Contrastive Semantics for Deontic Modals[*]

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Contrastivism about 'ought' is the view that 'ought' claims are always relative to a set of alternatives. If "Emmy ought to study" is true, then there is some contextually determined set of alternatives, Q, relative to which it is true. To put the point non-linguistically: if Emmy ought to study, then there is some set of alternatives out of which Emmy ought to study. Several philosophers have argued that 'ought' is contrastive in this way.[1] These philosophers have not, however, extended their contrastive frameworks to other deontic modals, like 'must' and 'may', and some have explicitly denied that these are contrastive.[2]

In this paper, I motivate and develop a simple contrastive framework for 'ought', 'must', and 'may'. In section 1, I motivate contrastivism about 'ought' by discussing several puzzles from the literature on deontic modals and deontic logic. This leads to a rough formulation of contrastivism, which will be refined later in the paper. In section 2, I argue that the same sorts of puzzles arise for 'must', suggesting that, if contrastivism about 'ought' is well-motivated, then so is contrastivism about 'must'. In section 3, I show that, while the puzzles do not seem to arise for 'may', we can generate similar puzzles for 'it is not the case that … may …'. This gives us some evidence that 'may' is also contrastive. In section 4, I give a more precise framework for contrastivism about 'ought', 'must', and 'may', and show that all the desired relationships between the modals are preserved. In particular, I show that the framework generates a generalized version of the duality of 'must' and 'may'. I conclude in section 5 by noting some possible implications of adopting contrastivism about deontic modals.

1   Motivating Contrastivism about 'Ought'
In this section I present some puzzles which motivate contrastivism about 'ought'.[3] The puzzles fall neatly into two groups. First, the Professor Procrastinate puzzle and what I call

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1 See Sloman (1970), Jackson (1985), Jackson and Pargetter (1986), Finlay (2009), Cariani (2009), and Cariani (fc).

2 I have in mind Finlay (2009), who offers a non-contrastive semantics for 'must' and 'may', and Cariani (2009) who gives an argument which can naturally be taken to be to the conclusion that modals are not contrastive (though he tells me in conversation that he doesn't want to commit himself to that conclusion).

3 I do not claim that the *only way* to solve these puzzles is to adopt contrastivism—only that contrastivism provides a nice, unified solution.

the Dialogue puzzle have the following form: we have some set of sentences, all of which are intuitively true, but which are apparently contradictory. The task is to reconcile the sentences in the set, so that they can all be true. Second, the Good Samaritan paradox and Ross's Puzzle depend on a particular principle from deontic logic, often called Inheritance. Inheritance says that if p entails q, then if it ought to be that p, then it ought to be that q. The problem is that we can start with intuitively true 'ought' sentences, and then use Inheritance to derive intuitively false 'ought' sentences. The task is to block this derivation. The solution to both kinds of puzzles is to recognize that 'ought' sentences are always relativized to sets of alternatives.[4]

1.1 Reconciling

Consider Professor Procrastinate.[5] She is asked to review a new book in her field because she is by far the most qualified person to write the review. She has time to write, and if she writes it will benefit the field significantly. But she knows that, just because of the way she is, she is extremely likely[6] to (culpably) put off writing if she accepts. If she accepts, the book will sit on her desk, unreviewed for months, while the author's career and the field at large suffer. If she does not accept, someone else, less qualified but more reliable, will be asked to review. The review written by the second choice will be adequate, but not great. But it will be done quickly. Intuitively, then, the following two claims are each true:

> (1) Procrastinate ought to accept and write.
> (2) Procrastinate ought not accept.

But this is puzzling. How can it be the case that Professor Procrastinate (PP) ought not accept, if she ought to accept and write? The problem is that we have two intuitively true 'ought' claims which seem inconsistent.[7]

A naïve view about 'ought' says that a sentence containing 'ought' has the same semantic content in every context in which it is used or assessed.[8] Clearly, (1) and (2) will cause

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4 In fact, there are two distinct features that a contrastivist might accept, and these two features let the contrastivist solve different puzzles, and solve the same puzzles in different ways. The first feature is that the sets of alternatives to which an 'ought' sentence is relativized need not be *exhaustive* of all of logical space—in this way, a contrastivist view is similar to Lewis (1996)'s relevant alternatives theory of knowledge. The second feature is that a set of alternatives might divide up the alternatives in different ways. For example, one set might be {I go to the bar, I stay home}, while a different set might be {I go to the bar, I stay home and watch a movie, I stay home and work on my dissertation}. Cariani (fc), following Yalcin (fc) calls this feature *resolution-sensitivity*: we divide up the space of possibilities at different resolutions, or at different levels of fine-grainedness. This feature comes with relativizing 'ought' sentences to *questions*. See Schaffer (2007) and Groenendijk and Stokhof (1997). I gloss over this distinction here, but discuss it more fully in Snedegar (ms).

