A Pragmatic Solution to the Problem with *Might**

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Introduction

There must be something weird about *might*—something that fundamentally sets sentences with *might* in them apart from other declarative sentences. Though the seminal Kratzerian analysis (Kratzer 1977 *et seq.*) takes declarative sentences containing *might* (and other modals) to denote propositions in the same way as other declarative sentences, more recent work has responded to problems for the Kratzerian view by analyzing sentences containing *might* as subject to a special pragmatics (von Fintel & Gillies 2011), sensitive to special contextual parameters (Yanovich 2014, MacFarlane 2011a, 2014) or both (Stephenson 2007)—other authors have denied that sentences containing *might* are profitably analyzed as truth conditional at all (Yalcin 2011) and proposed analyses of *might* as an operator that performs a special kind of update (Veltman 1996).

Given the analytical terrain explored in the works cited above, a Martian linguist familiar with the literature on epistemic modality but inexperienced with the behavior of human language in the wild would conclude that declarative sentences containing *might* behave in a strikingly different way than declarative sentences without overt modality. My contention, as a human linguist, is that they don't.

In this paper, I'll argue that there's nothing weird about *might*—that we can (and should strive to) come to a satisfactory analysis of *might*-claims within a semantic framework in which all declarative sentences denote the same kind of formal object, and within a pragmatic framework in which all declarative sentences are subject to the same conditions on assertion and disagreement, and update the context via the same mechanisms. This is restated programmatically below:

(1) DESIDERATA: A UNIFORM TREATMENT OF DECLARATIVE SENTENCES
All declarative sentences should be treated as equivalent in the following ways:
a. All declarative sentences denote the same kind of formal object.
b. All declarative sentences are subject to the same licensing conditions for assertion and disagreement.
c. All declarative sentences are subject to the same update condition that determines their effect on the conversational context.

These are broad desiderata; in this paper I attempt to make satisfying them manageable by choosing a narrow empirical issue as my angle of approach. The bulk of this paper focuses on the problem of disagreement over *might*-claims, a subject that was a motivating factor behind many of the analyses cited above (in particular, see Stephenson 2007, von Fintel & Gillies 2011, Yanovich 2014). However, after proposing a system that accounts for disagreement over *might*-claims while satisfying the desiderata in (1), I'll pop back up to the bird's-eye view and discuss how the resulting system unproblematizes a broader set of issues raised for the standard truth-conditional view of *might*-claims (Yalcin 2011, Swanson 2011, MacFarlane 2011a).

I'll briefly introduce the problem of disagreement over *might*-claims here, and argue that it provides an especially clear example of the problem with which we began: the empirical facts of disagreement over *might*-claims look just like the empirical facts of disagreement over all other declarative sentences, despite the increase in analytical complexity that has been proposed to account specifically for disagreement over *might*-claims in recent work. In the following section, I go into more depth about the problem: empirically, I provide arguments that disagreement over *might*-claims really is disagreement over *might*-claims, not disagreement with the prejacent; theoretically, I explain concretely and formally why these disagreements are problematic for the seminal Kratzerian view.

Consider the following disagreement between **A**ndrea and **B**ertrand:

(2) **A**: Paul was at the party last night.
B: {You're wrong, No way, That's false}, he was in Barbados.

In this interaction, when **A** asserts p, she is presenting herself as if it is true given her knowledge. When **B** rejects p, he is presenting himself as if $\neg p$ is true given his knowledge. Let's look at another disagreement between **A**ndrea and **B**ertrand:

(3) **A**: Paul might have been at the party last night.
B: {You're wrong, No way, That's false}, he was in Barbados.

In this interaction, when **A** asserts *might-p*, she is presenting herself as if it is true given her knowledge. When **B** rejects *might-p*, he is presenting himself as if $\neg might$-p is true given his knowledge.

To belabor the point: the intuitive description of what's going on in these disagreements is identical. Disagreement over *might*-claims seems to behave exactly like disagreement over all

other declarative sentences. To be the guiding light of the next few sections, I supplement the broad desiderata in (1) with this narrow desideratum:

(4) **The Narrow Desideratum:**
The fact that interlocutors assert and reject *might*-claims on the basis of their own knowledge should be given the same explanation as the fact that interlocutors assert and reject all other declarative sentences on the basis of their own knowledge.

The standard Stalnakerian model of assertion and disagreement with declarative sentences[1] designed to capture cases like (2) does not extend straightforwardly to capture disagreement over *might*-claims, as in (3). I argue that the reason for this doesn't lie in the semantics for *might*, but in the implementation of the pragmatics of assertion and disagreement; the proper way to solve the problem is to alter the implementation of that pragmatics, not to mess with the semantics of *might*.

I present a revised neo-Stalnakerian pragmatics of assertion, disagreement and context update that preserves the Stalnakerian explanation of (2) while extending it to cover disagreement over *might*-claims. The revision starts from the basic Stalnaker-inspired premise that when speakers make assertions, they are both describing their own beliefs and asking their interlocutors to adopt those beliefs as well (or, to be precise, they are committing to behave as though they have a certain belief, and asking their interlocutors to commit to behave as though they share that belief). The novel contribution of this paper is to cash this notion out within a neo-Stalnakerian framework that treats assertions of declarative sentences as putting into play a set of epistemic states, instead of a set of worlds as in the traditional Stalnakerian picture. I show that the resulting system is formally isomorphic to the familiar Stalnakerian system in its treatment of unmodalized declarative sentences, while assimilating disagreement over *might*-claims to disagreement over unmodalized declaratives, and satisfying the desiderata in (1) and (4).

The structure of this paper is as follows:

▷ §1 articulates the problem with disagreement over *might*-claims, and shows that previous solutions to it violate the desiderata in (1) and (4)

▷ §2 proposes a Revised Neo-Stalnakerian Pragmatics (RNSP) of assertion and disagreement that unifies disagreement over *might*-claims with disagreement over unmodalized declaratives, satisfying the desiderata in (1) and (4)

▷ §3 situates the proposal in §2 with respect to arguments about the empirical adequacy

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[1]It's worth pointing out two things up front: first, that here and throughout the rest of the paper, when I say 'declarative sentences' I'm referring to declarative sentences with *falling* intonation. (see Gunlogson 2001/2008, Krifka 2015, Malamud & Stephenson 2015 and Farkas & Roelofsen 2017 for discussion of the differences between rising and falling declaratives); second, that for the purposes of this paper, I'm using 'assertion' as a descriptive term representing the normal affect on the conversational context of uttering a declarative sentence. So when I say that some agent 'asserts a sentence', what I mean is they they utter it with intent to update the context in the normal way (to be contrasted with quotative or facetious utterances). For a philosophical perspective on the conceptual status of assertion, as opposed to the descriptive use of the term in this paper, see MacFarlane (2011b).

of the traditional contextualist semantics for epistemic modals, contending that the proposal renders those arguments unproblematic for the traditional view

▷ §4 discusses how to model the informativity of *might*-claims in the RNSP

▷ §5 discusses the treatment of epistemic *must* in the RNSP

▷ §6 concludes

Readers in a hurry are invited to read only §2; further discussion of the properties of the proposal and its applications beyond the disagreement problem are housed in §4 and §5; §1 and §3 provide context for the significance of the proposal, but are not crucial to understanding how it works.

1   The problem with disagreement over *might*-claims

As a prerequisite to discussion of the disagreement problem, I'll present some background on *might*-claims.

(5)   Paul might weigh 180 pounds.

In (5), the modal *might* scopes over the PREJACENT (*Paul weighs 180 pounds*), converting the sentence (informally speaking) from a claim that the prejacent is true to a claim that it could possibly be true. I will refer to sentences like (5) as *might*-claims, and to a *might*-claim with prejacent p as *might-p*.

The simplest version of standard theory of the semantics of *might* (Kratzer 1977, 1981, 1991) treats *might-p* as true iff there is at least one epistemically available p-world:

(6) $[\![\textit{might-p}]\!]^w = 1$ iff $\exists w' \in$ EPIST-WORLDS$_w$ s.t. $[\![p]\!]^{w'} = 1$
      Where EPIST-WORLDS$_w$ is the grand intersection of all propositions known in w.
      Grand intersection of all known propositions: EPISTEMIC MODAL BASE

I'll call this analysis the SIMPLE QUANTIFICATIONAL ANALYSIS of *might*. These truth conditions leave a crucial question unanswered: known by who?[2] It seems sensible to suppose that speakers assert *might*-claims on the basis of what *they* know—intuitively, when speakers assert *might*-claims they are representing themselves as believing the prejacent to be possible. So is the relevant body of knowledge made reference to in (6) the speaker's?

It will be useful to define a point of terminology before we move any further:

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[2]Note that this question arises in the exact same way (and causes the exact same problems to be explored below) for probabilist theories of epistemic modality (Swanson 2006, Yalcin 2010, Lassiter 2011, Moss 2015)—in fact, Rudin (2016) claims that some probabilist accounts of *might*-claims are isomorphic to Kratzer (1977)'s treatment of *might*. The operative question for probabilist theories, because they rely on the notion of *epistemic* probability, is: probable in whose estimation?

(7)   EPISTEMIC STATES (simple version)[3]
     An agent's epistemic state in world w is the set of all worlds compatible with that
     agent's knowledge in w—her epistemic modal base at w. For an agent A, I_w^A is A's
     epistemic state in w.

The view that *might-p* is true in w iff p is a possibility given the speaker's epistemic state in
w is called SOLIPSISTIC CONTEXTUALISM. Despite its intuitive appeal, disagreement data
like (2), repeated here, are widely held to be problematic for the solipsistic contextualist
account of *might* (see e.g. Yanovich 2014, Yalcin 2011, Swanson 2011, von Fintel & Gillies
2011):

(8)   **A**: Paul was at the party last night.
     B: {You're wrong, No way, That's false}, he was in Barbados.

If the semantic content of **A**ndrea's claim is that Paul could be in Santa Cruz *as far as
she knows*, we should only be able to make sense of **B**ertrand's disagreement by taking it
to comprise an accusation that **A** has willfully misrepresented her own epistemic state. It
should mean something like: *it's false that* p *is possible as far as you know*. But this is not
what **B**'s disagreement means—when **B** says *that's false* to **A**'s *might*-claim, **B** is saying
that p is not a possibility given *his* knowledge!

To put the problem for the solipsistic contextualist view more formally: any sentence S
denotes a proposition p, specifically that proposition comprising the set of all worlds in which
S is true. Given the solipsistic interpretation of the semantics in (6), then, **A**'s *might*-claim
denotes the set of all worlds in which its prejacent is compatible with *her own* knowledge.
Assuming that her assertion is sincere, the *might*-claim will automatically be true: if **A** has
sincerely asserted *might-p*, then it is necessarily true that the world of utterance is in the
set of all worlds in which p is compatible with **A**'s knowledge. Saying a *might*-claim is false,
then, should be taken as saying that the world of utterance is *not* in the set of all worlds
in which the speaker's knowledge is compatible with p—i.e. that the speaker has willfully
misrepresented her own knowledge.

However, the disagreement in (8) is possible even if **B** has no false beliefs (and therefore the
actual world is compatible with his knowledge), and cannot be interpreted as **B** accusing **A**
of insincerely representing her beliefs.

One skeptical response to the argument that cases like (8) pose a problem for the solipsistic
contextualist account of *might*-claims would be to argue that (8) does not represent an actual
disagreement over the semantic content of the *might*-claim. Perhaps what's going on with
(8) is just disagreement with the prejacent, as in (9):

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[3]This is the simple version, because it is the minimal representation of an epistemic state necessitated
by the simple theory of epistemic modality currently under discussion. The simplest version of an epistemic
state is the same as an epistemic modal base; however, phrasing the account that follows in terms of epistemic
states instead of epistemic modal bases allows it to be extended to more complex representations of epistemic
states than those necessitated by the simple quantificational semantics. See §4.2 for discussion of the minimal
representation of an epistemic state necessitated by the more complex Kratzerian ordering semantics.

(9)   **A:** I think Paul is in Santa Cruz.
       B: You're wrong, I happen to know for sure that he's on the East Coast.

In this case, **B** isn't saying that **A** is mistaken about what she thinks; **B** is instead rejecting the proposition expressed by the clause embedded by *think*. Could this be what's going on in (8) too?

We can see that disagreement over *might*-claims isn't disagreement with the prejacent by seeing what happens if we embed the prejacent under *you're wrong*:

(10) **A:** I think Paul is in Santa Cruz.
       a. **B:** ??/*You're wrong that you think Paul is in Santa Cruz, I happen to know...
       b. **B:** You're wrong that Paul is in Santa Cruz, I happen to know...

(11) **A:** Paul might be in Santa Cruz.
       a. **B:** You're wrong that Paul might be in Santa Cruz, I happen to know...
       b. **B:** ??You're wrong that Paul is in Santa Cruz, I happen to know...

The data in (10) and (11), even at first glance, make it quite clear that disagreement over *might*-claims is not disagreement with the prejacent. *You're wrong* optionally embeds a clause indicating exactly what is being rejected by the speaker, and we see that in disagreement with the prejacent of *think*, the prejacent is unanomalous if embedded under *you're wrong*, but in disagreement over a *might*-claim, the prejacent is anomalous if embedded under *you're wrong*.

