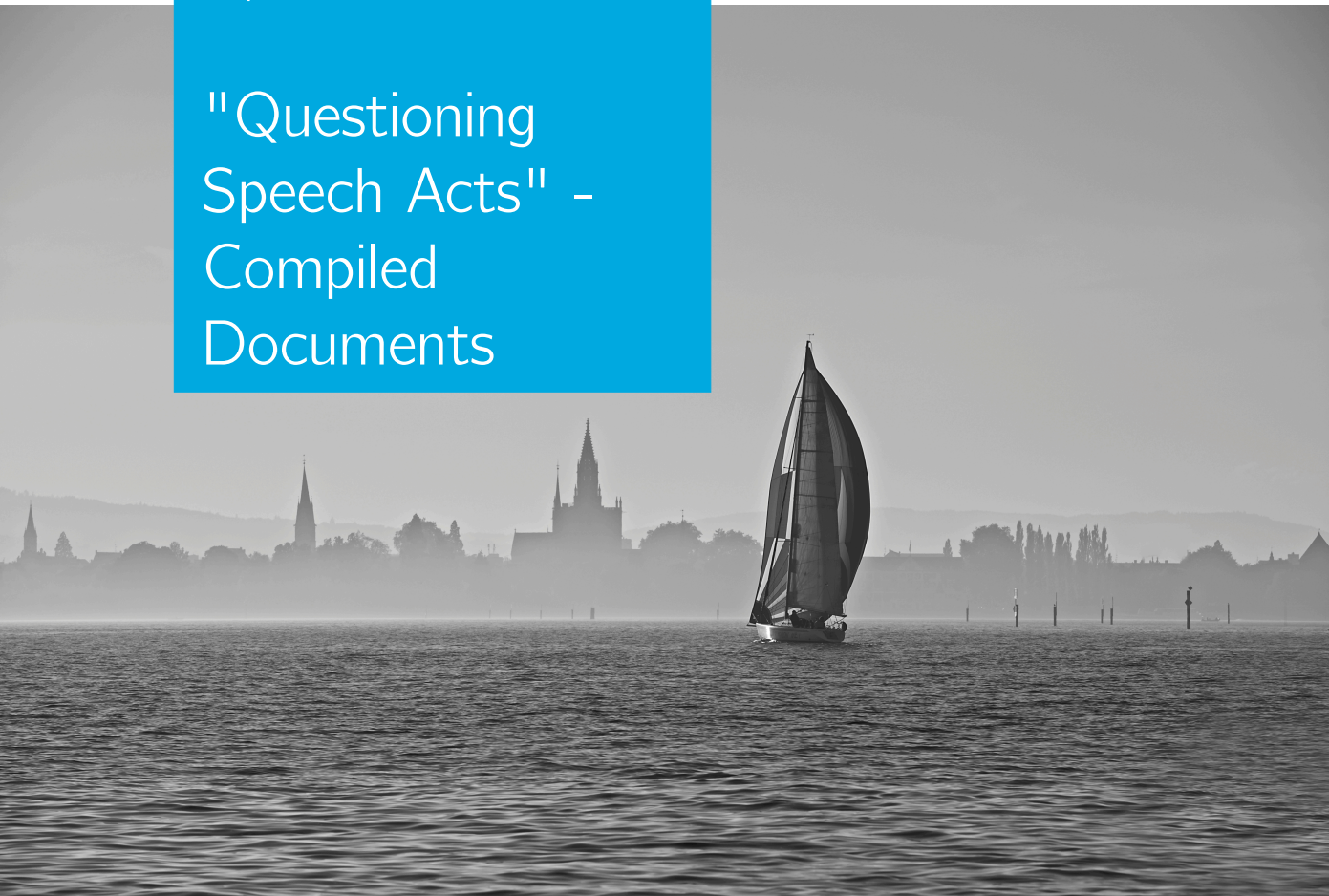


Konstanz,  
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"Questioning  
Speech Acts" -  
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# Certain Contractual Offers as Integrated Questions & Assertions

*Joe Buffington, J.D., Ph.D.*

*Albany Law School*

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## 1. *The Basics of Contract Formation*

For our purposes here, a **contract** is defined as a series of events via which two speakers of a language (in this case, English) come to create reciprocal rights and duties.

Example:

- (1) Speaker A: If you wash my car, I'll give you \$20.
- (2) Speaker B: I accept!

As the result of this conversation, Speaker A has a duty to pay and corresponding right to a wash; Speaker B has a reciprocal duty to wash and a corresponding right to a payment.

Of course, as linguists we're not interested in whether the law would recognize the conversation in (1) and (2) as creating a legal obligation or even whether Speaker A and Speaker B would refer to their rights and duties as a "contract." Still, some legal terminology will be helpful.

Under American law (inherited from the common law of England), in order to form a contract there must be an **offer**, an **acceptance**, and **consideration** – the last element meaning that in order for Speaker B to have right to Speaker A's performance, Speaker B must (agree to) reciprocally perform – in other words, the conversation in (3) and (4) would not result in a contract:

- (3) Speaker A: I'll give you \$20.
- (4) Speaker B: Thanks!

At first, the legal requirement of consideration appears to be just that – a legal requirement – in the sense that naïve speakers report that both of the conversations above create commitments on the part of Speaker A. (Under the law, only the first conversation creates a commitment on the Part of Speaker A to pay Speaker B \$20; in general, the only legal commitment created for Speaker A in the second conversation is to compensate B for the value of her reliance on what Speaker A said.) As for Speaker B's commitments, however, even for naïve speakers, only the first

conversation creates a commitment on the part of Speaker B to do something (other than accept the \$20, and maybe not even that). Moreover, (1) and (3) seem to differ in that speakers report that (1) creates a commitment on the part of Speaker A only upon Speaker B’s utterance of (2) or upon Speaker B’s washing of the car (call this B’s **acceptance**), whereas (3) seems to create a commitment on the part of Speaker A even in the absence of Speaker B’s utterance in (4). For these reasons, I’ll say that (1) reflects an **offer**, whereas (3) reflects a **promise**, and I’ll assume for the duration of this talk that whereas offers require acceptance and are revocable at any time before acceptance, promises don’t require acceptance and are irrevocable once made.

- |     |  |                    |
|-----|--|--------------------|
| (5) | <b>offers:</b> are revocable and require acceptance<br><b>promises:</b> are irrevocable and don’t require acceptance | cf. Hancher (1979) |
|-----|--|--------------------|

Now, it seems that promises can be conditional, as in (6): [more on this later]

- (6) If you need money, I’ll send you \$20.

So it’s not strange to assume that contractual offers are conditional promises, with the condition being a condition of reciprocal performance from the offeree – as had more or less been assumed by linguists (and many jurists) before Buffington (2015) – see Schane (2006); Tiersma (1986, 1993).

There’s one more important legal distinction for our purposes here: the law (and legal intuition) distinguishes between **unilateral offers**, which can be accepted only via performance, not via verbal acceptance as in (2) and **bilateral offers**, which can be accepted either via performance or via verbal acceptance.

- |     |  |
|-----|--|
| (7) | <b>unilateral offers:</b> can be accepted only by performance<br><b>bilateral offers:</b> can be accepted by performance or by verbal acceptance |
|-----|--|

The quintessential unilateral offer is a reward offer, as in (8), but non-reward examples exist, as in (9), and comparing the (8) - (10) suggests that, at least for conditional (‘if P then will Q’) sentences – arguably the linguistic archetype for contractual offers – the unilateral/bilateral distinction is pragmatic, not semantic. But we will see later that this may not be entirely true.

- |      |  |              |
|------|--|--------------|
| (8)  | If you find my wallet and return it to me, I’ll pay you \$500. | [unilateral] |
| (9)  | If you exercise daily for a week, I’ll pay you \$500.          | [unilateral] |
| (10) | If you rent me your apartment for a week, I’ll pay you \$500.  | [bilateral]  |

## 2. *Some Interesting Properties of Conditional Sentences as Contractual Offers*

Conditional ('if P then will Q') sentences as candidates for contractual offers seem to be "ambiguous" between "assertion" and "offer" interpretations:

(11) If John gives Mary some candy, she will stay up later than usual. ["ambiguous"]

This isn't surprising, since (12) is ambiguous, too, between "assertion" and "promise" interpretations:

(12) Mary will stay up later than usual. ["ambiguous"]

For both (11) and (12), the "ambiguity" seems to be located at the level of "illocution" in the theory of speech acts à la Austin (1962) & Searle (1969), and perhaps related to the phenomenon of performativity, in the sense that offers and promises have an intuitive "word-to-world" direction of fit – see e.g. Searle and Vanderveken (1985) – although this may be difficult to diagnose:

(13) That's not true! [# a response to (10) as an offer and (11) as a promise?]

Fortunately, conditional sentences have some interesting properties that reveal the "ambiguity" between "assertion" and "offer" interpretations more explicitly – specifically:

### ■ SEMANTIC NON-DIRECTIONALITY

As assertions, conditional sentences are naturally interpreted as involving temporal precedence of the antecedent / causation of the consequent – see e.g. Horn (2000). Not so for bilateral contractual offers; thus, in (11) neither John nor Mary necessarily performs first.

### ■ SYNTACTIC DIRECTIONALITY

In spite of the semantic non-directionality of contractual offers like (11), they're syntactically directional in that (11) isn't a viable candidate for a contractual offer on behalf of *John*. Cf. (14):

(14) If I give you \$20, you'll wash my car. [# as an offer]

### ■ REMOTENESS IN TENSE / MOOD

Just as "remoteness" in the "tense" or (subjunctive) mood of a conditional sentence is connected to remoteness in subjective probabilities [Iatridou (2000); Ippolito (2003)], remoteness in the tense

or mood of (11a) seems to be connected to remoteness in probability that an offer is being made:

(11a) If John gave Mary some candy, she would stay up later than usual. [% as an offer]

### ■ NEGATIVE POLARITY ITEMS

While NPI's are generally licensed in the antecedents of conditionals [von Stechow (1999) inter alia],

(11b) seems to be interpretable only as an assertion, not as an offer:

(11b) If John gives Mary any candy, she will stay up later than usual. [# as an offer]

This last fact in particular raises the possibility that “ambiguity” in (10) is “in the semantics.”

### 3. *Apparent Problems with a Semantic Analysis*

For the linguists who've looked at contractual offers in the past, a given locution must be semantically “equivalent” to a prototype containing the word ‘promise’ in order to qualify as a contractual offer:

(15) Schane's (original) archetype for contractual offers:

I promise that if you do X, I will do Y.

(16) Tiersma's archetype for (bilateral) contractual offers:

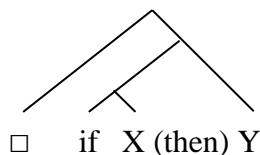
I propose that if you promise to do X, I will promise to do Y.

But given some form of the Stalnaker-Lewis analysis of conditionals, as in (17) [see e.g. Bennett (2003) for a history, and note that (1) and (11) don't involve “biscuit conditionals”]:

(17)  $[[\text{if } P \text{ (then) will } Q]] = 1$  iff in all foreseeable future situations in which P is true, Q is true

it seems that we can't come up with a compositional analysis of conditionals and silent promise elements ( $\square$ ) that yields that right result – i.e. we can't semantically embed the speech act:

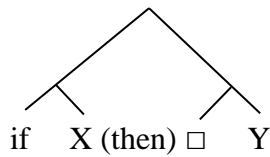
(18)



applied to (11)  $\approx$  Mary promises that if John gives candy ...

$\rightsquigarrow$  WRONG MEANING: ■ as a promise, (18) isn't revocable – but offers are

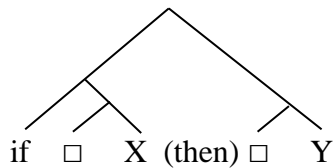
(19)



applied to (11) ≈ If John gives candy, then Mary promises...

- WRONG MEANING:
- Mary has no liability unless John gives candy
  - doesn't allow for bilateral offers

(20)



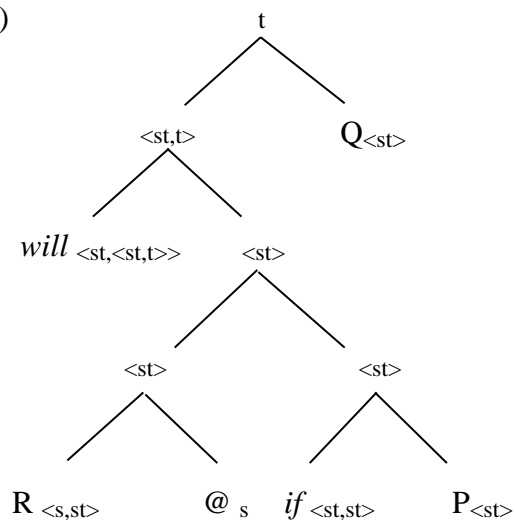
applied to (11) ≈ If John promises, then Mary promises ...

- WRONG MEANING:
- simple present tense not normally interpreted as promise
  - doesn't allow for unilateral (or bilateral) offers

So it seems that contractual offers aren't semantically equivalent to "conditional promises" in the sense of embedded speech acts, which may be a shame, since a semantic difference between assertions and offers may have helped us explain some of the data in Section 2 (esp. the NPI data).

A Kratzerian (1986, 2012) analysis of conditionals as in (21) may seem to be a more auspicious means of accomplishing a semantic analysis of the ambiguity in (11) and (12), given that that style of analysis involves an inherent connection between conditionals and modals like *will* and posits the existence of a silent variable R ranging over accessibility relations.

(21)



In such an analysis, the assertion interpretations of (11) and (12) would presumably involve R being assigned to an doxastic relation and the offer and promise interpretations of (11) and (12) respectively would involve R being assigned to a deontic relation (such that *will* is interpreted as something like *must*), with a contractual offer being nothing more than an explicit conditional where P expresses the proposition of the offeree's reciprocal performance.

However, such an analysis doesn't seem to be in a better position to explain much of data than the earlier analysis to the effect that contractual offers involve silent promise elements. For example, whereas contractual offers don't involve temporal precedence, deontic conditionals seem to:

(22) If you double park, you must pay a fine.

Perhaps more importantly, offers and promises seem to involve simultaneous doxastic and deontic accessibility relations in the sense, for example, that if Speaker A's statement in (1) were to be interpreted purely deontically, she should be able to "defend" against B's assertion for breach of contract by saying something like the following (which seems preposterous):

(23) I said that if you washed my car I'd *have to* give you \$20, not that I actually *would*.

In other words, when interpreted as a contractual offer, (1) seems to convey something like the following:

(1a) If you wash my car, I'll give you \$20 ... and if I don't, I'll be in trouble.

which raises the possibility that when conditional sentences are interpreted as contractual offers, the contractual offer interpretation results from some form of "pragmatic strengthening."

#### 4. *A Pragmatic Sketch*

Buffington (2015) suggested that the "offer" interpretation of conditional sentences results from some form of pragmatic strengthening of "assertions." We're used to seeing "pragmatic strengthening" in connection with the negation of stronger alternatives along Horn scales, as when the utterance of (24) implicates (25):

(24) I ate some of the candy.  $\mapsto$  relevant scale: < some, all >

(25) I didn't eat all of the candy.

But other forms of pragmatic strengthening exist. For example, Buffington (2012) argues that the fact that the quantity implicature seen in (26) to (27) – in which a stronger alternative (and not its negation) is inferred from the weaker one – is more robust in the answer to a how-many question than otherwise can be better explained on the basis of a pragmatic utility calculation than on the basis of silent exhaustivity operators:

- (26) There are two coins on the table.  $\mapsto$   
(27) There are only two coins on the table.

So it doesn't seem strange to suggest that "pragmatic strengthening" can involve the move from a weaker form to a stronger form, rather than its negation, especially when we're not dealing with scales comprised of lexical alternatives. [If there's time, discuss: Horn's pinkies and thumbs.] Indeed, from a set-theoretic perspective, (27) is as stronger than (26) as (25) is than (24), so "strengthening" seems like an acceptable term to use in both cases.

Of course, we'd like to have a model of when, where, why, and how speakers (and hearers) make the move from (1) to (1a). Presumably, this sort thing happens as a function of context in connection to the **felicity conditions** for offers as well as **Gricean maxims**. For example, (11) requires a context in which the speaker has or is perceived to have authority to speak on behalf of Mary, and in which the speaker believes or is perceived to believe that Mary would like for John to give her some candy, and in which the speaker believes or is perceived to believe that John would not give Mary some candy regardless of when she goes to bed, etc. In theory, an ambitious model could be constructed to predict when the speaker would go to the trouble of saying (1a) as opposed to (1). The more modest ambition of Buffington (2015) was merely to show that the data in Section 2 could be explained in ways that are consistent with a pragmatic (i.e. non-semantic) analysis of the "ambiguity" in (11). But there are problems for a pragmatic approach to the data:

## 5. *Earlier Pragmatic Explanations, and Problems*

### 5.1. *Semantic Non-Directionality*

Buffington (2015) suggested that the lack of semantic directionality (precedence / causation) between the antecedent and the consequent of a conditional sentence interpreted as a contractual offer could be explained by the phenomenon of "conditional perfection," i.e. the conversion of *if* to IFF:



- (28) If you wash my car, I'll pay you \$20.  $\mapsto$   
 (29) If and only if you wash my car, I'll pay you \$20.

which can suppress the tendency to infer directionality from the antecedent to the consequent:

- |  |           |
|--|-----------|
| (30) If X happens, Y will happen.          | [X > Y]   |
| (31) Only if X happens will Y happen.      | [X <> Y]  |
| (32) If and only X happens, Y will happen. | [X <?> Y] |

There is disagreement in the literature as to how (28) implicates (29) – see e.g. Horn (2000) – but many believe that the move is a pragmatic one, perhaps via (33) to (34) or (35) to (36):

- (33) If P, then Q.  $\mapsto$   
 (34) Not (Q unconditionally).  
 (35) If P, then Q.  $\mapsto$   
 (36) Not (If P' then Q).

But what we're interested in is when (28) implicates (29) ... or more precisely why conditional perfection seems to happen as matter of necessity in contractual offers but not in assertions. At first, this seems easy: When I'm making you a contractual offer, I want to give the impression that your reciprocal performance (the thing that I want) constitutes the only condition under which I will perform what I'm "promising" to perform; by default, there's no such motivation in assertions.

But there's a problem: Contractual offers can be unperfected, as in (11c).

- (11c) Heck, even if John gives Mary some gum, she'll stay up later than usual.  
 [cf. \*Even only if X, then Y.]

and yet the semantic non-directionality for the bilateral offer (11c) remains. So it seems that conditional perfection can't be the explanation for the lack of this directionality.

## 5.2. Syntactic Directionality

Buffington (2015) suggested that the reason why (11) isn't easily interpreted as an offer on behalf of John / why (14) isn't easily interpreted as an offer by the speaker can be explained in reference to the Kratzerian analysis of conditionals in (21), in which the antecedents of conditionals are essentially optional modifiers to modal statements:

- (11) If John gives Mary some candy, she will stay up later than usual. [# as an offer on behalf of John]

(14) If I give you \$20, you will wash my car. [# as an offer]

In other words, (14) can't be an offer any more than (14a) can be a promise:

(14a) You will wash my car. [# as a promise]

So the suggestion in Buffington (2015) was that the problem with interpreting (14) as an offer is that it's presumptuous for the speaker to utter the sentence (i.e. the "assertion") truthfully. But is presumption really the issue? I know a number of presumptuous lawyers, but I wouldn't expect many – in fact, any – of them to utter (11) as an offer on behalf of Mary. This seems to be a problem.

