced in (12)–(13).

(12) *Me:* Where are the colored pencils?  
*You:* They ought to be in the drawer with the crayons.

(13) *Me:* Where are the colored pencils?  
*You:* They must be in the drawer with the crayons.

Like with norms and preferences, one's expectations given a body of evidence can be conditional — e.g., conditional on things being normal in the relevant respects. Let  $w_N$  be a world in which your routine proceeds as normal, and let  $w_{\bar{N}}$  be a world where something abnormal happens to disrupt your routine.<sup>12</sup> The conditional expectations concerning the colored pencils' location can be encoded in a premise frame  $P_e$  which (inter alia) assigns  $w_N$  a premise set  $P_e(w_N)$  that includes the proposition  $d$  that the colored pencils are in the drawer, and which assigns  $w_{\bar{N}}$  a premise set  $P_e(w_{\bar{N}})$  that includes  $\neg d$ . Given  $P_e$ ,  $d$  is an epistemic necessity at  $w_N$  and not at  $w_{\bar{N}}$ . So in order for  $d$  to be accepted as epistemically necessary, as per (9)–(10), the context set must be restricted to worlds like  $w_N$  — to normal worlds where (e.g.) you didn't get distracted earlier before putting the colored pencils away, no one played a trick on us and moved them, etc. (The context set is the set of live possibilities, the set of worlds compatible with what is accepted for purposes of conversation (STALNAKER 1978).) As in the case of Martha and Alice, your reply in (13) is appropriate only if you have the epistemic authority to restrict the context set in this way. If I am unsure whether you are in a position to assume that nothing unusual led you to place the colored pencils somewhere else, I may challenge your assumption and raise possibilities that are incompatible with the epistemic necessity of  $d$ , as in (14).

(14) *You:* The colored pencils must be in the drawer with the crayons.  
*Me:* Really? I see that they aren't on the shelf. But don't you sometimes accidentally put them in the cabinet with the glue sticks?  
*You:* No, I never put them there. (/Oh, I forgot about that.)

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<sup>12</sup>As above,  $w_N$  and  $w_{\bar{N}}$  may be understood as representatives of relevant equivalence classes of worlds.

But if you use ‘ought’, my mentioning such possibilities, as in (15), may be beside the point, for you are not committing to conditions being normal. If I check the drawer and find no colored pencils, you can respond as in (16).

- (15) *You:* The colored pencils ought to be in the drawer with the crayons.  
*Me:* #Really? I see that they aren’t on the shelf. But don’t you sometimes accidentally put them in the cabinet with the glue sticks?  
*You:* I know; that’s why I said *ought!*
- (16) *You:* The colored pencils ought to be in the drawer with the crayons.  
*Me:* I checked and they aren’t there.  
*You:* Oh, then I’m not sure where they are. I would have expected them to be there.

Epistemic ‘Ought  $\phi$ ’ can be accepted even if it isn’t settled that certain conditions relevant to the epistemic necessity of  $\phi$  are satisfied.

Turn to our deontic modal examples in (5)–(6). My having an obligation to take care of my mother depends on the value of family being more important in my situation than other potentially competing values. Hence in order for the proposition  $m$  that I tend to my mother to follow from  $P(w)$  — what the normative considerations enjoin given the relevant facts — it must be the case that the value of family takes precedence in my situation in  $w$ . Accepting ‘Must  $m$ ’ thus requires committing to being in a world in which this condition is satisfied. But in (5), unlike (6), after my assertion is accepted it still isn’t settled whether the value of family *does* take precedence in my situation. So, were you to use ‘must’ you would imply that you are foreclosing certain possibilities that I have left open. Unless you are in a position to do so (cf. (7)), your using ‘must’ is dispreferred. By accepting ‘You ought to tend to your mother’ instead, we can provisionally proceed as if my helping my mother is required without needing to settle that the value of family is more important than other competing values we accept or may come to accept.

These examples highlight a crucial role for weak necessity modals in discourse and deliberation. Take the deontic case. There is typically a range of interests, values, and norms potentially relevant for determining what to do. How the normatively relevant factors, whatever they are, interact is often highly complex. (One needs only a brief foray into the deontic logic or normative ethics literatures to convince oneself of this.) Even given a specific set of normative factors, there may be uncertainty about the facts determining which considerations ultimately apply. The simplified deontic premise frame in (8), which reflects only two circumstances that might defeat a norm of charity, illustrates the difficulty. One might not know the details about someone’s financial or family situation. Other empirical factors, like how donations are used, the short- and long-term impact on those in need, etc., can be even more difficult to assess. Hence one might not be in a position to commit to being in a

world such as  $JRS$  or  $JR\bar{S}$  in which norms of charity aren't outweighed or defeated. A scenario such as in (5)–(6) compounds these challenges in normative and empirical evaluation. Using deontic 'Must  $\phi$ ' may thus be inapt: accepting 'Must  $\phi$ ' commits one to accepting that  $\phi$  follows from what the relevant considerations enjoin given the facts. Deontic 'ought' affords a means of guiding our deliberations and plans — indeed our *conditional* plans, as emphasized throughout Gibbard's work on the psychology of normative judgment (e.g., GIBBARD 1990, 2003, 2012; cf. SILK 2015b: §6) — while remaining open to new evidence about what specific values are at stake, and how they interact with one another and with the relevant facts.

Let's recap. I have proposed that what makes weak necessity modals "weak" is that they bracket whether the necessity of the prejacent is verified in the actual world. One can accept 'Ought  $\phi$ ' without committing that  $\phi$  follows from what the relevant considerations (norms, preferences, expectations, etc.)  $P$  enjoin given the facts — e.g., without committing that all preconditions for  $\phi$  to be a genuine obligation are satisfied, that one's evidence for  $\phi$  isn't misleading or defeated, and so on. This feature of weak necessity modals certainly doesn't mark the only dimension along which necessity modals differ (more on which in §§5–6). However, I claim that it does distinguish the *class* of weak necessity modals from the *class* of strong necessity modals. Previous accounts of weak necessity modals are often developed by considering a limited range of modal flavors, in a limited range of contexts; extensions to other readings, to the extent that they are discussed at all, are often strained (e.g., COPLEY 2006, SWANSON 2011, RUBINSTEIN 2012, CHARLOW 2013, RIDGE 2014, PORTNER & RUBINSTEIN 2016, YALCIN 2016). The account in this section, by contrast, generalizes across flavors of modality (epistemic, deontic, etc.), and captures a precise sense in which the relative felicity of 'ought' and 'must' depends on standing contextual assumptions. Weak necessity modals afford a means of coordinating on the implications of our values, expectations, etc. without having to settle precisely how they apply and weigh against one another in particular circumstances.

The preliminary account developed thus far raises many questions. In what sense is 'ought' "weaker" than 'must' if not in expressing a logically weaker kind of necessity? What does accepting 'Ought  $\phi$ ' require if not that  $\phi$  is necessary? We will take up such questions in the following sections. Yet even at the present level of abstraction, we can see that the approach to the weak/strong necessity modal distinction in this paper differs crucially from the other main approaches in the literature — e.g., comparative possibility/probability approaches (FINLAY 2009, 2010, 2014, LASSITER 2011) and domain restriction approaches (COPLEY 2006, VON FINTEL & IATRIDOU 2008, SWANSON 2011, RUBINSTEIN 2012, CHARLOW 2013).<sup>13</sup> For instance, domain restriction accounts maintain that the truth of 'Ought

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<sup>13</sup>Strictly speaking, Swanson's (2011) semantics doesn't involve domain restriction, as it doesn't make the limit assumption. But on an (ordering semantics) version of it with the limit assumption, 'ought' ends up quantifying over a subdomain of the domain of worlds that 'must' quantifies over ('ought' universally quantifies

$\phi$ ' at a world  $w$  requires that  $\phi$  be a necessity at  $w$ , and that accepting 'Ought  $\phi$ ' requires accepting that  $\phi$  is a necessity; what distinguishes 'ought' from 'must' is the logical strength of the notion of necessity. Weak necessity modals are treated as expressing a logically weaker *kind* of necessity — truth of the prejacent throughout a subdomain of worlds (equivalently, implication of the prejacent by a superset of premises). The present approach rejects these claims (§2). We will return to this below.

## 4 Weak necessity and the modal past

In §1 I noted that previous theories of weak and strong necessity modals have tended to be developed with an eye toward a narrow set of data. The project in this paper is to develop an approach to the weak/strong necessity modal distinction that systematizes a broader range of semantic and pragmatic phenomena. Taking on this more demanding goal requires sustained investigations into a variety of domains. In this section I will consider how weak necessity modals are expressed cross-linguistically to motivate several ways of implementing the account of the weak/strong necessity modal distinction from §3. §5 shows how the resulting account helps explain various seemingly unrelated semantic and pragmatic properties of 'ought' and 'must'.

### 4.1 Data

Past forms of modals — in English, 'would' for 'will', 'could' for 'can', 'might' for 'may' — are often used not to indicate past time reference, but to express tentativeness or politeness and weaken the apparent force, as in (17)–(19). These forms are also the forms that appear in the consequents of subjunctive conditionals, as in (20).

- (17) a. I will add one point to this discussion.  
 b. I would add one point to this discussion.
- (18) a. Alice will (/may, /can't) be at home now.  
 b. Alice would (/might, /couldn't) be at home now.
- (19) a. May (/Can) I comment on your proposal?  
 b. Might (/Could) I comment on your proposal?
- (20) If you took the flight tomorrow, you would (/could, /might) get there in time.

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over the worlds in some maximal  $\lesssim$  chain, and 'must' universally quantifies over the worlds in every maximal  $\lesssim$  chain). So for present purposes I classify Swanson's semantics with the other cited domain restriction analyses.



PALMER 2001 dubs these uses of past tense “the modal past.”<sup>14</sup>

Strikingly, ‘ought’ patterns with the past-marked modal forms. As has been observed in descriptive linguistic work on ‘ought’: First, ‘ought’ weakens the apparent force of ‘must’ — hence the common label “weak necessity modal.” Second, ‘ought’, unlike ‘must’, can appear in subjunctive conditionals, as in (21).

- (21) a. If Alice came to the party tomorrow, Bert ought to leave.  
b. #If Alice came to the party tomorrow, Bert must(ed) leave.

Third, when used with nonpast time reference, ‘ought’ is non-entailing. For simple clauses ‘ $\phi$ ’, ‘Ought  $\phi$ ’, unlike ‘Must  $\phi$ ’, is compatible with ‘ $\neg\phi$ ’.

- (22) I could give to Oxfam, but I won’t.  
(23) a. Alice ought to be here by now, but she isn’t.  
b. #Alice must be here by now, but she isn’t.

Fourth, when used with the perfect, ‘ought’ implicates the negation of its prejacent.

- (24) I could have given to Oxfam. (*Implicates: I didn’t*)  
(25) a. We ought to have given to Oxfam. (*Implicates: we didn’t*)  
b. #We must have given to Oxfam (but we didn’t).

‘Must’ cannot even receive a deontic reading when used with past time reference. ‘Ought’, but not ‘must’, can be used to communicate that a certain obligation held in the past. This follows from the more general point that in English only modal-past forms can take scope under the perfect (CONDORAVDI 2002). That ‘ought’ can take scope under the perfect in (25a) is a fifth respect in which ‘ought’ patterns with past-marked modal forms.

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<sup>14</sup>See also, e.g., JAMES 1982, COATES 1983, FLEISCHMAN 1989, BYBEE 1995, IATRIDOU 2000, HUDDLESTON & PULLUM 2002. Terminology varies among authors. I use ‘modal past’ descriptively for a use of past forms; my use of the label makes no theoretical assumptions about how modal/weakness/tentativeness interpretations arise and how they are related to temporal interpretations of past morphology (more on this below). Note that weakness (non-temporal) interpretations of past tense aren’t limited to uses of modal verbs, as reflected in the present time readings of (i)–(ii).

- (i) I wanted to ask you a question. (BYBEE 1995: ex. 21)  
(ii) I thought/was thinking about asking you to dinner. (FLEISCHMAN 1989: 8)

I am also not presupposing that all modal-past forms necessarily convey weakness/tentativeness relative to their nonpast counterparts. (For instance, although some speakers find epistemic ‘might’ slightly weaker/more tentative than epistemic ‘may’, corpus evidence suggests that (at least in contemporary English) their intuitive force is often roughly equivalent (see COATES 1983, PALMER 1990, HUDDLESTON & PULLUM 2002, COLLINS 2007).)