To put some formal teeth on what the data in (10) and (11) show, I adopt as a working theory of *you're wrong* that it entails that the content of its embedded clause is false, and presupposes that the addressee is publicly committed to the content of that clause. As we see in the true case of disagreement with the prejacent, (10), embedding the full sentence sounds strange, but embedding only the prejacent sounds natural. The former fact (10a) follows from the assumption that **A** is the foremost authority on what she thinks, and so **B** has no right to correct her about that. The latter fact (10b) follows from the observation that if somebody asserts that they think that p, they are publicly committing to p thereby (see e.g. Anand & Hacquard 2014), satisfying the presupposition of *you're wrong*.

The reverse is pattern true of *might*-claims, as shown in (11): embedding the full *might*-claim sounds natural, but embedding the prejacent sounds strange. The latter fact (11b) follows from the observation that asserting *might-p* does not generally have the effect of publicly committing the assertor to p, leaving the presupposition of *you're wrong*, namely that the addressee is committed to the embedded proposition, unsatisfied. The former fact (11a) demonstrates that what is being rejected in disagreement over a *might*-claim is indeed the semantic content of the *might*-claim itself: (11a) shows that the speaker both takes the addressee to be committed to *might-p* and asserts that *might-p* is false.

Given the above, it seems to me to be a sensible conclusion that disagreement over *might*-claims cannot be reduced to disagreement with the prejacent. Therefore, the possibility of

discourses like (8) really does pose a problem for the solipsistic contextualist interpretation of the simple quantificational semantics for *might*.

Ideally, an account of disagreement over *might*-claims should derive the behavior of those disagreements from the same principles that govern disagreement over all other declarative sentences, since the behavior of declarative sentences relative to assertion and disagreement is completely uniform: they can be (felicitously) asserted by agents whose knowledge they accurately characterize, and (felicitously) disagreed with by agents whose knowledge they contradict. A satisfying account of disagreement over *might*-claims will be one that satisfies the desiderata in (1) and (4).

The literature contains a variety of proposals for how to deal with the problem of disagreement over *might*-claims while preserving the basic Kratzerian perspective. Each one of these proposals proceeds by violating the desiderata in (1) and (4). In the rest of this section, I'll present prior contextualist proposals in some detail and point out empirical problems that crop up along the way; however, it is the violation of the desiderata in (1) and (4) that is most relevant for our purposes here. In none of these theories is the fact that interlocutors assert and disagree with *might*-claims on the basis of their own knowledge given the same explanation as the fact that interlocutors assert and disagree with all other declarative sentences on the basis of their own knowledge. Each theory in its own way stipulates a special pragmatics in order to predict the empirically observed discourse behavior of *might*-claims, instead of deriving that behavior from the interaction between the semantics of *might* and a fully general pragmatics pragmatics of assertion. After discussing previous contextualist proposals in this section, I'll present my own pragmatic proposal in §2; this proposal predicts the disagreement behavior of *might*-claims unproblematically given the solipsistic contextualist interpretation of the simple quantificational semantics for *might*. In §3 I address arguments for abandoning contextualism entirely and show how my proposal addresses them, and in §4 I show how the same pragmatic proposal can be applied to contextualist semantics other than the simple quantificational semantics.

1.1   Problems for goal sensitivity

Yanovich (2014) proposes an analysis of *might* in which its truth conditions are Kratzerian— existential quantification over a modal base—but its modal base is not associated with the epistemic state of any agent or agents. Instead, Yanovich argues that the modal base that *might*-claims quantify over is the set of all worlds compatible with the knowledge relevant to the current 'practical goal'. A practical goal is the underlying aim conversational participants wish to achieve—potentially a linguistic aim, but potentially not. Knowledge is relevant to a practical goal if it is able to affect the outcome of that goal—minimally, if is attainable during the timeframe of that goal, through reasonable effort. On this view, the disagreement in (8) is accounted for in the following way: we assume that the practical goal is something like 'to discuss Paul's whereabouts'. **A**'s assertion of the *might*-claim indicates that she believes there to be no knowledge relevant to the goal of discussing Paul's whereabouts that rules out his being in Santa Cruz. However, she is mistaken: **B** has access to knowledge that rules out that possibility.

On this account, asserting a *might*-claim is tantamount to making a prediction that no knowledge ruling out the prejacent will be encountered in the process of resolving the current practical goal. This is a very difficult prediction to test, because the concept of a practical goal is a slippery one—knowing what the practical goal is in a given context is crucial to predicting the behavior of a *might*-claim in that context, and Yanovich presents no empirical diagnostics for identifying practical goals, so it is quite difficult to see how his theory could be falsified—we could always come up with some practical goal that will explain the observed discourse behavior of *might*-claims in any given context, and so the theory skates dangerously close to treating *might*-claims as a diagnostic for identifying practical goals, rather than using practical goals to predict the behavior of *might*-claims. That said, I think there is sufficient reason to doubt that speakers only assert *might*-claims when they expect not to encounter knowledge ruling out the prejacent in the course of their current goal. Consider the following variation on (8), in which **A**ndrea is a millennial, glued to her phone while talking to **B**ertrand:

(12)   **B**: Paul told me a really complicated story last week about his travel plans, I can't remember where he said he'd be right now. Do you know if he's in Santa Cruz?
       A: He might be. If he's not, he'll be posting on instagram like crazy—let's check. Aha, he's taking selfies in Barbados as we speak!

In this case, it seems obvious (as obvious as such a thing could be) that **A** takes the current practical goal to be to figure out whether Paul is in Santa Cruz, this being the question directly posed to her by **B**. Yet she asserts *might-p* immediately before searching for knowledge that could falsify p. If she really meant to assert that there was no knowledge relevant to that practical goal that would rule out p, knowing full well as a tech-savvy millennial that the first step towards resolving that practical goal would be to look at Paul's social media accounts, then her *might*-claim should've expressed her total conviction that what she would find there would not rule out Paul being in Santa Cruz. This is far too strong: in asserting her *might*-claim, she does not indicate that she thinks the evidence she'll find on instagram won't rule out the prejacent—in fact, she turns to instagram specifically to seek evidence that could disconfirm the prejacent.

Asserting a *might*-claim while expecting to momentarily encounter evidence that could falsify the prejacent is a normal, coherent discourse move. It seems not at all odd for speakers to assert a *might*-claim followed immediately by *I'll go check*. Yanovich's account could be salvaged in relation to the data above by saying, for instance, that despite her *might*-claim being followed by an explicit plan to seek falsifying evidence of the prejacent, **A**'s practical goal is something like 'to be polite to **B**', a goal that is concluded before looking at Paul's instagram, and therefore a goal relative to which Paul's social media feed is not relevant information. In the absence of hard empirical diagnostics for identifying practical goals, such an analysis is impossible to rule out. Insofar as Yanovich's account makes clear predictions, they're not borne out.

1.2 Problems for cloud contextualism

In the system proposed by von Fintel & Gillies (2011), the relevant modal base for assessing the truth of a *might*-claim is indeterminate. In any conversation, there is a (perhaps quite large) set of potentially relevant epistemic states, that includes the epistemic states of all potentially relevant individuals as well as all combinations of those epistemic states. So for instance, if we assume that in a conversation between **A** and **B** at least **A** and **B** themselves are contextually relevant, the minimal set of contextually relevant epistemic states will be $\{A, B, A + B\}$, where A and B represent **A** and **B**'s epistemic states, and $A + B$ represents their intersection. This 'cloud' of epistemic states provides the set of possible modal bases that can be quantified over to produce a truth value for a *might*-claim asserted in this conversation. Because the context does not specify a unique modal base from this cloud relative to which to interpret a particular *might*-claim, any of them could in principle serve as the modal base for a *might*-claim. To control this indeterminacy and thereby make principled predictions about the behavior of *might*-claims in discourse, von Fintel & Gillies (2011) provide the following two pragmatic principles:[4]

(13) ASSERT: (cf. von Fintel & Gillies 2011 example 20)
      A speaker **S** can assert *might-p* iff **S** knows *might-p* to be true relative to at least one modal base in the cloud

This captures the intuition behind solipsistic contextualism, because in most normal cases, **S** will only be able to know for sure that *might-p* is true relative to her own epistemic state; therefore, most assertions of *might*-claims will be licensed by the speaker's own private knowledge. Crucially, this definition also allows speakers to assert *might*-claims that are false relative to their own epistemic state if they know the *might*-claim to be true relative to some other contextually relevant epistemic state. I discuss von Fintel & Gillies's rationale for allowing such assertions at the end of this section.

(14) CONFIRM/DENY: (cf. von Fintel & Gillies 2011 example 22)
      A speaker **S** can confirm (deny) *might-p* iff **S** knows *might-p* to be true (false) relative to the strongest modal base in the cloud that **S** has knowledge of the relevant properties of

This captures the disagreement facts in the following fashion: when **A** asserts *might-p*, she is responsible for putting into play a contextually indeterminate proposition, based on her knowledge that it is true relative to at least one of the ways to resolve that indeterminacy; **B** can rightfully say that **A** is wrong, because that contextually indeterminate proposition is false relative to a strictly stronger way of resolving that indeterminacy. This is because **B**

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[4]I've altered the following definitions from the way they're phrased in von Fintel & Gillies (2011)—most notably, I've substituted the phrases 'knows to be true' and 'has knowledge of the relevant properties of' for von Fintel & Gillies's 'be in a position to flat out assert' and 'reasonably has an opinion about'. As far as I can see, my simplifications preserve the crucial formal content of the definitions in von Fintel & Gillies (2011).

has no *p*-worlds in his epistemic state, and therefore he knows that there must be no *p*-worlds in the intersection between his epistemic state and **A**'s epistemic state.

The formulation of the CONFIRM/DENY operation in (14) takes **B**'s responses to **A**'s *might*-claims to be licensed by his knowledge of the intersection between his epistemic state and **A**'s in all situations where he has knowledge of the relevant properties of **A**'s epistemic state. This is because the intersection of **A** and **B**'s epistemic state is at least as strong as **A** or **B**'s personal epistemic state in isolation: as their intersection it is a subset of both, and it will be strictly stronger than either in all cases where neither interlocutor's epistemic state is included within the other's. Invoking the strongest possible epistemic state as the licensor of responses to *might*-claims causes empirical difficulties for von Fintel & Gillies's (2011) proposal. Confirmation of a *might*-claim is licensed relative to the strongest epistemic state the responder has enough knowledge of to assess the truth of the *might*-claim relative to it, and so if **B** knows that his *p*-worlds do not overlap with **A**'s *p*-worlds, he then also knows that the intersection of their epistemic states contains no *p*-worlds; *might-p* is false relative to the strongest epistemic state that **B** has knowledge of, and so confirmation should be impossible. If there is a pragmatic norm that responses to *might*-claims, either confirmations or denials, are made based on the strongest epistemic state the responder has knowledge of, then we should find it pragmatically anomalous for people to agree with a *might*-claim if they disagree with its assertor's grounds for believing the prejacent to be possible. However, the opposite is true. Consider the following dialogue:

(15)   **A**: Velociraptors might not be extinct—I saw some documents suggesting that they've survived for millennia on a single isolated island.
B: You're absolutely right that velociraptors might not be extinct, but you've been caught up in a hoax about the documents—they're fakes. However, I've heard reports that they've been cloned from ancient DNA trapped in amber.
A: You must be confused—that's the plot of Jurassic Park, not real life. And the documents I saw looked very convincing, so I don't believe you that they're fake. But hey, at least we can agree that velociraptors might not be extinct, even if we can't agree about why!

In general, people are very comfortable saying things like *I agree with you that Paul might be dead, but you're mistaken about why*, or *You're right that Paul might be dead, but for the wrong reasons*. These should have a flavor of, if not outright contradiction, then at least serious pragmatic uncooperativity given the definition in (14). However, they're perfectly acceptable.

One simple fix for this problem that would preserve the core conceit of von Fintel & Gillies (2011) would be to alter the definition of the CONFIRM/DENY operation to something more like the definition of the ASSERT operation in (13): say that someone can confirm (or deny) a *might*-claim iff they know it to be true (or false) relative to *some* modal base in the cloud. This would allow **B** to either disagree or agree with a *might*-claim by assessing his epistemic state alone, generating the observed disagreement behavior while also capturing the agreement facts presented in (15). However, it is exactly the reference to strength in the definition of CONFIRM/DENY that guarantees that responses to *might*-claims incorporate

the responder's own information; without that reference to strength, we would predict it to be pragmatically acceptable for a responder to disagree with a *might*-claim on the basis of their knowledge of someone else's epistemic state, even if they think the *might*-claim is true. This is clearly a bad prediction.

A more feasible fix would be to alter the definition of the CONFIRM/DENY operation to stipulate that confirmations and denials are only licensed by the confirmer/denier's own epistemic state. This would be a somewhat suspect move, however, if only because it would make this system virtually indistinguishable from the judge dependent system proposed by Stephenson (2007) and discussed in §1.3. This would be a suspect move because von Fintel & Gillies present their account as an alternative to such approaches, which they critique extensively in another paper (von Fintel & Gillies 2008).