### 5.3. *Tense / Mood*

Buffington (2015) suggested that the reason why (11a) isn't easily interpreted as a contractual offer is that the intuition that John is unlikely to give Mary some candy (or the speaker's unwillingness to presume that John will do so) generated by the use of past tense / subjunctive mood in the conditional antagonizes the act of making the offer. Iatridou (2001) and Ippolito (2003) *inter alia* argued that the intuitions like the one in (11a) that John is unlikely to give Mary some candy arise as a matter of implicature. The details are complicated, but Iatridou, at least, argues that these implicatures arise as the result of the fact that the speaker chose to make an assertion about possible worlds (or situations) in which the antecedent is true other than the actual world. And further confirmation of the equality in this respect of assertions and offers seems to come from Ippolito's examples: Whereas "non-past" subjunctive conditionals like (37) implicate that John's marrying Mary tomorrow is unlikely, "mismatched-past" subjunctive conditionals like (38) implicate that John's marrying Mary tomorrow is impossible:

(37) If John married Mary tomorrow, he would make her happy.

(38) If John had married Mary tomorrow, he would have made her happy.

Not surprisingly, the way the offeree, i.e. John's agent, would respond to (40) differs from the way he would respond to (39), if he wanted to pursue the deal in each case:

(39) If John gave Mary some candy tomorrow, she'd stay up later than usual. [= (10b)]

- AGENT'S RESPONSE: % I accept! / ✓ You seem to think that that's unlikely, but ...

(40) If John had given Mary some candy tomorrow, she'd have stayed up later than usual.

- AGENT'S RESPONSE: # I accept! / ✓ Wait, it's not too late – John can still do that!

Buffington (2105) asked: How could these kinds of facts be accounted for if contract formation didn't involve the exchange of assertions, especially if the fact that the speaker is making an assertion about non-actual worlds is the source of the relevant implicatures?

But all of this is just to suggest that contractual offers are, at some level, assertions – not that their offer interpretations are derived via pragmatic strengthening. This is a problem.

#### 5.4. *NPI's*

Buffington (2015) entertained several explanations for the fact that (11b), repeated here, is infelicitous as a contractual offer ...

(11b) If John gives Mary any candy, she will stay up later than usual.

... and rejected most of them, including the (i) possibility that the antecedents of conditionals interpreted as contractual offers don't create Strawson-Downward-Entailing (SDE) environments [see von Stechow (1999)], (ii) the possibility that the infelicity of (11b) can be correlated with contrasts like (41) and (42) [a distillation of Lakoff (1969), which indicate a dispreference for NPI's in something like recommendations, as opposed to warnings:

(41) If you drink {some / # any} of this, you'll feel better.

(42) If you drink {# some / any} of this, you'll feel worse.

... and also (iii) the possibility that the NPI facts can be derived from a dispreference for NPI's in the antecedents of perfected conditionals (an explanation that fails under (11c) above):

(43) If you give him any coffee, he'll stay up later than usual.

(44) ? Only if you give him any coffee will he stay up later than usual.

(45) ?? If and only if you give him any coffee ...

Arriving at a uniform explanation of NPI behavior in contractual offers is challenging. One obstacle to explaining the resistance to NPI's in the antecedents of conditional sentences interpreted as contractual offers is that focused any seems to be perfectly fine in (11c), where it has the flavor of "any at all," i.e. it operates as a minimizing NPI [see Israel (1995)]:

(11c) If John gives Mary any candy, she will stay up later than usual. [ok as an offer]

Another challenge is the fact that unfocused *any* seems to be acceptable in certain positions within the antecedents of conditional sentences interpreted as contractual offers, as shown in (11d):

(11d) If you donate {some / # any} money to any charity, we'll hold a dinner in your honor.

Yet another obstacle is that *ever* seems to be fine in (11e), although as shown in (46) as a response to it, (11e) seems to be interpretable only as a unilateral offer, distinguishing it from (11).

(11e) If John ever gives Mary some candy, she will stay up later than usual.

(46) # On behalf of John, I accept!

Similarly, (48) is an infelicitous response to (47):

(47) If you ever wash my car, I'll give you \$20. [= (1) with *ever* in the antecedent]

(48) # I accept!

As for the behavior of *any*, my instinct is still, as it was in Buffington (2015), that the distinction between minimizing (e.g. focused *any*) and non-minimizing (e.g. unfocused *any*) NPI's is relevant and relates to the respective ability of each (as well as the ability of unfocused *some*) to "refer" to contextually defined quantities [again, see Israel (1995)]: One the legal requirements for a valid contract is that the offer identify the quantity of performance to be exchanged. (Note: I'm simplifying here.) If minimizing NPI's are able to "refer" to minimum quantities but non-minimizing NPI's are unable to "refer" to quantities at all, then there's some hope for an explanation of why (11d) isn't interpretable as a contractual offer: no quantity of performance is proposed to be exchanged.

For our purposes here, however, I'm more interested in the behavior of *ever* – specifically the fact that the presence of *ever* in the antecedent of a conditional sentence interpreted as a contractual offer seems to render the offer unilateral, whereas it would otherwise be bilateral, which appears to present a problem for the earlier hypothesis that the unilateral / bilateral distinction is (purely) pragmatic.

In addition, I'm interested here in exploring explanations for the fact that contractual offers with locutions in the form of (49) and (50) likewise seem to be interpretable only as unilateral, not bilateral, offers – a fact that remained unexplained in Buffington (2015).

(49) Everyone who brings me candy gets an A. [✓ as an offer, but only as a unilateral one]

(50) Bring me candy, and get an A. [✓ as an offer, but only as a unilateral one]

6. *Before Moving On ... Conditional Promises, Revisited*

Before moving on to further discussion of the unilateral / bilateral distinction, the audience might be wondering whether a more sophisticated semantics for the relevant conditionals would make it possible to correct the paraphrases of the structures in (18), (19), and (20), such that the right interpretation of conditional sentences as contractual offers would result from one of them, not only with respect to the possibility of interpreting the structures as bilateral (when pragmatically viable), but also with respect to possibility of modeling the conditional sentences as containing silent promise elements. Indeed, I wouldn't be surprised if the audience had in mind that idea that (11f) – a variant of (11) that, for many speakers (including me), is ungrammatical, but is familiar by virtue of the fact that similar examples have been heard from other speakers – is informative:

(11f) % If John will give Mary some candy, Mary will stay up later than usual.

The intuition seems to be that whereas (11) is interpretable either as an offer or as a non-offer assertion, (11f) is interpretable only as an offer (and as an assertion only to the extent that offers are assertions). More specifically, the intuition seems to be that *will* in the antecedent of (11f) conveys something like the meaning of *is willing to* (which seems to open the door to a bilateral interpretation) although it's unclear how such an interpretation is derived from the lexical item *will*, and in any case it would seem that the future meaning of *will* would still have to be conveyed, anyway, since otherwise (11f) would present the same sort of problem illustrated (24): (11f) doesn't mean that Mary will stay up later than usual if John is merely willing to give her some candy (and doesn't).

Still, there is a sense in which (51) seems to be a close paraphrase of (1) when (1) is interpreted as a contractual offer, suggesting that the structure in (19) may be a viable model for (1), after all:

(51) All foreseeable continuations of the situation I think we're in in which you wash my car at some time  $t_i > \text{now}$  are situations in which I promise to give you \$20 at some time  $t_j > \text{now}$ .

The idea is that the introduction of an independent time variable in the antecedent  $t_i$  renders the antecedent worlds (or situations) less like “wash worlds” (as articulated above) and more like “will-wash worlds,” which may make it possible for the speaker of (1) to be conceived as a promise-maker when the hearer of (1) informs the speaker of (1) that all foreseeable continuations of the perceived current situation are, in fact, “will-wash worlds,” for example by uttering (52):

(52) I will wash your car.

In what follows, I suggest that how the time of the event in the antecedent of a conditional sentence is interpreted is in fact important in determining whether the conditional sentence is interpretable as a contractual offer (and also whether it's interpretable as a bilateral one), but for now:

First, the pure assertion interpretations of sentences like (1) and (11), which involve apparent present tense in their antecedents, generally seem to involve interpretation of the event in the antecedent as happening in the future, however that futurity is derived, so the paraphrase in (51), by itself, would not seem to distinguish the offer and assertion interpretations of (1) and (11).

Second, the distinction between the offer and pure assertion interpretations of sentences like (1) and (11) doesn't seem to be attributable just to the present or absence of silent promise elements in the consequents of the conditionals [as in (19)] for the following reason, at least:

Eckardt (2012) demonstrates that performative *hereby* is a syntactic element that participates in compositional semantics and refers to an ongoing act of information transfer; moreover, the agent of the information transfer need not be the agent of the performative verb that the adverb *hereby* modifies; hence (11g) is a viable paraphrase of (11), where the speaker is the agent of the information transfer, and Mary is the agent of the "speech act" or commitment [in (11), an offer]:

(11g) Mary hereby offers to stay up later than usual if John gives her some candy.

But if this is true, and if (19) is a viable model for the offer in (11) as well as the offer in (1), etc. – i.e. if (1) and (11) were truly conditional promises, i.e. conditional sentences with promises in the consequents, then it's not at all obvious why (53) isn't a sensible response to (1) and (54) isn't a sensible response to (11):

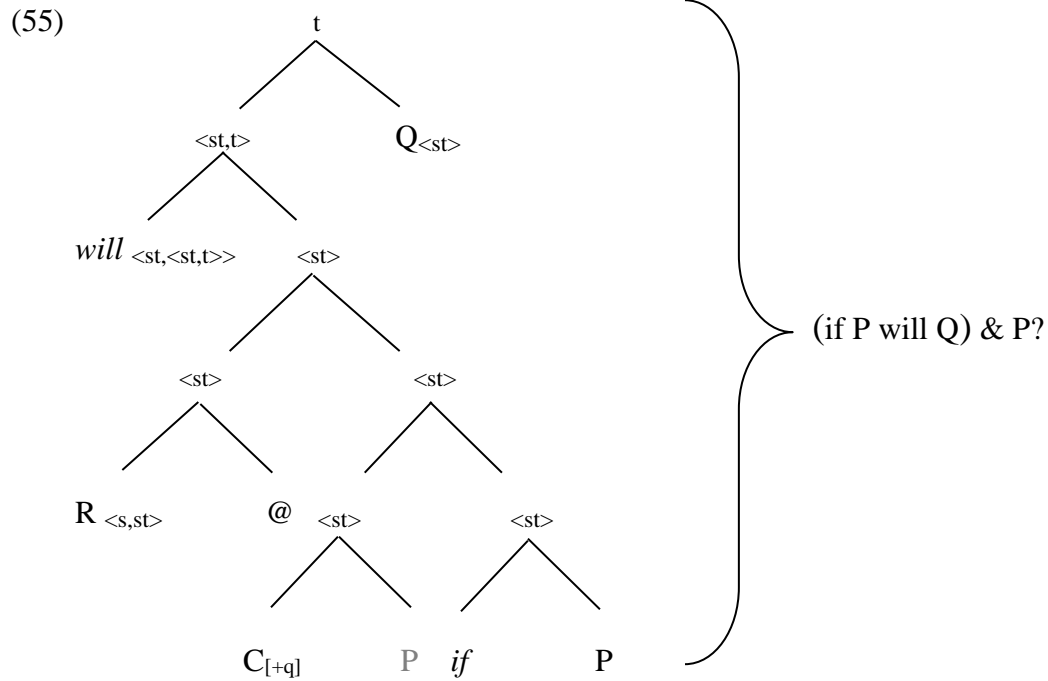
(53) ☒ {I accept / I will wash your car}, and you hereby promise to pay me \$20.

(54) ☒ {On behalf of John, I accept / John will give Mary some candy}, and Mary hereby promises...

especially when, from a jurist's perspective, a contractual offer involves the offeror's transfer of authority to the offeree to bind the offeror to the offeror's "promise" – see Owens (2006). [Note that *thereby* doesn't fare any better in examples like (53) or (54), even with past tense in the proper place. Perhaps Eckardt's intent (or agency) to define is what's missing here. FOR DISCUSSION: Example of a divorce mediator in front of both spouses: "You<sub>s1</sub> hereby promise to pay alimony."]

7. *A New Proposal*

I hereby propose that there may be a better way to model the distinction between the assertion and offer interpretations of sentences like (1) and (11), namely this: When interpreted as bilateral offers, conditional sentences like (1) and (11) involve the integration of a silent question into the assertion, perhaps as in (55), where  $C_{+q}$  is a silent yes/no question morpheme and its complement  $P$  is a silent copy of the antecedent  $P$ :



A few details will follow, but there are two things I want to make clear at this point: The first is to confess that the proposal was not born out of necessity in the sense of being the only apparent analysis in light of the data presented so far; rather, it was born out of a return to the elementary recognition that, unlike assertions, bilateral contractual offers invite a specific kind of response, and the essence of that response is an indication of whether or not the performance “requested” in the antecedent of the offer will be delivered. If this is on the right track, then important questions become (i) why the presence of *ever* in  $P$  seems to render the structure in (55) unavailable and (ii) why alternative locutions for contractual offers like the quantified expressions in (49) and pseudo-imperatives in (50) resist the integration of questions into their structures. Again, some details will follow, but the second thing I want to do first is to try to soothe any instant reactions to the potentially inflammatory idea proposed in (55) by showing that integrated questions likely exist elsewhere in English.

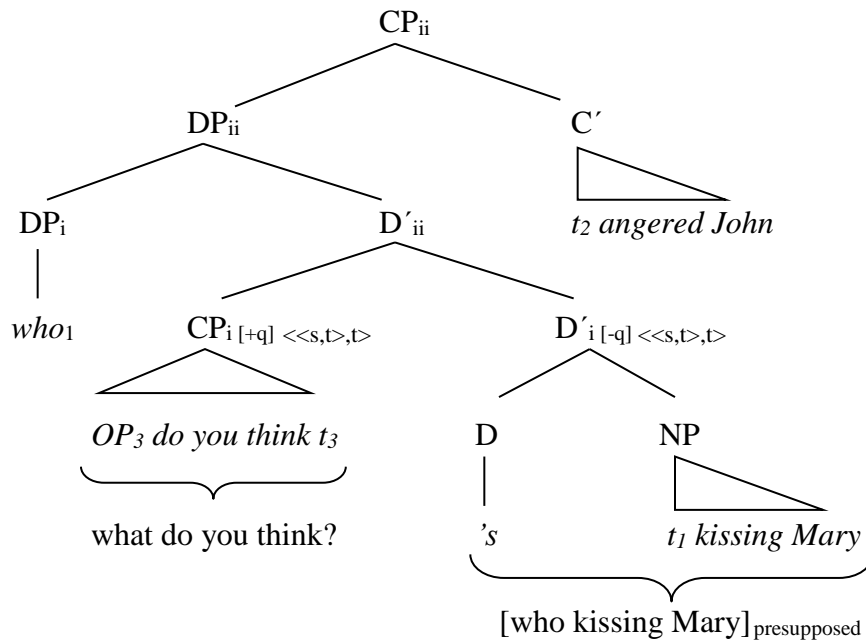
7.1. *Integrated Questions Elsewhere in English*

Buffington (2013) argues that a sentence like (56), which is perfectly grammatical for many speakers of English:

(56) Who<sub>1</sub> do you think t<sub>1</sub>'s kissing Mary angered John?

does not, contrary to appearances, involve the extraction of *who* from within the genitive gerund subject, which of course would violate the Condition on Extraction Domains [Huang (1982), Stepanov (2007)] but rather involves the integration of a constituent  $OP_3$  *do you think t<sub>3</sub>* that has the semantics of a question – similar to certain German examples discussed by Reis (1995), (2002).

(57)



$[[DP_{ii}]] = \text{What do you think?} \bullet [\text{Who kissing Mary}]_{\text{presupposed}}$

$[[CP_{ii}]] = \text{What do you think?} \bullet [\text{Who kissing Mary}]_{\text{presupposed}} \text{ angered John?}$

The idea was that, somewhat similar to the semantic operation of predicate modification, there exists a semantic operation of question modification of the following sort [à la Potts (2002)]:

(58) QUESTION MODIFICATION: If  $\alpha$  is a node whose daughters are  $\beta$  and  $\gamma$ , and  $\beta$  and  $\gamma$  are both of type  $\langle\langle s,t \rangle, t \rangle$ , then  $[[\alpha]] = [[\beta]] \bullet [[\gamma]]$ , where  $x \bullet y$  indicates that  $x$  is “parenthetical” (i.e. semantically inert).

A full presentation of the content of Buffington (2013) would consume too much of our resources



here. What's important is that the idea of integrating questions into other constructions in English isn't too exotic.

Still, one empirical point in Buffington (2013) is particularly relevant to today's analysis of contractual offers – namely that CED effects seem to persist for speakers of English who accept sentences like (56) in the sense that they reject sentences like (59):

(59) \* Who<sub>1</sub> do you think t<sub>1</sub>'s kiss angered John?

... suggesting that questions can't be integrated with constituents that aren't interpreted as propositions. (I assume à la Portner (1992) that gerunds denote minimal propositions, and that common nouns do not.)

## 7.2. *An Integrated Question Analysis of the Earlier Data*

If we take the following (simplified) lexical entries:

- (60) (i)  $[[C_{+q}]] = \lambda p. \lambda w. p(w) = p(@)$   
 (ii)  $[[if]] = \lambda p. \lambda w. p(w) = 1$

... and an operation like (61), modeled on QUESTION MODIFICATION above:

- (61) PROPOSITION INTEGRATION: If  $\alpha$  is a node whose daughters are  $\beta$  and  $\gamma$ , and  $\beta$  and  $\gamma$  are both of type  $\langle s, t \rangle$ , then  $[[\alpha]] = [[\beta]] \& [[\gamma]]$ , where:  
 (i) if  $\beta$  is  $+q$  and  $\gamma$  is  $-q$  then  $\& = \bullet$   
 (ii) else  $\& = \cap$

... and further assume that the tense of P is parasitic to *will* [see below], then (55) gives an intuitive interpretation of contractual offers: (1) / (11) are now paraphrased as something like (62) / (63):

- (62) If you wash my car, I'll give you \$20. Will you wash my car? [Discuss dynamic effects.]  
 (63) If John gives Mary some candy, she'll stay up later than usual. Will John give Mary some candy?

Depending on theoretical desiderata, we might want to invest the offer/assertion “ambiguity” into a polysemous lexical entry for *if* (i.e. complicate the lexicon to simply the semantics). For empirical reasons, too, we might want to alter the lexical meaning of *if* (with felicity conditions) to prevent over-generation of the integration of questions and assertions. [Discuss: limitations on the productivity of questions like (56), as shown e.g. by accusative vs. genitive gerunds.]

### 7.3. *Some of the Mysteries Solved?*

The audience may wonder at this point whether we're in the realm of science or science fiction: What's the advantage of moving the questionish nature of contractual offers into the semantics? What does it mean for the tense of P to be "parasitic"? How does any of this help solve the earlier mysteries regarding the differences between the offer and assertion interpretations of conditional sentences like (11)? Taking these questions one at a time ...