5 Jackson (1985) discusses this case, and the contrastivist solution. See also Jackson and Pargetter (1986) and Cariani (fc).

6 In Jackson and Pargetter (1986), we are told that Procrastinate *will not* write, rather than that she is *extremely unlikely* to write. While I don't think anything important turns on this difference, some people have the intuition that, if we set things up in Jackson and Pargetter's way, (1) isn't clearly true because accepting and writing seems psychologically impossible for Procrastinate. This is why I leave it open that Procrastinate *might* write (though it is extremely unlikely).

7 *Possibilists* deny that (2) is true. See Jackson and Pargetter (1986) for arguments against this view.

8 Here, I ignore issues surrounding the so-called 'ought to be' vs. 'ought to do' distinction. The view that there are two senses of 'ought', one which corresponds to the 'ought to be' and one which corresponds to the

problems for the naïve view, if we make the plausible assumption that 'ought' distributes over conjunction.[9] The goal is to show how (1) and (2) can both be true, but on the naïve view, it seems to follow from (1) that Professor Procrastinate ought to accept, and this is inconsistent with (2).

I suggest, following Jackson (1985) and Sloman (1970), that a contrastivist view of 'ought' can help.[10] The problem, according to the contrastivist, only arises if we ignore the contrast-sensitivity of 'ought'; what ought to be is always relative to a set of alternatives. This set is determined by context; generally, the options under consideration in the context will determine the set.[11] If I am trying to decide what to do tonight, and I have been invited to dinner with my sister, to the movies with my fiancée, and to the bar with my friends, then the set of alternatives will likely be {I go to dinner, I go to the movies, I go to the bar}. If, after some deliberation, I decide that I ought to go to the bar and say so, the contrastivist says that I should be understood to have said something like "I ought to go to the bar out of {I go to dinner, I go to the movies, I go to the bar}".[12]

The contrastivist says that (1) and (2) only seem inconsistent if we ignore the contrast-sensitivity of the 'ought' claims. The idea is that (1) and (2) are true relative to different sets of alternatives. (1) is true relative to a set of alternatives like {PP accepts and writes, PP accepts and doesn't write, PP doesn't accept}, while (2) is true relative to a set like {PP accepts, PP doesn't accept}. Out of the first set, it is true that PP ought to accept and write, since this is the best option. Out of the second set, the best option is that she doesn't accept, so it ought to be that she doesn't accept. Since the sets of alternatives are different, the claims are not inconsistent. This is easy to see if we make the alternatives explicit, as in: "You ought to accept and write rather than accepting and not writing, but you ought to decline rather than accept". This is similar to claims like, "You ought to have the chicken rather than the beef, but you ought to have the fish rather than the chicken".

What if we assert (1) and (2) in contexts in which the alternatives are the same? That is, what if we assert them in a context in which we should understand (1) as saying "It ought to be that PP accepts and writes out of {PP accepts and writes, PP accepts and doesn't write, PP accepts, PP doesn't accept}", and (2) as saying "It ought to be that PP doesn't accept out of {PP accepts and writes, PP accepts and doesn't write, PP accepts, PP doesn't accept}"? In this case, it seems like (1) and (2) will be inconsistent, even according to the contrastivist. But the goal was to show how (1) and (2) could be consistent.

The first thing to point out is that the contrastivist will likely deny that any context will actually give us sets of alternatives like this. The alternatives should be taken to be mutually exclusive; so we will not get distinct options like 'PP accepts and writes' and 'PP accepts' in the same set of alternatives. These are not real alternatives, or contrasts, and we will not be deciding between these options. The second thing to point out is that, even if we could get a set of alternatives like this from some context, (2) would be false. Out of this set, the best

thing that can happen is for PP to accept and write, so this is what ought to be the case. So it is not a problem that (1) and (2) are inconsistent, if (1) and (2) are taken to be relative to the same set of alternatives.

Contrastivism also offers solutions to several other sorts of puzzles from the literature. Jackson (1985) points out that the contrastivist can easily make sense of apparently contradictory 'ought' ascriptions which all seem true. Consider the following dialogue:

Dialogue 1
A: Smith ought to whip his slaves more gently.
B: In fact, he ought to stop whipping his slaves.
C: Really, he ought to free his slaves.
D: He ought to have never owned slaves in the first place.
And so on.