There is one way in which the resulting account would differ from Stephenson's, and that's that von Fintel & Gillies's ASSERT operation allows speakers to assert *might*-claims based on their knowledge of epistemic states other than their own. von Fintel & Gillies (2011) present an argument in favor of this idea, one that they've repeated in other venues (von Fintel & Gillies 2008). Imagine that **A**ndrea and **B**ertrand are playing a zero-sum game in which **A** has five colored balls which only she can see, and **B** must figure out how many of each color she has within a certain number of guesses. Assume that there is only one red ball in **A**'s set, but given the responses to **B**'s guesses, his knowledge allows for there being either one or two red balls. In such a situation, **A** could say to prod **B** into asking his next question: *Remember, there might be two reds.* This seems acceptable in this context even though her knowledge rules that possibility out. This could be taken to support the cloud contextualist viewpoint—**A**'s assertion could be taken to be licensed by her knowledge of **B**'s epistemic state instead of communicating something about her own, counter to the generalization at the end of the previous paragraph. However, there is a simpler explanation of what is going on here: the context of playing a zero-sum game in which one speaker is required to guess at what the other one knows is not a normal, cooperative context! The goal of the conversational participants in such a situation is explicitly *not* cooperative information exchange. In a situation governed by cooperative information exchange, we expect participants' assertions to represent their own beliefs; when playing a game based on deception and hiding what one knows, we expect nothing of the kind. Consider the case of quiz questions: imagine a syntax teacher asking her student whether the word *the* is of category D. The teacher knows the answer perfectly well; if she was being a cooperative interlocutor (in the Gricean sense), she wouldn't ask the question, she would simply say its answer. And in the same situation, if the student asks the teacher whether *the* is of category A, the teacher could respond: *It might be! How can we find out?* The goal of the teacher in this situation is not cooperative information exchange; it's to guide the student toward figuring out the correct answer herself. A more mischievous teacher could even, as a pedagogical exercise, present a faulty analysis and pretend to think it works, in an attempt to prod her student into correcting her mistake. Rather than representing a deep fact about the contextual indeterminacy of the epistemic state invoked by the semantics of a *might*-claim, **A**'s behavior in von Fintel & Gillies situation is more plausibly interpreted as her strategically saying something that she doesn't believe, because she hopes its concordance with her competitor's epistemic state will to compel him to consider a possibility that she

knows to be a dead end.

I see no evidence for the contextual indeterminacy of the modal base invoked by *might*-claims in the case discussed above. There are also conceptual reasons to object to the conceit of a cloud of modal bases. As the authors themselves observe, their system postulates that any *might*-claim is truly ambiguous, just as it's ambiguous to yell *He's got a gun* in a crowded theater, unaccompanied by any gestural indication of who is being referred to—von Fintel & Gillies (2011) argue that just as there are a number of possible ways to resolve the referent of *he* in such a case, there are a number of possible ways to resolve the choice of modal base for a *might*-claim. However, it seems a dubious claim indeed to argue that *Paul might come to the party* is systematically ambiguous between *According to me, Paul might come to the party*, *According to you, Paul might come to the party*, and *According to our pooled knowledge, Paul might come to the party*, in a way that the context doesn't resolve.[5] When we hear an assertion of a *might*-claim, we don't stop and think, *hmm, could she mean might as far as that guy over there knows?* in the same way that when we hear *He's got a gun* we search through various possibilities for determining the reference of *he*. Rather, in all normal, cooperative contexts, when **A** asserts *might-p*, she is presenting herself as believing *p* to be possible and asking her interlocutors to adopt that belief as well, and when **B** rejects *might-p*, he is presenting himself as believing *p* to be impossible.

1.3   Problems for judge dependence

Stephenson (2007) proposes a judge-dependent theory of epistemic modals that extends Lasersohn's (2005) theory of predicates of personal taste to account for disagreement over epistemically modalized claims. Lasersohn's proposal is to interpret sentences relative not just to worlds, times and so on, but also to judges—a sentence like *Poutine is tasty* means something more or less equivalent to *Poutine is tasty to* j. The truth of that sentence is evaluated relative to the taste preferences of the judge *j*, just as the truth of any sentence is evaluated relative to some world *w* and some time *t*, and so on. The reason why this kind of parameterization seems sensible for predicates of personal taste is that their 'judges' appear to be able to shift quite a bit given changes in context; to choose an example made much of in the literature, one may call cat food 'tasty' to indicate one's belief that a cat enjoys its taste, without conveying that one enjoys the taste of cat food oneself.

While the purpose of her paper is to import the machinery of judge dependence into the analysis epistemic modals, Stephenson points out that epistemic modals are not as freely judge dependent as predicates of personal taste. The crucial examples involve embedding under belief verbs like *think*, as in the sentences below.

(16)   *[Context: Uttered while watching a cat cheerfully eat a new brand of cat food.]*
      I think this new brand of cat food is tasty.

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[5]It's even more dubious to suppose that that systematic ambiguity includes interpretations like *According to someone watching footage of this conversation in 75 years, Paul might come to the party*, which must be included in the cloud to account for the fact that we can perfectly cheerfully disagree with *might*-claims that we observe in such situations

(17)   *[Context: Uttered while watching a cat puzzle over whether the food is hidden behind panel 1 or panel 2, while the speaker is in full view of the fact that the food is behind panel 1.]*
       #I think the cat food might be hidden behind panel 2.

As we see in (16), it is possible to embed *tasty* under *think* and still have it serve as a description of the taste of someone other than the subject of *think*; in (17), we see that the opposite is true of epistemic modals. Embedding *might* under *think* forces it to serve as a description of the epistemic state of the subject of *think*, making (17) infelicitous in the given context.

Stephenson captures this difference in behavior in the following way: she treats both predicates of taste and epistemic modals as functions taking covert pronominals as arguments, specifying whose taste (or whose epistemic state) is being discussed. Both can take covert pronominals referring to the given context's judge as an argument; predicates of taste, but not *might*, can also take as an argument null pronouns referring to salient entities. On this account in (16), *tasty* has as its argument a null referential pronoun referring to the salient cat; the same interpretation is not available for (17) because *might* is not allowed to take such a pronoun as an argument; it can only take a null pronoun referring to the judge, and there are principled restrictions on who the judge can be.

The discourse behavior of *might*, in Stephenson's system, is controlled via a strict pragmatics of judges. In her pragmatics of judges, a speaker always serves as the judge of her own assertions—that is to say, when **A** assesses a potential assertion against her own epistemic state to determine whether it is a felicitous assertion to make, she uses herself as its judge. The same self-centeredness is true of addressees: when **B** decides whether or not he agrees with the content of an assertion, he uses *him*self as its judge. Belief verbs like *think* automatically shift the judge of the lower clause to their subject, overriding both the speaker's and the addressee's tendencies to take themselves to as judge. Finally, the common ground is a set of sentences that are true when the judge is taken to be the sum of all interlocutors in the given conversation.

The empirical generalization that such a pragmatics of judges gives rise to is the following: **A** can (felicitously) assert *might-p* if given her knowledge state, *p* is possible; **B** can (felicitously) disagree with *might-p* if given his knowledge state, *p* is false; a sentence of the form x *thinks that might-p* means that given *x*'s knowledge state, *p* might be true; and if *might-p* enters the common ground, that means that all conversational participants believe that *p* might be true.

Stephenson's system generates the observation that *might*-claims behave identically to other declarative sentences with respect to assertion and disagreement, but it generates that uniformity of behavior using profoundly non-uniform machinery. It relies on covert judge-dependent pronominals and a stipulated pragmatics of judge choice just to get the fact that *might*-claims behave perfectly normally.

MacFarlane (2011a, 2014) proposes an account in a similar vein to Stephenson's judge dependence account; on his account epistemic modals are 'assessment sensitive'. Denotations are

parameterized to a 'context of assessment', which in the case of *might*-claims specifies whose epistemic state is relevant. So just as in Stephenson's system, when **A** is assessing the truth of a *might*-claim, she assesses it relative to her own epistemic state, but when **B** assesses an asserted *might*-claim, he assesses it relative to *his* own epistemic state. This quite simply cashes out the discourse behavior of *might*-claims. However, it does so by hard-coding into the semantics something that seems properly addressed by the pragmatics of assertion and disagreement, namely that agents assess the truth of sentences relative to their own epistemic states. This seems like a conceptual quibble, but it actually has ramifications for the analysis of disagreement over declarative sentences. It is a general fact that agents can assert declarative sentences if they think they're true, and disagree with them if they think they're false. Ideally, this would follow from the general pragmatic mechanisms taken to govern assertions and disagreements in discourse. But on MacFarlane's account, disagreement over *might*-claims is stipulated into the semantics: the semantics of *might*, on his account, makes explicit reference to the context of assessment. Disagreement over unmodalized declaratives follows from general pragmatic principles, but disagreement over *might*-claims follows from the fact that their semantics directly invokes the context of assessment. In what follows, I implement a system that is deeply indebted to MacFarlane's (2011a, 2014) assessment sensitive account of epistemic modals, differing in treating assessment sensitivity purely as a feature of the pragmatics of assertion and disagreement, deriving disagreement over *might*-claims from a uniform recipe for disagreement that applies equivalently to all declaratives, with no semantic stipulation of the assessment sensitivity of *might*-claims necessary.

2 A conservative adjustment to the pragmatics of assertion

The problem of disagreement over *might*-claims arises from the way their semantics interacts with the pragmatics of assertion. An assertion, on the standard model, puts into play the proposition denoted by the asserted sentence—so for a *might*-claim, we need to generate the set of all worlds in which *might-p* is true. To generate that set of worlds, we need to answer the question 'accessible to who', and if we resolve that question in favor of the speaker, following the intuition that speakers are licensed in asserting *might*-claims based on their own private knowledge, we end up putting into play a proposition that is leashed to the epistemic state of the speaker—we end up predicting that an assertion of *might-p* will put into play the set of all worlds in which *might-p* is true *as far as the speaker knows*. If we make a conservative change to the pragmatics of assertion, such that asserting a sentence puts into play not a set of worlds but a set of epistemic states,[6] an assertion of *might-p* no longer puts into play a proposition leashed to the knowledge of the speaker, and the problem disappears. This section presents a formalization of such a variant on the standard pragmatics of assertion.

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[6]The idea that sentential content might on some level be thought of as sets of states is by no means novel. Most recently, such set-of-states denotations have been proposed as the semantic representation of sentential content within Inquisitive Semantics (Ciardelli et al. 2013). The system developed here is contrasted with Inquisitive Semantics in §2.6

2.1 A Neo-Stalnakerian Pragmatics of Assertion

I take as my starting point a revised and extended version of the theory of assertion proposed by Stalnaker (1978). In Stalnaker (1978), an assertion of a proposition p is an attempt by the assertor to add p to the Common Ground. I will be restricting my attention to only those cases of assertion in which the assertor is presenting themselves as though they know the semantic content of their assertion to be true. Though these cases are compatible with Stalnaker's original system, in which speaker presupposition is a default, I want to make it formally clear that I'm restricting my attention only to cases where that default is upheld, abstracting away from conversations that are fanciful or facetious, so I will adopt an epistemic norm of assertion explicitly in my statement of the model (q.v. Williamson 2000, Farkas & Bruce 2010, and Farkas & Roelofsen 2017). I present here the basic components of what I will call the Standard Neo-Stalnakerian Pragmatics of assertion (SNSP):[7]

(18) **Standard Neo-Stalnakerian Pragmatics:**
for any proposition p, agent A and world w
   a. COMMON GROUND (CG):
      the set of all propositions presupposed by all conversational participants in w
   b. CONTEXT SET (CS):
      the set of all worlds that could be the actual world given the propositions in CG
   c. LICENSING CONDITION:
      A can assert p in w iff $I_w^A \subseteq p$
   d. REJECTION CONDITION:
      A can reject an assertion of p in w iff $p \cap I_w^A = \varnothing$
   e. UPDATE CONDITION:
      when p is added to CG, CS is intersected with p

To assert p is to propose that p be added to the Common Ground. In the SNSP, A's assertion of a proposition is felicitous iff it is entailed by I^A, and her rejection of the assertion of a proposition is felicitous iff it is incompatible with I^A. Of course, nothing prevents agents from lying, or from simply representing as knowledge what is only a hunch; when an agent insincerely asserts a proposition, for instance, it is insincere precisely because she is *behaving as though* her epistemic state entails it. Though it is arguably not a primitive of the system, being derivable straightforwardly from the licensing condition, I include a rejection condition explicitly in the statement of the model for the sake of clarity, as we'll be focusing here on the ability of this model to account for disagreement.