In sum, although ‘must’ doesn’t have a past tense form, ‘ought’, we can try saying, functions notionally as its modal past (cf. PALMER 1990, 2001). This is surprising. But it becomes less surprising when we examine other languages. Let’s use ‘OUGHT’ for the notion which in English is expressed with weak necessity modals such as ‘ought’ (‘should’, etc.), and ‘MUST’ for the notion which in English is expressed with strong necessity modals such as ‘must’ (‘have to’, etc.). As emphasized in von Fintel and Iatridou’s (2008) influential account of weak necessity modals, it is cross-linguistically common to mark the semantic distinction between OUGHT and MUST morphologically rather than lexically. A notion of OUGHT is often expressed not by using a different word — like ‘ought’ in English — but by using the modal-past form of a strong necessity modal, i.e. the form of a strong necessity modal that is used in counterfactuals.<sup>15</sup>

von Fintel and Iatridou (2008) attempt to capture this cross-linguistic data in their domain restriction account of weak necessity modals. They treat weak necessity modals as quantifying over “the best of the best” worlds — very roughly, the relevant  $P(w)$ -compatible worlds that are also compatible with an additional premise set describing a secondary ideal (in Kratzer’s terminology, a secondary ordering source).<sup>16</sup> (See SLOMAN 1970, WILLIAMS 1981, MCNAMARA 1990 for informal precedents.) In passing, von Fintel & Iatridou speculate that “the counterfactual marking is co-opted here in a somewhat meta-linguistic kind of way: ‘if we were in a context in which the secondary ordering source was promoted [to primary status], then it would be a strong necessity that...’” (2008: 139). The tentativeness associated with the counterfactual marking is attributed to the fact that the premises in the secondary ordering source needn’t apply: “The choice of whether to really promote the secondary ordering source is left open” (2008: 139).

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<sup>15</sup>See also PALMER 2001, MCGREGOR & WAGNER 2006, VAN LINDEN & VERSTRAETE 2008, MATTHEWSON 2010. In light of data such as those in the main text above, Palmer explicitly treats English ‘ought’ and ‘should’ as the notional modal-past forms of ‘must’ (1990: 59–60, 80, 124–128; 2001: 32, 73–74, 127, 203–204). As von Fintel and Iatridou note (2008: 126n.22), ‘ought’ fits the cross-linguistic pattern historically; it was formerly the past subjunctive of the verb ‘owe’. Modal-past forms in other languages may of course be derived from various elements, not simply past tense (e.g. IATRIDOU 2000).

<sup>16</sup>A bit more precisely (see n. 11): For a set of worlds  $W$  and premise set  $S$ , let the  $S$ -minimal worlds in  $W$  be the those worlds  $u \in W$  such that no world  $v \in W$  satisfies a proper superset of propositions  $p \in S$ . (For consistent premise sets, given the limit assumption, the set of minimal worlds reduces to  $W \cap \bigcap S$ .) Let  $s$  be a set of relevant worlds (as e.g. determined by a Kratzerian modal base),  $G_1(w)$  be a premise set representing some primary ideal, and  $G_2(w)$  be a premise set representing some secondary ideal. On von Fintel & Iatridou’s semantics, whereas ‘must’ universally quantifies over the  $G_1(w)$ -minimal  $s$ -worlds (as usual), ‘ought’ universally quantifies over a subset of these worlds: the  $G_2(w)$ -minimal worlds *among* the  $G_1(w)$ -minimal  $s$ -worlds. ‘Ought’ quantifies over the  $G_2(w)$ -minimal worlds that ‘must’ quantifies over.

I find these suggestions about the cross-linguistic data unsatisfying. Several interrelated worries:<sup>17</sup> First, little is said about what makes a certain ordering source “primary” and a certain ordering source “secondary” apart from the fact that the latter figures only in the interpretation of weak necessity modals. von Fintel & Iatridou briefly suggest treating the secondary ordering source for epistemic readings as representing what is normally the case, and the secondary ordering source for deontic readings as representing “less coercive sets of rules and principles (2008: 119)”<sup>18</sup>; however, no general story is given about what primary vs. secondary ordering sources represent per se, or how they are determined for different types of readings across contexts. Absent an independent understanding of what makes it the case about a speaker that she is counterfactually promoting a secondary ordering source, the proposed story about the role of the counterfactual marking seems ad hoc. One might worry that the explanation for the tentativeness associated with counterfactual morphology redescribes what needs to be explained. The tentativeness is “explained” by a parameter introduced as representing “shakier assumptions” (2008: 119n.9) that may not apply — uncharitably put, a parameter representing considerations one may only be tentatively committed to. Finally, it is unclear how von Fintel & Iatridou’s explanation would generalize to explain the tentativeness associated with counterfactual morphology on other lexical items — e.g., possibility modals like ‘might’, or desire verbs like ‘wish’, which, as von Fintel and Iatridou themselves note, are expressed in many languages by placing counterfactual morphology on the word for ‘want’ (IATRIDOU 2000, also n. 14). For instance, interpreting modal-past forms of possibility modals with respect to a secondary ordering source incorrectly predicts a strengthening effect. The tentative use of ‘might’/‘could’ in (19) cannot be derived by counterfactually “promoting” a secondary ordering source and then evaluating the possibility of the prejacent.<sup>18</sup>

## 4.2 Implementations

This subsection considers how broader work on the semantic/pragmatic roles of counterfactual marking may be incorporated into our analyses of ‘ought’ and ‘must’. I want to be clear up front that I am *not* assuming that lexicalized weak necessity modals, like ‘ought’, are decomposed at some level into a strong necessity modal and features associated with counterfactual morphology (schematically, *STRONG+CF*). Even if ‘ought’ is treated as the notional modal-past of ‘must’, they are distinct lexemes. The cross-linguistic data may be methodologically useful in providing insight into the semantics of lexicalized expressions of OUGHT.

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<sup>17</sup>See RUBINSTEIN 2012 for further criticisms. I consider Rubinstein’s account, which supplements von Fintel & Iatridou’s semantics with a substantive account of the primary/secondary ordering source distinction, in §6. I return to general worries for domain restriction analyses below.

<sup>18</sup>More formally (see n. 16): For a set of relevant worlds  $s$  and primary and secondary ordering sources  $G_1(w)$ ,  $G_2(w)$ , let  $i$  be the set of  $G_1(w)$ -minimal  $s$ -worlds, and  $j$  be the set of  $G_2(w)$ -minimal  $i$ -worlds. Since  $j \subseteq i$ , that there is a  $\phi$ -world in  $j$  asymmetrically implies that there is a  $\phi$ -world in  $i$ .

But we should be careful not to simply “read off” a semantics for ‘ought’ from a semantics for ‘must’ and counterfactual morphology. ‘Ought’ doesn’t mean ‘would have to’ (more on this shortly). It is an open question (i) how non-lexicalized means of expressing OUGHT are diachronically related to dedicated lexical items, (ii) how interpretations of *STRONG+CF* might have become conventionalized into an expression of OUGHT, (iii) how literal counterfactual interpretations of *STRONG+CF* are synchronically related to the meanings of the grammaticalized forms like ‘ought’, and (iv) how the meanings of the grammaticalized forms across languages compare. The focus in this paper is on lexicalized English weak necessity modals. I briefly reconsider the broader diachronic and cross-linguistic questions below.

It’s generally agreed that counterfactual marking signals that the worlds being talked about (“topic worlds”) needn’t be candidates for actuality (e.g., STALNAKER 1975, VON FINTEL 1998, IATRIDOU 2000, SCHLENKER 2003, 2005, BITTNER 2011). There are various ways of formalizing this signal and deriving it in the grammar (see also IPPOLITO 2003, ARREGUI 2009). One option is to say that counterfactual marking indicates a presupposition that the modal’s domain of quantification, or the set of topic worlds more generally, isn’t a subset of the context set. An alternative is to treat counterfactual markers as canceling a positive presupposition (e.g. associated with indicative) that the set of topic worlds is a subset of the context set. To fix ideas I assume the latter option: I assume that counterfactual markers fail to signal that the set of topic worlds is included in the context set.

Start with ‘must’. I have said that no innovations are introduced into the semantics or pragmatics of strong necessity modals. ‘Must  $\phi$ ’ is given its familiar semantics of necessity — ‘Must  $\phi$ ’ is true at  $w$  iff  $\phi$  follows from  $P(w)$  — and it carries the usual indicative presupposition that the worlds being talked about are included in the context set. One way of implementing the general indicative presupposition is to treat it as restricting the domain of the interpretation function to proper points of evaluation, i.e. to contexts  $c$  and worlds  $w$  such that  $w \in c$ . Applying this to the case of a necessity modal yields the following semantics for ‘must’:<sup>19</sup>

**Definition 1.**  $\llbracket \text{Must } \phi \rrbracket^c = \lambda w: w \in c. \bigcap P(w) \subseteq \llbracket \phi \rrbracket^c$

Uttering ‘Must  $\phi$ ’ predicates the necessity of  $\phi$  throughout the context set (i.e., predicates the proposition that  $\phi$  follows from  $P(w)$  of every world in the context set) — no different from how uttering ‘May  $\phi$ ’ predicates the possibility of  $\phi$  throughout the context set, or how uttering an atomic sentence ‘ $\phi$ ’ predicates  $\phi$  throughout the context set. *There is nothing special about strong necessity modals.* The treatment of ‘must’ vis-à-vis necessity is precisely parallel to the treatment of ‘may’, ‘can’, etc. vis-à-vis possibility:

**Definition 2.**  $\llbracket \text{May } \phi \rrbracket^c = \lambda w: w \in c. \bigcap (P(w) \cup \{\llbracket \phi \rrbracket^c\}) \neq \emptyset$

<sup>19</sup>In a framework with overt world variables, the presupposition would be that the assignment function maps the given world variable to a world in the context (cf. SCHLENKER 2003, 2005).

It is in this sense that there is nothing distinctively “strong” in the semantics/pragmatics of (so-called) strong necessity modals.

Accepting ‘Ought  $\phi$ ’, in contrast, doesn’t require accepting that all the preconditions for  $\phi$  to be necessary are satisfied. A natural idea is that the counterfactual marking in the relevant languages serves to cancel the assumption that the necessity claim is verified in the actual world, i.e. that the relevant worlds at which the prejacent is necessary are in the context set.<sup>20</sup> Call this approach a *modal-past approach* to weak necessity modals and the weak/strong necessity modal distinction. In what follows I will present three ways of implementing the modal-past idea in the formal semantics. The aim is to introduce a range of modal-past analyses of weak necessity modals, and begin investigating their costs and benefits. I leave more thorough developments and comparisons for future work.

One straightforward way of treating ‘ought’ as the semantic modal past of ‘must’ would be to treat them equivalently at the level of truth-conditions and distinguish them in their presuppositions. Compare the semantics for ‘must’ in Definition 1 with the following semantics for ‘ought’:

$$\text{Definition 3. } \llbracket \text{Ought } \phi \rrbracket^c = \lambda w . \cap P(w) \subseteq \llbracket \phi \rrbracket^c \quad (\text{v1})$$

What distinguishes ‘ought’ from ‘must’, on this line, is that ‘ought’ allows “improper” points of evaluation. ‘Ought  $\phi$ ’ is given an ordinary semantics of necessity, but lacks the presupposition that the worlds being talked about — here, the relevant worlds at which  $\phi$  is necessary — are in the context set. Informally, uttering ‘Ought  $\phi$ ’ places the necessity claim on the “conversational table,” but doesn’t conventionally commit one to its truth.

Formalizing a modal-past approach in this way faces pressing challenges regarding the discourse dynamics and embedding behavior of ‘ought’. On the familiar Stalnakerian theory of conversation, assertions propose to restrict the context set to worlds in which the asserted content is true (STALNAKER 1978). But for any world  $w \in c$ , ‘Ought  $\phi$ ’ is true at  $w$  according to Definition 3 iff ‘Must  $\phi$ ’ is true at  $w$  according to Definition 1.<sup>21</sup> To avoid predicting that ‘Ought  $\phi$ ’ updates context in the same way as ‘Must  $\phi$ ’, some alternative mechanism would be needed whereby uses of ‘ought’ may distinguish among worlds outside the context set or have some other non-eliminative effect. Second, it isn’t obvious how the relative weakness of

<sup>20</sup>On this I disagree with the analysis of ‘should’ in ARREGUI 2010. Though Arregui associates ‘should’ with a past morphology feature, which is frequently taken to be an important (perhaps essential) component of counterfactual interpretations, she denies that the feature is interpreted with ‘should’. Arregui maintains that ‘Should  $\phi$ ’ presupposes that the modal’s domain of quantification is included in the context set (at least for non-stative ‘ $\phi$ ’). We have seen that this is incorrect. Non-entailing uses ‘(Should  $\phi$ )  $\wedge$   $\neg\phi$ ’ are consistent, as in (i) (we will examine this in depth in §5).