Each of these claims seems true. But they appear to be inconsistent: how can Smith whip his slaves more gently if he doesn't whip them at all, or if he frees them? The contrastivist says that with each ought ascription, the set of alternatives shifts. A's utterance is relative to a set like {Smith whips his slaves more gently, Smith whips his slaves viciously}; B's utterance is relative to a set like {Smith stops whipping his slaves, Smith keeps whipping his slaves}; and so on. Since each ascription is relative to a different set of alternatives, and since this set of alternatives is part of the semantics of the ought ascription, the claims are not inconsistent.

Relatedly, contrastivism easily handles claims which include an explicit 'rather than' clause, like the following:

(3) You ought to take the bus rather than driving your SUV, but you ought to bike rather than taking the bus.[13]

Claims like this are perfectly legitimate. But on their face, they can seem inconsistent. The first conjunct says that you ought to take the bus, while the second plausibly says that you ought not take the bus. If we assume a naïve semantics for 'ought', for example, it is hard to see how a sentence like (3) could be true. More generally, it just isn't obvious how non-contrastive views should handle explicit 'rather than' clauses like those in (3). But contrastivism can handle sentences like (3) easily—the 'rather than' clause just makes the alternatives explicit.

1.2   Inheritance puzzles
Next, consider the Good Samaritan Puzzle.[14] Suppose you come across a stranger injured on the side of the road, and could easily help him. Then the following claim is true:

(4) It ought to be that you help the injured stranger.

But you help the injured stranger if and only if there is an injured stranger and you help him. Now consider a standard principle from deontic logic:

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13 See Cariani (2009).
14 This puzzle is presented in Prior (1958).

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Inheritance: If p entails q, then if it ought to be that p, it ought to be that q.

So by Inheritance, (5) follows from (4):

(5) It ought to be that there is an injured stranger and you help him.

But presumably this is false. It ought to be that there is not an injured stranger.[15] Contrastivism solves this puzzle by pointing out that the contrast has shifted between (4) and (5).[16] (4) is relativized to a set of alternatives like {you help the injured stranger, you ignore the injured stranger}, while (5) is relativized to a set of alternatives like {there is an injured stranger and you help him, there is an injured stranger and you ignore him, there is not an injured stranger}. Out of this latter set, what ought to be the case is that there is not an injured stranger, so (5) is false.

Next, consider Ross's Puzzle, which runs as follows.[17] Suppose you promise your friend that you will mail a letter for him. Then, we can assume

(6) You ought to mail the letter.

But if you mail the letter, then you either mail it or burn it. So by Inheritance, (7) follows from (6):

(7) You ought to either mail the letter or burn it.

But while (6) is true, (7) sounds false.[18]

Cariani proposes an 'anti-boxing' semantics for 'ought' on which Inheritance fails, thus blocking Ross's Puzzle.[19] On a standard 'boxing' theory, what ought to be, in a given world and context, is whatever is the case in the best world accessible from that world and context. It is clear, then, why Inheritance is valid on this picture. If it ought to be that φ, then φ is true in the best world. If φ entails ψ, then ψ will also be true in the best world. Thus, it ought to be that ψ. Cariani's semantics identifies what ought to be the case in a context with

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15 Some have offered a scope solution to this kind of puzzle; see Sinnott-Armstrong (1985) for discussion. Also, some have argued that, because of puzzles like this one, and Chisholm's Paradox (Chisholm (1963)), we need to recognize a conditional 'ought', "it ought to be that ___ given ___". This allows us to account for contrary-to-duty paradoxes, like Chisholm's paradox, and other related puzzles. It would be interesting to see if we could handle all of the puzzles presented here using a conditional 'ought', but I don't do that here. I only note that appealing to a conditional 'ought' does not seem to help with the Professor Procrastinate puzzle, since this puzzle does not appear to depend on any kind of conditional. Contrastivism, then, offers a unified solution to the various puzzles, while the conditional 'ought' does not obviously do so.

16 See Jackson (1985).

17 The puzzle is presented in Ross (1941).

18 Most people offer a pragmatic explanation of Ross's Puzzle, along Gricean lines (Grice (1989)). See Føllesdal and Hilpinen (1971) and Wedgwood (2006). But Cariani argues that this explanation does not work, because the relevant implicatures in Ross's Puzzle behave differently than the sorts of implicatures under which these authors want to subsume them.

19 Cariani calls his semantics 'anti-boxing' because he does not treat 'ought' as a quantifier over worlds, or "box", as the standard semantics does.

the best option in the context, rather than with whatever is true in the best worlds. So if it ought to be that φ, then φ is the best option. The only way that it would be that it ought to be that ψ, which is entailed by φ, is if ψ is tied with φ for the best option. In the Ross's Puzzle case, it is not true that 'you mail the letter or burn it' is tied for the best option with 'you mail the letter'; thus, it is not the case that it ought to be that you either mail the letter or burn it.