The SNSP deals with sets of worlds: all declarative sentences denote some set of worlds, and assertions and rejections are defined in terms of relations between the set of worlds denoted by a sentence and the assertor's (or rejector's) epistemic state. Updates to the Context Set are defined in terms of intersection between sets of worlds. The novel proposal of this paper is a slight adjustment to the SNSP: I take declarative sentences to put into play sets of

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[7]I suppress all mention of relativization to times throughout this paper, as this plays no crucial role in the phenomena discussed.

epistemic states (sets of sets of worlds) instead of sets of worlds. When an agent makes an assertion in the SNSP, she is putting into play a set of worlds, and publicly committing to her epistemic state being a subset of it. The adjustment I propose is that when an agent makes an assertion, she puts into play a set of epistemic states, and publicly commits to her epistemic state being a member of that set. These two formalizations cash out the same intuition: namely that when an agent makes an assertion, she is portraying her epistemic state as being a certain way. I'll call the variation on the SNSP that manipulates set-of-states denotations the Revised Neo-Stalnakerian Pragmatics of assertion (RNSP). I will show the RNSP to be isomorphic to the SNSP for all unmodalized sentences, then go on to show how it generates the correct discourse behavior for *might*-claims. The basic idea behind the RNSP is this:

(19) RNSP: THE BASIC IDEA
      Asserting a sentence puts into play the set of all epistemic states relative to which it
      is true.
      ▷ in asserting a sentence, an agent represents herself as possessing one of the
         epistemic states in that set
      ▷ in disagreeing with an assertion, an agent represents himself as having knowledge
         that renders him incapable of updating his epistemic state to make it a member
         of that set
      ▷ if an assertion is accepted by all conversational participants, the context set is
         updated in the most conservative possible way that will make it a member of
         that set

These notions are precisified in the following sections.

2.2   RNSP: type-lifting sentence meanings

The basic idea of the RNSP is that the pragmatics deals in sentential denotations that are sets of epistemic states (or sets of sets of worlds), not sets of worlds. This section presents how to derive these pragmatic denotations from truth conditions in a principled way.

The slight adjustment that I propose to the standard model of assertion is conceptually intuitive: let's say that an assertion of a sentence puts into play not a set of worlds—the set of all worlds in which the sentence is true—but instead puts into play the set of all epistemic states whose possessors would know the sentence to be true. On the standard view, an assertion puts into play a set of worlds, and the assertor thereby represents herself as possessing an epistemic state that is a subset of it. On my proposed revision, an assertion puts into play a set of epistemic states, and the assertor thereby represents herself as possessing one of the epistemic states in that set. In other words, I propose that sentential denotations are type lifted on the way from the semantics to the pragmatics. A sentence's truth conditions, denoting a set of worlds, is type lifted to a set of sets of worlds; from type $\langle s, t \rangle$ to type $\langle \langle s, t \rangle, t \rangle$. Because the term proposition (and the corresponding variable p) is characteristically associated with a set of worlds, I will refer to these lifted sentential denotations as Metastates (with the corresponding variable M).

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In the RNSP, what is put into play in the pragmatics is not its semantic denotation, but rather a Metastate derived from that denotation: the set of all epistemic states relative to which the sentence true—or, in other words, the set of all epistemic states whose possessors would know that sentence to be true. I'll first show how to derive these sets from the truth conditions of unmodalized propositions, and then I'll go on to show how that same basic formula for deriving Metastate denotations from truth condtions produces something slightly different for *might*-claims.

We don't need to make any alterations to the truth conditions of declarative sentences to derive these lifted Metastate denotations. Take a simple sentence like *John is dead*, that contains no overt modality in its truth conditions. Abstracting away from irrelevant complexity, we can take the denotation of *John is dead* to be something like `dead'(j)`, a function from worlds to truth values. The truth conditions directly specify when the sentence is true relative to a world; we can define truth relative to an epistemic state in terms of truth relative to worlds. Under what circumstances can the bearer of an epistemic state be said to know that the sentence *John is dead* is true? Only if every world in that epistemic state is a world that `dead'(j)` maps to 1. An unmodalized declarative sentence is true relative to an epistemic state (the bearer of that epistemic state knows the sentence to be true) iff it is true at every world in that epistemic state; otherwise the epistemic state is unresolved wrt the sentence (it admits of the possibility that it is true and that it is false), or the sentence is false relative to the epistemic state (it is false at every world in the epistemic state). There is no excluded middle for truth at an epistemic state—though every sentence is either true or false at any given world, agents always have some degree of uncertainty about which world they are in.

So, the set of all epistemic states relative to which a simple unmodalized proposition like `dead'(j)` is true will be the set of all epistemic states containing only worlds where `dead'(j)` is true—the powerset of `dead'(j)`.

(20)   For an unmodalized proposition p, the corresponding Metastate $M = \wp p$
        or, $\{i : \forall w \in i, p(w) = 1\}$
        where i is a variable ranging over epistemic states (sets of worlds)

It's quite simple to derive this set from a sentence's truth conditions by applying what I'll call a 'meta-intensionalization' operator, introducing universal quantification:

(21)   Universal meta-intensionalizer: $\lambda p.\lambda i.\forall w \in i, p(w) = 1$

(22)   Meta-intensionalized *John is dead*: $\lambda i.\forall w \in i, dead'(j)(w) = 1$

In the formulas above, I've used both the variable i and the variable p to range over entities of type $\langle s, t \rangle$. This is for readability: p picks out the proposition to be meta-intensionalized, whereas i picks out the epistemic states generated by the meta-intensionalization operation. This meta-intensionalization operator can apply to any truth conditions to derive the set of all epistemic states comprising only worlds in which those truth conditions hold.

This way of looking at things is only superficially different from the SNSP; it's actually a way of cashing out the exact same idea. In the SNSP, when a speaker asserts a proposition,

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they are representing themselves as knowing it to be true. The set above is the set of epistemic states of agents who know a proposition to be true. A Metastate is just the set of epistemic states that an agent could possibly be representing themselves as having by asserting the corresponding (pre-meta-intensionalized) proposition in the SNSP. We could think of a Metastate, then, as the set of all epistemic states that license the assertion of the corresponding proposition in the SNSP. I hope it's clear that the model of assertion being put forward here is not different from the SNSP model in any deep way: the scene is the same, the camera angle is the same, only what's in focus has changed. This change of focus makes no difference to how unmodalized declaratives behave, but it makes all the difference for *might*-claims.

For *might*-claims, unlike for unmodalized declaratives, we don't want to derive the set of all epistemic states containing only worlds in which the *might*-claim is true. What does it mean for a *might*-claim to be true relative to an epistemic state? The truth conditions for *might* answer this question directly and transparently: for any given epistemic modal base, *might-p* is true iff that modal base has at least one p-world in it.[8] An epistemic state (given the simple quantificational semantics for modals) is just the epistemic modal base possessed by some agent in some world—so a *might*-claim is true in w relative to the epistemic state of some agent in w iff that epistemic state has at least one p-world in it.

We want the denotation of *might-p*, then, to be the following set:

(23) $\{i : \exists w \in i,\ p(w) = 1\}$

This isn't what we'll get if we use the meta-intensionalizer above on the simple quantificational truth conditions in (6); those truth conditions refer to an epistemic modal base, but they don't specify whose. Once we specify which epistemic modal base, we run into the same old problem for *might*-claims: the denotation would be the set of all epistemic states whose bearers know that the *might*-claim is true *according to someone*, whoever's epistemic state the chosen modal base represents. Instead, we can generate the set of epistemic states above by applying an existential meta-intensionalizer to the prejacent of the *might*-claim:

(24)   Existential meta-intensionalizer: $\lambda p.\lambda i.\exists w \in i,\ p(w) = 1$

(25)   Meta-intensionalized *John might be dead*: $\lambda i.\exists w \in i,\ dead'(j)(w) = 1$

The reader may be somewhat uncomfortable with the inhomogeneity of the process by which the Metastate denotations above are derived from truth conditions. A universal meta-intensionalizer is draped over the truth conditions of a sentence if truth conditions make no reference to epistemic states, but an existential meta-intensionalizer is applied to the prejacent of a *might*-claim. This difference is merely cosmetic. These two different-looking Metastate denotations are derived from the same underlying recipe: a movement from the truth conditions of a sentence to the set of epistemic states relative to which that sentence is true. The difference between the mechanisms involved in creating the two different kinds

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[8]Yalcin (2011) expresses a similar intuition about the cognitive state one is in when one knows *might-p* to be true.

of Metastates above derives not from *might*-claims being treated as a fundamentally differ-ent kind of object from sentences whose truth conditions don't invoke epistemic states, but rather is derived from the same underlying principle, which derives different results from truth conditions that invoke epistemic states and truth conditions that don't. We can think of the difference between epistemically modalized and non-epistemically-modalized propo-sitions in the following way: when speakers make assertions, they are always describing a relation between some proposition and some modal base. This is constant across both types of propositions. In the case of epistemically modalized propositions, the overt modality specifies both the modal base and the relation between the prejacent proposition and that base—for instance, *might* specifies an epistemic modal base and a relation of non-empty intersection. In the case of non-epistemically-modalized propositions, that relation is sup-plied by the knowledge norm of assertion (Williamson 2000): non-epistemically-modalized propositions are taken by default to indicate an epistemic modal base that stands in the subset relation to that proposition. When an agent A asserts a non-epistemically-modalized proposition, her interlocutors take her to be representing herself as knowing that proposition to be true, and proposing that the context set be updated to reflect that knowledge. One way of making sense of the system proposed above is that the knowledge norm of assertion is actually just a default assumption, overridden by overt modals, which specify a relation other than knowledge between a prejacent and the speaker's epistemic state.[9]

One way of thinking about the line of reasoning above is to divide the formula giving the set of epistemic states put into play by the assertion of a declarative sentence into a 'propositional core' and a layer of 'modal scaffolding' indicating the relationship between that proposition and a modal base:

(26) a. John is dead.
      b. $\lambda i. \forall w \in i, dead'(j)(w) = 1$
      c. $\lambda i. \quad \underbrace{\forall w \in i,}_{\text{modal scaffolding}} \quad \underbrace{dead'(j)}_{\text{propositional core}} \quad (w) = 1$

(27) a. John might be dead.
      b. $\lambda i. \exists w \in i, dead'(j)(w) = 1$
      c. $\lambda i. \quad \underbrace{\exists w \in i,}_{\text{modal scaffolding}} \quad \underbrace{dead'(j)}_{\text{propositional core}} \quad (w) = 1$

Viewed from this perspective, we can say that the difference between epistemically modalized and non-epistemically-modalized propositions in terms of how their truth conditions relate to the set of epistemic states they put into play when asserted is that the truth conditions of epistemically modalized propositions contribute both modal scaffolding and propositional core, while the truth conditions of non-epistemically-modalized propositions contribute the

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[9]The idea that clauses could contain universal epistemic modality by default, which is overridden by overtly specified modality, is a very old one. For some implementations in other domains, see e.g. Kratzer's (1986) treatment of conditionals, Anand & Hacquard's (2013) treatment of representational attitudes, Alonso-Ovalle & Menéndez-Benito's (2010) treatment of modal indefinites, or Zeijlstra's (2007) treatment of modal concord.

propositional core only, with the modal scaffolding contributed by the default assumption of the knowledge norm of assertion.

Importantly, the Metastate put into play by assertions of *might-p*, and the formal mechanism for deriving it presented in this section, isn't intrinsic to the RNSP notion of the type-lifted denotations put into play in the pragmatics; it's just what the concept that sentences put into play the set of all epistemic states relative to which they're true produces when applied to the simple quantificational truth conditions for *might-p* in (6). For a walkthrough of how that concept gives a different result when applied to different truth conditions for *might*, see §4.2.

For the sake of clarity, I'll end this section by reiterating the basic RNSP recipe for deriving Metastate denotations from truth conditions:

(28) RNSP SENTENTIAL DENOTATIONS: THE RECIPE
      In the RNSP, a sentence puts into play the set of all epistemic states relative to which it is true.

In this section I've walked through how Metastate denotations can be derived from truth conditions as a pragmatic process: assuming a perfectly standard truth-conditional semantics, the Metastate associated with a sentence is the set of all epistemic states relative to which that sentence is true. Assertions of a sentence put into play the Metastate associated with that sentence, because that Metastate represents the set of all epistemic states the speaker could possibly be representing themselves as possessing. In the next section, I briefly discuss prospects for a more radical proposal, in which sentential denotations are lifted to Metastates in the semantics, rather than in the pragmatics. Throughout the rest of the paper, I will refer to the Metastate associated with a proposition, to remain agnostic about whether that Metastate is the sentential denotation resulting from applying a semantic meta-intensionalization operator to that proposition, or whether that Metastate is derived from the truth conditions of that proposition via pragmatic reasoning

2.3   RNSP: prospects for semanticizing the lift

In the previous section, I described a process of pragmatic reasoning by which the set of all epistemic states relative to which a sentence is true can be derived from its truth conditions, leading to Metastate denotations that are put into play in the pragmatics when a sentence is asserted. It would be possible to come to the same denotations by placing meta-intensionalization operators into the semantics, such that sentences simply denote Metastates directly. In this section, I show what such an account would look like, and present some problems that such an account would need to solve before it could be fully satisfactory; for the purposes of this paper, I'll remain agnostic about whether it is preferable to treat RNSP Metastate denotations as generated in the semantics, or derived from truth conditions via pragmatic reasoning.

Rather than using pragmatic reasoning to derive the set of all epistemic states relative to which a sentence is true, we could instead reify the meta-intensionalizers in the previous

section: instead of using them as handy tools to express the formal relationship between a sentence's truth conditions and the Metastate that its assertion puts into play, we could instead treat meta-intensionalizers as semantic operators hosted somewhere in the left periphery of the clausal spine.