The primary advantage of moving the questionish nature of contractual offers into the semantics is that if it's true that modification (or integration) operations work only when merging semantically matched constituents, then we have a ready-made reason why quantified expressions like (58) and pseudo-imperatives like (59) don't seem to be interpretable as bilateral offers, i.e. as inviting a verbal acceptance: a yes/no question, a proposition, can't be integrated with the properties denoted by relative clauses [see Heim and Kratzer (1998)] or imperatives [see Portner (2004)]. (Alternatively, again, we could invest the integrated meaning of bilateral contractual offers into one of the lexical meanings of *if* and simply ascribe the absence of integrated meanings in sentences like (58) and (59) to the absence of *if* in such sentences, although this feels too easy.)

As for the suggestion that the tense of P is "parasitic," here's the problem to be solved: The morphological tense in the antecedent clauses of (1) and (11) is present, but the proposed paraphrases in (62) and (63) involve future readings of the antecedents. Why wouldn't the integration of the question of P result, for example, in the interpretation of (1) as (64)?

(64) If you wash my car, I'll give you \$20. Do you wash my car?

The answer might be that (matrix) morphological present tense in the antecedents of conditional sentences is in fact non-tense (even if finite) or the morphological exponent of a free tense variable. While I have nothing of substance to say here about how such non-tense is interpreted in conditional sentences intended as pure assertions (where temporal precedence and/or causation is interpreted), it doesn't seem unreasonable to suggest that tenseless questions are askable – and yet for a contractual offer expressed as a conditional, the speaker (the offeror) is presupposing that the hearer (the offeree) has not performed the act denoted by the antecedent in the relevant past and isn't doing so in the present. In that sense, the tense of P in (1) is effectively presupposed as future or, one might say, parasitic to the future nature (and felicity conditions) of offers.

I admit that these ideas are far-fetched and frail by virtue of their informality, but they don't seem to be utterly foreclosed. So let's assume for the short duration of this presentation that the meaning of (1) and (11) when interpreted as bilateral contractual offers is as in (62) and (63), respectively, and see if such an assumption helps us solve any of the earlier mysteries regarding the differences between the offer and assertion interpretations of such conditional sentences. If so, the perhaps pursuing these ideas in future research will be fruitful. Using (11) as the primary example...

#### ■ SEMANTIC NON-DIRECTIONALITY

Whatever the explanation for the “semantic directionality” between the antecedent and the consequent of (11) when (11) is interpreted as a pure assertion (i.e. the interpretation of temporal precedence and/or causation between the antecedent and consequent), if (11) is interpreted as in (63) when (11) is interpreted as a contractual offer, then the “semantic non-directionality” between offeror and the offeree's performance may result from the fact that the antecedent is interpreted with parasite future tense; in other words, there are effectively two instances of *will* in (11) when (11) is interpreted as a bilateral offer. With two effective instances of *will*, neither the antecedent nor the consequent can be interpreted as preceding the other. [This explanation seems preferable to the explanation based on conditional perfection, in light of the evidence in (11c).]

#### ■ SYNTACTIC DIRECTIONALITY

If (1) is interpreted as in (62) when (1) is interpreted as a contractual offer, then the syntactic directionality of (1) may reduce to the fact that, even in the context of negotiation, it's generally infelicitous to question one's own future acts:

(14b) #Will I give you \$20?

Similarly, if (11) is interpreted as in (63) when (11) is interpreted as a contractual offer, then the fact that (11) can't be interpreted as an offer on behalf of John reduces to the fact that it's infelicitous for an agent to question his or her principal's future acts. [This seems preferable to the explanation based on the presumptuousness of (14a).]

#### ■ REMOTENESS IN TENSE / MOOD

If (11) is interpreted as in (63) when (11) is interpreted as a contractual offer, then the fact that past tense (real or otherwise) in the antecedent P antagonizes the parasitic tense in P is expected.

[This explanation seems preferable to an explanation that merely recognizes contractual offers as assertions in part.]

#### ■ NEGATIVE POLARITY ITEMS

As suggested above, there may be no mystery to solve with respect to *any* – its behavior may be predictable on the basis of its lexical semantics, the semantics of focus or minimization, and the need for contractual offers to relate a quantity of performance to be rendered. As for the fact that the introduction of *ever* into the antecedent in (11) seems to render (11) interpretable only as a unilateral offer: If the bilateral offer interpretations of (11) is as in (63), then this fact may be explained by whatever explains the fact that (66) is an incomplete response to (65):

(65) Will John ever give Mary some candy?

(66) # Yes.

[This explanation is preferable to the absence of any explanation for the *ever* facts.]

#### ■ FELICITOUS REPLIES

Finally, as suggested at the start of this section, if (11) is interpreted as in (63) when (11) is interpreted as a contractual offer, then there's a natural way to explain why bilateral offers invite verbal acceptances and yet (for some speakers) may still be denied with sentences like (13): such offers are integrated questions and assertions. [This explanation is preferable to the absence of any explanation of why offers invite different replies than assertions if offers are merely assertions that are pragmatically strengthened, as in (1a), although a remaining question is why “yes” isn't a viable form acceptance – perhaps because the question in the antecedent is tenseless?]

#### 8. *Conclusion*

Some (and maybe most) of the data from earlier work on contractual offers may be better explained by the idea that certain offers – namely conditional sentences interpreted (or interpretable) as bilateral offers – involve the integration of questions and assertions. Exactly how this integration happens, especially with respect to tense, remains to be explored and made explicit in future work, but the integration of a question into an assertion may be less exotic than expected, and good things sometimes happen when we follow intuition to unusual places.\*

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\* “Traveler, there is no path. Paths are made by walking.” – Antonio Machado, *Caminante no hay Camino*.

## 9. POSSIBLE TOPICS FOR FURTHER DISCUSSION

- embeddability issues
- intonational differences in offers vs. assertions
- Korean promissives and jussive syntactic heads, a la Zanuttini et al. (2012)
- contractual offers and the hearsay rule
- why I'm wrong (also, whether linguists and other scientists are lawyers for ideas)

## 10. THANKS!

Thanks to my dissertation committee (Yael Sharvit, Tim Stowell, Ed Keenan, and Seana Shiffrin) and audiences at UCLA for their support as I started to walk this path. And thanks to everyone here today for their attention, patience, questions, and comments as I stumble further down it.

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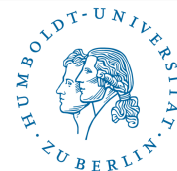


# Challenging Speech Acts

Workshop Questioning Speech Acts  
Universität Konstanz  
September 14-16, 2017

Arik Cohen

Manfred Krifka



## A classical joke:



The Trotzky Telegram:



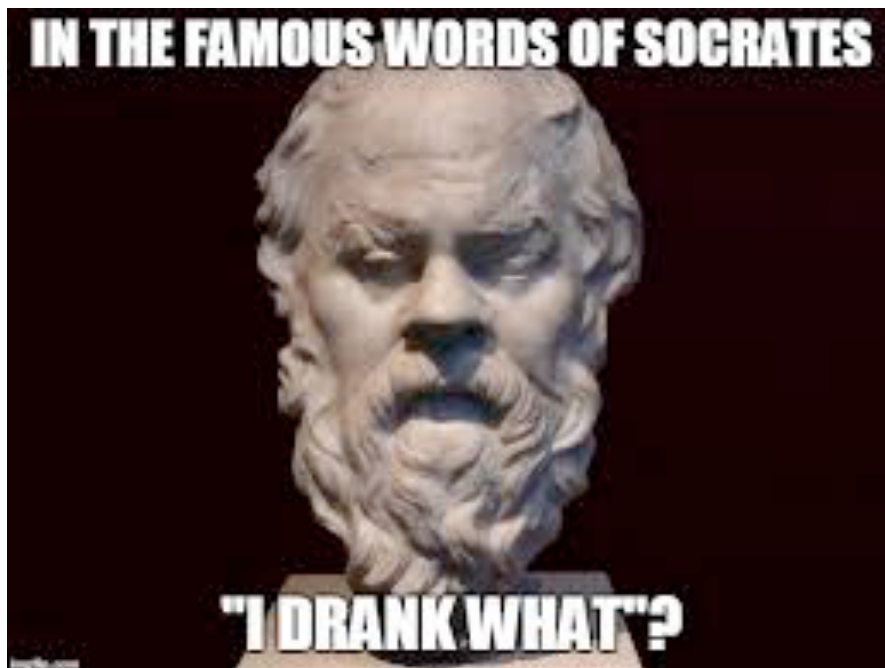
- ◆ “Joseph Stalin, The Kremlin, Moscow.  
*I was wrong? You are the true heir of Lenin? I should apologize?*”  
cf. Arthur Asa Berger, The Genius of the Jewish Joke, 1997

Prosody matters:

Féry 2017:

$[(I)_\phi \text{ (was WRONG.)}_\phi \text{ (and STALIN)}_\phi \text{ (was RIGHT.)}_\phi]_i \quad [(I)_\phi \text{ (should APOLOGIZE)}_\phi]_i$   
 $L^*H_\phi \quad L^*H_\phi H_i \quad L^*H_\phi \quad L^*H_\phi H_i \quad L^*H_\phi \quad L^*H_\phi H_i$

## A Classical Reaction:



## Challenges to speech acts



- ◆ Incredulity questions, cf. Cohen 2007
- ◆ Examples:
  - 1) A: *Donald will become president.*  
B: *DONALD will become president?! / Donald will become PRESIDENT?!  
DONALD will become PRESIDENT?! Are you sure?*
  - 2) A: *Will Donald become president?*  
B: *Will DONALD become PRESIDENT?! What a stupid question!*
  - 3) A: *If only Donald became president!*  
B: *If only Donald became PRESIDENT?! Are you crazy?*
  - 4) A: *Idiot!* B: *IDIOT?! Don't call me that!*
  - 5) Patient: *Ouch!* Dentist: *Ouch?! You are anesthetized, this can't hurt you!*
- ◆ Observations:
  - Speaker B expresses incredulity or indignation about the previous contribution
  - Invites explanation of justification by the first speaker, A – hence, a challenge
  - The antecedent contribution can be of any speech act type (assertion, question, optative, curse, interjection, ...)
  - Prosodic contour, with L\* (low focus accent) and H% (high boundary tone), expanded pitch range

## Challenges beyond speech acts



### ◆ Examples:

6) A goes to the farmers market. It is February. One stand offers strawberries.

A, to seller: *Strawberries in WINTER?!*

### ◆ Observe:

- Same prosodic marking: focus L\*, boundary H%, expanded pitch
- No preceding speech act; reference to some phenomenon given in the situation.
- Speaker expresses incredulity or indignation about this phenomenon
- Speaker expresses interest in clarification about the phenomenon

## Related cases: Contradictions



### ◆ Examples

7) A: *My fate is sealed. I am diagnosed with elephantiasis.*

B: *Elephantiasis isn't incurable!*

L\*+H                      L\*    L\*H%

Cf. Liberman, Mark & Ivan Sag. 1975,

Annotation: Ladd, D. Robert. 1996.

Contradiction contour onset as L\*+H+!H: Bartels, Christine. 1999. [2013].

Variety of possible realizations:

Hedberg, Nancy, e.a. 2003.

### ◆ How contradictions work:

- Current conversation or situation can be seen as entailing a proposition  $\varphi$
- Speaker rejects  $\varphi$ , typically by an assertion of the negation of  $\varphi$
- Focal accent on new part (negation, verum focus, etc.)

### ◆ Challenges $\neq$ Contradictions:

- Contradictions refer to an antecedent proposition and negates it
- Challenge refers to antecedent speech act or situational given phenomenon and questions it



## Related cases: Exclamatives



### ◆ Examples

- 8) A: *Donald will become president.*  
B: *Donald will become president!! Incredible!*
- 9) *Stawberries in winter!! Incredible!*  
*How fast this car is!!*

### ◆ How exclamatives work:

- Speaker expresses astonishment, surprise about a speech act, a proposition, a degree  
(Rett 2012)

### ◆ Challenges ≠ Exclamatives:

- Exclamatives do not question the antecedent
- Challenges express incredulity, give addressee a chance to revoke

## Related cases: Echo questions



### ◆ Examples:

- 10) A: *The symphony requires four ondes martenots.*  
B: *The symphony requires WHAT?* wh echo question  
B: *The symphony requires four ONDES MARTENOTS?* non wh echo question
- 11) A: *When will he bring his pet tarantula to the vet?*  
B: *When will he bring WHAT to the vet?* wh echo, antecedent: wh question

### ◆ How echo questions work:

- echo questions refer to preceding speech act, which can be of any type
- in echo questions one constituent is replaced by wh-element with focal accent, in non-wh echo question one constituent is realized as focus
- Speaker indicates that antecedent was not properly understood w.r.t. wh / focus constituent, asks to repeat the act to achieve better understanding.

### ◆ Echo questions ≠ Challenges

- Echo questions are requests for clarification, speech act was not understood  
Challenges: speech acts were understood, expression of indignation / disbelief
- Challenges have an expanded pitch range (Hirschberg & Ward 1992, Repp & Rosin 2015)
- Challenges are often accompanied by facial gestures (frowning) (Crespo-Sendra e.a. 2013)
- Echos but not challenges allow for focus/wh on parts of words: (Cohen 2007):  
*This is called WHAT-jacency?*

### ◆ Challenges are sometimes considered a type of echos (Artstein 2002, Poschmann 2015)



## Explaining challenges

- ◆ Challenges are not requests for information or confirmation, like questions or rising declaratives.
- ◆ Challenges express **incredulity** or **indignation** about a phenomenon in the situation, i.e. the phenomenon does not fit the **epistemic** or **deontic** background of the speaker (Cohen 2007)

11) A: *Donald will become president.* B: *DONALD will become PRESIDENT?!*

12) *Strawberries in WINTER?!*

- ◆ In case the phenomenon is an antecedent speech act, speaker signals resistance against accepting that speech act.
- ◆ Resistance can be understood as a challenge: The addressee can withdraw that speech act, or stick by it, but then some motivation for sticking by it is expected.



## The Commitment Space Model (CSM)

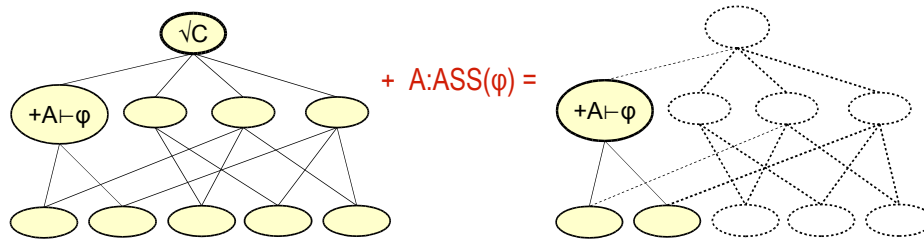
- cf. Cohen & Krifka 2014, Krifka 2015
- ◆ Commitments and other attitudes:
  - $A \vdash \varphi$  'A is committed to truth of  $\varphi$ ' assertions
  - $A \top \varphi$  'A prefers  $\varphi$  over alternatives' optatives
  - $A \perp \varphi$  'A is impressed by  $\varphi$ ' exclamatives
- ◆ Commitment States  $c$ :
  - Sets of ostensibly shared propositions
  - Non-contradictory, i.e.  $\cap c \neq \emptyset$
  - Adding of commitments, e.g.  $c + A \vdash \varphi = c \cup \{A \vdash \varphi\}$
- ◆ Commitment Spaces  $C$ :
  - Sets of commitment states, to model possible continuations
  - $\sqrt{C} = \cap C$ : the root, the propositions actually shared
  - $C + A: \mathcal{A} = C'$ , update of  $C$  with speech act  $\mathcal{A}$ , actor  $A$ , to output  $C'$
- ◆ Commitment Space Developments,  $CD$ :
  - Sequences of pairs of  $\langle \text{Actor}, \text{Commitment Space} \rangle$ ,
  - $\langle \dots, \langle *, C \rangle \rangle + A: \mathcal{A} = \langle \dots, \langle *, C \rangle, \langle A, C + \mathcal{A} \rangle \rangle$ ,  
update of last commitment space with speech act  $\mathcal{A}$ , actor  $A$



## Assertion in Commitment Spaces

◆ Assertion by A that  $\varphi$  at input commitment space C:

- A:  $[\text{ActP} \cdot [\text{CommitP} \vdash [\text{IP } \textit{Donald is president}]]]$
- $C + A: \text{ASS}(\varphi) = C + A \vdash \varphi = \{c \in C \mid A \vdash \varphi \in c\}$
- Restricts C to those commitment states that contain the proposition  $A \vdash \varphi$



◆ Assertion by A that  $\varphi$  at input commitment space development:

- $\langle \dots, \langle *, C \rangle \rangle + A: \text{ASS}(\varphi) = \langle \dots, \langle *, C \rangle, \langle A, C + A \vdash \varphi \rangle \rangle = CD$
- Conversational implicature introduces  $\varphi$  itself in a second step:  
 $CD + \varphi = \langle \dots, \langle *, C \rangle, \langle A, C + A \vdash \varphi \rangle, \langle A, [C + A \vdash \varphi] + \varphi \rangle \rangle = CD'$



## Reactions to Assertions; Rejection

◆  $CD'$  after assertion:  $\langle \dots, \langle *, C \rangle, \langle A, C + A \vdash \varphi \rangle, \langle A, [C + A \vdash \varphi] + \varphi \rangle \rangle$

◆ B: *Okay. / Aha. / ∅*

- acceptance, no change

◆ B: *Yes.*

- confirmation, picks up TP proposition in A:  $[\text{ActP} \cdot [\text{ComP} \vdash [\text{TP } \dots]]]$ , B asserts  $\varphi$ :
- $CD' + B: \text{ASS}(\varphi) = \langle \dots, \langle *, C \rangle, \langle A, [C + A \vdash \varphi] + \varphi \rangle, \langle B, [[C + A \vdash \varphi] + \varphi] + B \vdash \varphi \rangle \rangle$

◆ B: *No.* denial, picks up  $\varphi$ , B asserts  $\neg\varphi$ , requires rejection  $\mathfrak{R}$  for consistency:

- Rejection goes back to previous state:  
 $\langle \dots, \langle S, C \rangle, \langle S', C' \rangle \rangle + \mathfrak{R} = \langle \dots, \langle S, C \rangle, \langle S', C' \rangle, \langle S, C \rangle \rangle$
- $CD' + B: \text{No.} = CD' + \mathfrak{R} + B: \text{ASS}(\neg\varphi) =$   
 $\langle \dots, \langle *, C \rangle, \langle A, C + A \vdash \varphi \rangle, \langle A, [C + A \vdash \varphi] + \varphi \rangle, \langle A, C + A \vdash \varphi \rangle, \langle B, [C + A \vdash \varphi] + B \vdash \neg\varphi \rangle \rangle$
- Results in a commitment space with  $A \vdash \varphi$  and  $B \vdash \neg\varphi$ ,  
A and B make contradictory commitments, but commitment state not contradictory.
- without  $\mathfrak{R}$ , commitment states would contain  $\varphi$  and  $B \vdash \neg\varphi$ , incoherent c.state;  
in general:  $\mathfrak{R}$  is used to maintain consistency.