(i) Alice should give to charity but she won’t.

<sup>21</sup>The right-to-left direction is obvious. For the left-to-right direction, if  $\llbracket \text{Ought } \phi \rrbracket^c(w) = 1$ , then  $\cap P(w) \subseteq \llbracket \phi \rrbracket^c$ ; but then,  $\llbracket \text{Must } \phi \rrbracket^c(w) = 1$  since, by hypothesis,  $w \in c$ .

‘ought’ vis-à-vis ‘must’ would carry over in intensional environments that shift the evaluation world — e.g., in indicative conditionals or attitude ascriptions.<sup>22</sup>

A strategy for avoiding these challenges is to build a counterfactual element into the truth-conditions of ‘Ought  $\phi$ ’. Consider Definition 4, where  $h$  is a contextually supplied function that selects a set of closest relevant worlds to the evaluation world.

**Definition 4.**  $\llbracket \text{Ought } \phi \rrbracket^{c,w} = 1$  iff  $\forall w' \in h_c(w): \cap P_c(w') \subseteq \llbracket \phi \rrbracket^c$  (v2)

To a first approximation, one might think of  $h(w)$  as picking out relevant worlds that are minimal/“preferred” in some contextually relevant sense — most normal, expected, desirable, etc., depending on the context (cf. STARR 2010: 167, GROSZ 2012; see also n. 29).<sup>23</sup> For (26), from (12),  $h(w)$  might pick out the maximally  $w$ -normal worlds where you don’t get distracted before putting the colored pencils away, no one plays a trick on you and moves them, etc. — worlds like  $w_N$ . For (27) given the norms in (8),  $h(w)$  might pick out the maximally  $w$ -similar worlds where you have a job, the available charities are trustworthy, etc. — worlds like JRS.

(26) The colored pencils ought to be in the drawer.

(27) You ought to donate to charity.

$h$  maps  $w$  to the closest worlds  $w'$  in which relevant considerations (norms, expectations, etc.) such as these apply and aren’t defeated. ‘Ought  $\phi$ ’ is true, according to Definition 4, iff *these* worlds  $w'$  verify the necessity of  $\phi$ , i.e. iff  $\phi$  follows from the relevant considerations  $P$  at every  $w' \in h(w)$ . The point that ‘Ought  $\phi$ ’ brackets whether  $\phi$  is in fact necessary is captured via  $h$ : the set of worlds  $h(w)$  at which the necessity of  $\phi$  is evaluated might include the evaluation world  $w$ , but it might not.

The first-pass semantics in Definition 4 uses a simple selection function  $h$  for determining the worlds at which the necessity of the prejacent is evaluated. Critical issues include what general constraints, if any, the semantics imposes on how  $h$  is determined in context; whether  $h$  is derived from more basic elements of the semantics; and whether additional structure is needed to determine the relevant worlds  $w'$  at which the necessity of  $\phi$  is evaluated. For instance, one might treat the set of selected worlds as determined by independently represented orderings/premise sets of the relevant types (normality, similarity, desirability, etc.). Even bracketing such structure, one might treat the selection of worlds as explicitly depending the prejacent  $\phi$  or a contextually relevant set of circumstances  $C$ , i.e.  $h(w, \phi, C)$ .

<sup>22</sup>See SILK 2016b for ways of addressing these challenges in a dynamic Update with Centering semantics and theory of discourse.

<sup>23</sup>I will often use quotes around ‘preferred’ to highlight that it is a generalized notion of minimality, not necessarily bouletic or deontic.

This would reflect the intuitive idea that in interpreting ‘Ought  $\phi$ ’ one evaluates what follows from the relevant considerations  $P$  at worlds satisfying certain conditions plausibly relevant to whether  $\phi$  is a necessity:<sup>24</sup> in interpreting (12) one looks at worlds  $w'$  satisfying what is normally the case in matters concerning where the colored pencils are, and one checks whether, conditional on such facts, the relevant information (encoded in the given epistemic premise frame  $P_e$ ) implies that the colored pencils are in the drawer; in interpreting (27) one looks at worlds  $w'$  satisfying what is normally and/or preferably the case in matters concerning whether to donate, and one checks whether, conditional on such facts, the relevant norms (encoded in the given deontic premise frame  $P_d$ ) enjoin you to do so. Alternatively, one might stick with the simple world-indexed function  $h$ , and appeal to these sorts of additional factors in an extra-semantic account of how  $h$  is determined in concrete discourse contexts. Either way, the type of semantics in Definition 4 raises the question of what distinguishes ‘Ought  $\phi$ ’ from counterfactual necessity sentences ‘If  $\chi$ , it would have to be that  $\phi$ ’ — in particular in uses where  $\chi$  describes a condition corresponding to  $h_c(w)$ .

A contrasting semantics such as Definition 5 may avoid this issue — where  $<_w$  is a partial order on propositions along a contextually relevant dimension (likelihood, normality, desirability, etc.), and  $s(w, p)$  is the set of closest  $p$ -worlds to  $w$ , understanding the relevant closeness relation as the relation that would figure in interpreting a counterfactual.

**Definition 5.**  $\llbracket \text{Ought } \phi \rrbracket^{c,w} = 1$  iff  $\{u: u \in s(w, \cap P_c(u) \subseteq \llbracket \phi \rrbracket^c)\} <_w \{v: v \in s(w, \cap P_c(v) \not\subseteq \llbracket \phi \rrbracket^c)\}$   
(v3)

Roughly put, this treats ‘Ought  $\phi$ ’ as saying that it would be better (in a relevant sense) if  $\phi$  was necessary (in a relevant sense). One could refine the definition depending on one’s views about the semantics of claims about comparative possibility (LASSITER 2011, KRATZER 2012), but the basic idea should be clear enough. Like Definition 4, Definition 5 avoids treating the truth of ‘Ought  $\phi$ ’ at a world  $w$  as requiring that  $\phi$  be a necessity at  $w$ . The closest worlds  $u$  at which  $\phi$  is necessary needn’t be in the context set. Even so, the semantics reflects how uses of weak necessity modals may bear on interlocutors’ views about what is necessary. ‘Ought  $\phi$ ’ introduces the possibility that  $\phi$  is necessary and then comments on it. The attitudinal comment is that the (closest) worlds in which  $\phi$  is necessary are  $<_w$ -better — more desirable, normal, expected, etc., depending on the context. Accepting ‘Ought  $\phi$ ’ may thus incline

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<sup>24</sup>In my 2012 I framed the analysis by saying that weak necessity modals express a kind of “conditional necessity” (cf. WERTHEIMER 1972). Although the analyses in the main text have ways of incorporating a notion of conditionality (at least on an intuitive level), I no longer endorse this as a general way of capturing the ideas in §§2–3 or of understanding a modal-past approach. Conditional necessity analyses must provide a general account of what the relevant condition is as a function of context, and they make especially pressing the challenge of distinguishing uses of ‘ought’ from (implicit or explicit) conditional necessity claims. (More on this below.)

the conversation toward accepting that  $\phi$  is necessary without requiring a present commitment that it is. A potential worry, however, is why the semantics for ‘ought’ and ‘must’ should be so dissimilar: ‘Ought  $\phi$ ’ comments on the necessity of  $\phi$ , but it has the content of a comparative.<sup>25</sup> One will need to explain the precise sense in which ‘ought’ is (logically, conversationally) weaker than ‘must’. Further, although Definition 5 incorporates a counterfactual element in the semantics (via  $s$ ), it isn’t immediately obvious how a comparative semantics like Definition 5 might derive from *STRONG+CF* constructions or shed light on how OUGHT-interpretations of *STRONG+CF* arise in other languages.

Definitions 3–5 provide several options for developing a modal-past implementation of the core ideas from §2. Each semantics avoids analyzing accepting ‘Ought  $\phi$ ’ in terms of  $\phi$  being a necessity (in any sense) at  $w$ , for every  $w$  in the context set; and each takes seriously the idea of treating ‘ought’ as the notional modal-past of ‘must’: ‘Ought  $\phi$ ’ is interpreted with respect to the same body of considerations  $P_c$  as ‘Must  $\phi$ ’, and intuitively “introduces” the proposition that  $\phi$  is a necessity relative to  $P_c$ , while being distinguished insofar as the attitude taken toward that proposition needn’t be acceptance — in Definition 3, by allowing improper points of evaluation; in Definition 4, by including an additional layer of modality and evaluating the truth of  $[\lambda w. \bigcap P_c(w) \subseteq \llbracket \phi \rrbracket^c]$  throughout a set of possibly counterfactual worlds; and in Definition 5, by commenting on the preferredness (in a relevant sense) of  $[\lambda w. \bigcap P_c(w) \subseteq \llbracket \phi \rrbracket^c]$ . I won’t attempt to adjudicate among these implementations here. To fix ideas I will adopt the semantics of ‘ought’ in Definition 4, since I take it to provide the more natural way of implementing a modal-past approach in a standard static framework. *Prima facie*, it is less clear how an overt comparative meaning such as in Definition 5 might come to be given to OUGHT-expressing uses of *STRONG+CF* constructions in other languages, and I think the ideas motivating Definition 3 are more perspicuously developed in a dynamic setting (see SILK 2016b).

(As noted in §3, the proposed account of the weak/strong necessity modal distinction and the various formal semantics and pragmatics are ultimately neutral on matters of expressivism (contextualism, relativism, invariantism). The above sorts of formal semantics could be adapted depending on one’s views about whether (e.g.) particular values for the various broadly contextual parameters (premise/ordering frames  $P$ ,  $<$ , selection functions  $h$ ,  $s$ , etc.) figure in the derivation of semantic content, whether they are supplied by the con-

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<sup>25</sup>Compare the comparative probability semantics for ‘ought’ in FINLAY 2009, 2010, 2014, LASSITER 2011, which treat ‘Ought  $\phi$ ’ as saying (very roughly) that  $\phi$  is more likely than any relevant alternative to  $\phi$ . Definition 5, by contrast, treats ‘Ought  $\phi$ ’ as making a comparative claim about the necessity of  $\phi$  (rather than a comparative claim about  $\phi$ ), and it generalizes the relevant notion of comparative possibility via the context-dependent parameter  $<$ . (See also RUBINSTEIN 2014, PORTNER & RUBINSTEIN 2016) for additional discussion of connections between weak necessity modals and comparatives/gradability.)



text of utterance or a posited context of assessment, and so on. I continue to bracket such potential complications in what follows.)

### 4.3 “Weakness” in weak necessity modals

Treating ‘ought’ as the semantic modal past of ‘must’ captures why ‘ought’ should pattern with the past modal forms in (17)–(25). For instance, a modal-past analysis gives precise expression to the informal intuition that ‘ought’ is weaker and more tentative than ‘must’. In uttering ‘Ought  $\phi$ ’ the speaker makes a claim about the necessity of  $\phi$  but fails to mark her utterance as being about worlds that are candidates for actuality. However, as Stalnaker notes, “normally a speaker is concerned only with possible worlds within the context set, since this set is defined as the set of possible worlds among which the speaker wishes to distinguish” (1975: 69). So, using ‘ought’ implicates that one isn’t in a position to commit to the prejacent’s being a necessity throughout the set of live possibilities. The basis of the scale between ‘ought’ and ‘must’ isn’t fundamentally logical but epistemic strength; ‘Ought  $\phi$ ’ and ‘Must  $\phi$ ’ are ordered not in terms of (e.g.) subset/superset relations in their domains of quantification, but in terms of epistemic attitude regarding the proposition that  $\phi$  is a necessity.<sup>26</sup> This feature of the account marks an important contrast with domain restriction accounts of the weak/strong necessity modal distinction (see §§2–3; more on this shortly).

Since ‘ought’ is weaker than ‘must’ in the above way, Grice’s first quantity maxim — “Make your contribution as informative as is required” (GRICE 1989: 26) — can be exploited to generate a familiar upper-bounding implicature (HORN 1972, GAZDAR 1979; n. 26). Using ‘ought’ implicates that for all one knows — better, for all one is willing to presuppose in the conversation — ‘Must  $\phi$ ’ is false. This implicature has the usual properties of implicatures. It is cancelable and reinforceable, as in (1a) and (2a), respectively, and it is suspendable, as in (28).

(1a) I ought to help the poor. In fact, I must.

(2a) I ought to help the poor, but I don’t have to.

(28) I ought to help the poor. Maybe I have to.

In (1a), e.g., the speaker first conveys that the worlds in which my helping the poor is deontically necessary needn’t be live possibilities, and then commits that what holds in the former worlds also holds in the actual world. The implicature data with ‘ought’ can be treated analogously to implicature data with subjunctive conditionals.