One such theory would look like this: the universal meta-intensionalizer lives in the left periphery of sentences without overt modality, producing type-lifted sentential denotations of the form arrived at via pragmatic reasoning in the previous section; however, in *might*-claims that universal meta-intensionalizer is replaced by *might* itself, which just denotes the existential meta-intensionalizer:

(29) *Denotation of* might *on a semantic view of Metastates:*
$[\![might]\!] = \lambda p.\lambda i.\exists w \in i, p(w) = 1$

This is semantics for *might* looks crucially different from Kratzer's familiar *might*, as presented in (6). The denotation in (29) gives us a *might-p* that is not true in a world—the contribution of this *might* isn't to the semantics of the prejacent, but instead directly legislates the relation between that prejacent and the epistemic states in the Metastate the sentence denotes. But even on this more radical, semanticized view of Metastate denotations we've made our way to this new, different-looking *might* by taking the traditional semantics in (6) as our starting point, rather than discarding it. If we take the Kratzerian intuition about the meaning of epistemic *might* as our starting point, and reason about what denotation that meaning will lead to in the RNSP, we end up with a sense of the assertive effect of *might-p* that is quite different from the effect it would have if it put into play the set of all worlds in which *might-p* is true. And let me point out that this way of treating Kratzer's *might* makes sense of the underspecification in her truth conditions: we don't need to specify whose epistemic modal base is being quantified over—we generate the set of all modal bases that would render the *might*-claim true!

Whether pushing meta-intensionalization into the semantics of sentential denotations is a feasible move depends on the answers to a variety of questions. I'll point out three here.

First, a view in which clauses denote Metastates would need to be supplemented with a theory of the semantics of clause embedding that allows clause-embedding verbs to apply to Metastate denotations. A convincing implementation of this would need to grapple with the fine-grained typology of clause embedding verbs and their interactions with epistemic modals, as recently explored by e.g. Anand & Hacquard (2013)

Second, an analysis in which the denotation of *might* is as given in (29) would be forced to propose a fundamental difference between the semantics of epistemic *might* and the semantics of non-epistemic flavors of *might*. Our attention has been restricted to epistemic uses of *might* so far in this paper, but *might* does have non-epistemic uses, sometimes called METAPHYSICAL:

(30) The Earth's atmosphere might just as well have been helium-rich instead of oxygen rich—life would've evolved very differently under those conditions.

In sentences like this, *might* doesn't invoke what is possible given the speaker's epistemic state, but instead invokes what *could've* been possible in some metaphysical sense. We don't want to model the contribution of *might* in (30) along the lines in (29) for this reason. A pragmatic account has no trouble with different flavors of *might*—the pragmatic reasoning that leads to the existentially meta-intensionalized prejacent for epistemically flavored *might*-claims will not go through in the same way for non-epistemically flavored *might*-claims. But if existential meta-intensionalization is denotational for epsitemic *might*, as in (29), we would be forced to analyze metaphysical *might* as a completely separate lexical item.

Thirdly, and relatedly, there is the question of the possibility of so-called 'exocentric' uses of *might*-claims (Egan et al. 2005). An exocentric use of a *might*-claim is one in which the relevant epistemic state seems not to be the speaker's. Egan et al. (2005) provide the following example of an exocentric use:

(31)   *[Context: Ann is planning a surprise party for Bill. Unfortunately, Chris has discovered the surprise and told Bill all about it. Now Bill and Chris are having fun watching Ann try to set up the party without being discovered. Currently Ann is walking past Chris's apartment carrying a large supply of party hats. She sees a bus on which Bill frequently rides home, so she jumps into some nearby bushes to avoid being spotted. Bill, watching from Chris's window, is quite amused, but Chris is puzzled and asks Bill why Ann is hiding in the bushes. Bill says:]*
        I might be on that bus.

As the context makes clear, Bill knows the prejacent of his *might*-claim to be false—it is interpreted as a statement about Ann's epistemic state. The upshot of examples like this has been controversial. The amount of contextual labor that is required to create a licit exocentric interpretation of a *might*-claim leads one to suspect that the possibility of an exocentric interpretation is more a property of the context than of the semantics of *might*. Stephenson, for instance, provides a concrete analysis of (31) as non-exocentric in terms of the semantics of *might*, in which the *might*-claim is covertly embedded under *because*, which supplies the epistemic state of the agent whose behavior is being explained (Stephenson 2007 §4.5). A semantic account of meta-intensionalization is required to take a stand against the possibility of exocentric readings of *might*-claims: the semantics in (29) relativizes all *might*-claims to the epistemic state of the speaker. An account couched in pragmatic reasoning can remain agnostic about exocentricity: *might-p* will put into play an existentially meta-intensionalized *p* only in contexts where the *might*-claim is interpreted as invoking the speaker's epistemic state.

For the purposes of this paper, the decision between a conception of meta-intensionalization as arising via pragmatic reasoning from traditional truth conditions and a conception of meta-intensionalization as introduced in the semantics via (sometimes covert) operators is one that does not need to be made. In either case, the denotations manipulated by the pragmatics are Metastates, and in either case (speaker-oriented, epistemic) *might*-claims will differ from non-epistemically-modalized propositions in terms of whether that Metastate involves existential or universal quantification. The solution to the problem of disagreement over *might*-claims follows from those properties, whether we take those Metastates to be derived pragmatically

or semantically. I turn now to a description of how assertion and disagreement operate in the RNSP, and a demonstration of how it accounts for the disagreement behavior of *might*-claims.

2.4 RNSP: CG, CS, licensing, rejection and update

Given that the RNSP manipulates sets of epistemic states, not sets of worlds, I'll have to make some formal changes to the SNSP as presented in (18). The changes that I make are strictly formal in nature, and do not change in any fundamental way the conceptual foundations of the SNSP, or the dynamics by which it operates.

(32) **Revised Stalnakerian Pragmatics:**
   for any Metastate M, agent A and world w

   a. COMMON GROUND (CG):
      the set of all Metastates presupposed by all conversational participants in w

   b. CONTEXT SET (CS):
      the set of worlds that could be the actual world given the Metastates in CG

   c. LICENSING CONDITION:
      A can assert M in w iff $I_w^A \in M$

   d. REJECTION CONDITION:
      A can reject an assertion of M in w iff $[\neg \exists I : I \subseteq I_w^A]I \in M$

   e. UPDATE CONDITION:
      when M is added to CG, CS is restricted by the maximally conservative operation f such that for any M-compatible epistemic state I, $f(I) \in M$

To assert a Metastate is to propose that it be added to the Common Ground. When **A** asserts some Metastate M, she is portraying herself as possessing one of the epistemic states in that set—she is portraying herself as possessing an epistemic state relative to which the sentence that denotes M is true. When **B** rejects an assertion of M, he is presenting himself as being incapable of updating his epistemic state to make it a member of M—there is no way for him to add knowledge to his epistemic state that will result in the sentence that denotes M being true relative to it (in other words, he knows the sentence to be false). In this system, disagreement over *might*-claims works just like disagreement over any other declarative sentence: if **A**'s epistemic state contains at least one *p*-world, then *might-p* is true relative to it (it is a member of the Metastate M denoted by *might-p*), and she can therefore felicitously assert it; if **B**'s epistemic state contains no *p*-worlds, then *might-p* is incompatible with it (it cannot be restricted such that it is a member of M), and he can therefore felicitously reject it.

The update condition in (32e) requires the following supplementary definitions:

(33) *M*-COMPATIBILITY:
   For any Metastate M, epistemic state I, I is M-compatible iff $[\exists I : I \subseteq I^A]I \in M$

(34) MAXIMAL CONSERVATIVITY:
For any function f, Metastate M, f is maximally conservative with respect to M iff
$[\forall M' : [\forall I : I$ is M-compatible$]f(I) \in M']M \subseteq M'$

The update condition in (32e), then, can be put into words in the following way: to update the Context Set to reflect the addition of M to the Common Ground, restrict it with an operation that guarantees that the result will be a member of M, but that is not so strong that it guarantees that the result will entail anything not entailed by M.

Update in the RNSP works in a way that is isomorphic to update in the SNSP for non-espitemically-modalized propositions:

(35) UPDATING WITH p IN SNSP
Once all interlocutors have committed to p:

a. $\qquad\qquad$ $\text{CG}_0 = \{q, r, s\}$ $\qquad$ $\text{CS}_0 = q \cap r \cap s$
b. Update with p: $\text{CG}_1 = \text{CG}_0 + p$ $\qquad$ $\text{CS}_1 = \text{CG}_0 \cap p$
$\qquad\qquad$ $(= \{p, q, r, s\})$ $\qquad\qquad$ $(= p \cap q \cap r \cap s)$

In (35a), we see our initial Common Ground, CG_0. It contains some propositions, q, r, and s, which all interlocutors share a prior commitment to. The initial Context Set, CS_0, is the intersection of all of the propositions in the Common Ground. In (35b), we see the process of updating with p: the updated Common Ground, CG_1, is CG_0 with the element p added to it; the updated Context Set, CS_1, is CS_0 intersected with p.

In the RNSP asserting a Metastate M that is the denotation of a sentence without overt epistemic modality will have the effect of intersecting the Context Set with the corresponding proposition p (the set of all worlds in which the sentence is true), just as in the SNSP. This follows from the RNSP UPDATE CONDITION, repeated here:

(36) UPDATE CONDITION:
when M is added to CG, CS is restricted by the maximally conservative operation f such that for any M-compatible epistemic state I, $f(I) \in M$

Because we are assuming that M is the denotation of a sentence without overt epistemic modality, it is equivalent to $\wp p$ for some proposition p: the set of all epistemic states containing only worlds in which p is true. Therefore, the maximally conservative operation guaranteed to turn any M-compatible CS into a member of M is intersection with p: this operation removes all worlds in which p is false, guaranteeing that if CS had any p-worlds in it before the update, the result will be a member of M, and otherwise leaves CS unchanged. In the RNSP, the SNSP's intersective update operation is derived for unmodalized sentences as a special case of the more general recipe.

But what about the update potential of *might*-claims? Applying the general recipe will produce an update potential for *might-p* that is quite different than intersection with the set of all worlds in which the sentence is true.

An assertion of *might-p* will put into play the set of all epistemic states including at least one *p*-world. It follows that the most conservative possible way to restrict the Context Set to reflect an update with a *might*-claim is to leave it alone.

(37) UPDATING WITH *might-p* IN RNSP:
(assuming that the Metastates Q, R and S correspond to the unmodalized propositions q, r and s, and that $CS_0 \cap p \neq 0$)
a. $\qquad\qquad CG_0 = \{Q, R, S\} \qquad\qquad CS_0 = q \cap r \cap s$
b. Update with *might-p*: $CG_1 = CG_0 + \textit{might-p} \qquad CS_1 = CG_0$

An epistemic state is compatible with the Metastate associated with *might-p* iff that epistemic state includes a *p*-world—if an epistemic state contains no *p*-worlds, there is no way to shrink it that will change that fact. Therefore, any epistemic state that is compatible with *might-p* is also an epistemic state relative to which it is true! In the RNSP, it will be impossible to update the Common Ground with a *might*-claim if the Context Set entails $\neg p$, because there is no way to restrict such a Context Set such that it will become a member of the set of all states that have at least one *p*-world in them; in all other cases, adding *might-p* to the Common Ground will have no effect on the Context Set.

This update potential for *might-p* follows from the Metastate associated with *might-p* given the simple quantificational semantics in (6). A different semantics for *might* would lead to a different associated Metastate, which would in turn lead to a different update potential. For the sake of clarity, I'll end this section by reiterating the basic RNSP recipe for deriving update potentials from Metastate denotations:

(38) RNSP UPDATE POTENTIALS: THE RECIPE
In the RNSP, the update potential of a Metastate M, applied to the Context Set when M is added to the Common Ground, is the maximally conservative operation guaranteed to make any M-compatible epistemic state a member of M

2.5   Comparison with Veltman's (1996) Update Semantics

The update potential for *might*-claims in the RNSP (on the simple quantificational analysis) happens to be exactly what Veltman (1996) proposes for the update potential of *might-p* in his Update Semantics. In the Update Semantics, the meaning of a sentence is modeled as the effect a successful assertion of it has on the CS. The basic update for unmodalized propositions works just like in the SNSP and RNSP:

(39) $i[p] = i \cap p$

$i[p]$ is to be read as 'i updated with p'. The update with an unmodalized proposition in (39) is simply the intersective update taken to be the basic update operation in the SNSP, and derived as a special case of the general update recipe in the RNSP.

However, for Veltman, *might* has no denotation, and therefore *might*-claims to not denote the same kind of object as unmodalized declaratives, updating the context in the same way. Instead, he defines *might-p* syncategorematically like so:

$$(40) \quad i[\textit{might-p}] = \begin{cases} i \text{ if } i[p] \neq \varnothing \\ \varnothing \text{ ow} \end{cases}$$

For Veltman (1996), *might-p* is a 'consistency test'—an epistemic state updated with *might-p* is unchanged if it contains *p*-possibilities; anomaly results otherwise. It would seem from reading Veltman's paper that this is a radically non-Kratzerian analysis: in his account, *might-p* doesn't even have truth conditions. However, the update potential in (40) is exactly the update potential of *might*-claims in the RNSP, given the simple quantificational analysis of *might*. The proposal above, then, could be seen as a technique for deriving Veltman's 'consistency test' semantics from Kratzer's truth conditions for *might* instead of stipulating those update conditions directly. We can have *might*-claims enact Veltman-style updates while still having a system in which all declarative sentences denote the same kind of formal object, and in which there is only one notion of update: maximally conservative restriction of the Context Set. Just as with the difference between the denotation of unmodalized declaratives and *might*-claims, the difference between the updates enacted by unmodalized declaratives and *might*-claims, in the RNSP, follows principledly from differences in their semantics, interacting with a unitary update condition that doesn't distinguish between the two.