◆ Rejection has a similar function as negotiating table in Farkas & Bruce 2010

# Questions in the CSM

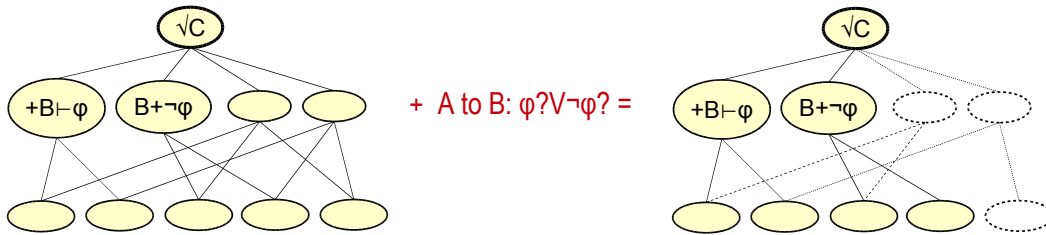


◆ Example: bipolar question

13) Is Donald president or not?

◆ Questions restrict the possible continuations, not the root – **meta speech act**

- $C + A \text{ to } B: \varphi? \vee \neg\varphi? = \{\sqrt{C}\} \cup C+B\vdash\varphi \cup C+B\vdash\neg\varphi$
- Restricts possible continuations to commitments by addressee B to either  $\varphi$  or  $\neg\varphi$



# Reactions to questions



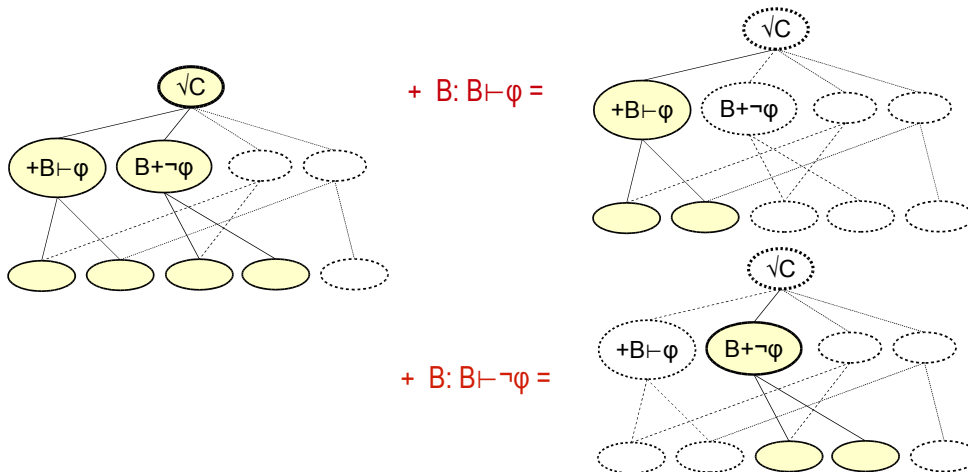
◆ Reactions to bipolar question:

• B: *Yes, he is.*

$$CD + B: \text{ASS}(\varphi) = \langle \dots, \langle *, C \rangle, \langle A, \{\sqrt{C}\} \cup C+B\vdash\varphi \cup C+B\vdash\neg\varphi \rangle, \langle B, C+B\vdash\varphi \rangle \rangle$$

• B: *No, he isn't.*

$$CD + B: \text{ASS}(\neg\varphi) = \langle \dots, \langle *, C \rangle, \langle A, \{\sqrt{C}\} \cup C+B\vdash\varphi \cup C+B\vdash\neg\varphi \rangle, \langle B, C+B\vdash\neg\varphi \rangle \rangle$$



•  $CD + R + B: \text{I don't know}$  requires rejection for consistency

$$= \langle \dots, \langle *, C \rangle, \langle A, \{\sqrt{C}\} \cup C+B\vdash\varphi \cup C+B\vdash\neg\varphi \rangle, \langle *, C \rangle, \langle B, C+B:\neg K\varphi \rangle \rangle$$

## Challenges vs. Denials and Questions



- ◆ Denials vs. challenges:
  - A: *Donald will become president.* B: *No.*  
B: *Donald will become PRESIDENT?!*
  - Denials reject an asserted proposition by asserting its negation
  - Challenges do not negate an assertion, and the antecedent speech act can be of various types.
- ◆ Questions vs. challenges:
  - A: *Will Donald become president?*  
A: *Donald will become PRESIDENT?!*
  - Questions, including raising declaratives, indicate informational need how the common ground **should** develop, i.e. they relate to the **possible continuations** of the **commitment space**
  - Challenges express an irritation about how the common ground **has** developed, i.e. they relate to the **past commitment space development**

## Modeling Challenges by Speech Act Sets



- ◆ A simpleminded analysis: A:  $\mathfrak{A}$  followed by B: CHALLENGE(A:  $\mathfrak{A}$ )
- ◆ Problems:
  - focus and questioning nature of challenges is not covered.
  - incredulity just postulated.
- ◆ Authier (1993), Dayal (1996), Artstein (2002) on echo questions:
  - Echo questions denote sets of alternatives (like regular wh questions)
  - *You gave WHAT to George? / You gave FLOWERS to George?*  
{‘Adr gave flowers to George’, ‘Adr gave chocolate to George’, ...}
- ◆ Generalization to challenges:
  - Echo / Challenges denote **sets of alternative speech acts**
  - We call such sets **secondary speech act**.

## Creating speech act alternatives



- ◆ Speech act alternatives created by focus, modeled by structured meanings
- 15) DONALD<sub>F</sub> will become president?!
- ◆ Projection of focus (cf. Krifka 1992)
  - ASSERT(will(become(P(⟨λx[x], d⟩))))
  - ⟨λx[ASSERT(will(become(P(x)))], d)⟩
- ◆ Different from focus in answers to questions (v. Stechow 1990, Rooth 1992)
- 16) A: Who will become president?  
B: DONALD<sub>F</sub> will become president.
- ASSERT(⟨λx[will(become(P(x)))], d)⟩
- Focus bound by illocutionary operator (cf. Jacobs 1984, Krifka 1992), corresponding to question (for CS approach: Krifka 2015, Kamali & Krifka i.prep)
- ◆ WH in challenges and echoes:
- 17) WHO<sub>F</sub> will become president?!
- ⟨λx[ASSERT(will(become(P(x)))], {d})⟩
- wh in echo / challenges refer to singleton alternative set that is given by preceding act (cf. Authier 1993, Beck & Reis 2017)
- resulting in similar meaning to non-wh-case

## Working through an example



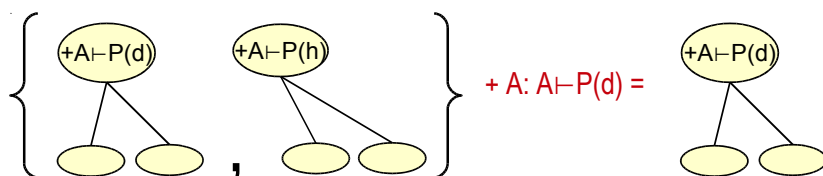
- ◆ Antecedent act:  
 $\langle \dots, \langle *, C \rangle \rangle + A: \text{Donald is president.} = \langle \dots, \langle *, C \rangle, \langle A, C+A-P(d) \rangle \rangle = CD$
- ◆ Echo or Challenge: B: DONALD is president?!
- refers anaphorically to the salient adjacent speech act A-P(d)
- focus on DONALD indicates alternatives represented by structured meaning:  $\langle \lambda x[A-P(x)], d \rangle$
- structured speech act is uttered by B, leading to update of  $\langle \dots, \langle *, C \rangle \rangle$  to  $\langle \dots, \langle *, C \rangle, \langle B, \langle \lambda x[C+A-P(x)], d \rangle \rangle \rangle$
- interpreted as: A should proceed by choosing one C out of  $\{C+A-P(x) | x \in \text{ALT}(d)\}$
- ◆ Restriction for updating a CD with a structured update ST:
  - $\langle \dots, \langle *, ST \rangle \rangle$  requires that there is no C in ... such that  $C \in \{ST(x) | x \in \text{ALT}\}$
  - Reason: If C were already established, there is no reason to provide this choice
  - this may require a reject operation  $\Re$
- ◆ Illustration by example:
  - $CD + \Re = \langle \dots, \langle *, C \rangle, \langle A, C+A-P(d) \rangle, \langle *, C \rangle \rangle = CD'$
  - Application of speech act set to CD' results in a commitment space set:  
 $CD' + B: \langle \lambda x[A-P(x)], d \rangle = \langle \dots, \langle *, C \rangle, \langle A, C+A-P(d) \rangle, \langle *, C \rangle, \langle B, \langle \lambda x[C+A-P(x)], d \rangle \rangle \rangle$



## Working through an example

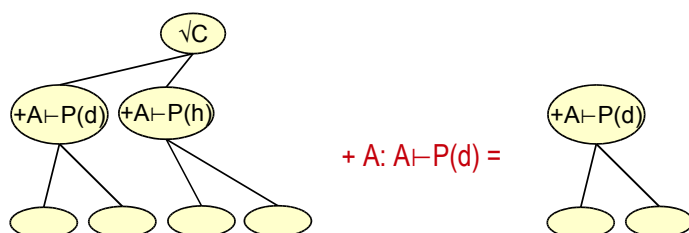
### ◆ Resulting commitment space development:

- $\langle \dots, \langle^* C \rangle, \langle A, C+A \neg P(d) \rangle, \langle^* C \rangle, \langle B, \langle \lambda x [C+A \neg P(x)], d \rangle \rangle \rangle = CD''$   
B signals a set of options, A should choose one
- $CD'' + A: A \neg P(d) =$   
 $\langle \dots, \langle^* C \rangle, \langle A, C+A \neg P(d) \rangle, \langle^* C \rangle, \langle B, \langle \lambda x [C+A \neg P(x)], d \rangle \rangle, \langle A, C+A \neg P(d) \rangle \rangle$



### ◆ Contrast with answer to bipolar question whether P(d) or P(h):

- $\langle \dots, \langle^* C \rangle, \langle B, \{C\} + C+A \neg P(d)+A \neg P(h) \rangle \rangle = CD$   
 $CD + A: A \neg P(d) = \langle \dots, \langle^* C \rangle, \langle B, \{C\} + C+A \neg P(d)+A \neg P(h) \rangle, \langle A, C+A \neg P(d) \rangle \rangle$



## Generalization to other cases



### ◆ Questions:

- $\langle \dots, \langle^* C \rangle \rangle + A, \text{ to B: Will Donald be president?}$   
=  $\langle \dots, \langle^* C \rangle \rangle + A: B \neg P(d)$   
=  $\langle \dots, \langle^* C \rangle, \langle A, \{ \sqrt{C} \} \cup C+B \neg P(d) \rangle \rangle = CD$
- $CD + \mathfrak{R} + B: \text{Will DONALD be president?}$   
=  $\langle \dots, \langle^* C \rangle, \langle A, \{ \sqrt{C} \} \cup C+B \neg P(d) \rangle, \langle^* C \rangle, \langle B, \langle \lambda x [\{C\} \cup C \neg P(x)], d \rangle \rangle \rangle$

### ◆ Optatives:

- $\langle \dots, \langle^* C \rangle \rangle + A: \text{If only Donald became president!}$   
=  $\langle \dots, \langle^* C \rangle \rangle + A: B \top P(d)$   
=  $\langle \dots, \langle^* C \rangle, \langle A, C+B \top P(d) \rangle \rangle = CD$
- $CD + \mathfrak{R} + B: \text{If only DONALD became president?!}$   
=  $\langle \dots, \langle^* C \rangle, \langle A, C+B \top P(d) \rangle, \langle^* C \rangle, \langle B, \langle \lambda x [C+B \top P(x)], d \rangle \rangle \rangle$

### ◆ Situations (sketch):

- Common ground changes by situational evidence  $\phi$  assumed to be shared:  $C + \phi = \{c \in C \mid \phi \in c\}$
- Take  $\psi(t) = \text{'They are selling strawberries in the current situation } s \text{ \& } s \text{ is a situation in } t \text{'}$   
 $\langle \dots, \langle^* C \rangle \rangle + \psi(\text{winter}) = \langle \dots, \langle^* C \rangle, C+\psi(\text{winter}) \rangle = CD$ ,  
i.e.  $\psi(\text{winter})$  is treated as becoming part of the common ground
- $CD + \mathfrak{R} + A: \text{They sell strawberries in WINTER?!}$   
=  $\langle \dots, \langle^* C \rangle, C+\psi(\text{winter}), \langle^* C \rangle, \langle A, \langle \lambda x [C+B \neg \psi(x)], \text{winter} \rangle \rangle \rangle$
- A resists accepting non-linguistic, visual evidence for  $\phi(\text{winter})$ , requests confirmation from addressee, implicating that an alternative would be more likely.



## The challenge of challenges

- ◆ Where we are:
  - B rejects a previous speech act by A
  - B offers A a choice of speech acts, including A's original speech act, as continuations
- ◆ Challenge:
  - Why is this understood as a challenge?



## Intensionality

- ◆ Challenges are intensional:
  - Assume John is the winner of Best Manager Award
- 18) a. *JOHN will get the job?!*  
b. *#THE WINNER OF THE BEST MANAGER AWARD will get the job?!*
- ◆ Focus normally is taken to induce extensional alternatives:
- 19) *Who will get promoted?*
  - a. *JOHN will get promoted.*
  - b. *THE WINNER OF THE BEST MANAGER AWARD will get promoted.*
- ◆ Since challenges are intensional, it makes sense to suggest that they trigger a set of alternative worlds.
- ◆ These are determined by the modal base:
  - Doxastic—belief worlds
  - Deontic—normative worlds





## A closer look

19) A: *Donald will become president.*

B: *Donald will become PRESIDENT?!*

- ◆ B resists what (s)he just heard.
- ◆ B is asking: In which of the worlds compatible with my belief / norms does A assert that Donald will become president?
- ◆ This is a rhetorical question, since B presumably knows what (s)he considers permissible.
- ◆ A rhetorical question implies a negative answer (Sadock 1974)
- ◆ In none of B's belief / normative worlds does A assert that Donald will become president
- ◆ Hence, this assertion is incredible / outrageous



## World semantic value

- ◆ How is this modeled?
- ◆ The alternatives generated by focus can be formalized by the focus semantic value,  $[[\Phi]]^F$  (Rooth 1985; 1992), but this cannot generate the required intensional interpretation.
- ◆ Cohen (2009) proposes an additional type of semantic value: world semantic value,  $[[\Phi]]^w$
- ◆  $[[\Phi]]^w$  is a set:  
each member of this set is the ordinary semantic value of  $\Phi$  in some world.
- ◆ Regular focus introduces focus semantic value,  
extended pitch range: world semantic value

# The denotation of speech acts



- ◆ We have treated speech acts as devices that add commitments to the world
- ◆ Hence speech acts are functions from world/time pairs to world/time pairs (cf. Szabolcsi 1982, Krifka 2014)

# The semantic values of speech acts



- ◆ The **ordinary** semantic value:
  - $\llbracket \text{ASSERT}(\textit{Donald will become President})(\langle w, t \rangle) \rrbracket^o$   
= the unique pair  $\langle w', t' \rangle$   
such that  $t'$  immediately follows  $t$   
and  $w'$  is just like  $w$  except that the speaker is committed to the truth of the proposition 'Donald will become President'
- ◆ The **world** semantic value  
is a set of the ordinary semantic values in different **worlds** in the modal base:
- ◆  $\llbracket \text{ASSERT}(\textit{Donald will become President})(\langle w, t \rangle) \rrbracket^w =$   
 $\left\{ \begin{array}{l} \llbracket \text{ASSERT}(\textit{Donald will become President})(\langle w_1, t \rangle) \rrbracket^o, \\ \llbracket \text{ASSERT}(\textit{Donald will become President})(\langle w_2, t \rangle) \rrbracket^o \\ \dots \end{array} \right\}$



## Alternative worlds

- ◆ Each of the worlds  $w_1, w_2, \dots$  is a world in B's belief / normative worlds.
- ◆ B is asking a question by presenting these alternatives:  
In which of these worlds does A assert that Donald will become President?
- ◆ This question is rhetorical,  
B thereby implies that in **none** of these worlds does A make this assertion.
- ◆ The fact that A did, after all, make the assertion,  
is therefore incredible / outrageous,  
depending on the modal base (epistemic / deontic).
- ◆ The time  $t$  for all alternatives is the same: the time of A's utterance.
- ◆ This explains the intuition that, at the time the speech act was made,  
B did not believe that it would be made.
- ◆ Of course, now that A **did** make the speech act,  
B has no choice but to believe this...



## The role of focus

- ◆ Focus indicates the alternative challenges, as usual:  
20) a. DONALD is going to become President?!  
b. Donald is going to become PRESIDENT?!
  - Both (a) and (b) mean that Donald's becoming President is incredible / outrageous.
  - But (a) and (b) indicate different challenges that are not made
    - (a) does not challenge the election of other people to President:  
in B's belief / normative worlds,  
other people may be asserted to become President.
    - (b) does not challenge giving other positions to Donald:  
in B's belief / normative worlds,  
Donald may be asserted to have other positions.
- ◆ In general:
  - A speech act  $\mathfrak{A}(\langle \alpha, \beta \rangle)$  is made with the propositional content  $\alpha(\beta)$ ,
  - and it is presupposed that other speech acts  
with the same illocutionary force  $\mathfrak{A}$  but an alternative propositional content  $\alpha(X)$   
could have been made.



## Putting it all together

- ◆ The speech act is represented as follows:
  - a.  $\langle \lambda x[\text{ASSERT}(x \text{ will become President})(\langle w, t \rangle)], \text{Donald} \rangle$
  - b.  $\langle \lambda x[\text{ASSERT}(\text{Donald will become } x)(\langle w, t \rangle)], \text{President} \rangle$
- ◆ And they are interpreted as follows:
  - a. The assertion that Donald will become President is not made in any of B's belief / normative worlds, but in each of these worlds, assertions of the form “X will become President” could be made.
  - b. The assertion that Donald will become President is not made in any of B's belief / normative worlds, but in each of these worlds, assertions of the form “Donald will become X” could be made.



## Wrapping up

- ◆ What we have achieved:
  - model for challenging speech acts in conversation
  - as secondary speech acts that address a surprising previous speech act or a surprising fact that enters the common ground
  - that captures the fact that challenges have a focus that creates alternatives and that challenges are requests to the addressee, just like questions
  - keeping apart regular use of focus and questions (commitment spaces) and challenging uses (commitment space developments)
  - deriving the challenging use in a non-stipulative way
- ◆ Natural extensions:
  - Echo questions: No challenge, but request for clarification
  - Other types of secondary speech acts:  
Haoze Li e.a., S&B 2017, Cantonese: [-ho](#),  
add to many other speech acts with the meaning:  
Speaker performs that act; asks addressee for supporting that act.