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<sup>26</sup>Cf. VERSTRAETE 2005b, 2006, VAN LINDEN & VERSTRAETE 2008. See VERSTRAETE 2005a on complications in deriving scalar implicatures with deontic modals; see also n. 42.

- (29) a. If you had the flu, you would have exactly the symptoms you have now.  
           (cf. ANDERSON 1951: 53)
- b. If you had the flu, you would have very different symptoms from the symptoms you have now.
- c. If you had the flu, you would be sick. Maybe you do have the flu; you *are* pretty congested.

Likewise we can assimilate the tentativeness of ‘ought’ to the tentativeness of modal-past forms generally, as in non-counterfactual subjunctive conditionals (“future-less-vivid” conditionals) such as (20) above and (30).

- (30) If you came to our party tomorrow — and I’m not saying that you will — you would have a great time.

Using the past form highlights the possibility that the marked clause might not ultimately be accepted.

#### 4.4 Counterfactuality?

Languages that mark the weak/strong necessity modal distinction morphologically use the same string to express OUGHT (=‘ought’) and counterfactual necessity (=‘would have to’). Other things equal, it would be preferable to take the surface forms at face value. A worry, however, is that doing so obscures the import of weak necessity modal claims on how things are in the actual world (§4.2). As VON FINTEL & IATRIDOU (2008: 128–131) observe, ‘ought’ cannot generally be replaced by ‘would have to’:

- (31) a. I ought to help the poor. In fact, I must.  
       b. ?I would have to help the poor. In fact, I must.
- (32) a. I ought to help the poor, but I don’t have to.  
       b. ?I would have to help the poor, but I don’t have to.
- (33) a. (If Fred wanted to get to the island) he would have to use this boat.  
       b. He ought to use this boat.
- (VON FINTEL & IATRIDOU 2008: exs. 59, 62)

The modal-past analysis in Definition 4 avoids simply giving ‘Ought  $\phi$ ’ the semantics of an implicit counterfactual necessity claim ‘(If  $\psi$ ,) NEC  $\phi$ ’: the necessity of the prejacent isn’t in general evaluated at the closest  $\psi$ -worlds, for any implicit condition  $\psi$ , but rather at the relevant minimal/preferred (desirable, normal, etc.) worlds as determined by  $h$ . Although my focus in this paper is on lexicalized English weak necessity modals, there remains a question

of how the proposed semantics might be related to OUGHT-expressing uses of *STRONG+CF* in other languages. In what follows I will suggest (read: “engage in highly speculative arm-chair historical linguistic theorizing about”) linguistic and conversational bases for associating modal-past forms with weakness interpretations, and for associating uses of counterfactual morphology with the sort of role given to *h* (picking out a set of relevant worlds that are “preferred” in some lexically unspecified sense, at which to evaluate the embedded claim); however, the conclusions must remain provisional. Thorough synchronic/diachronic cross-linguistic work on how OUGHT-interpretations of *STRONG+CF* have become conventionalized in certain languages, and in some languages grammaticalized in particular lexical items, is called for.

Using a clause that lacks the standard indicative presupposition places a burden on the interpreter’s task of inferring which possibilities are being talked about. Typically a condition specifying which possibilities are relevant must be salient in the context — explicitly in the linguistic context, as in (34), via an ‘if’-clause or previous sentence, or implicitly in the extra-linguistic context, as in (35).

- (34) a. If I bought this guitar, my wife would kill me.  
 b. I couldn’t buy this guitar. My wife would kill me.
- (35) [Context: We are trying out electric guitars in a music store. Looking at a very expensive vintage Gibson Les Paul, I say:]  
 My wife would kill me.

Uses of ‘would have to’-clauses are ordinary cases of this kind: a relevant condition must be salient in the linguistic or extra-linguistic context, as in (36)–(37):

- (36) a. If I wanted to buy this guitar, I would have to check with my wife.  
 b. I could buy this guitar. But I would have to check with my wife.
- (37) [Context: Same as in (35)]  
 I would have to check with my wife.

If no condition is retrievable, using ‘would have to’ is anomalous.

- (38) [Context: We are strangers standing in a hotel lobby. I notice you fumbling with your bags. I say:]  
 ?Here, I would have to help you.

Uses of ‘ought’ lack this salience/retrievability requirement; contrast (38) with (39).

- (39) [Context: Same as in (38)]

Here, I ought to help you.

A hypothesis, then, is that distinctive discourse effects of weak necessity modals are reflexes of using an expression that conventionally lacks the usual indicative presupposition and fails to be indicated as being about a particular salient topical possibility (via an implicit/explicit antecedent condition).

Suppose we are inquiring about the necessity of  $\phi$ . Uttering ‘Must  $\phi$ ’ requires settling which considerations apply given the circumstances: your uttering ‘The colored pencils must be in the drawer’ would require settling that we have confirming evidence about the colored pencils’ location; and your uttering ‘You must tend to your mother’ would require settling that the value of family, which we accept, takes precedence in my situation over other potentially competing norms or values. We might not be prepared to restrict the future course of the conversation in these ways. Nevertheless each of us takes some ways of extending the conversation and addressing the question to be more likely or better than others. Using a weak necessity modal allows us to consider the necessity of  $\phi$  as holding, not necessarily in the current context, as with ‘must’, but in a preferred (likely, normal, desirable) continuation or minimal revision of the current context, whatever that might turn out to be (§§2–3).<sup>27</sup>

[If the reader may allow me to wax speculative:] It isn’t implausible that these sorts of conversational considerations might become repeatedly associated with uses of modal-past forms in the relevant types of contexts — i.e., uses in which the modal claim isn’t linguistically marked as being about the context set (via indicative) or a particular antecedent condition, and no particular implicit-counterfactual interpretation is readily retrievable. This would provide a basis for a conventionalized interpretation of *STRONG+CF* as a necessity claim throughout a (lexically unspecified) set of preferred worlds. Given suitable conditions such an interpretation may even become grammaticalized, where the original counterfactual meaning is semantically bleached and only the weakness interpretation remains (cf. ‘ought’ (n. 15)). As is often the case in grammaticalization and pragmaticalization,<sup>28</sup> the reinterpreted meaning for the source construction (here, an implicit counterfactual) becomes more abstract, and the specific attitude expressed about the necessity claim can appear vague/nonspecific. Such an interpretation is essentially what is delivered by the lexically unspecified generalized notion of minimality/“preferredness” associated with the higher modal-like element *h* in Definition 4. The above grammaticalization path predicts the sorts of cross-linguistic variation that we see in how *OUGHT* is expressed — i.e., with some languages simply

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<sup>27</sup>Compare Schueler’s (2011: 8) claim that the implicit antecedent in an implicit conditional is an antecedent that “expresses the most plausible alterations to current contextual knowledge which would make the content of the [implicit conditional] (interpreted as a consequent in the paraphrase) relevant to the context of utterance.”

<sup>28</sup>The literatures are vast; see, e.g., HORN 1984, HEINE ET AL. 1991, LEHMANN 1995, HOPPER & TRAUOGOTT 2003, NARROG & HEINE 2011; and TRAUOGOTT 1995, 2003, DIEWALD 2011 (see DAVIS & GUTZMANN 2015 for recent applications to linguistic expressives).

utilizing a conventionalized weakness interpretation of *STRONG+CF*, e.g. French; some languages also utilizing a dedicated grammaticalized form (which in some cases may itself be subject to morphologically-based weakening), e.g. German; and some languages only utilizing the grammaticalized form, e.g. English.

I have suggested how an interpretation along the lines in Definition 4 might become associated with uses of *STRONG+CF*. The hypothesis also predicts that one's judgments about replacing 'would have to' with 'ought' should improve to the extent that the antecedent for 'would have to' describes what one regards as preferred (normal, desirable, etc.) conditions relevant for evaluating questions about the necessity of  $\phi$ . This prediction appears to be borne out. Contrast (40)–(41), where replacing 'would have to' with 'ought' is anomalous, with (42)–(43).

- (40) [Context: I don't know whether Alice will come to my wedding next month. Unbeknownst to me, she won't end up coming. I say:]
- a. (If Alice were to come,) I would have to send her a thank you card.
  - b. ?I ought to send Alice a thank you card.
- (41)
- a. (If I was a mobster, which I'm not,) I would have to kill you.
  - b. ?I ought to kill you.
- (42)
- a. Alice left an hour ago. If there wasn't any traffic and everything was normal, she would have to be at her office by now. In fact, I checked and there wasn't any traffic and everything was normal. So she must be at her office by now.
  - b. Alice left an hour ago. She ought to be at her office by now. In fact, I checked, and there wasn't any traffic and everything was normal. So she must be at her office by now.
- (43) [Context (see (7)): Alice is considering with her mother whether to take the A or the C train. The A is quicker, but the C is safer. Her mother says:]
- a. If safety was most important, you would have to take the C train. In fact, safety is more important, as we can agree. So you have to take the C.
  - b. You ought to take the C train. In fact, safety is most important, as we can agree. So you have to take the C.

The discourse effects of 'would have to' and 'ought' are strikingly closer in (42)–(43) than in (40)–(41).

Let's recap. This section has examined ways of implementing the proposal from §§2–3 by treating 'ought' as the notional modal past of 'must'. The weakness of uses of 'Ought  $\phi$ ', as compared to uses of 'Must  $\phi$ ', derives from their failing to presuppose that the topic worlds in which the necessity of  $\phi$  is verified are included in the context set. The semantics in Def-

inition 4 captures this idea by treating ‘ought’ as predicating the necessity of the prejacent throughout a set of possibly counterfactual relevant worlds that are “preferred” (in some lexically unspecified sense), via the world-indexed minimality function *h*. This implementation avoids the worry raised in VON FINTEL & IATRIDOU 2008 with conflating ‘ought’ with ‘would have to’. Yet there remains a question of how the proposed interpretation for the lexicalized weak necessity modal ‘ought’ might be associated with certain uses of *STRONG+CF*, the cross-linguistically common means of expressing OUGHT. I speculated that the apparent sensitivity to a set of “preferred” (desirable, normal, etc.) worlds may result from making a necessity claim that is neither marked as being about the context set (via indicative mood) nor indicated as being about some other topical possibility (via an implicit/explicit antecedent condition). This sensitivity may become conventionally associated with certain uses of *STRONG+CF*, and may in some cases be lexicalized.

Before proceeding, I want to reiterate a methodological point. While there are difficult questions about implementing the idea that ‘ought’ functions semantically as the modal past of ‘must’, it’s important to remember that the phenomenon of using past forms to express weakness/tentativeness generalizes across modals (§4.1; n. 14). *Everyone* needs an account of how weakness interpretations of modal-past forms are derived — e.g., with ‘would’ versus ‘will’, ‘might’ versus ‘may’, etc. in (17)–(19) — and how weakness interpretations versus implicit-counterfactual interpretations of past forms are determined across contexts, as in (44).

- (44) a. A: How old is John?  
       B: He’d be about sixty. (*weakness interpretation*)  
       b. (If John were still alive,) he’d be about sixty. (*implicit CF*)  
(cf. HUDDLESTON & PULLUM 2002: 200–201)

In an ideal linguistic world, a theory of lexical and morphologically-based expressions of OUGHT — accounts of the formal semantics and discourse dynamics, and contrasts among OUGHT-interpretations, MUST-interpretations, and implicit-counterfactual-necessity interpretations — would fall out of an explanation of the more general case. To my knowledge, no such derivation of non-implicit-counterfactual weakness interpretations of past forms has been given — either in general, or for the case of OUGHT-interpretations of *STRONG+CF* constructions in other languages. The above preliminary hypothesis provides a potential basis for weakness (tentativeness, politeness) effects associated with modal-past forms generally. Indeed it isn’t uncommon for uses of unmarked items to give rise to derived conversational effects, such as weakness, politeness, etc., which may in turn become conventionalized (n. 28). The account in this section treats weak necessity modals as an instance of this gen-

eral phenomenon. I hope our discussion may prove fruitful for future theorizing about the semantics and pragmatics of modal-past forms, both notional and morphological.<sup>29</sup>

## 4.5 Entailments?

A worry for the modal-past analyses in this section is that they don't seem to predict entailment relations between 'ought', on the one hand, and 'must' and 'may', on the other. An initially plausible idea is that — as the (not necessarily innocent) labels might suggest — strong necessity modals entail weak necessity modals, which entail possibility modals. Examples such as (45)–(46) are anomalous.

(45) #I mustn't lie to Alice, but I ought to.

(46) #I can't (/may not) lie to Alice, but I ought to.