One criticism that could be levied against the update potential of Veltman's *might*, and which therefore applies with equal force to the RNSP update potential for Kratzer's simple quantificational semantics, is that such an update communicates no information: a context successfully updated with *might-p* is not changed in any way. §4 addresses the question of whether *might-p* should be taken to be an informative update, and discusses possible avenues toward rendering *might-p* informative in the RNSP.

2.6 Comparison with Inquisitive Semantics

Inquisitive Semantics (IS, Ciardelli et al. 2013) also performs context updates by manipulating sets of sets of worlds, which are taken to be the type of sentential denotations. Denotations in Inquisitive Semantics must be downward closed—if a state is a member of a denotation, then all of its subsets are a member of that denotation as well. IS is designed to unify declarative and interrogative sentences by treating them as the same kind of formal object, that affects the context via the same operations, but declarative sentences without any 'inquisitive content' will denote the downward closure of some proposition p, that proposition being the maximal element in the denotation. This is the same denotation as the Metastate associated with non-epistemic propositions in the RNSP: in both the RNSP and in IS the assertion of the simplest declarative sentences puts into play $\wp p$ for some proposition p. It would be easy to enrich the notion of a sentential denotation in IS with denotations like the RNSP denotation derived from the simple quantificational analysis of *might-p*—the set of

all states with at least one p-world in them is not a downward closed set, but it does have principled closure properties: it's an upward closed set (to be technical, it's the grand union of the set of all principal ultrafilters whose principal element is a p-world). The difference in closure properties between *might*-claims and non-epistemically-modalized declaratives could be connected to the difference in the kind of relation the two kinds of sentences indicate between a prejacent and an epistemic modal base, just as in the discussion above. So why not simply adopt IS? Why propose a new system?

The crucial reason why I've avoided adopting IS wholesale here is the notion of update in IS. In IS, the context is taken to be a set of states as well, and update proceeds via intersection. This is so that denotations with 'inquisitive content'—e.g. denotations of questions, which introduce multiple alternatives—can update the context in the exact same way as the simplest non-inquisitive declarative sentences: via set intersection. However, if we implement a denotation for *might-p* in which it denotes the set of all states with at least one p-world in them in IS, we make a pathological prediction. Intersecting that denotation of *might-p* with any context would remove from that context all states without any p-worlds in them, rendering a future update with $\neg p$ impossible. In effect, in this system an assertion of *might-p* is tantamount to saying 'either p is true, or we'll never figure out whether or not it's true'. This is a prediction worthy of skepticism for reasons already discussed in §1.1, but the prediction made here is even stronger: that it should never be coherent for $\neg p$ to be accepted in a discourse that has previously accepted an assertion of *might-p*.

This is a bad prediction *prima facie*—intuitively, a speaker's utterance of *might-p* indicates uncertainty about whether p or whether $\neg p$, an uncertainty that can be resolved in either direction as new information comes in. However, if an update with *might-p* removed all $\neg p$-validating states from the context, we would predict that it would be impossible to coherently follow an assertion of *might-p* with an assertion of $\neg p$. Such sequences are perfectly coherent if the assertor receives new information between the two assertions. Witness the following:

(41)   *[Context: we're watching a recording of a horse race that happened yesterday.]*
       My horse might have won the race! ... Ach, it didn't.

This is a perfectly coherent sequence of assertions if we assume, for instance, that the speaker's horse is in the lead at the time of utterance of the first sentence, and is edged out at the finish line before the speaker's utterance of the second. The coherence of this sequence of assertions empirically substantiates the *prima facie* discomfort discussed in the previous paragraph. Though in the general case conjunctions of the form '*might-p* and $\neg p$' sound robustly contradictory, even when embedded under verbs like *suppose* (see Yalcin 2007 for discussion), in cases where the speaker receives new information between the conjuncts they become coherent. This suggests that the sense of contradiction these conjunctions give rise to follows from the fact that it's not possible for an agent to believe both conjuncts simultaneously, not from the two conjuncts comprising an impossible update sequence, which is what would be predicted by an IS implementation of the Metastate denotation of the simple quantificational analysis of *might*-claims.

Despite similarities between IS and the RNSP in terms of the denotations put into play by an assertion, there's reason to prefer the RNSP update conditions proposed above due to the way they capture the effectiveness of *might-p* as a 'hedge', committing its assertor neither to *p* nor to ¬*p*. However, the RNSP isn't set up to capture inquisitive content—it hasn't been extended to deal with the update potential of questions, only declaratives. I certainly wouldn't go so far as to say it's impossible to successfully implement a denotation for *might* like the one presented above in Inquisitive Semantics—in fact, a unification of the proposal here with IS would be very desirable, to preserve the insights IS provides into the behavior of questions in discourse. However, I won't pursue such an analysis here.

3   Beyond disagreement

Several authors (q.v. e.g. Yalcin 2011 and MacFarlane 2011a, 2014) discuss a variety of empirical issues that they see as problematic for the solipsistic contextualist account of *might*-claims. One such issue is the problem of disagreement, discussed extensively above. Another is the problem of so-called 'epistemic contradictions' (Yalcin 2007, 2011, 2015), the import of which has been discussed skeptically elsewhere in the literature on epistemic modality (Willer 2013, Rudin 2017). Setting these two issues aside, I focus here on the problem of eavesdropper cases, and the intuitive applicability of both 'I was right' and 'I was wrong' to an assertion of *might-p* upon reflection by a speaker who was epistemically justified in believing that *p* might have been true at the time of utterance, but who now knows *p* to have been false. I argue that the RNSP account above, though designed to solve the disagreement problem, gives us sensible explanations for these phenomena as well, lending additional support to the idea that the problem with *might* could be a problem with the standard implementation of the pragmatics of assertion, not a problem with the semantics of *might*.

I'll first introduce the problem of eavesdropper cases. What has been discussed up until this point in the paper is cases in which two interlocutors are speaking to each other, and disagree. However, disagreement over *might*-claims occurs much more freely than this:

(42)   *[Context:* **A***ndrea is lurking around the corner from some teenagers,* **B***ertrand and* **C***lyde, who are eagerly discussing what the features of the iPhone 10, to be released next week, are.* **A***, who works for Apple, knows that the iPhone 10 has no headphone jack, though that information hasn't been made public yet.]*
B: The new iPhone might reintroduce the headphone jack!
C: Yeah! That would be exciting!
A (to herself): These kids are totally wrong! There's no headphone jack on the iPhone 10!

(43)   *[Context:* **B***ertrand is watching an 50-year-old TV broadcast of a famous come-from-behind racing victory. The* **A***nnouncer says:]*
A: Sally Parsons is ahead by a comfortable margin with only half a lap to go! Her lead might well be impossible to overcome!

B: Hah! That announcer is totally wrong! Franny Peterson's going to overtake her in a photo finish!

People can freely disagree with *might*-claims that are not addressed to them, uttered by people who do not know they are listening—whether those conversations are happening contemporaneously with the disagreement or not. The eavesdropper cases above, therefore, pose a problem for accounts that rely crucially on the inter-interlocutor relationship to explain disagreement over *might*-claims.

Let me note, first of all, that just as with inter-interlocutor disagreement over *might*-claims, the ability to disagree while eavesdropping works the same for any unmodalized declarative sentence as it does for a *might*-claim. There's nothing *might*-specific going on here. All that's necessary to explain disagreement in eavesdropper cases is to extend the model of disagreement to such cases. In the RNSP model of disagreement proposed above, when one interlocutor makes an assertion to another, the addressee considers the set of all epistemic states the assertor could possibly be representing themselves as having, and checks whether their epistemic state could be restricted such that the result would be a member of that set. If no, then the addressee is licensed to disagree. It's trivial to see how to extend this model of inter-interlocutor disagreement to a model of disagreement over eavesdropper cases: simply say that whenever an agent hears a sentence, they can freely express disagreement with it if the conditions above are met, i.e. if there is no way to restrict their epistemic state such that it would be a member of the set of epistemic states whose possessors would know the overheard sentence to be true. Eavesdropper cases do not intrinsically pose any special problems for the explanation of disagreement over *might*-claims above.

There is, however, a somewhat trickier problem associated with eavesdropper cases: inconsistent intuitions about the wrongness of *might*-claims uttered in the past. Consider the following scenario:

(44)   **A**ndrea does not know where **B**ertrand is, but she has noticed that there are no lights on in his office. When **C**lyde asks her where he is, she replies: 'He might have gone home.' She later learns that he was in his office the whole time, taking a nap.

In this context, the following discourse seems appropriate (q.v. von Fintel & Gillies 2011):

(45)   **C**: So you were *wrong* when you told me he might have gone home.
       A: No I wasn't! He *might* have gone home, for all I knew!

However, it the following seems equally appropriate:

(46)   **C**: So you were *wrong* when you told me he might have gone home.
       A: Yep, I was wrong. He was in his office all along.

Why does it seem appropriate for **A** to say she was wrong, but also seem appropriate for **A** to say she wasn't? Surely it's a contradiction to be both wrong and not wrong.

This is a genuine *might*-specific problem: take *might* out of **A**'s sentence in (44) and (45) becomes infelicitous—only (46) is felicitous in such a context. I argue that the reason for this asymmetry has to do with an ambiguity associated with *wrong*, and how it relates to the semantics of *might*.

We can make sense of the fact that both (45) and (46) seem appropriate in the same context by postulating that there are two different ways to be wrong, a weaker and a stronger way. The stronger way to be wrong is to make an assertion whose content is incompatible with a fuller set of facts about the world than you had at the time of utterance. The weaker way to be wrong is to make an assertion that is epistemically unjustified—i.e. that presents at knowledge what is only at best suspicion. I call the stronger interpretation strong and the weaker interpretation weak because it's possible for an assertion to be wrong in only the strong way, without being wrong in the weak way.

Consider the case in (44). In this case, **A** is wrong in the strong sense: the content of her assertion turned out to be incompatible with the fuller set of facts. However, she was not wrong in the weak sense: the content of her assertion was an accurate representation of her knowledge, none of which was inaccurate. Given the RNSP implementation of *might*-claims, it's possible for them to be wrong only in the strong sense: the speaker has represented her epistemic state accurately, though the acquisition of new facts has made her epistemic state no longer compatible with p. We can make sense of the conflicting facts in (45) and (46) by saying that in (45) **A** is denying having been wrong in the weak sense, whereas in (46) she is admitting to having been wrong in the strong sense.

Unlike *might*-claims, it's impossible for unmodalized declarative sentences to be wrong in one sense but not the other. In the RNSP, to assert an unmodalized declarative sentence with propositional content p is to represent yourself as though all of your epistemically available worlds are p-worlds. In a modified version of (44) in which **A** asserts an unmodalized declarative sentence like 'He has gone home', she is necessarily wrong in both senses: if p is false, then it is not possible to be epistemically justified in asserting $\neg p$, even if it's justified that $\neg p$ characterizes your doxastic state on the basis of plausible inference from observed evidence. In such a context, only (46) is felicitous, as neither reading of *wrong* is flattering to **A**.

In this section, I've argued that neither eavesdropper cases in general, nor the specific problem of inconsistent intuitions about wrongness, is problematic for the solipsistic contextualist account of *might*-claims given an RNSP pragmatics of assertion. The eavesdropper cases are rendered unproblematic for the same reason as other disagreements over *might*-claims are: by the RNSP allowing *might*-claims to be licensed on the basis of the speaker's epistemic state, but putting into play a denotation that is not leashed to that epistemic state. The availability of both *wrong* and *not wrong* to characterize (epistemically justified) assertions of *might-p* in contexts where p turns out to be false comes from the crucial distinction between *might*-claims and unmodalized declarative sentences: that *might*-claims express a non-trivial overlap between an epistemic state and a proposition (allowing them to be strongly wrong without being weakly wrong), whereas unmodalized declarative sentences express the inclusion of an epistemic state within a proposition.

Yalcin (2011) (see also Rothschild 2012) argues for a fundamental distinction between 'factual' sentences (like non-epistemically-modalized ones) and 'nonfactual' sentences (like *might*-claims). Factual sentences, as Yalcin puts it, describe 'a way the world is'. Nonfactual sentences don't describe the world, but rather express the epistemic state of the speaker. This distinction is argued to track a distinction in terms of sentential denotations: factual sentences are truth-conditional in the familiar way; nonfactual sentences express their meanings in some other way. The proposal in this paper is not a rejection of the intuitions behind the proposal that *might*-claims are, in some sense, 'nonfactual.' In fact, the proposal in this paper can be viewed as a way of formally cashing out the distinction between 'factual' and 'nonfactual' sentences: we can take the term 'factual' to describe sentences that express a subset relation between the speaker's epistemic state and some proposition, and take the term 'nonfactual' to describe sentences that express some other relation between the speaker's epistemic state and some proposition, such as non-trivial overlap. What I do argue we can reject is the idea that the 'nonfactuality' of *might*-claims is an insurmountable challenge to the contextualist viewpoint. Quite the opposite: the approach in this paper ties (non)factuality directly to the truth conditions of the sentence: do those truth conditions explicitly invoke an epistemic state, or don't they? We can explain the intuitions behind the arguments made by Yalcin (2011) without being forced to analyze factual and nonfactual sentences as fundamentally different in terms of the kind of object they denote and the way they update the context—in fact, we can derive those intuitions from the solipsistic contextualist truth conditions of *might*.