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# Challenging Speech Acts

Ariel Cohen

Ben-Gurion University of the Negev, Beer-Sheva, Israel

[aric@bgu.ac.il](mailto:aric@bgu.ac.il)

Manfred Krifka

Leibniz-Zentrum Allgemeine Sprachwissenschaft & Humboldt-Universität zu Berlin, Germany

[krifka@leibniz-zas.de](mailto:krifka@leibniz-zas.de)

**Challenges.** Unexpectedness is typically seen as a property of propositions. In this talk, we will be concerned with unexpectedness of speech acts, as in the following examples:

- (1) [S<sub>2</sub> to S<sub>1</sub>: *John will get the job.*] S<sub>1</sub> to S<sub>2</sub>: *JOHN will get the job?!*
- (2) [S<sub>2</sub> to S<sub>1</sub>: *What a generous man!*] S<sub>1</sub> to S<sub>2</sub>: *What a GENEROUS man?!*
- (3) [S<sub>2</sub> to S<sub>1</sub>: *Come on, dude!*] S<sub>2</sub> to S<sub>1</sub>: *Come on, DUDE?!*

These examples have a final rise, just like questions, yet clearly differ from regular questions in both their prosody and their meaning. They are uttered with the incredulity contour (cf. Pierrehumbert & Hirschberg 1990, who analyze this contour as L\* H- H%). In this talk we address two questions: (1) What do such utterances mean? (2) How is this meaning conveyed by the form of the utterance?

We argue that such utterances indicate a **challenge** to the addressee to perform a particular speech act, where a challenge is a move in a conversational game that indicates that the speaker considers the act to be difficult or unjustified. In (1) – (3), the speech act in question actually has been performed by S<sub>2</sub>; the challenge by S<sub>1</sub> then is understood as an attempt to make S<sub>2</sub> reconsider things, and perhaps retract the speech act. Challenges can be applied to a wide range of speech acts, e.g. assertions, exclamatives, and addressations. In (1) S<sub>1</sub> challenges S<sub>2</sub> to perform the assertion *John will get the job*, indicating that this will be difficult or impossible for S<sub>2</sub>. With assertions, the obvious reason is that the asserted proposition is considered unlikely; with exclamations (2), that the exclamation is unjustified; and with addressations (3), that the form of address violates a social norm. If a subexpression in the challenge is highlighted by L\* accent, then the challenge contrasts this utterance with alternatives; for example, (1) with focus on *John* indicates that there are alternatives to John, x, such that S<sub>1</sub> would not challenge the assertion of ‘x will get the job’.

**A formal theory of speech acts.** We express this analysis within the framework of Commitment Spaces (cf. Cohen & Krifka 2014, Krifka 2015). The information that is presumed to be shared at the current point in a conversation is modeled by a set c of propositions, a **commitment state**. The commitment state is updated in conversation; for

example, if a speaker  $S$  asserts a proposition  $\varphi$ , the proposition that  $S$  is committed to the truth of  $\varphi$  (written  $S \vdash \varphi$ ) is added. If the addressee does not object, this will lead to adding  $\varphi$  itself to  $c$  by a conversational implicature. But there are conversational moves that cannot be captured by commitment states, like denegations (e.g. *I don't promise to come* is refraining from making a promise, cf. Hare 1970) or questions as requests by the speaker that the addressee perform an assertion of a particular type. For such moves we also have to incorporate the possible continuations from a commitment state into other commitment states. This leads to the notion of a **commitment space**  $C$  as a set of commitment states, a root commitment state  $\sqrt{C}$  and possible continuations  $c$  with  $\sqrt{C} \subset c$ .

With an assertion that  $\varphi$ , a speaker  $S_1$  changes a commitment space  $C$  to  $C' = \{c \in C \mid \sqrt{C} \cup \{S_1 \vdash \varphi\} \subseteq c\}$ , where  $S_1 \vdash \varphi$  is established in all commitment states. The typical intent is to make  $\varphi$  part of the CS as well (by a conversational implicature), to  $C'' = \{c \in C' \mid \sqrt{C} \cup \{\varphi\} \subseteq c\}$ ; the addressee  $S_2$  can accept this or **reject** this move, e.g. by *no*, which involves a return to the previous commitment space  $C'$  and adding  $S_2 \vdash \neg\varphi$ . With a polarity question *whether*  $\varphi$  uttered to an addressee  $S_2$  the speaker  $S_1$  changes an input commitment space  $C$  to  $C' = \{\sqrt{C}\} \cup \{c \in C \mid \sqrt{C} \cup \{S_2 \vdash \varphi\} \subseteq c\}$ , which has the same root as  $C$  but restricts the continuations to the assertion of  $\varphi$  by the addressee; such acts that only change the possible continuations are called **meta speech acts** in Cohen & Krifka 2014. The addressee  $S_2$  can perform the requested assertion, or again can reject it and return to the previous commitment space  $C$ , e.g. to prepare a negative answer in which  $S_2$  commits to  $\neg\varphi$ . (Alternative questions like *Did John come or didn't he?*, *Did John or Mary come?*, or constituent questions like *Who came?* present a disjunction of possible continuations that also can be rejected to prepare reactions like by *I don't know* or *I won't tell you*). One formal model that allows for such rejections is to integrate the concept of a negotiating table (cf. Wolf & Cohen 2009; Farkas & Bruce 2010; Wolf 2015). Another is to model things with a sequence of conversational states (cf. Krifka 2015). In the second framework, the conversational development is represented by a sequence  $\langle \dots C', C \rangle$ ; rejection of the last move  $C$  will lead to  $\langle \dots C', C, C' \rangle$ , where the last commitment space  $C'$  can be input for a new move, resulting in  $\langle \dots C', C, C', C'' \rangle$ .

**Explaining Challenges.** Exchanges like (1) – (3) are reactions by  $S_1$  to the most recent conversational move performed or implied by  $S_2$ . They consist in a linguistic form that can be used as a speech act but do not perform that act; rather, they test whether the other speaker would perform that act. In (1)  $S_1$  does not assert that John will get the job, but tests whether  $S_2$  really would perform this action; in (2)  $S_1$  does not express appreciation for the man's generosity, but tests whether  $S_2$  really would do so; similarly in (3),  $S_1$  tests whether  $S_2$  really would use this form of addressation. We propose that these moves involve rejection of  $S_2$ 's original move followed by a meta speech act that restricts the possible continuation to performing the expressed speech acts, as in questions in general; this is indicated by question prosody. The incredulity contour, in addition, indicates that  $S_1$  expresses amazement or disbelief that  $S_2$  actually will go along with performing this speech act, by introducing alternative possible worlds and implying that there is no world where the speech act is performed (cf. Cohen 2009). If  $S_2$  accepts the challenge, some additional backing up might be necessary to achieve acceptance of the intended result. If  $S_2$  rejects the challenge, then  $S_2$  implicitly takes back the original speech act.

**Focus** plays a similar role in challenges as in other speech acts, namely that it indicates alternative speech acts that are not made. In assertions like *JOHN got the job*, focus indicates alternative continuations proposed by an alternative or constituent question like *Who got the job?* that are not asserted; in regular polarity questions as in *Did JOHN get the job?*, focus indicates alternative questions of the form *Did x get the job?* that are not made (they correspond to a situation in which *Who got the job?* is asked). Similarly, focus in challenges indicates alternative challenges that are not made; for example, focus on *John* in (1), indicates that assertions of the type *x got the job* could be expected, and the challenge that is expressed concerns the choice of *John* for *x* in these assertions.

The special property of challenging speech acts is that they can take forms that express any speech act type, just by adding the appropriate focus and prosody on these forms. Hence they may be called **second-order speech acts**: They take an arbitrary speech act and turn it into a challenge for the addressee to perform that speech act.

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# Non-representational speech acts on the table

Regine Eckardt  
University of Konstanz  
16. Sept. 2017

## 1. Speech Acts that propose a plan

### 1.1 Bermuda triangle: Directives, commissives and declarations

Some acts fall in between commissives and directives

- (1) *A: I invite you to dinner on Saturday.*
- (2) *A: I bet you 50 € that Black Beauty will win.*
- (3) *A: I challenge you to a duel. / Ich fordere Sie zum Duell.*

Obligations are mutual rather than obligations-of-A (= commissive) or obligations-of-B (= directive). Speech acts can invite to establish a **shared plan**. (Utterance requires uptake. No uptake — no new obligations.)

Open offers and proposals

- (4) *A: I propose to ... p ...*
- (5) *A: I suggest that ... p ...*
- (6) *A: Lets ... p ...*

English can express speech acts that propose **plans p of any level of complexity**. Plans for mutual obligations are not limited by cultural practices / the lexicon.

### 1.2 Uptake

- (7) *A: I invite you to dinner on Saturday.*
  - a. *B: No, sorry, I don't have time.*
  - b. *B: Thank you, I gladly accept.*
  - c. *B: (negotiates details; change of plan)*

Is uptake part of the act or an act in its own right?

What is the effect of uptake? Which utterances require uptake?

Austin, Searle: *not all SA require uptake ("Hello!", "Foul!")*  
*some SA do ... (offer, propose, bet, invite, ...)*

More uptake than Austin/Searle saw:

- Table theory (Farkas&Bruce 2010): silence as tacit consent
- Portner (2004): Imperatives establish To-Do obligations *unless* the addressee turns them down.
- Schlöder (2014), Schlöder & Fernández (2015): weak and strong uptake; Clark (1996): dialogues as shared projects

### 1.3 Meta-Uptake: Negotiations

Schlöder (2014), Clark (1996) a.o.:

- proposal of a plan
- modifications of plan
- acceptance (or rejection) of modified plan

Models of non-representative speech acts need a storage device for plans while negotiations are going on.

**Aim: Describe SA that propose a plan**  
**Define a Table Model, including**  
**proposal of plan**  
**reactions and effects of reactions**

## 2. What's in a plan?

Searle (1976): propositional content  $p$  (plus many more factors)

Portner (2004): commands are propositions on someone's To-Do-List

Kaufmann (2012): Imperatives denote modal propositions of certain types

Condoravdi & Lauer (2012): Imperatives change A's preference relations

Schwager (2006): Conditional obligations

<Anon>: Commissives are dual to directives<sup>1</sup>

Plans are (at least) recursive systems of conditional obligations between two or more people.

A: *I offer to sell you a car for 500 \$.*

(i) if B says "yes", then A must pass car to B.

(ii) if B says "yes" and A passes car to B, then B must give A 500 \$.

(iii) if B says "yes" and A passes car to B and B gives A 500 \$ then B owns car.

If A fails to produce car, then B has no further obligations.

(See also Buffington 2015 for the logical form of contracts.)

#### A provisional proposal:

- The plan conveyed by a non-representative speech act is coded as a (modal) proposition  $p(A,B)$  that describes the future moves and obligations of A and B.
- Plans can involve one or several interlocutors.
- Plans are stored in a common PLAN set, like shared beliefs are stored in CG. There are no individual To-Do-Lists or such.
- Individual speakers can take away individual preference relations / to-do-lists after the dialogue has ended.

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<sup>1</sup> Starr (2012), Murray & Starr (t.a.) seem cases in question

### 3. Speech Acts on the Table

#### 3.1 Elements of Table model for two interlocutors A, B

TABLE = storage device for unprocessed utterances.

DC<sub>A</sub>, DC<sub>B</sub> = the discourse commitments of A, B; “public beliefs”

CG = common ground

CG\* = projected set; possible next common ground(s)

PC<sub>A</sub>, PC<sub>B</sub> = plan commitments of A, B; “plans that A/B agrees to”

PLAN = shared plans (plans that all interlocutors agree on)

PLAN\* = projected plans; plans that await approval by one or more interlocutor

#### 3.2 Semantic content of speech acts that propose plans

Utterance content  $q$  ( [[ . ] ] applied to the utterance) +

proposed plan  $p(A,B)$  (similar to Searle’s *propositional content*)

A: *I order you to open the window.*

SA  $q$  = ORDER(A, B,  $p(A,B)$ ) with  $p(A,B)$  = ‘B opens the window’

A: *I bet you 50 \$ that black beauty wins.*

SA  $q$  = BET(A, B,  $p'$ )  $p'$  = ‘BB wins’

with  $p(A,B)$  = ‘A gives B 50 \$ if BB lost and B gives A 50\$ if BB won’

Presupposition: A holds it most likely that BB will win.

A: *I invite you to dinner on Saturday.*

SA  $q$  = INVITATION( A, B, ‘dinner-on-Saturday’ )

with  $p(A,B)$  = ‘B has dinner at A’s on Saturday’

A: *I challenge you to a duel.*

SA  $q$  = CHALLENGE( A, B, ‘duel’ )

with  $p(A,B)$  = ‘A and B duel, A is first’

Derive  $p(A,B)$  from syntactic form = major open project for semantics?

#### 3.3 Steps in negotiating plans

**Comprehension precedes consent:** Performative utterance must be understood before the proposed plan  $p(A,B)$  can be accepted or rejected.

**“True/false” are inappropriate:** When A makes a performative utterance, B can not refuse the content (“that’s not true”). Content  $q$  will (almost) automatically update CG.

#### **Uptake:**

If plan  $p(A,B)$  is proposed on the table, B can accept or reject the plan.

If  $p(A,B)$  is not in PLAN\*, an utterance by B is required (yes,ok — no, I object).

If  $p(A,B)$  is in  $PLAN^*$ , then B's silence counts as acceptance.<sup>2</sup>

### **Aim of discourse:**

Interlocutors aim to process utterances and clear the table.

### **3.4 Some examples**

(see extra sheet / slides)

### **3.5 Performative utterances: Rules for conversational game**

#### **I. Performative utterance**

Assume that A makes a performative utterance S with utterance meaning  $q$  and proposed plan  $p(A,B)$ . This has the following effects on the table:

- $\langle S, q \rangle$  and  $p(A,B)$  are stored on the table.
- $p(A,B) \in PC_A$ . (A agrees to plan  $p(A,B)$ )
- $q \in DC_A$
- $q \in DC_B$
- dependent on  $q$ ,  $p(A,B) \in PLAN^*$  (or not)

#### **II. Hey, wait a minute**

SA can depend on presuppositions (sincerity, other preparatory conditions). B can claim presupposition failure for the speech act. This removes  $q$  from  $DC_B$  and blocks further processing.

- (8) *A: I offer you my new Mercedes. — B: Hey wait! You don't own any Mercedes.*
- (9) *A: I invite you to dinner on Saturday. — B: Hey wait! You can't be serious; Saturday is your night shift at hospital.*

The dialogue is in a crisis. Further negotiations are necessary to settle the issue.

#### **III. Remove utterance content from the table**

Precondition:  $DC_A$  and  $DC_B$  contain  $q$ .  $\langle S, q \rangle$  is on the table.

- CG is updated by  $q$ .
- The utterance  $\langle S, q \rangle$  is removed from the table.
- **The plan  $p(A,B)$  remains on the table.**

(Rule 3 extends the clearing rule for Assertions proposed by Farkas & Bruce).

#### **IV. Uptake**

Precondition: There is a plan on the table and interlocutor B has not commented yet.

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<sup>2</sup> This in analogy to tacit acceptance of asserions. Alternatively, we could let the kind of SA determine the range of possible reactions: Is  $\emptyset$  tacit consent or failed uptake?

- B can uptake positively: “yes, ok, I agree ...”.  
<Yes,  $p(A,B)$ > on TABLE;  $p(A,B) \in PC_B$
- B can uptake negatively: “no, I don’t agree”.  
<No,  $\neg p(A,B)$ > on TABLE, no update of  $PC_B$
- If  $p(A,B) \in PLAN^*$  and B does not uptake negatively,  
then  $p(A,B) \in PC_B$

#### V. Remove a proposed plan from the table

Precondition: Plan  $p(A,B)$  is on TABLE and all interlocutors have  $p(A,B)$  in their projected plans.

- PLAN is updated by  $p(A,B)$ . The plan gains the status of an accepted shared project.
- $p(A,B)$  is removed from the TABLE, from  $DC_A$  and  $DC_B$ , as well as  $PLAN^*$ .

#### 4. Promises vs. orders

A: *I promise, swear to do p ; ich schwöre, p zu tun*

SA function as if they were *uptakes* to requests of B.

- Consent by B is presupposed:  $p(A,B) \in PC_B$  when the utterance is made.
- Therefore the plan is established automatically when the utterance has been parsed and comprehended — unless B claims presupposition failure.

(10) A: *I promise to cook the salad.* — B: *Hey wait, I don’t want you to cook the salad!*

ORDER  
good discourse starters  
rest on general hierarchy A/B  
previous commissive makes  
order redundant.

PROMISE  
marked discourse starters  
rest on specific desires of B  
previous request does not make  
promise redundant

(11) a. A: *I order you to read this book.* — B: *I promise to read it.*  
b. A: *I will read this book.* — B: *#I order you to read it.*

ORDER: incoherent when plan is already approved.

PROMISE: felicitous uptake of request.

It is coherent to claim that *promise* presupposes consent. Is it necessary?  
Is it infelicitous to propose plans that are already accepted?

(12) A: *I will read “war and peace”.* — B: *Yes. Read it! It is cool!*

=> Inquire in the typology of imperatives (see 5.2)

=> Test similar pairs for other directive verbs.

## 5. Further considerations

**5.1 Hypothesis:** Only declarations can establish plans without uptake by interlocutors.

The following speech acts do not allow for negative uptake:

- (13) *Foul!*
- (14) *I order you to pay a fine of 40 Sfr.*
- (15) *I sentence you to 10 years in jail.*
- (16) *I (hereby) quit my job.* (Klaus Mehdorn as BER Manager, 2015)
- (17) *The meeting is hereby opened.*
- (18) *You are fired!*
- (19) *I baptize this ship "Maria".*

Utterance establishes a plan / change in plan / change in situation.

The action taken by A **must be an action alternative in a more general "game" that A and B are part of.**

- *conventional speech acts*
- *speech acts that require institutional anchoring*
- *speech acts that are culture dependent, depend on time*

If S denotes an action alternative  $q$  for A in a more general "game", then  $q$  is immediately established in PLAN.

Interlocutor B can not disagree to  $q$  but B can challenge the fact that A has permission to do  $q$ .

(It was discussed whether Mehdorn could actually quit his manager position by standing up in a meeting and utter "*I quit.*" Experts agreed that the step was one of Mehdorn's action alternatives and he was entitled to resign in this manner.)

## 5.2 Typology of imperatives

The table model reflects the typology of imperatives (e.g. Schwager 2007, Kaufmann 2012):

- (20) ORDER:  
*Open the window!*
- (21) PERMISSION:  
*Take a cookie! (Feel free to take a cookie! / Nimm ruhig einen Keks!)*
- (22) WARNING/ADVICE:  
*Drive carefully!*
- (23) WISH:  
*Get well soon! Machs gut! (lit. "do well")*
- (24) INFORMATION:  
*(In order to go to the airport, ...) take the local trains Konstanz - Zurich.*

Different uptake potential:

- (18') ORDER: Ø / *ok!* / *no, I won't*.  
“ok” establishes a plan. Refusal triggers negative reactions by A (force)
- (19') PERMISSION: Ø / *ok (, thanks!) / no (thanks)!*  
“ok” establishes a plan, but sanctions are mild if B fails to comply.  
Refusal likewise less costly than in (18).
- (20') ADVICE: Ø / (*ok!*) / # *no, I won't*.  
“ok” does not establish a plan; B commits to a certain manner of acting.  
Refusal would be irrational (even if B does not plan to follow warning).
- (21') WELL-WISHING: Ø / (*ok*) / #*no, I won't*  
Imperative does not bring a plan on the table. “ok” acknowledges the positive intention of speaker A.
- (22') INFORMATION: Ø / *ok* / #*no, I won't* / *no (that's not a good idea)*  
Imperative conveys information. A aims at update of CG (“how to go to Zurich airport”) rather than at establishing a shared plan.

Different content (Kaufmann 2012) = different uptake potential and table moves → to be studied further.