But the proposed semantics seem to predict the consistency of 'Ought  $\phi$  and must  $\neg\phi$ ' and 'Ought  $\phi$  and  $\neg$ may  $\phi$ ' (assuming 'may' is the dual of 'must', as in Definition 2). The 'must  $\neg\phi$ '/' $\neg$ may  $\phi$ ' conjunct is true at  $w$  iff the necessity of  $\neg\phi$  is verified at  $w$ , i.e. iff  $P(w)$  implies  $\neg\phi$ ; the 'ought' conjunct is true at  $w$  (assuming the semantics in Definition 4) iff the necessity

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<sup>29</sup>Intuitively speaking, the hypothesis in the main text treats the use of *STRONG+CF* on the model of a subjunctive conditional consequent (one without any particular implicit/explicit antecedent). An alternative is to think of the use of *STRONG+CF* on the model of the *antecedent*. Interestingly, there is a precedent for associating an interpretation like the one given for  $h$  in Definition 4 with a certain type of 'if'-clause. GROSZ 2012 argues that optatives/exclamatives should be treated on the model of (so-called) non-logical 'if'-clauses under a covert exclamation operator *EX* ("non-logical" because the embedded clause provides the subject matter of the attitude). Grosz's *EX* operator is essentially a scalar analogue of  $h$  in Definition 4, both of which are generalized to express a lexically unspecified attitude toward the embedded proposition.

- (i) Oh, that it would snow!
  - a. *EX* [it snows]
  - b.  $\approx$ It would be good if it snowed.
- (ii) Oh, that it snowed!
  - a. *EX* [it snowed]
  - b.  $\approx$ It's surprising that it snowed.

It would be interesting to compare Grosz's treatment of optatives/exclamatives via *EX* with the treatment of deontic/epistemic 'ought' in Definition 4 via  $h$ . In Grosz's terms, deontic readings would be associated with (roughly) an attitude of desirability toward the deontic necessity of the prejacent, and epistemic readings with (roughly) an attitude of likelihood/normality toward the epistemic necessity of the prejacent. A Grosz-style scalar version of Definition 4 — that 'Ought  $\phi$ ' is true iff the proposition that  $\phi$  is necessary is at least as "preferred" (desirable, normal, etc.) as a contextually relevant standard/threshold — may help capture connections between weak necessity modals and gradability/comparatives (FINLAY 2014, RUBINSTEIN 2014, PORTNER & RUBINSTEIN 2016). I leave investigation of cross-linguistic comparisons among morphological/lexical expressions of OUGHT, non-logical 'if'-clauses, and optatives/exclamatives for future research.

of  $\phi$  is verified at every “preferred” (desirable, expected, etc.) world  $w'$ , i.e. iff  $P(w')$  implies  $\phi$  for every  $w' \in h(w)$ . Accepting (45)/(46) requires restricting the context set to worlds  $w$  such that  $P(w)$  implies  $\neg\phi$  and, for every selected world  $w' \in h(w)$ ,  $P(w')$  implies  $\phi$ . Absent additional constraints on  $h$ , such conditions are consistent.

I think this prediction is actually a feature, not a bug. ‘Must’, ‘ought’, and ‘may’ *cannot* be ordered in terms of logical strength simply in virtue of the words’ conventional meanings. ‘Must  $\phi$ ’  $\models$  ‘May  $\phi$ ’, no doubt about that; but ‘Must  $\phi$ ’  $\not\models$  ‘Ought  $\phi$ ’ and ‘Ought  $\phi$ ’  $\not\models$  ‘May  $\phi$ ’.

The point is clearest in the epistemic case. The discourses in (47)–(48), unlike the discourse in (49), are coherent.<sup>30</sup>

(47) Alice must not be home yet; she hasn’t called, and she always calls right away to let us know she got back safely. But she did leave two hours ago. She ought to be home already. I hope there wasn’t an accident.

(*Must*  $\neg\phi \wedge$  *Ought*  $\phi$ )

(48) Alice can’t be home yet; she hasn’t called, and she always calls right away to let us know she got back safely. But she did leave two hours ago. She ought to be home already. I hope there wasn’t an accident.

( $\neg$ *Can*  $\phi \wedge$  *Ought*  $\phi$ )

(49) #Alice can’t be home yet; she hasn’t called, and she always calls right away to let us know she got back safely. But she did leave two hours ago. She must be home already. I hope there wasn’t an accident.

(# $\neg$ *Can*  $\phi \wedge$  *Must*  $\phi$ )

Epistemic ‘Must  $\phi$ ’ commits the speaker to high credence in  $\phi$  and epistemic ‘May  $\phi$ ’ commits the speaker to some credence in  $\phi$ . Epistemic ‘must’ entails epistemic ‘may’. But epistemic ‘Ought  $\phi$ ’ doesn’t commit the speaker to any credence in  $\phi$ . Surprisingly, epistemic ‘must’ doesn’t entail epistemic ‘ought’, and epistemic ‘ought’ doesn’t entail epistemic ‘may’ (cf. SILK 2013b, SWANSON 2016a, YALCIN 2016).

Epistemic ‘Ought  $\phi$ ’ is compatible with a denial of ‘ $\phi$ ’. Although uttering epistemic ‘Ought  $\phi$ ’ doesn’t commit the speaker to any *unconditional* credence in  $\phi$ , it still conveys a doxastic attitude about  $\phi$ . Roughly speaking, it conveys a conditional attitude about the necessity of  $\phi$  given a relevant body of evidence, on the assumption that conditions are normal in the relevant respects (§§2–4; cf. GROEFSEMA 1995: 72–73; WEDGWOOD 2007: 118–119; YALCIN 2016). One may infer from the falsity of ‘ $\phi$ ’ that conditions aren’t normal. Yet since ‘ought’ can be used to talk about the modal status of  $\phi$  at non-actual possibilities, on the proposed

<sup>30</sup>I use epistemic ‘can’t’ to target the external negation ( $\neg < can$ ), since with epistemic ‘may not’ the negation is internal. With ‘mustn’t’ the negation is internal (*must*  $< \neg$ ). With deontic ‘may not’ the negation is external ( $\neg < can/may$ ).



semantics, epistemic ‘Ought  $\phi$ ’ can still be true and accepted. This invalidates the entailments between epistemic ‘ought’, on the one hand, and epistemic ‘must’ and ‘may’, on the other.<sup>31,32</sup>

It is hard to come up with coherent deontic examples analogous to the epistemic examples in (47)–(48). Hard, but perhaps not impossible:

- (50) I must tell my wife the truth about the affair. I know I shouldn’t; it’ll only hurt her. But I must.
- (51) I know I shouldn’t tell my wife the truth about the affair; it’ll only hurt her. But I can’t lie to her.
- (52) #I must tell my wife the truth about the affair. I know I can’t; it’ll only hurt her. But I must.

I grant that it isn’t immediately obvious what to say about these examples. It is interesting that the entailments from ‘must’ to ‘ought’ and from ‘ought’ to ‘may’ seem more evident in the case of non-epistemic readings. In any case, insofar as we want unified semantics for modal verbs that generalize across readings, we should prefer an account that avoids treating these entailments as *semantically* valid.

## 5 Entailingness and directive force

In §4 I proposed that we develop the §3-account by treating ‘ought’ as the notional modal past of ‘must’, and we examined several ways of doing so incorporating general insights about the semantics/pragmatics of counterfactual marking. This section shows how a modal-past approach helps explain several seemingly unrelated puzzles concerning entailingness and performativity with ‘ought’ and ‘must’.

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<sup>31</sup>It is an interesting question under what conditions epistemic ‘Ought  $\phi$ ’ can be felicitous when ‘ $\neg\phi$ ’ is accepted. One possible constraint is that one cannot have direct evidence that circumstances aren’t normal in the relevant respects, and one would have expected conditions to be normal were it not for one’s direct evidence that  $\neg\phi$ . It seems preferred for subsequent denials that conditions are normal to be headed by epistemic ‘must’, which signals that its prejacent is the conclusion of an inference (KARTTUNEN 1972, COATES 1983, PALMER 2001, VON FINTEL & GILLIES 2010) — here, an inference from one’s direct evidence that  $\neg\phi$ :

(i) She ought to be here by now, but she isn’t. She {must have gotten, ?got} lost.

<sup>32</sup>As discussed in §2, I use ‘epistemic’ pretheoretically to describe intuitive readings involving an assessment (in some sense) of the truth or likelihood of a proposition given a body of information (contrast YALCIN 2016). This usage follows the typological literature in treating non-entailing uses of ‘ought’, such as (23)/(47)–(48), as epistemic (see n. 7). Terminology aside, what matters for our purposes is that the uses of ‘ought’ are compatible with a denial of the prejacent. ‘Ought’ contrasts with ‘must’ and ‘may’ in this respect.

First, though many authors have claimed that epistemic ‘Ought  $\phi$ ’ expresses that  $\phi$  is probable,<sup>33</sup> we have seen that this isn’t quite right (§4): Epistemic ‘Ought  $\phi$ ’ doesn’t commit the speaker to any unconditional credence in  $\phi$  (cf. SWANSON 2016a, YALCIN 2016), as reflected in (23), reproduced in (53).

- (53) a. Alice ought to be here by now, but she isn’t.  
 b. #Alice must be (/may be, /is probably) here by now, but she isn’t.

Epistemic ‘(Must  $\phi$ )  $\wedge$   $\neg\phi$ ’ is anomalous in a way that epistemic ‘(Ought  $\phi$ )  $\wedge$   $\neg\phi$ ’ is not. Surprisingly, there is robust evidence that this holds with deontic readings as well (e.g., WERNER 2003, NINAN 2005, PORTNER 2009).<sup>34</sup> When one wishes to convey that one thinks a given obligation won’t be satisfied, one typically uses ‘ought’/‘should’ rather than ‘must’, as in (54)–(55).

- (54) a. He should/ought to come tomorrow, but he won’t.  
 b. \*He must come tomorrow, but he won’t.  
 (PALMER 1990: 123; judgment Palmer’s)
- (55) a. You ought to help your mother, but you won’t (/but I know you won’t).  
 b. ?You must help your mother, but you won’t (/but I know you won’t).

As Eric Campbell insightfully puts it, “The idea that one *must* (not) do something... does not generally indicate that one option is simply better than another option, but that the other is out of bounds,” “off the table,” “closed off”; alternative possibilities become “*unthinkable*” (CAMPBELL 2014: 463–465). Of course obligations can go unfulfilled. What is interesting is that speakers appear to assume otherwise, at least for the purposes of conversation, when expressing obligations with ‘must’.<sup>35</sup>

Call data concerning sentences of the form ‘(MODAL  $\phi$ )  $\wedge$   $\neg\phi$ ’ *entailingness data* (though see n. 36). Our discussion in §4 suggests a natural way of capturing entailingness data such as (53)–(55). Evaluating ‘Ought  $\phi$ ’ can take us to worlds outside the context set when assessing the necessity of  $\phi$ . There is no requirement that the value of the premise frame  $P$  at worlds outside the context set be compatible with the common ground. So, ‘Ought  $\phi$ ’ can be true at

<sup>33</sup>E.g., SLOMAN 1970, HORN 1972, WERTHEIMER 1972, THOMSON 2008, FINLAY 2010, 2014, LASSITER 2011, WHEELER 2013, RIDGE 2014.

<sup>34</sup>For theoretical discussion see esp. WERNER 2003: 124–137; NINAN 2005; PORTNER 2009: 103, 189–196, SILK 2013b, 2016b. See also, a.o., LEECH 1971, WERTHEIMER 1972, HARMAN 1973, LYONS 1977, WOISETSCHLAEGER 1977, WILLIAMS 1981, COATES 1983, PALMER 1990, SWEETSER 1990, MYHILL 1996, HUDLESTON & PULLUM 2002, SWANSON 2008, 2016a, CLOSE & AARTS 2010, CAMPBELL 2014, GODDARD 2014.