4   Informativity

The RNSP technique for generating Metastates from the truth conditions of declarative sentences and updating the context with them, when applied to the simple quantificational semantics in (6), replicates the update potential for *might*-claims proposed by Veltman (1996), as discussed in §2.5. Given this update potential, the communicative purpose of *might-p* is strictly to double-check that the conversational participants both believe p to be possible. It is impossible in principle, on this analysis, for *might-p* to communicate new information. This prediction seems to be at odds with the way people respond to assertions of *might*-claims:

(47)   **A**ndrea: What's the weather going to be like tomorrow?
       Bertrand: It might rain.
       Andrea: Oh, I didn't know that!

In the dialogue above, **B**'s contribution is cooperative, and **A** reacts as though it was an informative contribution. This is commonplace in exchanges involving *might*-claims, but is impossible to capture on Veltman's 'consistency test' semantics, because on such a semantics it is impossible in principle for a *might*-claim to communicate new information.[10] **A**'s

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[10]This follows because for Veltman (1996), this test is performed on the conversational context. If, however, we took the context to be a set of epistemic states, and applied the test pointwise to its members, the update

response is impossible to explain from such a perspective: if *might-p* is a 'consistency test', then it should only be able to be a successful update if the interlocutors involved already believe *might-p* to be true.[11]

The uninformativity of *might*-claims is an inevitable consequence of Veltman's semantics for them, but it's not an inevitable consequence of the RNSP. The RNSP provides recipes for generating Metastates from the truth conditions of declarative sentences and updating the context with them; different truth conditions for *might* will give rise to different meta-intensionalized denotations for *might*-claims, and therefore different update potentials for *might*-claims. In this section I outline three possible strategies for rendering *might*-claims informative in the RNSP.

4.1   The Attentive Semantics

There is an analysis of *might* on the books in the Inquisitive Semantics literature—the 'attentive' analysis of *might* (Ciardelli et al. 2011, Roelofsen 2013)—which takes *might-p* to be an informationally trivial proposition containing two alternatives: *p* and the set of all worlds. In other words, on this account *might-p* has the same denotation as a disjunction of *p* and a tautology. The idea at the core of the 'attentive' analysis is that *might-p* makes no informational contribution to a discourse, but serves to draw attention to the possibility that *p* is true. Because this denotation is informationally trivial, disagreement over *might*-claims is problematic for the attentive account. A special pragmatics must be stipulated to capture disagreement over attentive content—disagreement over *might*-claims on this account does not follow from the same mechanism that captures disagreement over non-modal claims, a violation of our guiding desiderata in (1).

This analysis is driven by the intuition that *might*-claims serve to draw attention to the possibility that their prejacent is true; it places that intuition at the center of the update potential of *might*-claims. The RNSP implementation of the simple quantificational semantics gives us a different way to cash out the intuition of the attentive analysis, while generating disagreement behavior in a way that is unified across all declarative sentences. In the Stalnakerian picture, as opposed to the Veltmanian one, there is actually one minor way in which an update with a *might*-claim alters the context: asserting *might-p* adds it to the list of the assertor's public commitments, and if nobody objects to the assertion, *might-p* is added to the Common Ground as well.

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could be informative: it would weed out all epistemic states in the context that have no *p*-worlds in them. Exactly such an implementation of Veltman's denotation for *might* is proposed by Willer (2013).

[11]Rudin (2016) argues on empirical grounds that *might*-claims are trivially weak—they entail only what the simple quantificational semantics suggests they do, namely that *p* is not strictly ruled out, epistemically. He derives strengthening of *might*-claims in context as an implicature associated with the maxim of Relevance: for it to be cooperative to assert that *p* has non-zero probability, *p* must have *relevantly* non-zero probability. The question of whether the informativity of *might*-claims is hard-coded into their semantics or derived as a pragmatic inference is orthogonal to our current concerns: either way, we need to model how a stronger denotation for *might*-claims (whether entailed by its semantics or derived as a pragmatic inference) will update the context in the RNSP.

We could associate adding a Metastate to the Common Ground with an 'attentive' affect: adding a Metastate to the Common Ground serves to draw attention to that Metastate. We could say that *might-p* performs a trivial update, but draws attention to the possibility of *p* by adding *might-p* to the Common Ground.

This way of cashing out the intuition behind the attentive analysis of *might*-claims is superior to the accounts on the books in the Inquisitive Semantics literature for two reasons. The first has already been discussed: it gets disagreement over all declarative sentences from the same general mechanisms. The second is that associating adding a Metastate to the Common Ground with drawing attention to it unifies the attention-drawing effect of asserting a *might*-claim with other attention-drawing effects. Attention-drawing is a general property of assertion, and there are many sentences, such as *As you know, p* or *Just as a reminder, p*, that presuppose that *p* is already Common Ground and serve perhaps exclusively to draw attention to it. The attention-drawing properties of assertion have been modeled by Franke & de Jager (2011), and applied to assertions of clarity by Crone (2016); to model attention-drawing as a special property of *might*-claims is to miss the bigger picture about attention-drawing as a fundamental motivation behind assertion. Cashing out the intuition behind the attentive analysis of *might*-claims by deriving it from a general notion of the attention-drawing affect of assertion, rather than treating attention-drawing as a special intrinsic property of *might*-claims, seems preferable.

That said, empirical issues remain for the idea that the only affect *might*-claims have on contexts is the affect of drawing attention to the possibility that their prejacent is true. If we examine the behavior of unambiguously attention-drawing expressions like *As you know, p*, we see that they don't behave the same way as *might*-claims. Most damningly for the idea that *might*-claims contribute nothing beyond attention-drawing is data like the following:

(48)   a. **A**: As you know, Paul will come to the party.
           B: Hey, I didn't know that!

       b. **A**: Paul might come to the party.
           B: Oh, I didn't know that!

(49)   a. **A**: #Did you know that, as you know, Paul will come to the party?

       b. **A**: Did you know that Paul might come to the party?
           B: No, I had no idea! / Yes, I'm very excited about it!

To respond to *As you know, p* with *I didn't know that* as in (48a) is to accuse the speaker of having made an incorrect presupposition. In (48b) we see that *might*-claims don't behave the same: a response of *I didn't know that* to a *might*-claims is an acknowledgement that the responder has gained new information. This distinction is diagnosed by the naturalness of *Hey* and *Oh* in (48a) and (48b) respectively.

Likewise, given its presuppositions, to ask someone whether they know that *As you know, p*, as in (49a) is infelicitous; however, it's a perfectly natural question to ask with a *might*-claim, as shown in (49b).

In both (48b) and (49b), we see *might*-claims behaving like they have nontrivial informational content. The attentive story cannot be the whole story.

4.2   The Ordering Semantics

The RNSP's recipes for meta-intensionalizing sentential denotations and updating the context with them can be fruitfully applied to any semantics for *might*. In this section, I show how to apply those recipes to the Ordering Semantics for modality proposed by Kratzer (1981, 1991):

(50)   HUMAN POSSIBILITY:
(from Kratzer 1981, simplified via the limit assumption à la Portner 2009)
$[\![\textit{might-p}]\!]^w = 1$ iff $\exists u \in \text{BEST}_{g(w),f(w)}$ s.t. $[\![p]\!]^u = 1$
Where $\text{BEST}_{g(w),f(w)} = \{u : u \in f(w) \land \neg \exists v \text{ s.t. } v >_{g(w)} u\}$
Where $\forall u, v,\ u \geq_{g(w)} v$ iff $\forall P \in g(w),\ v \in M \rightarrow u \in M$ $(u >_{g(w)} v$ iff $u \geq_{g(w)} v$ and $v \not\geq_{g(w)} u)$
Where $f(w)$ is an epistemic modal base, and $g(w)$ is an EPISTEMIC ORDERING SOURCE, or set of propositions known to be especially normal/likely

The intuition behind the analysis of *might* above is simpler than the complexity of the formulas involved might indicate. Put into words, to associate *might* with 'human possibility' is to claim that *might-p* is true iff there is at least one *p*-world in a special subset of the epistemic modal base comprising the most normal/likely worlds. This special subset is derived by enriching epistemic states with an 'ordering source', or set of propositions taken to be especially normal or likely; a relation partially ordering worlds in terms of their normality/likelihood is calculable relative to this ordering source: worlds in some of the propositions in the ordering source are more normal/likely than worlds in a proper subset of those propositions.

This analysis of *might* allows it to communicate something much stronger than the simple quantificational semantics of *might* in (6). On this account, *might-p* doesn't simply mean that *p* is a possibility; it means that *p* is one of the most normal/likely possibilities.

To generate an RNSP denotation for the human possibility interpretation of *might*, we need to generate the set of all epistemic states relative to which *might-p* is true. The ordering semantics assumes that epistemic states involve more machinery than the simple quantificational semantics does; an epistemic state includes both a modal base and an ordering source. In other words, to generate the Metastate that an assertion of *might-p* will put into play assuming the ordering semantics for *might*, we need to extend the notion of Metastate to a set of tuples of a modal base and an ordering source. Since the Context Set is the mutual epistemic state, it must also be treated as a tuple of a modal base and an ordering source. If the Context Set is no longer a set of worlds, but a tuple of a set of worlds and a set of propositions, calling it the Context Set seems odd (because it's no longer simply a set of worlds), so let's call it the Mutual Epistemic State (MES).

(51)   *Epistemic States for the Ordering Semantics:*

$\langle i,O \rangle$ is an epistemic state iff i is an epistemic modal base (set of worlds) and O is an epistemic ordering source (set of propositions)

Given the RNSP notion that declarative sentences denote the set of all epistemic states relative to which they are true, we get the following sets as the denotations for unmodalized declaratives and for *might*-claims

(52) For an unmodalized proposition p, the corresponding Metastate $M =$
$\{\langle i,O \rangle : \forall w \in i, \, p(w) = 1\}$

(53) For a proposition of the form *might-p*, the corresponding Metastate $M =$
$\{\langle i,O \rangle : \exists w \in \text{BEST}_{O,i} \text{ s.t. } p(w) = 1\}$

Update conditions for a Metastate M that corresponds to an unmodalized proposition p will be the same as in our simpler system without ordering sources: the semantics of p makes no reference to the ordering source, and so futzing with the MES's ordering source can have no effect one way or the other on whether the result will be a member of M. All epistemic states $\langle i,O \rangle$ where $i \subseteq p$ are members of M. $\langle i,O \rangle$ is M-compatible iff $i \cap p \neq \varnothing$, and the most conservative operation that guarantees that any M-compatible $\langle i,O \rangle$ it is applied to will be a member of M is intersection of i with p.

(54) UPDATE POTENTIAL FOR UNMODALIZED DECLARATIVES (Ordering Semantics version):
For any M corresponding to an unmodalized proposition p:
$\langle i,O \rangle[M] = \langle i \cap p, O \rangle$

Given a Metastate M corresponding to *might-p*, it's a little more complicated to determine the most conservative operation f that guarantees that any M-compatible epistemic state it is applied to will be a member of M. An epistemic state $\langle i,O \rangle$ can be updated by removing worlds from i (shrinking the set of available epistemic possibilities) or by adding propositions to O (modifying what is taken to be especially normal/likely).

The problem of determining the update potential for such an M becomes more tractable if we define classes of epistemic states that f should target. We can ignore all epistemic states that are not M-compatible: given an M corresponding to *might-p*, any epistemic state $\langle i,O \rangle$ is M-compatible iff $i \cap p \neq \varnothing$. This is because there must be at least one p-world in i for there to be at least one p-world in $\text{BEST}_{O,i}$. We can split M-compatible states into two categories: those that are already members of M and those that aren't. If a state is already in M, M's update potential should leave it alone. So for any epistemic state in M, f should map that epistemic state to itself. Our operation f should only actually alter M-compatible epistemic states that are not already members of M—that is to say, epistemic states $\langle i,O \rangle$ such that $i \cap p \neq \varnothing$ and $\text{BEST}_{O,i} \cap p = \varnothing$.

Removing worlds from i will not be the most conservative way to make such epistemic states members of M: if f is an operation that removes worlds from i, $f(\langle i,O \rangle)$ is guaranteed to be a member of some $M' \not\supseteq M$. To put it informally: given its ordering semantics analysis, *might-p* doesn't communicate that some worlds are epistemically *impossible*; rather, it communicates

only that p is one of the most normal/likely possibilities. So its update potential must target the ordering source.

For any M-compatible epistemic state $\langle i, O \rangle$, the epistemic state that results from adding p to O will be a member of M. If p is in O, then at least one p-world will be in $\text{BEST}_{O,i}$. Adding any proposition other than p to O will either not guarantee that at least one p-world will be in $\text{BEST}_{O,i}$, if that proposition is not a subset of p, or will guarantee that the resulting epistemic state will be a member of some $M' \not\supseteq M$, if that proposition is a subset of p.