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# Suggesterrogatives

Itamar Francez  
University of Chicago

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## 1 Introduction

Suggesterrogatives are, very roughly, *why*-interrogatives whose illocutionary force is suggestion.

(1) Why don't you take a left here. (Manfred Krifka's personally communicated NYC memoir)

Studied in the 70s, mainly by Sadock (1974) and Green (1975), who viewed them as a subclass of *whimperatives*.

- (2)
- a. Shouldn't you put that away?
  - b. Could you take out the trash (please)?
  - c. Will you close the fridge (please)?

The surface-hallmark of English suggesterrogatives is the *why not / why don't* form.

- (3)
- A: I'd like to know when the 55th st. post office opens.  
B: **Why don't** you go there now and ask.  
B: **Why not** go there now and ask.

The surface-hallmark of Hebrew suggesterrogatives is the presence of a complementizer after the *wh-* word *lama* 'why' (Francez 2015)

— *why* question:

- (4) **lama lo** yored geSem?  
why neg comes.down rain  
Why isn't it raining?

— *suggesterogative*:

- (5)
- A: I'd like to know when the 55th st. post office opens.  
B: **lama Se-lo** telxi le-Sam axSav ve-tiS'ali  
why that-neg go.fut.2sf to-there now and-ask.2fs  
Why don't you go there now and ask.

More examples from Francez (2015):

- (6) lama Se-lo tagiS et exad ha-sfarim Selxa ke-teza?  
why that-neg submit.fut.2sm acc one the-books yours as-thesis  
Why don't you submit one of your books as a thesis?  
(title of a blog post by journalist Raviv Druker, <http://drucker10.net/?p=306>)
- (7) az im anaxnu kvar kan, az lama-Se lo nexayex ve-niSte eyze te  
so if we already here, then why that-not smile.fut.1pl and-drink.fut1pl which tea.CS  
vradim im nana.  
roses with mint  
So since we're already here, why don't we smile and drink some sort of rose-tea with mint.  
(found in Tal Linzen's Israblog corpus, <http://tallinzen.net>)

WORKSHOP QUESTIONS:

- What is the meaning and force of suggesterrogatives?
- How is their interpretation related to some puzzling features of their form?

## 2 Descriptive generalizations

The most obvious difference between suggesterrogatives and *why*-questions is in their presuppositions and in their main discursive effect:

— *Why*-questions presuppose the truth of a proposition and ask for reasons for its truth.

— suggesterrogatives presuppose the unsettledness of an issue under the addressee's control and suggest a resolution.

- (8) A: Why don't you feed the cats? ( $\partial$ : you don't feed the cats)  
B: Because I'm training them to hunt their food.
- (9) A: Here, why don't you feed the cats. ( $\partial$ : you feed the cats? is unsettled and up to you. )  
B: OK, thanks.

- Some ways to recognize suggesterrogatives in English:
  - Appendability of *here* (Gordon and Lakoff 1975)

(10) a. Here, why don't you take a left at the light.  
b. #Here, why didn't you take a left at the light?
  - Appendability of *please* (Sadock 1974; Gordon and Lakoff 1975)

(11) a. Why don't you take out the trash please  
b. #why didn't you take out the trash please?

– Response with 'ok'

- (12) a. A: Why don't you feed the cats tonight. B: ok  
b. A: Why don't you ever feed the cats? B: #ok

## 2.1 The main puzzles

Suggesterrogatives in English and Hebrew have some peculiar properties that any analysis should explain:

### 1. Restriction to negation.

- (13) A: We have a leak.  
B: Why don't you call my plumber. ( $\equiv$  call my plumber)  
B: #Why (do you) call my plumber. ( $\neq$  don't call my plumber)
- (14) A: we have a leak.  
B: lama Se-lo titkaSer la-Sravrav. ( $\equiv$  call the plumber)  
why that-not call.fut.2ms the-plumber  
Why don't you call the plumber  
B: #lama Se titkaSer la-Sravrav. ( $\neq$  don't call the plumber)  
why that call.fut.2ms the-plumber  
Why call the plumber?

(Interestingly, (14-b) can be used sarcastically to mock A's fecklessness.)

### 2. Failure, despite negation, to license NPIs and concord items:

- (15) a. Please, come in. Here, why don't you eat something / #anything  
b. hine, lama Se-lo toxal maSehu / \*klum.  
here, why that-not eat.2ms.fut something / nothing  
Here, why don't you eat something.
- (16) a. Sam is going to Finland. Why don't you go there too / \*either.  
b. Why doesn't Sam know where Finland is? And why don't you know it either / \*too.

### 3. Obligatory contraction in English:

- (17) \*Why do you not have some cookies.

### 4. Restriction to controlable eventualities

- (18) a. Why don't you look like your mother? (question only)  
b. Why don't you know Amharic? (question only)

### 5. Tense restrictions

- (19) Here, why don't you eat something. (= )  
a. #Here, why aren't you eating something. ( $\neq$  eat something!)  
COMPARE: Aren't you eating anything?

- b. #Here, why won't you eat something. ( $\neq$  eat something!)  
 COMPARE: Won't you eat something?

In Hebrew, suggesterrogatives are always in the future tense.

### 3 A simple, attractive analysis

Suggesterrogatives are rhetorical negative *why*-questions.

We know there are rhetorical *why* questions:

- (20) a. Why do I bother talking to you? (= I shouldn't bother talking to you).  
 b. Why do you do this to yourself. (Rhode 2006) (= you shouldn't do this to yourself)
- (21) Why don't you turn left.

Very roughly:

- The issue of where you should go is relevant.
- Speaker asks for reasons for *you don't turn left*.
- It's either common ground, or speaker is certain, that there are no such reasons ("obvious answer" or "challenging" rhetorical question, following Doron and Wolf 2016, following Krifka 1995; Caponigro and Sprouse 2007)
- Hearer concludes Speaker believes, and hence is communicating, they should turn left.
- NPIs are not licensed because, somehow (!!), the positive force of the utterance blocks them.

IMMEDIATE PROBLEMS:

— The non-interrogative versions of suggesterrogatives have the wrong meaning, they are obligatorily habitual.

- (22) You don't turn left.

(21) does not presuppose that, and ask why, you don't turn left.

— Suggesterrogatives clearly don't involve subject-aux inversion like *wh*- questions.

- (23) a. Why don't you be there on time (next time).  
 b. \*You don't be there on time (next time).

- (24) a. Why don't everybody be quiet.  
 b. \*Everybody don't be quiet.

So, suggesterrogatives are clearly not negative *why* questions, semantically or structurally.

## POSSIBLE WAY OUT: SUBJUNCTIVE

English has a “subjunctive” form that occurs in some embedded contexts.

- (25) a. I suggest [you don't go there].  
b. I suggest [you not go there].  
c. I request that [you not / don't go there].

Note: not all speakers accept *don't* in (25-a) and (25-c).

Perhaps English suggesterrogatives are special *why* questions formed out of a subjunctive clause. But:

- Subjunctives cannot be matrix clauses.
- There are suggesterrogatives that do not have a grammatical subjunctive counterpart.

- (26) a. Why don't I be there early.  
b. \*She suggested that I don't be there early.

MY CONCLUSION: Suggesterrogatives in English are not *why* questions inquiring reasons for a negative proposition. In other words, not:  
why: [ ... neg...]

This is a good conclusion, because it alleviates the need to figure how to account for:

- the restriction to negation
- the failure to license NPIs and concord items.

## 4 Another simple analysis that doesn't work

Suggesterrogatives are *why* questions formed from imperatives.

- (27) a. Why don't you turn left here.  
b. Why: [ don't you turn left here!]

This is not really an option at all. Neither English nor Hebrew suggesterrogatives involve an imperative. In Hebrew, this is transparent from the morphology. (See also discussion in Green 1975)

- (28) a. Why don't you shut the fuck up already.  
b. #Don't you shut the fuck up already!

- (29) a. Why don't you eat something.  
b. \*Don't you eat something!

- (30) a. Why don't I drive.  
b. \*Don't I drive!

- (31) \*lama Se-lo Sev.  
 why that-not sit.imp  
 Intended: why don't you sit down.

## 5 Suggesterrogatives are short-circuited *why not* interrogatives

Suggesterrogatives are formed from *why not* questions, inquiring reasons against a suggestion, expressed by a subjunctive.

- (32) Why-not [you turn left]

English Suggesterrogatives consist of:

- A subjunctive clause that
  - Presupposes an unsettled issue.
  - Denotes the proposition that the speaker prefers a particular resolution.
- *why*
- negation: *not* if there subjunctive has no subject, *don't* if it does. (why??)

The meaning of subjunctive is the same as that of imperative.

- English subjunctive: non-matrix form that expresses speaker commitment to an effective preference for a particular resolution of a presupposed unsettled issue.

$$(33) \llbracket \text{you turn left at the light} \rrbracket = PEP_{sp}(\text{Ad turn left at the light})$$

(I leave it open whether a subjunctive operator, similar to Condoravdi and Lauer's Condoravdi and Lauer (In Press) IMP is involved.)

- *why+not*, *why-*, inquires about reasons against a proposition.

$$(34) \llbracket \text{why-}, S_{subj} \rrbracket = \lambda p.p = \exists x[x \text{ is a reason against } S] \text{ (following Doron and Wolf 2016).}$$

$$(35) \llbracket \text{why don't you turn left} \rrbracket = \lambda p.\exists x[p = x \text{ is a reason against } PEP_{sp}(\text{Ad turn left at the light})]$$

a. What reasons are there against the suggestion that you turn left?

- So, the literal meaning of a why-not-subjunctive sentence is a question asking for reasons against the speaker publicly committing to preferring a particular resolution of an unresolved issue.

IMMEDIATE EXPLANATION OF:

- The failure of NPI licensing: there is no licenser in the clausal complement of *why not*.
- The tense restrictions: tensed sentences cannot express speaker's public commitment to effective preferences.
- Obligatory contraction: negation does not "originate" in the main clause.

What about the restriction to negation?

- The sentences might be candidates for positive suggesterrogatives:

- (36) a. Why be a doctor?  
b. Why drink and drive if you can smoke and fly?  
c. Why leave?

- But they cannot really convey suggestions or be responded to as suggestions:

- (37) a. Why be a doctor? #ok.  
b. #Please, why leave! (cf. Please, why don't you stay!)

I don't know why suggesterrogatives can be formed from *why not* but not from *why* questions.

## 5.1 Force

Suggesterrogatives have the force of imperatives. They can be used to make commands, give advice, etc. (though they cannot form wishes.)

- (38) a. Why don't you shut the fuck up / get the hell out of here / do what I tell you! (Command)  
b. Why don't you use some more olive oil. (Advice)

If their literal meaning is a question, how do they get their force?

INDIRECT SPEECH ACTS?

Idea: suggesterrogatives are questions that indirectly convey suggestions.

- (39) Could you pass the salt?

But what are indirect speech acts?

**option 1: conversational implicatures** (a la Searle (1975); Gordon and Lakoff (1975))

- (40) Why don't you eat something.  
a. Semantically, a question asking for reasons for something.  
b. MANNER implicature: you should eat something.

— As Sadock (1972) points out according to Horn and Bayer (1984) (as does Green 1975) such alleged implicatures, unlike normal conversational implicatures, are detachable.

- (41) a. #Is it possible for you to pass the salt?  
b. #Here, what are reasons against the suggestion that you eat something?

**option 2: conventions of usage** (a la Morgan (1977))

conventions that are, strictly speaking, not conventions *of* the language, but conventions *about* the language, properly considered conventions of the culture that uses the language.

On this view, there is a convention about English that says that you can make suggestions by using Suggesterrogatives, which have the meaning of questions.

- (42) **convention of usage for suggesterrogatives:** you can make a suggestion by inquiring for reasons against it.

But the impositive force of suggesterrogatives seems to be part of their conventional meaning:

— They can occur in anankastic conditionals, unlike indirect suggestions.

- (43) a. If you want to go the Harlem, why don't you take the A train.  
b. #If you want to go the Harlem, can/could you take the A train.  
c. #If you want to go the Harlem, would you like to take the A train.

(same in Hebrew)

— They can't be literally interpreted as a question, even a rhetorical one (Green (1975))

- (44) a. Why don't you be a doctor.  
b. Why don't you get the hell off my property!  
c. Why don't I take that upstairs for you.

— They are not compatible with question-forcing material:

- (45) a. #Why on earth don't you be there 10 minutes early.  
b. #Why, tell me, don't you be there 10 minutes early.  
c. #Why in the world don't you be a little more careful next time.

So, it looks like the force of suggesterrogatives is not a convention *about* language, but a convention *of* language.

ALTERNATIVE: SHORT CIRCUITED IMPLICATURE

Morgan (1977) suggests the notion of short-circuited implicature.

... where the implicature... is in principle *calculable*, but is not actually calculated.

— Essentially, this is a grammaticalization / conventionalization story.

— What was once an implicature has become a convention of *use*, determining the *sentential force* of suggesterrogatives.



I follow Condoravdi and Lauer in modeling suggestions in terms of speaker commitments.

- (46) **Suggestions:** Self-verifying assertions of Speaker preference for an action.
- a. Doxastic commitment: Speaker publicly commits to behave as if she believes the proposition that she prefers  $p$ .
  - b. Preferential commitment: Publicly commits the speaker to a preference for  $p$  (by virtue of Speaker having publicly behaved as if she prefers  $p$ ).

(47)  $\llbracket \text{Why don't you turn left} \rrbracket = \lambda p. \exists x [p = x \text{ is a reason against } EP_{sp}(\text{Ad turn left})]$

The short-circuited implicature:

- Since Speaker is inquiring about reasons against the proposition that she is committed to *Ad turn left*, she must have no such reasons.
- By communicating that she has no reasons against it, she is committing to it, and hence she commits to preferring *Ad turn left*.

The contextual effect of a suggesterrogative is thus conventionally implicative.

- The component of inquiry about reasons is still accessible.
- When there are reasons available to Addressee but not to Speaker, a possible response is to state them.

- (48) A: Why don't you be a doctor.  
 B: Because doctors work hard. No thanks.  
 B: #I don't be a doctor because doctors work hard.

## 6 What about Hebrew?

The analysis of suggesterrogatives I proposed for English is the one I first proposed for Hebrew in Francez (2015).

- *Se*-clauses serve as something like subjunctives in Hebrew (borrowed from Judeo-Spanish, Schwarzwald and Shlomo 2015).

- (49) a. Se-tamut amen ba-kever ha-Saxor Sel hitler.  
 that-die.fut.2ms Amen in.the-grave the-black of Hitler  
 May you die in Hitler's black grave, Amen!
- b. Se-tiye lexa nesia tova!  
 that-be.fut.3fs to.you journey good.f  
 Have a good trip!

- So the analysis works the same, and explains the inability to license concord items.

But in Hebrew, negation really seems to be, syntactically, within the *that*-clause:

- (50) lama Se-lo teSev.  
 why that-not sit.fut.2ms  
 Why don't you sit.

Are there other ways to show that negation in Hebrew is really external to the *that*-clause?

— In Hebrew, negation can only have surface scope relative to subject quantifiers.

- (51) a. **kol** exad **lo** hicliax.  
 every one neg succeeded  
 Everybody didn't succeed. ( $\forall > \neg$ )  
 b. **lo kol** exad hicliax.  
 not every one succeeded  
 Not everybody succeeded  $\neg < \forall$

— But, in suggesterrogatives, negation in either position is interpreted higher than in either surface positions.

- (52) a. yalla, lama Se-**lo kol** exad yaavod levad.  
 yalla, why that-neg every one work.fut.3s one  
 Alright, how about everybody work alone.  
 b. yalla, lama Se-**kol** exad **lo** yaavod levad.  
 yalla, why that-every one neg work.fut.3s in-self  
 Alright, how about everybody work alone.

— In fact, in these cases negation can even appear outside the clause on the surface

- (53) lama **lo** Se-**kol** exad yaavod levad.  
 why not that-every one work.fut.3ms alone  
 How about everybody work alone.

## 7 Conclusions

- Suggesterrogatives in both Hebrew and English are *why not [S]* interrogatives, not *why [not S]* interrogatives. That is why they fail to license NPIs and concord items.
- They are formed with a subjunctive or subjunctive-like core.
- They are not indirect speech acts, their impositive force is conventional.
- While *why don't you q* denotes a question, the question is not about reasons against *q*, but about reasons against the speaker preferring *q*.
- Their impositive force arises as a contextual effect of updating with the questions they denote.

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## Suggesterrogatives

Itamar Francez

University of Chicago

As has been well known but by and large forgotten since the 1970s, negative *why* interrogatives of a particular form have a variety of illocutionary forces (most typically that of suggestion) rather than that of questions:

- (1) Why don't you be a man about it, and set me free. (Kim Wilde)

I name such sentences “suggesterrogatives”, alluding to Sadock’s (1970) “whimperatives”. While English suggesterrogatives have been subject to significant investigation in the 70s by e.g. Sadock (1974) and Green (1975), they have not received an explicit analysis, have not been examined cross linguistically, and remain poorly understood

In Modern Hebrew, suggesterrogatives are distinguished formally from *why* questions by, inter alia, the presence of a complementizer after the *wh*- word.

- (2) a. *lama lo teSev?*  
why neg sit.fut.2msg  
Why won't you sit?  
b. *lama Se-lo teSev.*  
why that-neg sit.fut.2msg  
Why don't you sit.

I propose to workshop a preliminary analysis of suggesterrogatives that aspires to be cross linguistically applicable and to capture some new and old generalizations about how their force relates to their meaning and form. Specifically, I propose that suggesterrogatives, despite their surface form, are rhetorical *why-not* (as opposed to *why*) questions which, through a convention of usage, commit the speaker to the endorsement of a future action.

Suggesterrogatives are subject to several descriptive generalizations that distinguish them from regular *why* questions and which any analysis of them should ideally capture.

1. While *why*-questions presuppose a settled issue, suggesterrogatives presuppose an unsettled one. For example, (2a) presupposes that you won't sit (and asks why), whereas (2b) presupposes that whether or not you sit is unsettled (and suggests a preferred resolution).

2. Suggesterrogatives, unlike *why*-questions, require negation (similar facts hold in Hebrew):

- (3) a. Why don't you have a seat. (= please sit)  
b. #Why do you have a seat. (≠ please don't sit)

3. Suggesterrogatives are restricted in tense (to the simple preset in English, to the future in Hebrew):

- (4) a. Why don't you go home (please).  
b. Why didn't you go home (\*please).  
c. Why won't you go home (#please)  
d. Why aren't you going home (#please)

4. Suggesterrogatives, despite containing negation, fail to license polarity and concord items, as

demonstrated for polarity items by the contrast in (5), and for concord items by Hebrew data given in the full paper.

- (5) a. Why don't you eat anything? (Question)  
b. Why don't you eat something? (Suggestion)

The descriptive generalizations about Hebrew and English are discussed more fully in the talk.

I propose to analyze suggesterrogatives as a special case of *why not* interrogatives, i.e. interrogatives that ask for reasons against resolving an issue in a certain way. Structurally, my main claim is that suggesterrogatives, in both English and Hebrew, contain a negation that does not originate in the sentential core of the *wh*- question. For example, contrary to appearances and unlike *wh*-questions, English suggesterrogatives do not involve subject-aux inversion. Unlike (5a), (5b) is not a *why* question derived by *wh*- movement from a sentential core containing a negated auxiliary.