<sup>35</sup>Cf.: “The basic strong obligation component common to [‘got to’, ‘have to’, and ‘must’] is ‘I can’t think:  $X$  will not  $V$ ’; note that this does not mean that the obligated event will inevitably take place but rather that the speaker is operating on this assumption” (MYHILL 1996: 348–349).

a world  $w$  in the context set even if every world in the context set is a  $\neg\phi$ -world; hence the coherence of ‘(Ought  $\phi$ )  $\wedge$   $\neg\phi$ ’. Since ‘Must  $\phi$ ’ doesn’t have a counterfactual element to its meaning, the context set must include  $\bigcap P(w)$ , for all worlds  $w$  in the context set. So, if ‘Must  $\phi$ ’ is accepted,  $\neg\phi$  cannot be satisfied throughout the context set; hence the incoherence of ‘(Must  $\phi$ )  $\wedge$   $\neg\phi$ ’ on any reading.<sup>36</sup>

How exactly these points about the relation between the modals’ premise sets and the context set are derived depend on general issues of presupposition and verbal mood (see §4; n. 19). For instance, with modals such as ‘must’ that lack a counterfactual meaning component, there might be a context set presupposition on the embedded clause so that it denotes a proposition defined only at worlds in the context set. (This could be due to an indicative presupposition that is transmitted to the embedded clause, or a presupposition in the modal verb’s semantics on the evaluation worlds for its clausal argument.) So, in order for ‘must  $\phi$ ’ to be true, i.e. for  $\bigcap P(w)$  to be a subset of  $\{u: [\lambda v: v \in c. \llbracket \phi \rrbracket^{c,v} = 1](u) = 1\}$ ,  $\bigcap P(w)$  must be a subset of the context set. Alternatively, there might simply be a general presupposition on the values of premise frame variables (and perhaps quantifier domain variables generally) that they be compatible with the common ground at worlds in the context set. For present purposes we can put such internal compositional semantic details aside. What is important is that non-counterfactual modal constructions (modal sentences, indicative conditionals, etc.) presuppose that the domain of quantification is included in the context set. ‘Ought  $\phi$ ’ lacks this presupposition — whether by failing to transmit an indicative presupposition on its embedded clause, or in virtue of a general presupposition about modals’ premise sets at live/non-live possibilities. Parallel to our discussion in §3, there is nothing distinctively “strong” that is posited about ‘must’ vis-à-vis its entailingness properties: the incoherence in accepting ‘(Must  $\phi$ )  $\wedge$   $\neg\phi$ ’ follows from the modal’s ordinary semantics of necessity and

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<sup>36</sup>This explanation leaves open whether ‘ $\neg\phi$ ’ may be true at some worlds in the context set, and thus seems to predict that accepting deontic ‘Must  $\phi$ ’ is compatible with accepting the epistemic possibility of  $\neg\phi$ . This prediction appears to be borne out by corpus data. VERSTRAETE 2007 cites the naturally occurring example in (i) with an imperative, which we can adapt with ‘must’ as in (ii).

- (i) You’ve got to take a stand Tom. You’ve got to do it mate. [...] Don’t stand for it, because if you do you’ll just get trampled on. (CB ukspok) (VERSTRAETE 2007: ex. 23)
- (ii) You mustn’t stand for it, because if you do you’ll just get trampled on.

Though (iii) strikes me as somewhat anomalous, this is arguably due to a general norm of cooperative conversation that interlocutors do what they can to make the actual world be among the best worlds (cf. PORTNER 2007: 358). On this diagnosis, (iii) would be anomalous to the extent that it’s anomalous to commit someone to help see to it that  $\phi$  while expressly admitting the possibility of  $\neg\phi$ .

- (iii) ?You must go to confession, but maybe you won’t (/but you might not).

general context set presuppositions associated with indicative. It's the *non*-entailingness of 'ought', and the consistency of '(Ought  $\phi$ )  $\wedge$   $\neg\phi$ ', that is given special explanation.<sup>37</sup>

Deontic 'ought' and 'must' are often thought to differ in illocutionary force. Paul McNamara characterizes the phenomena well (§1):

To say that one ought to take a certain option is merely to provide a nudge in that direction. Its typical uses are to offer guidance, a word to the wise ("counsel of wisdom"), to recommend, advise or prescribe a course of action... In contrast, to say that one must take a certain option is to be quite forceful. Its typical uses are to command, decree, enact, exhort, entreat, require, regulate, legislate, delegate, or warn. Its directive force is quite strong. (MCNAMARA 1990: 156)

Indeed it is often claimed that (root-level) uses of deontic 'Must  $\phi$ ' are distinguished in conventionally performing a directive speech act, perhaps in addition to performing an assertion.<sup>38</sup> Many previous accounts capture this contrast by stipulating an ad hoc performative element in the lexical semantics of 'must', such as an independent dynamic entry (NINAN 2005, PORTNER 2007, 2009, SWANSON 2008; cf. FINLAY 2014: 172–174; RIDGE 2014: 27–36). Our account of entailingness data suggests a strategy for *deriving* the contrasting speech-act properties of deontic 'ought' and 'must' from their static semantics and general pragmatic considerations. Accepting 'Must  $\phi$ ' is incompatible with denying ' $\phi$ '. So, if the truth of ' $\phi$ ' is assumed to depend on the actions of the addressee, updating with 'Must  $\phi$ ' will commit

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<sup>37</sup>This of course isn't the only possible explanation for the (non-)entailingness data in (53)–(55). One alternative is to say that 'must' is only interpreted with respect to a modal base (or the union of several modal bases), not an ordering source (see n. 11; cf. HACQUARD 2009: 290n.9). (As far as the interpretation of 'must' goes, one might say, "all laws are natural laws" (cf. PIAGET 1962: 340).) Since modal bases are realistic — they consist of propositions true at the evaluation world — 'Must  $\phi$ ' would entail ' $\phi$ '. However, there are reasons for introducing ordering sources into the semantics, both empirical (in handling inconsistent premise sets and gradability) and conceptual (in distinguishing facts and norms, and dynamic and deontic modality) (KRATZER 1981, 1991; cf. GROVE 1988, SPOHN 1988, KAUFMANN 2005). We can explain the (non-)entailingness data without ad hoc stipulations about the interpretation of 'must'. Second, SWANSON 2016a captures the data by including in the semantic entry for 'must' but not 'ought' a constraint that requires high credence in the modal's prejacent. It would be better, I take it, if we could explain the data in terms of independent features of the semantics of 'ought' and 'must', as I have argued we can. Third, one might explain the data by appealing to the different performative properties of weak and strong necessity modals (see n. 38). I argue below that the analysis in the main text has the advantage of deriving these performative properties, without needing to take them as basic. For general discussion of entailingness with root modals in the perfective, see also HACQUARD 2009.

<sup>38</sup>See esp. NINAN 2005; PORTNER 2007: 363–365, 2009: 103–105, 189–196; SWANSON 2008: 1203–1204. See also LEECH 1971, LAKOFF 1972a, WERTHEIMER 1972, LYONS 1977, WOISETSCHLAEGER 1977, COATES 1983, PALMER 1990, BYBEE ET AL. 1994, VERSTRAETE 2001, HUDDLESTON & PULLUM 2002, TAGLIAMONTE 2004, LEECH ET AL. 2009, GODDARD 2014, RIDGE 2014; see also nn. 42, 43. For discussion of differences in force among weak vs. strong deontic adjectives, see VAN LINDEN & VERSTRAETE 2011: 153, VAN LINDEN 2012: 69.

her to seeing to it that  $\phi$  (or, in the general case, commit the interlocutors to presupposing that the relevant subject of the obligation is committed to seeing to it that  $\phi$ ). So, it is no surprise that ‘must’ should be thought to be conventionally directive. By contrast, since accepting ‘Ought  $\phi$ ’ is compatible with denying ‘ $\phi$ ’, updating with ‘Ought  $\phi$ ’ needn’t commit anyone to seeing to it that  $\phi$ . We correctly predict that even if deontic ‘ought’ can be used to perform a directive speech act in certain contexts, it doesn’t do so as a matter of its conventional meaning. Yet given our discussion of the conversational role of ‘ought’ in §§2–4, it is unsurprising that deontic ‘ought’-claims should often perform more moderate speech acts of recommending or advising. Uttering ‘Ought  $\phi$ ’ one can convey one’s preference that ‘ $\phi$ ’ be accepted, but without imposing the truth of ‘ $\phi$ ’ on the common ground. Indeed, as Gibbard writes, following Stevenson (1937, 1944), the speaker “is making a conversational demand. He is demanding that the audience accept what he says, that it share the state of mind he expresses” (172), though in a “more subtle, less fully conscious way” than by issuing “an imperative” (STEVENSON 1937: 25) — or, we might say, than by using ‘must’. Deontic ‘ought’ generally provides a less face-threatening alternative to deontic ‘must’, in particular in contexts where the speaker might be construed as imposing on the addressee or other relevant subject (n. 43).<sup>39</sup>

Our treatments of various differences in “strength” between ‘ought’ and ‘must’ are compatible with the observation that the latter may carry an intuitively weaker conversational force in certain contexts. Consider (56), from Robin Lakoff.

- (56) [Context: You are hosting a party. You wish to offer the guests a cake that you baked yourself, and that you take responsibility for. You say:]
- a. You must have some of this cake.
  - b. You should/ought to have some of this cake.
  - c. You may have some of this cake. (LAKOFF 1972a: 910)

As Lakoff observes, using ‘must’ would be most polite, merely conveying an offer, while using ‘should’ would be less polite and using ‘may’ would be flat-out rude. It’s an interesting question precisely what conversational factors are responsible for such apparent reversals of the modals’ felt forces. Given our focus on weak/strong necessity modals I put this issue aside, as the phenomenon generalizes to intuitively “strong” uses of possibility modals, as in (56c) and command uses such as (57), and to intuitively “weak” uses of imperatives, as in permission and invitation uses such as (58).<sup>40</sup>

<sup>39</sup>Cf. “Bradshaw said, he must be taught to rest. Bradshaw said they must be separated. ‘Must,’ ‘must,’ why ‘must’? What power had Bradshaw over him? ‘What right has Bradshaw to say “must” to me?’ he demanded” (*Mrs Dalloway*, Virginia Woolf).

<sup>40</sup>For discussion of non-command uses of imperatives, see PORTNER 2012, KAUFMANN 2012, LAUER 2013, VON FINTEL & IATRIDOU 2015.

(57) [Context: Celebrity to entourage:]

You may/can leave now.

(58) [Context: Same as in (56)]

Here, have some of this cake!

I have said that ‘(Must  $\phi$ )  $\wedge$   $\neg\phi$ ’ cannot be coherently accepted on any reading. This claim needs to be qualified. Though there is robust data attesting to the general anomalousness of deontic ‘(Must  $\phi$ )  $\wedge$   $\neg\phi$ ’ (see n. 34), some speakers report being able to hear sincere uses as consistent in certain contexts.<sup>41</sup> However, a critical observation is that even speakers who may find examples such as (59) as consistent agree that it would sound better if a strong necessity modal such as ‘have to’ or ‘be required to’ was used instead of ‘must’, as in (60).

(59) I must go to confession; I’m a Catholic. But I’m not going to. I haven’t practiced for years.

(60) I have to (/I’m required to) go to confession; I’m a Catholic. But I’m not going to. I haven’t practiced for years.

Intuitively, in (60) it’s consistent for the speaker to dismiss going to confession because she isn’t endorsing the norms which imply that she is obligated to do so. She is simply reporting what these norms require.

These observations suggest that one can hear (59) as felicitous to the extent that one accepts “objective” uses of ‘must’, in (roughly) the sense of LYONS (1977, 1995). Adapting Lyons’s terminology, say that a modal is used *endorsingly* in an utterance of ‘MODAL  $\phi$ ’ if the utterance presents the speaker as endorsing the considerations with respect to which the modal is interpreted; and say that the modal is used *non-endorsingly* if it doesn’t. Among strong necessity modals, ‘be required to’ is typically used non-endorsingly; ‘have to’ and ‘(have) got to’ are more flexible, with ‘have to’ tending more toward the non-endorsing side of the spectrum and ‘(have) got to’ more toward the endorsing side; and ‘must’ is typically used endorsingly.<sup>42</sup> It’s easier to hear sincere utterances with (e.g.) ‘have to’/‘be required to’

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<sup>41</sup>I haven’t seen this judgment expressed in published work, though I have heard it voiced in personal conversations. Thanks to Jan Dowell for discussion.

<sup>42</sup>These generalizations are supported by a robust body of data in descriptive linguistics. In addition to LYONS 1977, 1995, see LEECH 1971, 2003, LAKOFF 1972a,b, COATES 1983, PERKINS 1983, PALMER 1990, 2001, MYHILL 1995, 1996, MYHILL & SMITH 1995, VERSTRAETE 2001, HUDDLESTON & PULLUM 2002, SMITH 2003, LEECH ET AL. 2009, CLOSE & AARTS 2010, GODDARD 2014. The distinction between (what I am calling) endorsing and non-endorsing uses has been noted under various descriptions in a range of disciplines (see SILK 2016a for references). I adapt Lyons’s terminology since the terminology of ‘subjective’ and ‘objective’ can be fraught. For critical discussion and applications, see also SWANSON 2012, 2016b, SILK 2015b, 2016a; see SILK 2016a, 2017a on formal implementations.

as compatible with the speaker's rejecting or being indifferent about the considerations that would verify the modal claim:

- (61) [Context: Some friends are deciding whether to go home or stay out late for a party.]
- a. #You must get home by 11, but I don't care whether you do.
  - b. #Bert must get home by 11. Aren't his parents stupid? I would stay out if I were him.
- (62) [Context: Same as (61)]
- a. You have to (/are required to) get home by 11, but I don't care whether you do.
  - b. Bert has to (/is required to) get home by 11. Aren't his parents stupid? I would stay out if I were him.