(55) UPDATE POTENTIAL FOR *Might-p* (Ordering Semantics version):
For any M corresponding to a proposition of the form *might-p*:
$\langle i, O \rangle[M] = \langle i, O + p \rangle$

So, when implemented in the RNSP, the ordering semantics for *might*-claims is assigned the following update potential: asserting *might-p* has the effect of asking interlocutors to accept p as a normal/likely possibility, as cashed out by adding p to the ordering source of the Mutual epistemic state. This update potential falls out of the exact same recipe that derived a Veltman-style consistency test update potential from the simple quantificational semantics for *might-p*.

4.3 The Probabilist Semantics

A prominent alternative to the Kratzerian analysis of modality has been proposed in recent work by a group of authors who analyze epistemic modality in probabilistic terms (Swanson 2006, 2011, 2015, Lassiter 2011, 2015, 2016, Moss 2015, Yalcin 2010, 2012). On the accounts of Swanson (2006) and Lassiter (2011), *might-p* is true iff the (epistemic) probability of p is higher than some contextual threshold α. This notion explains the informativity of *might* straightforwardly: it's possible to know that nothing rules p out without knowing that it is at least α likely.

To implement such probabilistic truth conditions in the RNSP, we need to extend the notion of an epistemic state to express probabilities. Yalcin (2012) proposes that we treat epistemic states as tuples of a set of worlds and a probability measure; Rudin (2017) proposes that we treat epistemic states as sets of probability measures; Lassiter (to appear) proposes that we treat epistemic states as Probabilistic Graphical Models. No matter how we choose to represent probabilistic epistemic states, in the RNSP the denotation generated by probabilistic truth conditions for *might*-claims will be the set of all such states relative to which *might-p* is true, and the update potential of a *might*-claim will be to alter the Mutual Epistemic State in the most conservative way possible to make it one of those states. For one proposal for how such updates could proceed, and for discussion of the difficulties inherent in designing such a system, see Rudin (2017).

5 Epistemic *Must*

The reader may be concerned that I've derived meta-intensionalized denotations for un-modalized sentences by introducing universal epistemic quantification over them in the pragmatics. On this view, shouldn't epistemic *must* be redundant? On the standard view of *might* and *must* as duals, *must* should introduce universal epistemic quantification as well—so in the RNSP implementation of the simple quantificational analysis of epistemic modality, *must*-claims denote exactly the same thing as their bare unmodalized prejacents. The system renders *must-p* identical to p.

This seems at first glance to be a problem: surely assertions of *must*-claims communicate something different than assertions of their prejacents! Otherwise, why would people even use them?

In this section, I'll discuss two avenues toward solving this problem that follow from analyses of *must* currently in the literature. I'll simply be glossing a range of extant proposals and how they could solve this redundancy problem; deliberating between prior proposals or fully formalizing a novel one is outside of the scope of this work. The first such solution proposed in the literature is to take the semantics of *must* to be something weaker than universal quantification over all epistemically possible worlds; the second is to take *must* to contribute evidential content in addition to (or instead of) universal epistemic quantification.

5.1 Weak Analyses

One major line of reasoning in the literature about *must* treats it as having a meaning that is weaker than quantification over all epistemically possible worlds. Adopting one of these analyses of *must* would serve to rescue it from redundancy, by treating it as doing something different than what the universal meta-intensionalizer does in the RNSP.

The empirical intuition that undergirds weak analyses of *must* is that *must-p* seems to indicate less confidence in p than bare assertions of p:

(56)   It's raining.
(57)   It must be raining.

Intuitively, a speaker who asserts the *must*-claim in (57) seems to be less confident that it's raining than a speaker who directly asserts the prejacent (56). Weak analyses of *must* take this intuition to stem from *must-p* being semantically weaker than p.

Proposals for a weak *must* have been made in both the Kratzerian and the probabilistic traditions. Kratzer's (1981, 1991) Ordering Semantics offers a treatment of *must*-claims that is the dual of the Ordering Semantics treatment of *might*-claims discussed in §4.2. On this view, *must*-claims enact universal quantification over the set of BESTworlds. This makes it possible for *must-p* to be weaker than p—all of the BESTworlds can be p-worlds even if there are epistemically accessible worlds where p is false.

In the probabilistic tradition, there are comparable analyses put forward by Swanson (2006) and Lassiter (2011) in which *must* is taken to indicate an epistemic probability for its prejacent that is above a contextual threshold probability, usually taken to be quite high. On these analyses, *must* expresses high but non-total credence in its prejacent. On the probabilistic account just as on the ordering account, *must*-claims avoid redundancy respective to assertions of their unmodalized prejacents by way of communicating something weaker.

Whether an analysis of epistemic *must-p* that takes it to be weaker than p is empirically feasible has been controversial. von Fintel & Gillies (2010) argue forcefully that *must-p* must entail p; a recent response by Lassiter (2016) argues the opposite view equally forcefully. I'll avoid engaging in that argument here. If we analyze *must-p* as weaker than p, we have a sensible story to tell about why speaker might choose to use it in a system where the Metastate put into play by the assertion of an unmodalized declarative sentence is derived via a meta-intensionalization operator contributing universal epistemic quantification; we can tell a different, but still sensible story about that if *must* is analyzed as being (at least) as strong as p if we take *must* to contribute evidential content, a family of analyses discussed below.

5.2   Evidential Analyses

Another line of work in the literature takes *must* to contribute evidential content. This view is prompted by observations like the following:

(58)   *[Context: uttered while looking at a dripping wet umbrella and raincoat placed in a windowless entryway.]*
It must be raining.

(59)   *[Context: uttered while standing in a torrential downpour.]*
#It must be raining.

It seems appropriate to use *must*-claims when making an inference from indirect evidence; however, a *must*-claim is infelicitous if used in the presence of direct perceptual evidence of the prejacent.

On the evidential view, the reason why *must*-claims seem weaker than bare assertion of their prejacents is that inference from indirect evidence is generally taken to be weaker than direct perceptual evidence (Karttunen 1972). This view offers a sensible account of why intuitions of strength disappear with 'alethic' uses of *must*:

(60)   For any integers x, y, if x is even then xy must be even as well.

In the context of mathematical reasoning, *must* is used to indicate absolute confidence. This follows from an indirect inferential analysis of *must*: in many cases, indirect inference is considered weaker than direct perceptual evidence, but in mathematical reasoning it is the gold standard, and so there is no inference of weakness associated with uses of *must* in mathematical contexts.

In principle, there are three ways that an evidential analysis of *must* could proceed. We could (i) analyze *must* as a pure evidential, that contributes nothing to a sentence other than evidentiality; (ii) analyze *must* as a universal epistemic modal that *also* contributes information about evidence; (iii) analyze the evidential component of *must*-claims as an implicature.

To the best of my knowledge, analyses of type (i) has not been put forth in the literature; to make such an analysis credible would require serious engagement with prior literature on grammatical evidentials (e.g. Faller 2002, Davis et al. 2007, Murray 2014) and demonstration that epistemic *must* shares well-known features of grammatical evidentials, like the not-at-issue status of evidential content. It would be ideal to conduct such an examination in a language that has both grammatical evidentials and epistemic *must*, such as Bulgarian or Turkish. Such an analysis would also have to grapple with the fact that in many languages epistemic and deontic necessity are expressed homophonously, a generalization that follows straightforwardly from an account of epistemic and deontic *must* as encoding different flavors of modality, but that is mysterious on an account where epistemic *must* introduces no modal content.

An analysis of type (ii) is put forth by von Fintel & Gillies (2010), who analyze epistemic *must* as a universal epistemic modal that carries an evidential presupposition, namely that its prejacent is not settled by directly observed facts. However, they acknowledge that their presuppositional account is a placeholder, and express hope that an account of type (iii) could someday supplant it. Their hope stems from the following explanatory deficiency of any account of the evidential component of epistemic *must* that hardwires evidentiality into the semantics: on such accounts, we are at a loss to explain the fact that such evidential inferences crop up with universal epistemic modals in language after language.

Furthermore, an account of the evidential component of *must-p* as a presupposition might cause us to expect antipresupposition effects via MAXIMIZE PRESUPPOSITION (Heim 1991) for bare assertions of *p*, which we do not observe:

(61) *[Context: uttered while looking at a dripping wet umbrella and raincoat placed in a windowless entryway.]*
It's raining.

Assertions of unmodalized propositions are perfectly compatible with indirect evidence, which we would not expect if there were a presuppositionally stronger alternative in such situations.

Finally, though its desirability is hinted at by Karttunen (1972) and explicitly invoked by von Fintel & Gillies (2010), a fully formal analysis of type (iii) has not yet been proposed in the literature. I'll close this section by sketching how such an analysis might proceed.

von Fintel & Gillies (2010) propose a sketch of how an implicaturial analysis of the evidential component of *must* would proceed. Their sketch assumes that this analysis would take the evidential component to stem from a Quantity implicature. If the evidential component of *must* were a Quantity implicature, *must-p* would need to compete with a stronger alternative

that entails direct evidence; the choice of *must-p* would indicate that the stronger alternative could not be used, and therefore license the inference that the speaker does not have direct evidence for their claim. However, as von Fintel & Gillies (2010) point out, what such a stronger alternative would be is not clear. As demonstrated in (61), unmodalized declaratives don't entail direct evidence.

However, there are forms of implicature that don't require competition with a strictly stronger alternative. I'll sketch here how the evidential component of *must* might be derived as a Manner implicature (see e.g. Horn 1984). Unlike a Quantity implicature, a Manner implicature can derive pragmatically enhanced meanings from a desire to avoid redundancy: if a speaker has used a marked form, we can infer that they intended to communicate a marked meaning. If they had meant to communicate only the literal meaning of what they said, they would've chosen an unmarked form that means the same thing. To modify a classic example from Grice (1975):

(62)   **A**: I couldn't make it to karaoke last night, how did Chris do?
       B: He emitted a series of sounds approximating the pitches and rhythms of *I Wanna Dance With Somebody*.

Taken literally, what **B** says means more or less the same thing as *He sang I Wanna Dance With Somebody*. However, if we assume that **B** is a cooperative speaker obeying the maxim of Manner, we must also assume that there is some reason why **B** could not have cooperatively uttered that simpler sentence. We derive the inference that **B** doesn't think it's accurate to describe Chris's performance as 'singing'. Marked form, marked meaning.

A derivation of the evidentiality of *must* as a Manner implicature would start from the assumption that what is communicated by an assertion of *p* and of *must-p* (prior to pragmatic enrichment) is the same. Clearly, *must-p* is the marked form. Using it instead of simply asserting *p* appears to be a violation of the maxim of Manner; if we assume that the speaker is being cooperative, they must intend to communicate something beyond the literal content. If we assume that the least marked evidence source is direct perceptual evidence, we could take the speaker's flouting of Manner to license the inference that the speaker does not have direct perceptual evidence. Marked form, marked meaning.

This sketch of an account falls far short from being fully formalized; I present it here only as a plausible alternative strategy for deriving evidential meanings for *must*-claims as implicatures.

6   Conclusion

In this paper I've presented a conservative modification of the standard neo-Stalnakerian pragmatics of assertion and disagreement that renders disagreement over *might*-claims unproblematic. The revision to the pragmatics of assertion and disagreement proposed herein is to treat the denotations manipulated by the pragmatics to be sets of epistemic states instead of sets of worlds—sentences denote the set of all epistemic states whose bearers

would judge them to be true. By generating a set of epistemic states instead of a set of worlds, the denotation of a *might*-claim no longer must be leashed to any particular body of knowledge.

The proposed Revised Neo-Stalnakerian Pragmatics has the following properties:

i. It's isomorphic to the Standard Neo-Stalnakerian Pragmatics in its treatment of un-modalized declaratives

ii. It derives the observed disagreement behavior of *might*-claims from their standard semantics

iii. It satisfies the desiderata in (1), i.e. it treats *might*-claims like they're normal declarative sentences

My narrow focus in much of this paper has been on unifying disagreement over *might*-claims with disagreement over other declarative sentences, in a way that observes the desiderata in (1). My contention, as discussed briefly in §3, is that the RNSP takes us a good deal of the way to realizing the dream of a perfectly normal *might*, a dream encapsulated in the desiderata in (1). If, as I've argued here, the problems with *might* that we've been wringing our hands over are predominantly problems with our implementation of the pragmatics of assertion, not problems with the semantics of *might*, then it's far from clear that the traditional, solipsistic contextualist view of the semantics of *might*-claims is as problematic as has been claimed.

The proposal made here opens up some clear avenues for future work. One such avenue would be the exploration of what I'll call Portner's Hypothesis, following Portner (2007). Portner pursues the hypothesis that as sentences of declarative form relate to epistemic modality, so do sentences of imperative form relate to deontic modality. In this paper, I've argued for a very particular conception of that relation: that the meaning of a declarative sentence uttered in conversation is always about the relation between a proposition and an epistemic state. If this is on the right track, then Portner's Hypothesis suggests it could be profitable to seek to understand the meaning of imperative sentences as being about the relation between a proposition and a deontic state.

The proposal here has focused exclusively on declarative sentences. In addition to imperatives, of course, we have the third basic clause type: interrogative. Another avenue for future research would be the unification of the system developed here with frameworks like Inquisitive Semantics, that seek to unify the denotation and update potential of declarative sentences with the denotation and update potential of interrogatives.

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