The failure of Inheritance on Cariani's semantics leads to a problem. Often, we can make coarse-grained 'ought' claims, which are supported by more fine-grained claims which more fully specify what we ought to do. Consider the following inference from (8) to (9), which is perfectly legitimate:

(8) You ought to drive less than 65 mph on this road.
(9) You ought to drive less than 100 mph on this road.

On a boxing view, we can explain this inference using Inheritance. Since 'you drive less than 65 mph' entails 'you drive less than 100 mph', and since it ought to be that you drive less than 65 mph, it ought to be that you drive less than 100 mph. But Cariani's semantics invalidates Inheritance. In fact, on Cariani's semantics, what ought to be is whatever is the best option. Presumably, if (8) is true, then 'you drive less than 100 mph' is not the best option, so (9) comes out false. But intuitively, it is true.

To solve this problem, Cariani appeals to contrastivism: (8) and (9) are true relative to different sets of alternatives. (8) is true relative to {you drive less than 65 mph, you drive more than 65 mph}, while (9) is true relative to {you drive less than 100 mph, you drive more than 100 mph}.[20] Since the more you exceed the speed limit, the worse you are doing, driving less than 100 mph is the best alternative in this set. So if Ross's Puzzle leads us to abandon Inheritance, we can still explain why Inheritance seems to hold in some cases, by appealing to contrastivism. The set of alternatives shifts in a way that seems to validate some Inheritance-like inferences.[21]

Ignoring the contrast-sensitivity of ought ascriptions leads to puzzlement: sets of intuitively true 'ought' sentences may appear to be inconsistent, or to entail false 'ought' sentences. The contrastivist is able to make the right predictions in these cases. This will serve as the main argument for contrastivism in this paper.

2   'Must'
In the last section, I motivated contrastivism about 'ought' by showing how the theory can solve several puzzling cases from the literature. In this section, I show that these cases carry over to the deontic 'must'. This suggests that, if contrastivism about 'ought' is well-motivated, then contrastivism about 'must' is, as well. I discuss Cariani's rejection of contrastivism for 'must', and show that the same problems which led him to adopt contrastivism about 'ought' should lead him to adopt contrastivism about 'must'.

2.1   Reconciling
First, consider the Professor Procrastinate puzzle, adapted for 'must'. Suppose the stakes are

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20 Cariani also attempts to show how the truth of (8) *explains* the truth of (9), but this is somewhat tangential to my purposes. What I've said so far should make it clear why Cariani adopts contrastivism—doing so is necessary for even saying that (9) is *true*.

21 For a more detailed version of this argument, see Cariani (2009).

higher this time around—if the book does not receive a competent review, the author might be denied tenure. Worse, if the book is not reviewed at all, the author will lose her position altogether. Both of the following claims are plausibly true:[22]

> (1') Professor Procrastinate must accept and write.
> (2') Professor Procrastinate must not accept.

The same problem arises. (1') and (2') both seem true[23], but they are also apparently inconsistent. In the case of 'ought', we saw that paying attention to contrasts helped. The same move can help here. (1') is true relative to a set of alternatives like {Procrastinate accepts and writes, Procrastinate accepts and does not write, Procrastinate does not accept}, while (2') is true relative to {Procrastinate accepts, Procrastinate does not accept}. Out of the first set, Procrastinate must accept and write. But, given that she will not write, out of the second set, she must not accept. As with 'ought' in the last section, I will initially work with a somewhat rough formulation of contrastivism about 'must'. I offer a more precise framework in section 4.

Next, consider the following dialogue:

Dialogue 2:
A: Smith must whip his slaves more gently.
B: In fact, he must stop whipping his slaves.
C: Really, he must free his slaves.
And so on.

Each of these claims is intuitively true. But again, on a standard semantics for the deontic 'must', it seems like they should be inconsistent. If you must φ—if φ-ing is the only permissible option—then how could it be true that you must ψ, when ψ and φ are incompatible? Contrastivism about 'must' can reconcile the claims. A's claim is true relative to {Smith whips his slaves more gently, Smith keeps whipping his slaves viciously}; B's claim is true relative to {Smith stops whipping his slaves, Smith keeps whipping his slaves}; and so on. Again, paying attention to contrasts can reconcile these intuitively true, but apparently inconsistent, claims. And it can explain why, once B makes her claim, A's claim does not seem true anymore—if A insisted on his claim, he would be mistaken. What has happened is that the conversational context has changed in way that makes A's utterance false, by taking on a new set of relevant alternatives.[24]

2.2   Inheritance puzzles
Next, consider the Good Samaritan puzzle, using 'must'. Suppose you come across an injured

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22 The intuitions here might not be as robust as in the 'ought' case, but I can hear (1) and (2) as both true. Throughout this section, feel free to substitute 'has to' or 'is required to' for 'must'. These are equivalent, for my purposes.