When one wishes to describe relevant norms without necessarily expressing endorsement of them, one typically uses (e.g.) 'have to' rather than 'must'. However, non-endorsing uses of 'must' may be possible for some speakers.

So, the promised qualification is this: in *endorsing* uses of a strong necessity modal, '*STRONG*  $\phi$ ' is incompatible with a denial of ' $\phi$ '. It's only with endorsing uses of strong necessity modals that  $\cap P(w)$  must be included in the context set. What makes the claims about entailingness and performativity particularly compelling in the case of 'must' — as opposed to, say, 'have to' — is that 'must' is typically used endorsingly.<sup>43</sup> But to the extent to which one finds non-endorsing uses of 'must' acceptable, to that same extent one will find '(Must  $\phi$ )  $\wedge$   $\neg\phi$ ' to be consistent and find deontic 'Must  $\phi$ ' to lack directive force.

What is distinctive about weak necessity modals is that *even when they are used endorsingly* they are non-entailing and may lack imperative force. 'Ought' and 'should' are like 'must' in typically being used endorsingly (n. 42).<sup>44</sup> Parallel to (61)–(62), the claims in (63) with 'ought' would be more naturally expressed with a weak necessity modal such as 'supposed to', as in (64).

- (63) a. #You ought to get home by 11, but I don't care whether you do.  
b. #Bert ought to get home by 11. Aren't his parents stupid? I would stay out if I were him.
- (64) a. You're supposed to get home by 11, but I don't care whether you do.

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<sup>43</sup>It isn't implausible that the drastic decline in frequency of deontic 'must' is due in no small part to the above features of its meaning and use (cf. MYHILL 1995, 1996, KRUG 2000, SMITH 2003, TAGLIAMONTE 2004, LEECH ET AL. 2009, CLOSE & AARTS 2010, GODDARD 2014).

<sup>44</sup>Hence why I have chosen to frame the discussion primarily in terms of these modals: doing so abstracts away from independent issues concerning (non-)endorsingness.

- b. Bert is supposed to get home by 11. Aren't his parents stupid? I would stay out if I were him.

Nevertheless a characteristic use of 'Ought  $\phi$ ' is with an explicit or implicated denial of ' $\phi$ ' (§4).

## 6 Negotiability and collective commitment

Along the way we have noted ways in which the approach to the weak/strong necessity modal distinction in this paper differs from various approaches in the literature. As discussed throughout §§2–5: Alternative approaches, varied as they are, generally agree in treating uses of 'Ought  $\phi$ ' as predicating a distinctive *kind* of necessity, namely weak necessity, of the prejacent  $\phi$  at the actual world (evaluation world). To very rough first approximations: On comparative possibility/probability analyses (FINLAY 2009, 2010, 2014, LASSITER 2011),  $\phi$  is a weak necessity if  $\phi$  is more likely (more desirable, better) than any relevant alternative to  $\phi$ . On domain restriction analyses (COPLEY 2006, VON FINTEL & IATRIDOU 2008, SWANSON 2011, RUBINSTEIN 2012, CHARLOW 2013),  $\phi$  is a weak necessity if  $\phi$  is true throughout a certain set  $S$  of worlds, where  $S$  is a subdomain of the set of worlds quantified over by 'must'. Although Yalcin's (2016) recent normality-based semantics denies that the quantificational domains for 'ought' and 'must' are logically related, 'Ought  $\phi$ ' is still interpreted by evaluating the truth of  $\phi$  throughout a set of minimal worlds relative to the actual world (evaluation world).

The approach in this paper rejects treating acceptance of 'Ought  $\phi$ ' in terms of  $\phi$  being a necessity, in any posited sense of necessity, at every candidate for the actual world. Though we have seen several ways of implementing the core ideas in the formal semantics and pragmatics, the candidate analyses agree in explaining the apparent "weakness" of (so-called) weak necessity modals in terms of a failure to presuppose that the relevant worlds in which the prejacent is a necessity are included in the context set. For example, the semantics in Definition 4 adds an additional layer of modality, predicating the familiar ordinary type of necessity claim — the proposition  $[\lambda w. \bigcap P_c(w) \subseteq \llbracket \phi \rrbracket^c]$  — of every world in a certain set of possibly counterfactual worlds. I have argued that the general "modal-past approach" (even if not implemented in precisely this way) captures various contrasting discourse properties of 'ought' and 'must', including differences in conversational force, performativity, and relations to standing contextual assumptions; that it captures various logical properties, including differences in entailment and the lack of entailment relations between 'must' and 'ought' and between 'ought' and 'may'; that it captures relations between weak necessity modals and modal-past phenomena in English and cross-linguistically; and that it maintains these virtues while generalizing across flavors of modality.



There are important insights from previous accounts which are preserved in the account developed here. The semantics in §4 allow for connections between weak necessity modals and common ground assumptions (n. 5); mood, counterfactuality, and conditionality (nn. 15, 20, 24); and notions of comparison (explicitly in Definition 5; n. 25), normality (MAKINSON 1993, FRANK 1996, YALCIN 2016), and probability (although not *unconditional* probability; n. 33). Existing accounts are often developed with an eye toward one or few of these issues to the exclusion of others. Although we haven't examined each of the connections in equal depth, I hope our discussions have illustrated the fruitfulness of the proposed modal-past approach and its potential for systematizing diverse phenomena involving weak and strong necessity modals.

In the remainder of this section I would like to devote a bit more attention to comparing the account in this paper with one particular alternative: the “collective commitment” account developed in RUBINSTEIN 2012 (see also 2014, PORTNER & RUBINSTEIN 2012, 2016). I focus on Rubinstein's account because it's arguably the best developed version of arguably the dominant type of account in the literature, a domain restriction account. We have already observed ways in which the modal-past approach in this paper contrasts with domain restriction accounts generally: the account developed here denies that ‘ought’ and ‘must’ can be ordered in a scale of quantificational strength, and that ‘Must  $\phi$ ’ truth-conditionally entails ‘Ought  $\phi$ ’ which truth-conditionally entails ‘May  $\phi$ ’;<sup>45</sup> and it rejects analyzing acceptance of ‘Ought  $\phi$ ’ in terms of  $\phi$  being a necessity, in some posited sense, at every world in the context set. In what follows I put these general points of disagreement to the side, and focus on the distinctive feature of Rubinstein's domain restriction account: the appeal to “collective commitment” to a body of “priorities” (norms, goals, ideals (PORTNER 2007, 2009)). Briefly considering Rubinstein's account will help elucidate several distinctive features of the account developed in this paper. (Rubinstein doesn't examine epistemic modals. I leave open how her account would be extended to epistemic readings. There will be now-familiar issues about the lack of entailment relations between epistemic ‘ought’ and ‘may’/‘must’, and the

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<sup>45</sup>It's perhaps worth mentioning that there are ways of implementing a domain restriction account that invalidate these entailments. For instance, an option mentioned but ultimately rejected by von Fintel & Iatridou is to treat ‘ought’ as interpreted with respect to the union of the primary and secondary ordering sources, quantifying over the  $\lesssim_{G_1(w) \cup G_2(w)}$ -minimal worlds in the modal base. Such a view faces independent problems: As von Fintel & Iatridou note, it fails to capture the relative priority of the premises in the primary ordering source, and thus makes incorrect predictions in cases where premises in the secondary ordering source conflict with the primary ordering source (2008: 137). It also won't help for approaches (like von Fintel's own) that use an empty ordering source for epistemic ‘may’ and ‘must’ (e.g., VON FINTEL & GILLIES 2010); as we have seen, accepting epistemic ‘Ought  $\phi$ ’ is compatible with denying that  $\phi$  is epistemically possible.

fact that epistemic ‘ought’ cannot in general quantify over a set of worlds that are regarded as epistemically possible (§§4–5). Again, I put these general worries aside.)<sup>46</sup>

In §4 we raised an explanatory worry for von Fintel & Iatridou’s domain restriction account, that it doesn’t provide a general account of what makes an ordering source primary vs. secondary in particular contexts. Rubinstein’s account improves on von Fintel & Iatridou’s by supplementing it with a substantive account of the primary/secondary ordering source distinction in terms of *collective commitment*: what makes a primary ordering source “primary” is that it includes premises which are presupposed to be collectively committed to; what makes a secondary ordering source “secondary” is that it includes premises which are presupposed not to be collectively committed to. ‘Must’ is interpreted only with respect to “primary” premises, premises which are presupposed to be collectively endorsed by the interlocutors. ‘Ought’ is logically weaker in that it is interpreted with respect to these premises as well as “secondary” premises which are presupposed not to be collectively endorsed by the interlocutors. Rubinstein summarizes the view as follows:

[S]trong necessity modals are only sensitive to prioritizing premises that the conversational participants are presupposed to be collectively committed to... [I]f any participant in the conversation were given the chance to defend these priorities, it is assumed in the context of the conversation that they would do so. Weak necessity modals take into account all these premises plus some more. For these additional premises, lack of collective commitment is presupposed... [A] speaker uses a weak modal when he or she believes (perhaps mistakenly) that the secondary priorities it depends on are still up for discussion. (RUBINSTEIN 2012: 51–52)

For instance, in (65) ‘ought’ is interpreted with respect to a priority favoring cost-effectiveness. Though the speaker may be committed to this priority, it isn’t presupposed that the addressee, Alice, is committed to it (cf. RUBINSTEIN 2012: 55–60).

- (65) [Context: Alice wants to go to Harlem and is considering whether to take the subway or a cab. The subway is cheaper, but the cab is quicker.]  
You ought to (/should, /?have to, /?must) take the subway.

This lack of collective commitment is what calls for using ‘ought’, on Rubinstein’s view.

We have seen two dimensions along which modals can differ: first, in strength; second, in tendencies for (non-)endorsing use, i.e. the frequency with which uses of ‘MODAL  $\phi$ ’ convey the speaker’s endorsement of the considerations that would verify the modal claim.

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<sup>46</sup>Thanks to an anonymous referee for encouraging me to expand on the various differences between our accounts.

Delineating these dimensions of difference highlights problems for attempts to capture the weak/strong necessity modal distinction in terms of collective commitment to a body of priorities. For clarity let's use 'commitment<sub>Rub</sub>' for the notion of commitment in Rubinstein's analyses. Rubinstein is explicit that commitment<sub>Rub</sub> is commitment to the *content* of an ordering source: commitment<sub>Rub</sub> to a priority *p* is understood as *endorsement that p is desirable* (e.g., 2012: 78; see also PORTNER & RUBINSTEIN 2012: 475, 477–481).<sup>47</sup> What is relevant for determining whether *p* is a “primary” or “secondary” priority — hence whether *p* figures in the interpretation of a strong (or weak) necessity modal, or may serve as an additional priority in the interpretation of a weak necessity modal, respectively — is the interlocutors' views about the desirability of *p*. The problem is that, as we have seen, the weak/strong necessity modal distinction crosscuts the distinction between necessity modals that express endorsement in this sense and those that don't, and hence crosscuts the distinction between necessity modals that express collective commitment<sub>Rub</sub> and those that express a lack of commitment<sub>Rub</sub>.

First, there are uses of weak necessity modals that involve collective endorsement to the relevant priority. In (66) we are both publicly committed<sub>Rub</sub> to the value of family; my helping my mother is “publicly endorsed as desirable” by every conversational participant. Yet ‘ought’ is felicitous, indeed preferred.

- (66) *Me*: Family is very important. I think I would rather stay here.  
*You*: I agree. You ought to tend to your mother.

Second, there are uses of strong necessity modals in which the individuals expressly reject commitment<sub>Rub</sub> to the relevant priorities, as we saw in (60) and (62) (and possibly (59)). The lack of endorsement can even be common ground, as in (67).

- (67) [Context: We're teenage siblings. It's 10:30 p.m., and we plan on staying out and going to a party. We know our parents are already asleep.]  
*You*: When is curfew, again? We need to make sure that we tell Mom we got back before then if she asks.