That the contracted auxiliary *don't* is not part of the sentential core of a *why* question is made clear from the existence of suggesterrogatives that have no declarative counterpart, as well as by the fact that contraction is obligatory (6).

- (6) a. (If you want to be safe,) why don't you be there first thing in the morning.  
b. \*You don't be there first thing in the morning.  
c. Why do you not eat anything?  
d. \*Why do you not eat something.

Semantically, the proposal is that suggesterrogatives consist of two parts:

- A **suggesterrogator**, like *why not* or *why don't*
- A **prejacent** sentence radical or VP in the base form expressing an eventuality description.

The suggesterrogator presupposes (a) an unsettled binary issue  $p?$ , of which the prejacent is a resolution. Combined with the prejacent, it forms a rhetorical question (Han 1997) expressing the proposition that there exists no reason against the resolution expressed by the prejacent. The overall force of a suggesterrogative is impositive, which I propose to analyze along the lines of Condoravdi and Lauer's (2012) analysis of imperatives and anankastic conditionals (2016), as a self-verifying assertion that speaker has an action-relevant preference (for the resolution of  $p?$  expressed by the prejacent. That the force of suggesterrogatives has to do with action relevant preferences can be seen in their ability to occur as consequents of anankastic conditionals (cf. *if you want to eat why don't you pull over here.*), as well as in the infelicity of suggesterrogatives in which the prejacent description describes uncontrollable eventualities ( $\neq$  *why don't you resemble your mother, please.*). I suggest that suggesterrogatives, whose literal meaning is a rhetorical question, assume this force through a convention of use.

The assumption that negation is not part of the sentential core of suggesterrogatives, but is rather generated as part of the suggesterrogator, immediately explains their failure to license polarity and concord items, as well as the restriction to negation. The presupposition of unsettledness explains the tense restriction to tenses expressing future reference.

In the talk, I compare this line of analysis to an obvious alternative, in which negation is where it seems to be on the surface, and the force of suggesterrogatives is derived pragmatically from a rhetorical *why* question with a negative sentential core, discuss how each analysis might explain the relation between the interpretation of suggesterrogatives and their form across languages.

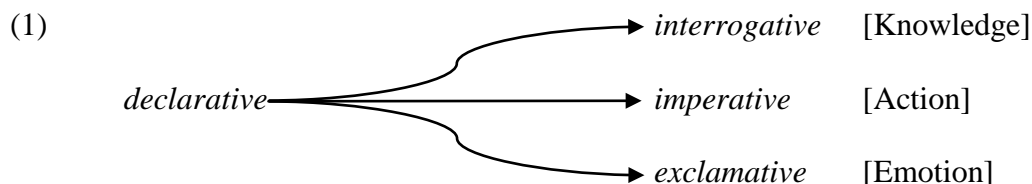
## Relating Inventories of Sentence Types and Speech Acts: A Look at Cognitive Approaches

Hans-Martin Gärtner (RIL-HAS Budapest) & Markus Steinbach (U Göttingen)

**[Intro].** We analyze approaches to accounting for the inventory of natural language sentence types (STs) as established in research on typology and formal morphosyntax in terms of inventories of illocution types (ITs). On the form side we take Sadock & Zwicky (1985) to be essentially correct in identifying three *bone fide* major STs (*declaratives*, *interrogatives*, *imperatives*). All others (*exclamatives*, *optatives* etc.) count as minor (perhaps ranked according to frequency of occurrence). On the function side, we assume familiarity with the controversies around the proposals by Searle (1976) and Zaefferer (2001). Searle's direction-of-fit-based approach links the major STs to "unidirectional" values (*dec* > word-to-world; *int*, *imp* > world-to-word). Its well-known main weaknesses concern *interrogatives*: Neither are they properly separated from *imperatives*, nor is their close affinity to *declaratives* captured. Also, Searle predicts a prominent minor ST counterpart of the COMMISSIVE IT in spite of such STs being unattested (but see Pak, Portner and Zanuttini 2008). In Zaefferer's attitude-based illocutionary semantics, the major STs correspond to (telic) volitional ITs (ASSERTIVE, EROTETIC, DIRECTIVE) (as opposed to the atelic EXPRESSIVES) (cf. Zaefferer 2007). *Declaratives* and *interrogatives* are taken to form a "natural" subclass of [+epistemic] information-oriented types (as opposed to [–epistemic] action-oriented types corresponding to *imperatives*). One shortcoming of this approach lies in its strong (perlocution-enriched) analysis of assertion as *WANT(S, BELIEVE(H,p))*, which has been shown to lead to contradictions (Searle 2001) and whose repairs (Zaefferer 2006) threaten to abandon the *dec/int*-distinction (Gärtner 2012).

**[Aims].** In this talk, we critically assess cognitive approaches to the ST-IT-nexus, with part [A] focusing on conceptualizations of the problem and part [B] scrutinizing experimental approaches. Part [C] provides an outlook. Our overall aim is to inspire discussion, as we believe defending any particularly strong fixed view on the subject matter would be premature.

**[A].** Although appeal to cognition was made, e.g., by Bach & Harnish (1984) in seeking to defend the "psychological reality" of their "Speech Act Schema," and by Sperber & Wilson (1986), whose inference-based critique of simplistic approaches to sentence moods was framed within a theory of "Communication and Cognition," it was Croft (1994) who made the first – and, to our knowledge only (substantial) – explicit cognition-based proposal for the ST-IT-nexus. Croft's idea is to seek explanatory grounding via "the common-sense model of belief-desire-intention psychology" (p.475) (for BDI-logics, see Rao & Georgeff 1998) for the schema in (1) (p.470):



However, a closer look at the underlying model by Wellman (1990) reveals several mismatches. First, Wellman's analysis of "belief-desire reasoning" focuses on caused action, which, in "subjectivist" psychology, means action by the attitude holder. Thus, in place of other-directed *imperatives*, Croft would incorrectly predict (something like) *optatives* (or singular *exhortatives*) to constitute a major type (cf. appeal to "mind-to-world" direction of fit in the analysis of *optatives* by Searle and Vanderveken 1985:95). Second, "[t]he emotions expressed by expressive sentences tend to be evaluative rather than the emotion of desire focused on by belief-desire-intention psychology" (Croft 1994:473). Thus, the category of

counter-expectation ("surprise"), most adequate for *exclamatives*, is situated elsewhere in Wellman's model, the closest counterpart for (volitional) desire once again being *optatives*.

From a linguistic perspective, granting default status to *declaratives* – although it fits well with their descriptive primacy as evidenced by performatives (cf. Lewis 1970: VIII) (cf. Panther and Köpcke 2008 on their "prototypicality") – creates a symmetry among the three remaining types that isn't warranted. Again, structural affinities of *dec/int*, e.g. concerning choice of markers of negation, are neglected and similar affinities are incorrectly predicted for *dec/imp*. Likewise, the often observed status of *exclamatives* as "derivative" of *int* or *dec* (cf. e.g., Rosengren 1994) isn't properly reflected.

As for predicting minor types, Croft (1994:470) suggests that these can be found as intermediate categories along the three dimensions in (1) conceived of as "continua." In addition to an unsubstantiated claim about genuine continuity vs. discreteness, this raises two concerns: first, hybrid STs should not occur across dimensions, which is incorrect. *Wh-exclamatives* involving subject-auxiliary inversion (*How cool is that!?*) mix *int/exc* properties (Auer 2016). Second, specializations of *declaratives* are predicted to be found only along the three dimension, i.e., as initial steps toward *int*, *imp*, or *exc*. However, (reportive) *presentationals*, as can be found in Quechua (Faller 2002), arguably remain "neutral" in that respect.

**[B].** A closer look at the more recent experimental literature shows that there tends to be a significant gap between what results have been gotten so far and what one would like to know to make explanatory progress on the ST-IT-nexus by appeal to cognition. Most relevantly, Egorova, Pulvermüller & Shtyrov (2014; 2013; 2016) provide ERP-, MEG-, and fMRI-based evidence for distinct neural signatures of the basic directions of fit. To bring such evidence to bear on deciding between Searle, Zaefferer, and Croft, in addition to testing *imp*-triggered DIRECTIVES and *dec*-triggered ASSERTIVES, a study of *interrogatives*/EROTETICS would (have) be(en) needed. Evidence for the "double complexity" of COMMISSIVES is arguably provided by self-paced reading and ERP-studies (Gísladóttir 2015), where pre-offers and rejections differ from answers in early processing, due to indirectness, and pre-offers differ from the other two in late processing, due to an additional forward-looking component. Together with the acquisition results by Bernicot & Laval (2004) – late acquisition of preparatory and sincerity conditions for promises –, this would confirm skepticism wrt treating COMMISSIVES as a primary IT category. Of course, an ST-independent study and/or a study of Korean *promissives* (Pak, Portner and Zanuttini 2008) would be needed to clarify this further.

**[C]. Outlook.** Three kinds of caveats need to be made. First, taking into account the social nature of speech acts must serve as a corrective to overly "subjectivist" conceptions of cognition. On the conceptual side, the analysis of the ASSERTIVE-EROTETIC "function space" by Levinson (2012), which a.o.t. builds in interpersonal "politeness"-related notions, may be taken as exemplary here. However, at this stage we lack further insight into (constraints on) the topology of such function spaces. Also, adopting an evolutionary game-theoretic perspective here (Franke 2012) may be called for in accounting for the establishment and long term stabilities of ST- and IT-inventories. Second, further exploration of the distinction between basic and evaluative "emotions" (mentioned in [B]) requires dealing with sub-sentential form types and thus a more elaborate model of ST-inventories (cf. the distinction between "structured" and "holistic" types by Zaefferer 2007). Third, "deflationary" or "minimalist" approaches to illocutionary categories and their link to STs (e.g., Portner 2004; Wilson and Sperber 1988) are a useful backdrop against which to assess cognitive approaches. In particular, studies on language acquisition and autism spectrum disorder presented by Kissine (2013: Chapter 5) to argue for diminished roles of inference and intention recognition are important here.

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# Commitments, speech acts, and common ground

Bart Geurts

Despite the fact that there are lots of pragmatic theories in which commitments play a more or less prominent role (e.g., Asher and Lascarides 2008, Lauer 2013, Krifka 2014), I believe there is room for another one. Unlike most accounts that I'm aware of, mine treats commitment not as a property of, but as a relation between, agents. I propose to view commitment as a three-place relation  $C$  between two agents  $a$  and  $b$  and a propositional content  $\varphi$ , and to read  $C_{a,b}(\varphi)$  as “ $a$  is committed to  $b$  to act in accordance with  $\varphi$ .”  $C_{a,b}(\varphi)$  entails neither that  $\varphi$  is true nor that  $a$  or  $b$  believe  $\varphi$  to be true. Commitment is a normative notion: if  $C_{a,b}(\varphi)$ , then  $a$  must act in accordance with  $\varphi$ , and  $b$  is entitled to act in accordance with the premiss that  $a$  will act in accordance with  $\varphi$ .

Commitments enable agents to coordinate their actions; that's what they are for. In the paradigm cases, coordination is required to attain a common goal, but the notion of coordination as such does not presuppose a common goal. If Fred tells Wilma that he will do the dishes, his promise to her enables them to coordinate their actions: Fred is now committed to do the dishes, and by the same token, Wilma is now entitled to plan her activities on the assumption that Fred will do the dishes. But none of this implies that doing the dishes was a common goal when Fred made his promise, nor need it become a common goal as a result of Fred making his promise.

If  $C_{a,b}(\varphi)$  and it is  $a$ 's goal that  $\varphi$  be true, then  $a$ 's commitment is telic; otherwise it is doxastic (cf., e.g., Walton and Krabbe 1995). Assertions engender doxastic commitments; most other speech acts engender telic commitments. The distinction is an important one, but it bears emphasising that, whether telic or doxastic, commitments always act as self-imposed constraints on our future activities, which enable others to coordinate their actions with ours.

My working hypothesis is that every speech act engenders a commitment  $C_{a,b}(\varphi)$ , where  $a$  is the speaker and  $b$  is the addressee. Commissives engender telic commitments that require the *speaker* to make  $\varphi$  true; directives engender telic commitments that require the *addressee* to make  $\varphi$  true. For example, if Wilma asks Fred to do the dishes, she thereby becomes committed to the goal that Fred do the dishes. As usual, questions may be analysed as directives. If Betty asks Barney, “Are you gay?”, for example, she thereby becomes committed to the goal that Barney commit himself either to being gay or to not being gay.

Assertions, too, give rise to commitments of the form  $C_{a,b}(\varphi)$ , but in this case none of the constraints that characterise commissives and directives need apply. Suppose Wilma tells Fred: “I'm pregnant.” Then  $\varphi$  is a possible state of affairs in the present, but nonetheless Wilma's speech act constrains her *future* actions: she is now committed to act in accordance with the premiss that she is pregnant, and Fred is now entitled to do the same.

If  $a$  makes a speech act that engenders the commitment  $C_{a,b}(\varphi)$ , then *ceteris paribus*  $b$  will share  $a$ 's commitment:  $C_{b,a}(\varphi)$ . In many cases, sharing will be signalled (“Sure”, “Right”, ...), but it also may be merely implied or taken for granted. Note that, if  $C_{a,b}(\varphi)$  is telic,  $C_{b,a}(\varphi)$  need not be telic. If Fred promises Wilma to do the dishes, for example, and she agrees to share his commitment, then in the first instance this just means that she commits herself to act in accordance with the premiss that Fred will do the dishes.

Whereas commitment sharing is optional, a commitment must be acknowledged for it to be a commitment:

*Acknowledgment:*  $C_{a,b}(\varphi) \models C_{b,a}(C_{a,b}(\varphi))$

If an utterance is ignored or rejected, or goes unheard, then it fails to engender a commitment. In many cases, acknowledgments will be signalled (“Hmm”, “Okay”, ...), but they also may be merely implied or taken for granted. Assuming that acknowledgment is a prerequisite for commitment, shared commitment entails joint commitment (and vice versa):

*Joint commitment:*  $C_{a,b}(\varphi)$  and  $C_{b,a}(\varphi)$  and  $C_{a,b}(C_{b,a}(\varphi))$  and  $C_{b,a}(C_{a,b}(\varphi))$  and ...

Joint commitment is closely related to common (or mutual) belief, but it is not the same. In particular, unlike common belief, joint commitment doesn't entail belief for either party (though belief may be an implicature, as we will presently see), and it is more general than common belief, since the notion of commitment encompasses doxastic as well as telic attitudes.

Thus far, we have ignored the possibility that  $C_{a,b}(\varphi)$  while  $a = b$ . However, there is nothing in the foregoing discussion to rule out that possibility. Let's say that  $C_{a,b}(\varphi)$  is a private commitment iff  $a = b$ , and that  $C_{a,b}(\varphi)$  is a social commitment if  $a \neq b$ . Private commitments are commitments to oneself, and they serve the same purpose as social commitments, i.e. action coordination. If you commit yourself to yourself to do the dishes, you impose a constraint on your own future actions, viz. that you will do the dishes, which is bound to affect your plans. Private telic commitments are intentions in the sense of Bratman (1987); private doxastic commitments are beliefs (or, at least, belief-like attitudes).

Assuming that acknowledgment is a blanket prerequisite for commitment, it follows that private commitment entails what is known as “positive introspection”, which comes out as a special case of joint commitment:

*Positive introspection:* If  $C_{a,a}(\varphi)$ , then  $C_{a,a}(C_{a,a}(\varphi))$  and  $C_{a,a}(C_{a,a}(C_{a,a}(\varphi)))$  and ...

Private commitments play the key role in my analysis of self talk (Geurts 2016). If Fred tells himself, “I'll do the dishes now”, for example, he thereby becomes committed to himself to doing the dishes, or in other words, he thereby forms the intention to do the dishes. And private commitments are useful in other ways as well. For example, they enable us to generalise Grice's Quality maxim along the following lines:

*Generalised Quality:* Don't make a commitment to another unless you make the same commitment to yourself. More succinctly: if  $C_{a,b}(\varphi)$ , then  $C_{a,a}(\varphi)$ .

This predicts, for example, that Fred's promise to do the dishes may implicate that he intends to do the dishes; that Betty's assertion that Napoleon was gay may implicate that she believes that Napoleon was gay; and so on.

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## Gradable Assertion Speech Acts

Questioning Speech Acts Workshop, 14/9/2017, Konstanz

Yael Greenberg, Bar Ilan University, [yaelgree@gmail.com](mailto:yaelgree@gmail.com) &

Lavi Wolf, Ben Gurion University of the Negev, [wolf.lavi@gmail.com](mailto:wolf.lavi@gmail.com)

### 0. Introduction:

- In this talk we are building on two existing ideas in the literature:
  - **The first idea is that, similarly to adjectives (*tall / clean*), (some) epistemic modal expressions (e.g. modal adjectives) are gradable:**
    - Specifically, that they do not denote quantification over possible worlds (Kratzer 1981, 1991, and many others)
    - **But rather relations between propositions and degrees of probability / belief / credence** (cf. Yalcin 2007, 2010; Swanson 2006; Lassiter 2010, 2014, 2016, Rubinstein & Herburger 2014, 2017 on German *eh*)
- Motivation (among other things): The ability of such expressions to appear in degree-based constructions, e.g.

(1) *It is more likely/probable/certain that Jorge will win the race than it is that Sue will win.*

(2) *It is very possible / likely / probable / certain is it that Jorge will win the race*

(3) *How possible / likely / probable / certain is it that Jorge will win the race?*

- Lassiter 2015, for example, gives the following analysis of *likely*, and *more likely*:

(4) a.  $[[ \textit{likely} ]] = \lambda p_{\langle s,t \rangle} . \mu_{prob}(p)$

b.  $[[ \textit{\varphi is more likely than \psi} ]] = 1 \textit{ iff } \mu_{prob}(\varphi) > \mu_{prob}(\psi)$

- Notice: We do not take a stand here in the debates about whether this is really the right analysis of modal adjectives (cf. Klecha 2012, Herburger & Rubinstein 2014, 2017)
  - Rather – we rely on the basic notion of graded epistemic modality.

### ➤ **The second idea is that speech acts (can) participate in the compositional interpretation**

- E.g. they can be negated, conjoined, embedded, modified by various operators etc.
  - (cf. Krifka 2014, 2015, 2017, Cohen & Krifka 2014, Thomas 2014, Crnič & Trinh 2009, Beck 2016, Suareland & Yatsushiro 2012).
  - Here we focus on assertions and on the speech act operator *ASSERT*.

- These two ideas have usually not been related to each other, and were usually discussed in different areas of literature.

**Our basic proposal is to integrate these two ideas, and move them one step forward, so that**

- **Assertion speech acts are modeled as gradable,**
- **and are compositionally modifiable by (overt and covert) degree modifiers.**

### **Roadmap:**

**Section 1:** Initial motivation for our proposal: Existing observations about Modal Adverbs, and Wolf's 2015 idea:

- MADVs are illocutionary modifiers of assertion speech acts, which lower / raise degrees of subjective probability (credence) of the content of the asserted proposition.

**Section 2:** The current proposal: making these ideas more compositional, by taking assertions and MADVs to parallel degree-based constructions at the propositional level.