23 Steve Finlay suggests in conversation that it would be strange to assert both, but points out that it seems appropriate to assert *either*, as long as we do not go on to assert the other. I think this is enough to support the claim that both seem true, though it does point to a disanalogy between the 'ought' case and the 'must' case, since in the 'ought' case, it seems fine to assert both at the same time.

24 Compare Jackson (1985).

stranger on the road, that you could easily help him, that there's no one else around, etc. Then the following is true:

(4') It must be that you help the injured stranger.[25]

But you help the injured stranger if and only if there is an injured stranger and you help him. So (5') follows from (4'):

(5') It must be that there is an injured stranger and you help him.

But (5') sounds false. It is not the case that, deontically, there must be an injured stranger. In fact, deontically, it must be that there is no injured stranger (or: it is deontically necessary that there is no injured stranger). Contrastivism about 'must' predicts that (4') is true, while (5') is false. (4') is relative to {you help the injured stranger, you ignore the injured stranger}, while (5') is relative to {there is an injured stranger and you help him, there is an injured stranger and you do not help him, there is no injured stranger}. In the former, it is assumed that there is an injured stranger. We make this explicit in (5'), and it introduces the alternative that there just is no injured stranger. Since this state of affairs is better than the state of affairs in which there is an injured stranger and you help him, (5') is false. This is the right prediction.

Finally, note that a version of Ross's Puzzle also arises for 'must'. Suppose your friend gives you his rent check to mail; if you don't mail it, then he will be evicted from his apartment. Then the following is true:

(6') You must mail the letter.

But you mail the letter only if you either mail it or burn it. So if we have a principle for 'must' which corresponds to Inheritance for 'ought', (7') follows from (6'):

(7') You must either mail the letter or burn it.

But (7') sounds false; in fact, I think it is as bad as the corresponding sentence using 'ought'. Since Ross's Paradox for 'ought' motivated Cariani to reject Inheritance for 'ought', he should be motivated to reject the corresponding principle for 'must'.

By rejecting Inheritance for 'ought', Cariani had trouble explaining the legitimacy of inferences from more fine-grained 'ought'-claims to more coarse-grained ones. Notice that a similar problem arises, if we reject Inheritance for 'must'. The inference from "You must drive less than 60 mph on this road" to "You must drive less than 100 mph on this road" is legitimate. Inheritance for 'must' gives us an easy way to explain why. But Ross's Puzzle for 'must' gave us reason to reject that principle, so we are left looking for an explanation. This is where Cariani turned to contrastivism for 'ought'. So this gives us reason to think that 'must' is contrastive, as well.

2.3   *Rejecting contrastivism about 'must'*

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25 The epistemic reading of 'must' is more natural than the deontic reading, which I intend. Perhaps it would be better to replace 'it must be that' with 'it is deontically necessary that', assuming that 'must' is a deontic necessity operator. Thanks to Steve Finlay here.

But Cariani gives an argument which can naturally be taken to show that 'must' is not contrastive. He actually focuses on what he calls *prohibition* and *permission* operators, like 'may not' or 'prohibited', rather than 'must'. But I think it's very plausible that 'prohibited' just means 'must not', which is contrastive only if 'must' is contrastive. If you rejects this claim, though, you might accept Cariani's argument that prohibition and permission operators are not contrastive, but still be open to contrastivism about 'must'.[26] Nevertheless, I'll present the argument which Cariani's discussion suggests, even though it's not the one he explicitly gives.

Claims like (10) are perfectly legitimate:

(10) You ought to take the bus rather than driving your SUV, but you ought to bike rather than taking the bus.

This suggests that 'ought' is contrastive, since using an explicit 'rather than' clause can be understood as a way to make the alternatives explicit. But 'rather than' claims with a prohibition operator like 'may not' are apparently infelicitous. Cariani provides the following example:

(11) You may take the bus rather than driving your SUV, but you may not take the bus.

If this is right, it suggests that 'must' and 'may' are not contrastive, if we think that they are permission and prohibition operators—it would seem that there just are no alternatives there to make explicit.

But I'm not so sure; (12) does not sound obviously contradictory to me, and (13) is obviously fine:

(12) You have to take the bus rather than driving your SUV, but you have to bike rather than taking the bus.[27]

(13) You may take the bus rather than driving your SUV, and you may bike rather than taking the bus.