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<sup>47</sup>In PORTNER & RUBINSTEIN 2012 commitment to a premise is understood derivatively in terms of commitment to a conversational background, defined as follows (conversational backgrounds (“modal backgrounds,” in their terminology) are treated as relativized to events rather than worlds):

- (i) “An individual *a* is COMMITTED TO a modal background *h* in event *e* iff *a* is disposed/prepared in *e* to argue for *h*(*e*) in a conversationally appropriate way (e.g., by arguing that it is rational/proper/sensible/wise) in any relevant conversation *c*.”

(PORTNER & RUBINSTEIN 2012: ex. 40)

An individual *a* would be “committed” to a premise *p* (in e.g. a discourse event *e*) if *a* is “willing to defend” (in *e*) that *p* is “reasonable” or “rational/proper/sensible/wise” in any relevant conversation (PORTNER & RUBINSTEIN 2012: 471, 475, 477). See SILK 2013a for extensive critical discussion.

*Me:* We have to be home by 11. Aren't her rules stupid? C'mon, let's go.

The putative contextually presupposed priorities and additional priorities can all be rejected as undesirable, as in (68).

(68) [Context: *A* and *B* are in an anti-terrorist training session on explosives. *A* is wondering about the most effective way of setting up a bomb so as to inflict maximum damage. *B* says:]

You should/have to use the nails and set it off during rush hour.

Perhaps Rubinstein might respond by revising her understanding of the relevant notions of endorsement or commitment, or by offering an alternative way of representing the relevant norms, values, etc. in the apparent problem cases. I am skeptical about the prospects for such moves. Counterexamples such as those above aren't atypical. Corpus studies uniformly confirm that there is variation among necessity modals in both classes (weak and strong, respectively) (weak/strong) vis-à-vis tendencies to express collective commitment<sub>Rub</sub>. Indeed collective commitment, in Rubinstein's sense, has been appealed to in distinguishing *among* weak necessity modals, and *among* strong necessity modals.<sup>48</sup> For instance, in summarizing his corpus analyses of 'ought' and 'should' in contemporary American English, Myhill concludes that "using *ought* suggests that people have the same feelings about the specific obligation in question and there is agreement about it, while *should* does not suggest the same feelings or agreement" (1997: 8). Far from being an exception, examples like (5) or (66) expressing collective commitment<sub>Rub</sub> with 'ought' are the *norm*, as in the naturally occurring example in (69):

(69) *A:* I won't tell anyone... but the Dean, of course.

*B:* And Mrs. Reynolds.

*A:* Yes. She ought to know.

(cf. MYHILL 1997: ex. 18; slightly modified)

Conversely, though 'must' tends to be associated with collective commitment<sub>Rub</sub>, other strong necessity modals such as '(have) got to' do not. '(Have) got to' is distinguished in being "associated with *conflicts* between the speaker and the listener" (MYHILL 1996: 365), as in the naturally occurring example in (70).

(70) Edie, you've got to stop bothering me when I'm working.

(MYHILL 1996: ex. 81)

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<sup>48</sup>See, e.g., JOOS 1964, MYHILL & SMITH 1995, MYHILL 1996, 1997, VERSTRAETE 2001, FACCHINETTI ET AL. 2003, LEECH ET AL. 2009, CLOSE & AARTS 2010, GODDARD 2014.

Collective commitment<sub>Rub</sub> to the contents of premise sets may affect the distribution of modals in discourse, but it isn't what explains the distinction between weak and strong necessity modals.

A modal-past approach better captures intuitions about negotiability and collective commitment that may be motivating Rubinstein's domain restriction analysis. Distinguish (i) commitment<sub>Rub</sub>, i.e. endorsing the propositions in a premise set as being desirable, and (ii) commitment to thinking that a premise set correctly represents the relevant priorities. Sense-(ii) commitment is an ordinary boring notion of commitment associated with uses of context-sensitive expressions; presupposing sense-(ii) commitment is little more than a general Quality commitment that what one is saying is retrievable and true. Uttering 'He<sub>i</sub> is sleeping' (a) assumes that a certain actual individual  $m$  is the contextually salient male (that such-and-such assignment function represents an intention for the  $i$ th index to refer to  $m$ ), and (b) proposes to restrict the context set to worlds in which  $m$  is sleeping. Using 'he' expresses a commitment that context determines  $m$  as the value of the pronoun, and a commitment that  $m$ , the contextually salient male, has the property ascribed. Precisely parallel, uttering 'STRONG- $P_k \phi$ ' expresses a commitment that context determines  $P$  as the relevant premise frame (that such-and-such assignment function represents an intention for the  $k$ th index to refer to the house rules  $P$ ), and a commitment that  $P$  verifies the necessity of the prejacent. Strong necessity modals "presuppose (collective) commitment" in the same sense as any other context-sensitive expression: one commits to the value of the context-dependent item being as one's utterance assumes, and to the world being as one's utterance says it is, given this assumed value. Such commitments are compatible with not endorsing-as-desirable the premises  $p \in P(w)$ , for any  $w$  in the context set. In (67), e.g., we can accept that the house rules require us to be home by 11 while denying that those rules are desirable, that it's desirable that they are the house rules, or that they are to play any role in guiding our plans. Conversely, uses of weak necessity modals express "negotiability" in the sense that they don't commit one to being in a world in which the relevant considerations verify the necessity of the prejacent. This lack of commitment to the prejacent's being necessary is compatible with (collectively) endorsing the considerations encoded in the given premise frame or premises from which the prejacent would follow. In (5) we can endorse the value of family even if we prefer not to settle how it relates to other potentially competing values. Indeed 'ought' is typically used endorsingly (above; also §5).

## 7 Recap. Philosophical therapy?

This paper has developed what I called a *modal-past approach* to weak necessity modals and the weak/strong necessity modal distinction. I have argued that there is nothing specially "strong" about strong necessity modals per se: strong necessity modals can be given their

familiar semantics of necessity; uses of ‘Must  $\phi$ ’ predicate the (deontic/epistemic/etc.) necessity of the prejacent  $\phi$  of the actual world (evaluation world). The common semantic core of weak necessity modals across their various readings — what makes them intuitively “weak” — is that they bracket whether the prejacent is necessary in the actual world. ‘Ought  $\phi$ ’ can be accepted without needing to settle that the relevant considerations (norms, goals, etc.) that actually apply, given the facts, verify the necessity of  $\phi$ . This analysis carves out important roles for weak necessity modals in conversation and deliberation. Weak necessity modals allow us to entertain and plan for hypothetical continuations or minimal revisions of the current context. They afford a means of coordinating our norms, values, expectations, and plans — indeed our *conditional* plans (attitudes), as emphasized in Gibbard’s particular developments of expressivism (e.g., GIBBARD 1990, 2003, 2012) — while remaining open to new evidence about how these considerations apply and weigh against one another in particular circumstances. The proposed account systematizes a wide variety of linguistic data — e.g., concerning the relative felicity of weak and strong necessity modals in context, the relation between weak and strong necessity modals and standing contextual assumptions, the morphosyntactic properties of expressions of OUGHT cross-linguistically, and the contrasting logical properties and illocutionary properties of weak and strong necessity modals. The range of semantic and pragmatic phenomena that are unified under and explained by our analysis lend it a robust base of support.

The data considered here certainly aren’t the only data that must be explained by an overall theory of weak and strong necessity modals. For instance, first, we briefly examined one additional dimension of difference among modals, regarding tendencies for (what I called) endorsing and non-endorsing use. It’s worth investigating possible interactions between weak/strong necessity modals and other such differences in modal meanings, e.g. regarding implicatures (cf. VERSTRAETE 2005a). Second, although I argued against treating (e.g.) ‘ought’ and ‘must’/‘may’ as ordered in terms of logical/quantificational strength, we noted in §4 that there may be differences in certain intuitive entailments with epistemic and deontic readings. More thorough comparisons of inference patterns with different types of readings are needed. Third, in addition to the contrasts between weak and strong necessity modals discussed here, there are contrasts in data involving incomparabilities, comparatives, quantifiers, conditionals, modifiers, and neg-raising, among others.<sup>49</sup> Fourth, our discussion has highlighted various ways in which phenomena with weak and strong necessity modals interact with more general issues of context-sensitivity, counterfactuality, mood, grammaticalization, attitude expression, and performativity. These interactions afford rich avenues for future research. Further investigation of the above broader issues would be helpful in adjudicating among different ways of formally implementing a modal-past approach. I wel-

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<sup>49</sup>See, e.g., VERSTRAETE 2005a, LASSITER 2011, 2012, SWANSON 2011, IATRIDOU & ZEIJLSTRA 2013, SILK 2013b,d, 2015b, 2017b, RUBINSTEIN 2012, 2014, PORTNER & RUBINSTEIN 2016.

come the development of alternative ways of systematizing the data with which the present account may be compared.

In closing I would like to briefly mention a potential broader application for this linguistic work on weak and strong necessity modals. Consider the case of deontic readings. A notion of obligation or deontic necessity is central in (meta)normative theory and deontic logic. We are often interested in investigating what we are actually required to do. We wish to guide our planning and influence others' behavior in light of the norms we accept. An endorsing strong necessity modal like 'must' is well-suited to the task. However, using 'must' is often awkward. We may want to talk about obligations which held in the past, or which may go unfulfilled or be overridden in the future. Or we may want to communicate information about a body of norms without necessarily registering commitment to them or enjoining others to share in such commitment. A modal like 'should' or 'be required to' can thus be more suitable. There is a range of expressive resources at our disposal for coordinating our actions and states of mind. This is for the better given the variety of our purposes. But it also raises a philosophical risk. Bracketing differences among necessity modals might turn out to be harmless for the purposes of (meta)normative inquiry. But it might not. It's worth investigating to what extent inattention to differences among necessity modals might have obscured intuitions and hindered theorizing on broader philosophical issues. A tantalizing possibility.<sup>50</sup>

*Very briefly:* To take one example, consider debates about judgment internalism — to a first approximation, the thesis that there is an internal and necessary connection between making a normative judgment and being motivated to act in accordance with it.<sup>51</sup> Here is Gibbard (cf. e.g. WEDGWOOD 2007: 71):

The clear distinctive feature of normative concepts, I now think, lies in their conceptual ties. Oughts of action tie in conceptually with acting. (GIBBARD 2011: 36)

Many take it as obvious that some form of internalism is true. After all, one might say, normative judgments are constitutive of deliberation, and deliberation is essentially practical; its aim is action. But many find clear counterexamples. What about the psychopath, or someone who is tired or depressed (such as perhaps the poor reader who has made it to this point in the paper)?

Attending to the dimensions of difference among necessity modals examined in this paper may illuminate conflicting intuitions about judgment internalism. It's revealing that although Gibbard couches the thesis about the practicality of the normative using 'ought', he goes on to pump the intuition using 'must':

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<sup>50</sup>See SILK 2013b, 2015b for specific discussion and examples.

<sup>51</sup>See SILK 2015b: §§6–7 for elaboration on the following ideas.

...Oughts of action tie in conceptually with acting. Take, for example, the belief that the building is on fire and the one and only way to keep from being burned to a crisp is to leave forthwith. If that's the case, we'd better leave forthwith, but it isn't strictly incoherent, conceptually, to have this belief and not to leave. Contrast this with the normative belief that one *must* leave forthwith. It is, I maintain, conceptually incoherent to hold this belief and not leave, if one can. (GIBBARD 2011: 36; emphasis in original)

As we've seen, it's hard to hear a sincere utterance of 'Must  $\phi$ ' as consistent with the speaker's being indifferent about whether  $\phi$ ; yet such judgments aren't nearly as anomalous when expressed with weak necessity modals or (weak/strong) necessity modals that are more naturally used non-endorsingly (§§4–5).

(71) #I *must* (/I've got to) get home by 10, but forget that; I'm not going to.

(72) I {ought to, should, am supposed to, have to} get home by 10, but forget that; I'm not going to.

We should be wary of general claims about normative language and judgment. Judgment internalism can seem compelling when considering examples using terms that are paradigmatically entailing and endorsing. But when we consider cases using other terms, counterexamples can appear in the offing. Gibbard's favored "primitive concept OUGHT" may be expressed by 'ought' less often than initially supposed.

The skeptically inclined might be apt to wonder what is at-issue in (e.g.) metaethical debates about judgment internalism — that is, if not linguistic issues about the varieties of directive/entailing/endorsing uses of language, or empirical psychological issues about conditions under which different types of attitudes/judgments guide and motivate us. One might even wonder how probative it is to couch our inquiries in terms of a class of "normative" language/concepts/judgments at all. More fruitful, perhaps, to leave talk of the "(meta)normative" to the side, and ask directly about motivational states of mind and directive uses of language, and how one wants oneself and others to live.

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