The sentence Cariani appeals to, (11), does sound contradictory. But notice that it is importantly different than the 'ought' claim (10). (10) is analogous to (12) and (13). (14) is an 'ought' sentence which is analogous to (11):

(14) You ought to take the bus rather than driving your SUV, but it's not the case that you ought to take the bus.

But this sentence sounds worse than any of (10), (12), or (13), and not clearly better than (11). So this argument that 'must' and 'may' are not contrastive is not convincing, especially given the apparent parallels between 'ought' and 'must' with regards to Ross's Puzzle.

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26 In fact, this is precisely what Cariani wants to do (p.c.); he wants to remain open to the possibility that 'must' is contrastive.

27 I am assuming that 'have to' is synonymous with 'must' here. 'Have to' just sounds much more natural to me than 'must'.

3 'May'

In the previous two sections, I motivated contrastivism about both 'ought' and 'must' by showing how the view can solve various puzzles. In this section, I briefly show that the some of same sorts of puzzles—namely, the Professor Procrastinate puzzle and the Dialogue puzzle—do not arise for 'may', and offer an explanation for why this is so.[28] I then show that both the Professor Procrastinate and the Dialogue puzzles *do* arise for 'it is not the case that … may…' (from here on, I use '¬may' to abbreviate this), suggesting that '¬may' is contrastive. But of course, '¬may' is contrastive only if 'may' is. This gives us indirect evidence that 'may' is contrastive.

3.1 Puzzles for 'may'

First, consider the Professor Procrastinate puzzle. Both of the following claims are plausibly true:

(1") Procrastinate may accept and write.
(2") Procrastinate may [not accept].[29]

The corresponding sentences using 'ought' and 'must' each seem true, but also appear to be inconsistent. The trouble, if we are trying to generate a puzzle to motivate contrastivism, is that (1") and (2") are not inconsistent. We consider performing actions that are neither prohibited nor obligatory all the time. If φ denotes such an action, then both 's may φ' and 's may [not φ]' will be true. So this version of the Professor Procrastinate puzzle does not provide motivation for adopting contrastivism about 'may'.

Next, consider the following dialogue.

Dialogue 3:
A: Smith may whip his slaves more gently.
B: Smith may stop whipping his slaves altogether.
C: In fact, Smith may free all of his slaves.
And so on.

All of these claims are true (though they might sound inappropriately weak because of the maxim of quantity). In the case of 'ought' and 'must', the corresponding claims were also apparently inconsistent. But again, this is not the case with 'may'; these claims are all perfectly consistent.

The problem is this: if something ought to be the case, or if something must be the case, then nothing else either ought to be or must be the case in those circumstances. If I ought to/must φ, then it is not true that I ought to/must ψ, where φ and ψ are mutually exclusive (assuming there are no moral dilemmas). So it was easy to get apparently inconsistent 'ought' or 'must' claims. But it is perfectly consistent for two mutually inconsistent propositions to be such that they may be the case in the same situation (or for two

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28 The puzzles which involve Inheritance do seem to arise, though it is hard to evaluate whether or not these really support contrastivism about 'may', so I leave them out.

29 I'll use brackets to distinguish 'may [not]' from '[may not] ', since 'may not' is usually synonymous with 'must not' in English. What I have in mind here is not prohibition, but rather the permissibility of refraining.

incompatible actions to both be permissible).

In the last section, I showed that two of the puzzles which motivate adopting contrastivism about 'ought' and 'must' do not arise for 'may', and explained why. In this section, I show that puzzles do arise for '¬may'. And, of course, '¬may' is contrastive if and only if 'may' is contrastive. So these puzzles provide some (indirect) motivation for adopting contrastivism about 'may'.[30]

Consider, one last time, Professor Procrastinate. The following two claims seem true (using, of course, the deontic 'may'):

(1*) It is not the case that Procrastinate may fail to accept and write.
(2*) It is not the case that Procrastinate may accept.

But they are apparently inconsistent; (1*) prohibits Procrastinate from failing to accept and write, while (2*) prohibits her from accepting. This is not surprising; (1*) and (2*) just mean the same thing as (1') and (2'), the 'must' analogues. This suggests that '¬may' is contrastive, which, in turn, suggests that 'may' is contrastive.

Next, consider the following Dialogue:

Dialogue 4:
A: It is not the case that Smith may fail to whip his slaves more gently.
B: It is not the case that Smith may continue to whip his slaves.
C: It is not the case that Smith may fail to set his slaves free.
And so on.

All of these sentences are plausibly true. But A's claim seems incompatible with B's and C's. Again, contrastivism can help to reconcile these sentences by pointing out that each claim is relativized to a different set of alternatives. Thus, they are perfectly consistent. This provides some motivation for adopting contrastivism about 'it is not the case that … may …', which in turn provides motivation for adopting contrastivism about 'may' .

I admit that some of the motivations for adopting contrastivism about either 'must' or 'may' are perhaps less compelling than those for adopting contrastivism about 'ought'. But I have argued that there is at least some motivation; further, it would be nice to give a unified treatment of deontic modals. If what one ought to do, or what ought to be the case, is contrast-sensitive, it would be a bit surprising if what one (deontically) must or may do, or what must or may be the case, were not similarly contrast-sensitive.

4   Contrastive Semantics
In the previous three sections, I have worked with a rough, intuitive version of contrastivism about deontic modals. In this section, I propose a more precise contrastive framework which captures all of the right relationships between the modals. I set things up by considering a

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30 The sentences in this section come out a bit stilted, since 'it is not the case that' isn't really a common phrase in everyday English. Fabrizio Cariani suggested that the same kinds of arguments could be run using 'I doubt that … may'. I think that's an interesting and plausible suggestion, but I don't have the space to explore it here.

potential objection: if 'must' and 'may' are both contrastive, we are in danger of losing the duality of 'must' and 'may'. The framework I propose gives us a contrastivist-friendly understanding of this duality.

4.1   Objection: Lost duality of 'must' and 'may'

'Must' and 'may' are duals. Here is the standard formulation of Duality:

Duality: must p ≡ ¬[may[¬p]]

This formulation will not do for the contrastivist. Suppose I am trying to decide what to do tonight, and the set of alternatives is {stay in, go to the bar, go to the movies}. And suppose that, as it turns out, I must stay in. So (15) is true:

(15) I must stay in out of {stay in, go to the bar, go to the movies}.

Using Duality, we should be able to replace 'must stay in' with '¬[may[¬stay in]]', giving us

(15') It is not the case that I may [not stay in] out of {stay in, go to the bar, go to the movies}.

The problem is that the sets of alternatives are not necessarily closed under negation. 'Not stay in' is not in the set of alternatives, and so (15') does not make sense for the contrastivist. After sketching a contrastive semantics for the deontic modals I've been considering, I'll show how to answer this objection.

4.2   The semantics

I let the context of utterance of the use of a deontic modal supply (i) a deliberative background, and (ii) a normative background.[31] The deliberative background provides a set of alternatives Q, to which the 'ought', 'must', or 'may' claim is relative. The normative background provides (a) a ranking < of the alternatives, and (b) a selection function, L, which selects the lowest-ranked permissible alternative from Q, or the 'least you can do'.[32] I leave it open both how the ranking is determined and how the least you can do is determined. Suppose we have a ranking of the alternatives in Q, and that L selects, as the least you can do, alternative a. Then we can define 'ought', 'must', and 'may' as follows:[33]

May: may p out of Q $=_{df}$ p is ranked at least as highly as a

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31 This framework is similar to the semantics developed by Cariani (2009), though his normative base provides a selection function which selects the most highly-ranked alternative, instead of the 'least you can do'. But in his more recent work, Cariani (fc), he (independently of my work on the issue) develops a semantic theory which *does* make use of this sort of 'least you can do' bar, though he puts it to different use than I do. Both his theory and my theory have roots in Kratzer (1981)'s semantics for modals, though we both modify the semantics beyond anything Kratzer would likely accept.

32 See McNamara (1996c),McNamara (1996b) and especially McNamara (1996a) for discussion of the 'least you can do', and how to incorporate it into a formal semantics.

33 This picture needs to be amended to allow for information-relativity regarding the modals, but I don't have the space to take up that issue here. I do so in Snedegar (ms). See Kolodny and MacFarlane (fc), Finlay and Björnsson (2010), and Dowell (fc).

Must: must p out of Q $=_{df}$ p = a, and there is no q ≠ p in Q which is ranked as highly as p

Ought: ought p out of Q $=_{df}$ there is no q ≠ p in Q which is ranked as highly as p[34]

Intuitively, an alternative may be the case when it is the least you can do or better; an alternative must be the case when it is the only alternative which may be the case; and an alternative ought to be the case when it is the best alternative.[35]

Suppose context provides us with a set of alternatives, Q={a, b, c, d}, ranked in that order, and that L selects c as the least you can do. Then by our semantics, it may be that a, it may be that b, and it may be that c, out of Q. And since a is ranked the highest, it ought to be that a. So we can truly say, "It ought to be that a (out of Q), but it may be that b or c instead". This seems right. We often say things along these lines. Suppose Emmy has gotten a bonus at work. Then the following is perfectly appropriate, I think: "You ought to save that money, but you may take your fiance to a nice dinner, instead". We're saying that saving the money would be the best thing to do, but it would be permissible to spend the money on her fiance.[36] But since there is more than one permissible option (more than one alternative is ranked at least as highly as the alternative selected by L), nothing must be the case. This is intuitive. If there is more than one permissible option, then there is nothing which must be the case; note that the following sounds inappropriate: "It may be that a or b (out of Q), but it must be that a".[37]

This picture assumes that if anything may be, must be, or ought to be the case out of a set of alternatives, L will select something as the least you can do; that is, it assumes that there is always some permissible option. If we are considering a set of alternatives for which no option is permissible, then L will not select anything. It follows that nothing will be such that it may be the case, must be the case, or ought to be the case, out of that set of alternatives. It isn't obvious that there will be contexts which provide such a deliberative background, but if there are, these results seem correct.[38]

4.3   Relative strengths

An adequate semantics for deontic modals should preserve the following relative strengths: 'must' is stronger than 'ought', and both are stronger than 'may'. Using this framework, we get all the right results: it is easy to see that 'must p out of Q' entails 'ought p out of Q', but that the converse does not hold; further, both entail, but are not entailed by, 'may p out of Q'.

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34 I am assuming here that there are no conflicts about what ought to be the case or what must be the case. I think the semantics could be amended to allow for such conflicts—the first move, at least, would be to change the definition of 'ought' and the second half of the definition of 'must', to say that   is ranked *at least as highly* as every other alternative.

35 Here I am assuming that < ranks the alternatives from best to worst, and leaving it open what constitutes the best. This may be different in different contexts.

36 McNamara (1996c) argues convincingly that it isn't always true that we must do what we ought to do.

37 One interesting complication, which I don't have the space to take up here, is that if a, b, and c are the only permissible options, we might want to say "It must be that (a ∨ b ∨ c)".

38 It is at least arguable that in a situation in which all the alternatives are bad, the least bad alternative still (say) ought to be the case. It might sound strange to say that, in such a situation, some bad alternative, even if it is least bad, is selected by L as the lowest-ranked *permissible* alternative. But I do not mean to use 'permissible' in any morally loaded way. In some contexts, the lowest-ranked permissible alternative, in my sense, might turn out to be impermissible, according to some set of moral standards.

4.4   Recovering duality

In the framework I have sketched above, 'must' and 'may' stand in the following relationship: 'must p' means that L selects p, and < does not rank any alternative higher than p. That is, p is the only permissible alternative. So if 'must p' is true, then 'may q' is false, for any q not identical with p. This suggests the following generalized version of Duality:

Contrastivist Duality (CD): must p out of Q ≡ for any q in Q not identical with p, ¬[may q] out of Q.

CD may initially appear very dissimilar to standard Duality. But notice that standard Duality actually *falls out* of CD as a special case when the only options in Q are p and its negation, ¬p. For example, suppose the set of alternatives Q is {go out, do not go out}. And suppose that I must go out, out of Q. Since 'not go out' is an element of Q not identical with 'go out', by CD, it follows that it is not the case that I may [not go out] out of Q; that is, 'must p out of Q' entails '¬[may[¬p]] out of Q'. Now suppose that it is not the case that I may [not go out], out of Q. Then since 'not go out' is the only alternative in Q, not identical with 'go out', it follows from CD that I must go out. That is, '¬[may[¬p]] out of Q' entails 'must p out of Q'.

5   Conclusion

I have argued that we should take seriously the idea that 'ought', 'must', and 'may' are contrastive. Contrastivism allows us to solve various puzzles surrounding these modals in a nice, unified way. Further, I have shown that it is possible to give a simple, unifying semantic framework which captures all of the desired relationships between the modals.

Adopting contrastivism about deontic modals could have interesting implications elsewhere. For example, I have shown that we would need to replace the standard understanding of the duality between 'must' and 'may' with a generalized version. It is plausible that other principles and axioms from deontic logic would have to be generalized, or otherwise altered. It could also have implications elsewhere in normative philosophy, since most ethical theories are concerned with what we ought to do, or what we must do, or what we may do. If it turns out that our use of these deontic modals is contrastive, it would not be surprising if this reflected important features of the role of alternatives our moral thinking. Finally, many philosophers have argued that there is some tight connection between 'ought' and reasons. While adopting contrastivism about deontic modals may not *force* one to adopt a contrastive picture of reasons, it does suggest that it would be interesting to investigate the prospects for such a view.[39] I do not explore any of these implications here, though I think they might prove to be interesting and fruitful areas for future research.

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39 Sinnott-Armstrong (2006) and Sinnott-Armstrong (2008) argues that reasons for belief are contrastive, and suggests that *all* reasons are contrastive. I take up contrastivism about reasons in Snedegar (ms).

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