- Specifically, we propose to make 3 moves:
  - **First move:** adding a credence degree argument to the denotation of *ASSERT* (so its entry is similar to that of gradable predicates like *tall / clean*)
  - **Second move:** Analyzing MADVs as degree modifiers over gradable SAs
  - **Third move:** Taking apparently unmodified assertions to be modified by a covert *POS*.

**Section 3:** Exemplifying our proposal with a sample entry of *ASSERT* (along the lines of Krifka 2014), and pointing out some empirical predictions and advantages

- **Advantages of the second move:** pointing out similar constraints on MADVs and on degree modifiers at the propositional level (e.g. *completely*)
- **Advantages of the third move:** Pointing out similarities in the behavior of apparently unmodified assertions and Upper-closed adjectives in the 'positive form' (*The room is pos clean*)

**Section 4:** Summary, open questions, and directions for further research

**Section 1: Initial motivation for our proposal: Existing observations and ideas about Modal Adverbs as illocutionary modifiers of speech acts**

- The literature on gradable Modal Adjectives (MADJs, like *possible / probable*) does not distinguish between them and Modal Adverbs (MADVs, like *possibly / probably*)
  - (inter alia Hamblin 1959, Jackendoff, 1972; Jacobson, 1978; Kratzer, 1981; Perkins, 1983, Yalcin 2010, Lassiter 2010).

- However, there are important differences between MADJs and MADVs:

➤ **First difference: MADVs, unlike MADJs, have a strong speaker oriented quality** (cf. Jackendoff 1972):

(5) A: *It is probable that they have run out of fuel.*

B: *Whose opinion is this?*

(6) A: *They have probably run out of fuel.*

B: *#Whose opinion is this?* (Nuyts, 2001)

- **Second difference: Similarly to other speech act modifiers, MADJs, but not MADVs can be embedded in conditional antecedents** (inter alia Pinon 2006, Wolf 2015):

(7) a. *If it's possible/probable that John arrived at the office early, I will call the office*

b. *#/ ??If John possibly/probably arrived at the office early, I will call the office.*

➤ **Notice: MADVs (like MADJs) CAN be embedded in conditional consequents:**

(8) a. *If John is in the office, it is possible / probable that he arrived there early*

b. *If John is in the office, he possibly / probably arrived there early.*

- This observation is supported by data from the Corpus of Contemporary American English (COCA) (Davies, 2008):

(9) *If it is/it's possible (243 hits)* vs. *If it is/it's/he is/he's/she is/she's possibly (0 hits)*

(10) *If possible (1725 hits)* vs. *If possibly (14 hits; 12 non-conditional if e.g. as whether)*

- **A question: What do these observations show?**
- **Wolf's 2015 answer** (following ideas in Piñón 2006 and Wolf & Cohen 2009):
  - **MADVs are illocutionary modifiers that change (lower / raise) the speaker's credence regarding the propositional content she asserts.**
    - (In contrast: MADJs are propositional degree operators, involving non-Bayesian probability
      - Notice – this is a claim we put aside for now
      - We will now concentrate on MADVs )
- **Specifically, three claims in Wolf 2015 are relevant here :**
  - First, ASSERT involves a credence degree:

(11) Assertion of  $\varphi$ :  $A_x P(\varphi) = v$  .

- In prose, the speaker  $x$  performs an assertion  $A$ , thereby asserting propositional content  $\varphi$  with a degree of credence  $v$ .

- Second, MADVs combine with ASSERT and change the credence degree

(12) a. *John is possibly in the office* -  $A_x P(\text{John is in the office}) > 0$

b. *John is probably in the office* -  $A_x P(\text{John is in the office}) > 0.5$

- In prose The speaker  $x$  asserts the propositional content 'John is in the office ' with a degree of credence greater than 0 ( with *possibly*) / greater than 0.5 (with *probably*)

- Third, the default credence degree the speaker has towards the propositional content is  $\geq$ high.

(13) *John is in the office* -  $A_x P(\text{John is in the office}) \geq \text{high}$

In prose: The speaker  $x$  asserts the propositional content 'John is in the office ' with a degree of credence which is at least as 'high'

## **Section 2: The current proposal:**

- We follow Wolf's 2015 ideas but suggest to make them more compositional by taking assertions and MADVs to parallel degree-based constructions - specifically gradable predicates and degree modifiers - at the propositional level.
  - **Notice that in this paper we are NOT committed toward any specific view about assertions, but we suggest a general recipe:**

**Our ‘general recipe’:** Take your favorite entry for *ASSERT* (from the compositional literature on speech acts) and make the following 3 moves:

- **First move:** Supplement this entry for *ASSERT* with a credence degree argument,
- **Second move:** Take MADVs to function as overt degree modifiers over *ASSERT*
- **Third move:** Take apparently unmodified assertions to be modified by a covert *POS*

### **Section 3: Illustrations and advantages**

- To illustrate our proposal we will take as our basis a dynamic, Krifka 2014 style entry for *ASSERT* (simplified as in Thomas (2014), Becks (2016)):

(14)  $[[ASSERT]]_{\langle\langle s,t \rangle, \langle c,c \rangle\rangle} = \lambda p. \lambda c. \iota c': c' = \langle c_{sp(aker)}, c_{h(earer)}, c_t, C_{ow} \cap \{w: assert(p)(c)\} \rangle$

**In prose:** *ASSERT*, type  $\langle\langle s,t \rangle, \langle c,c \rangle\rangle$ , combines with a proposition  $p$  and a context  $c$  and yields the context  $c'$  (extending  $c$ ) which is just like  $c$  in having the same speaker, hearer and time, but differs from  $c$  in that the CG is updated with the information  $Assert(p)(c)$ .

- Where  $Assert(p)(c)$  holds in  $w$  iff the speaker of  $c$ ,  $c_{sp}$  is committed to behave as though she believes in  $w$  that  $p$  at the time  $c_t$ , and the hearer  $c_h$  is a witness to this commitment.
- We will now proceed by making the three moves we suggested, and pointing out some empirical predictions and advantages:

- **First move:** we add a credence degree argument to the denotation of *ASSERT* in (14), resulting in (15), with *ASSERT* now being type  $\langle\langle s,t \rangle, \langle d, \langle c,c \rangle \rangle\rangle$ :

(15)  $[[ASSERT]]_{\langle\langle s,t \rangle, \langle d, \langle c,c \rangle \rangle\rangle} = \lambda p. \lambda d. \lambda c. \iota c': c' = \langle c_{sp}, c_h, c_t, C_{ow} \cap \{w: Assert(p)(d)(c)\} \rangle$ ,

- **In prose:**  $Assert(p)(d)(c)$  is true iff in  $w$  the speaker,  $c_{sp}$ , is committed to behave as though she believes that  $p$  to a degree  $d$ , at the time  $c_t$ , (and the hearer  $c_h$  is a witness to this commitment)

- **Second move:** we propose that similarly to degree modifiers at the propositional level (e.g. *completely*), MADVs are degree modifiers over gradable SAs:
- So, adopting (15) as the basic gradable entry for *ASSERT* we end up with (16)-(18):

(16)  $[[\text{Probably}]]: \lambda G. \lambda p. \lambda d. \lambda c. \lambda c': c' = \langle c_{sp}, c_h, c_b, C_{ow} \cap \{w: \exists d > 0.5 \wedge G(p)(d)(c)\} \rangle$

$[[\text{Possibly}]]: \lambda G. \lambda p. \lambda d. \lambda c. \lambda c': c' = \langle c_{sp}, c_h, c_b, C_{ow} \cap \{w: \exists d > 0 \wedge G(p)(d)(c)\} \rangle$

(17)(a) *John is probably a thief*                      b.  $[\text{Probably}(\text{Assert})](\text{John is a thief})(c)$

(18)  $\lambda c': c' = \langle c_{sp}, c_h, c_b, C_{ow} \cap \{w: \exists d > 0.5 \wedge \text{Assert}(\text{John is a thief})(d)(c)\} \rangle$

- **In prose:** I.e. (17) combines with a context  $c$  and yields the context  $c'$  which is just like  $c$  except that the speaker,  $c_s$ , is committed at the time  $c_t$ , to behave as though her credence in “John is a thief” is greater than 0.5

○ **Some advantages of taking MADVs to be degree modifiers:**

- We predicts that MADVs, being degree modifiers, are incompatible with other degree modifiers, due to type mismatch.
- This prediction seems to be borne out, as seen with the following observations:

➤ **Observation # 1: MADVs are infelicitous with degree *how*:**

(19) #*How (much) probably is it that John left?*

- Notice that theories like Haegeman (2009) suggested that such sentences are infelicitous due to syntactic constraints on movement (e.g. pied piping) of MADVs,
- This is because, as Haegeman notes, the parallel construction with MADJs is perfectly felicitous:

(20) *How probable is it that John left?*

- Since Haegeman regards MADVs and MADJs as semantically identical, she concludes that the contrast can only be explained syntactically.
  - However – take a look now at the next observation:



- **Observation # 2:** Unlike MADJs, MADVs are also infelicitous with degree *that* and degree *so* :
- Some preliminary example results (from a recent Google search):
  - *not that probable* – got **33,700** got hits, **MANY** of them with degree *that*  
In contrast, *Not that probably* - got **27** hits **NONE** of them with degree *that*
  - *not so possible*- got **146,00** hits, **MANY** of them with degree *so*  
In contrast, *Not so possibly* – got **45** hits, **3** of them with degree *so*
- Crucially, unlike degree *how*, degree *that* and *so* do NOT involve pied piping or movement to a high position.
- So the data here seems to support our ‘semantic’ analysis:
  - i.e. that MADVs are incompatible with degree *how*, *that* and *so*, since they are themselves degree modifiers (of *ASSERT*).
- **Support # 3:** MADVs are also infelicitous with (some) epistemic comparatives:
  - Goncharov & Irimia (2017) argue that some epistemic comparatives in Russian involve a ‘high’ epistemic *-er*,
    - i.e. one which operates over covert gradable epistemic operator in the left, ‘high’, periphery, (cf. Rubinstein & Herburger 2014, 2017 on *eher*).
  - if this operator is a some correlate of *ASSERT*, our analysis predicts that such epistemic comparatives will be not be compatible with MADVs,
    - since they are themselves degree modifiers,
  - This prediction seems to be borne out (Goncharov, p.c.):

(21) a. ‘Low’ (propositional) modals in Russian:

Ivan *mozhet* *byt’ na rabote*.

Ivan *may be at work*

“Ivan *may be at work*”

b. Epistemic comparatives are fine with such low modals:

Ivan *mozhet* *byt’ skoree na rabote chem doma*.

Ivan *may be sooner at work than home*

“It is more plausible that Ivan *may be at work than that he is at home*”

(22) Modal adverbs in Russian:

a. *Vozmozhno Ivan na rabote.* (*'High' modal adverb*)-

*Maybe Ivan is at work*

*"Maybe / perhaps Ivan is at work"*

b. Epistemic comparatives are indeed infelicitous with such modal adverbs:

?? *Vozmozhno Ivan skoree na rabote chem doma.* –

*maybe Ivan sooner at work than home*

Intended: *"It is more plausible that maybe/perhaps Ivan is at work than that he is at home"*

- Support # 4: There are clear degree modifiers in the propositional level which can be used as modifiers of ASSERT as well, expressing degrees of credence
- E.g. the Hebrew *legamrey* (roughly *completely*) can be used as
  - a degree modifier of upper closed adjectives in the propositional level (23)
  - but in a 'metalinguistic way' - as a modifier of *ASSERT*, or as a response particle with no gradable expression present, expressing complete certainty / credence (24):<sup>1</sup>

(23) . *ha-kos legamrey mele'a*

*The-glass completely full*

*"The glass is completely full"*

(24) A: *ze dani she –mitkarav eleinu*

*its dani that-approaches us*

*"It's Danny who is approaching us"*

B: *legamrey!*

*Completely*

*"Totally / I completely agree"*

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<sup>1</sup> Notice that *legamrey* differs from English *totally*, which also has a 'metalinguistic' use. As shown in Beltrama (in press), although *totally* has a 'complete certainty' reading, it has a 'surprise' reading, which cannot be captured by letting *totally* modify the epistemic component in assertion speech acts. In contrast, in its 'metalinguistic uses *legamrey* seems to be limited to expressing 'complete epistemic certainty', and can be thus be taken to be a degree modifier of gradable assertion speech acts.

**Reminder so far: We have already made 2 moves:**

- **First move:** We supplemented the entry for *ASSERT* with a credence degree argument (so *ASSERT* denotes a degree relation)
- **Second move:** We analyzed MADVs as degree modifiers over *ASSERT*

**Third move:**

- A question: What do we do with assertions of *p* do not seem to be modified by any modal adverb?
  - Our analysis predicts that such assertions cannot stay unmodified, since they denote degree relations, type  $\langle\langle s,t \rangle, \langle d, \langle c,c \rangle \rangle\rangle$ .
- Our answer: Such apparently unmodified assertions are actually modified by a **covert** degree modifier over SAs:
  - We suggest that this covert modifier is a speech-act level version of *POS*
    - similarly to covert *POS* with adjectives in the ‘positive form’ at the propositional level (e.g. von Stechow 1984, Kennedy & McNally 2005)

(25) **Speech act level POS:**

$[[POS]]: \lambda G. \lambda p. \lambda c. \lambda c': c' = \langle c_{sp}, c_h, c_t, C_{ow} \cap \{w: \exists d \geq \mathbf{standard}(G,C) \wedge G(p)(d)(c)\} \rangle$

(24) a. Asserting *John is a thief*    b.  $[POS(Assert)](John\ is\ a\ thief)(c)$

(25)  $\lambda c': c' = \langle c_{sp}, c_h, c_t, C_{ow} \cap \{w: \exists d \geq \mathbf{standard}(ASSERT,C) \wedge Assert(John\ is\ a\ thief)(d)(c)\} \rangle$

In prose, (25b) combines with a context *c* and yields the context *c'* which is just like *c* except that the speaker, *c<sub>s</sub>*, in *c* is committed at the time *c<sub>t</sub>*, to behave as though her credence in “John is a thief” is at least as high as **the standard of credence for assertions in the context.**

- **Obvious worries regarding this third move:**
  - What is the standard of credence for assertions with this *POS*?
  - Is this standard really determined contextually?
  - Does this mean that assertions are contextually dependent in the way that relative adjectives in the positive form are?

(26) *John is tall / This is expensive*

- Answer: No.
  - But assertions DO seem to be interestingly similar in their contextual variability to U(ppper)-closed adjectives in the positive form, as in (27):

(27) *The room is clean / The rod is straight*

- Let's look first at the contextual variability of U(ppper)-closed
- As is well known, Kennedy & McNally 2005 (K&M) suggested that the standard degree for such U(ppper)-closed adjectives in the positive form (supplied by POS) is at the maximal endpoint of the scale.
  - And this is unlike relative (open scale) adjectives in the positive form (as in (26)), where the standard degree is contextually dependent
- K&M themselves, however, admit that there are contexts such sentences are used although the degree (of e.g. cleanness / straightness) is lower than maximum,
- **But – importantly, this contextual variability is constrained, in at least two ways:**
  - **First constraint:** Unlike open scale adjectives (*tall / expensive*), here contextual variability is limited to contexts where precision / tolerance considerations are relevant (cf. Brunett 2014)<sup>2</sup>
    - Higher degrees are acceptable with more precise / strict contexts
    - Lower degrees are acceptable with less precise / more tolerant contexts

(28) *The room is clean*

Context #1: Uttered by a lab worker (about the lab) – highest degree of cleanness

Context #2: Uttered by a pedant old lady (about her room) – lower degree is enough

Context #3: uttered by a teenager (about his room) – even lower degree is enough

- **Second constraint:** The degree with the positive form of such adjectives cannot be too low.
  - For example, *The room is clean / The rod is straight* will not be considered true if the room is 50% dirty, or if the rod is 45 degrees bent
    - I.e. the actual degree in the positive form of such adjectives should still be at the upper part of the scale.

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<sup>2</sup> Though Brunett uses a delineation approach to adjectives, and does not rely on *pos*.

- Notice - there are debates and different views regarding how to derive contextual variability of U-closed adjectives, e.g. :
  - Keeping the standard at the maximal endpoint, and deriving lower degrees from imprecision / tolerance (K&M, Brunett)
  - Allowing the standard to be lower than maximal (McNally 2011))
- We do not take a stand in these debates here
- **Rather, the crucial observation we want to make is that, no matter how this contextual variability of U-closed adjectives is eventually captured, apparently unmodified assertions behave similarly in this respect.**
  - This is good: Since this is what we would predict if assertions involve degrees on a credence scale,
    - and if as e.g. Lassiter (2015, to appear) suggests, the credence scale is maximally closed (but cf. Klecha 2012).

**So, what are the similarities between Upper closed adjectives in the positive form, and apparently unmodified assertions?**

- First, following Lewis (1976), Potts (2006) and Davis et al. (2007) observe that speakers do not always assert propositions with complete certainty, i.e. with subjective probability / credence of 1.
  - Moreover, they point out that the subjective probability value (what they call ‘the quality threshold’) corresponding to assertions varies with context:

*"The Gricean imperative would ...be that a speaker should confine himself to utterances such that  $PS([U]) = 1$  .*

*In practice, though, we are not nearly this strict. We can be lax on quality, as when we brainstorm new ideas or participate in bull sessions (Frankfurt, 1986). Conversely, we can be quite strict on quality, as when we maneuver to land rockets on the moon or instruct our students (perhaps).....*

*Therefore, I propose that each context comes with a quality threshold  $C_T$ . This is a numerical value in the real interval  $[0,1]$ " (Potts 2006, p. 208)*

- Crucially, though, this contextual variability with assertions is different than the one we observe with relative adjectives in the positive form (*John is tall*)
  - Instead, it is constrained **in a similar way to what we saw with Upper-closed adjectives in the positive form:**
    - **First constraint:** Lower credence degrees are found in less precise / more tolerant contexts (or where what is at stake is less important). See (28):  
(28) Asserting *John stole the money*  
Context 1: As part of a testimony in court - high credence degree  
Context 2: As part of a casual conversation in a bar - lower credence degree is enough
    - **Second constraint:** The degree of credence a speaker has in the proposition she asserts cannot be too low, i.e. it is not anywhere between 0 and 1, but has to be at the upper part of the credence scale.
      - This is in accord with Wolf & Cohen's (2009) and Wolf's (2015), original claim that with (apparently) unmodified assertions the default degree of credence is  $\geq$  *high*.
      - We can now, then, attribute this constraint to the upper-closeness of the credence scale with assertions.
- **We conclude that,** no matter how contextual variability of Upper-closed adjectives in the positive form is eventually derived, the fact that apparently unmodified assertions behave in a similar way supports a parallel analysis.
  - Like the one we suggested above

#### **Section 4: Summary, open questions, and directions:**

- **We pointed out several parallels between modified and apparently unmodified assertion speech acts and degree-based expressions in the propositional level.**
  - **We suggested that these support a view of assertions as gradable, denoting (credence) degree relations, and as modifiable by overt and covert degree modifiers.**
  - **More generally, these parallels support theories which view speech acts as part of the compositional process.**

- **The proposal is still preliminary, and leaves open many questions and directions for further research** (hopefully fruitful ones!), for example:
  - (a) What is, after all, the systematic connection between MADVs and MADJs e.g. *possibly / possible* ?
  - (b) Can the proposal account for embedded MADVs? (e.g. using embedded *ASSERT*)
    - (29) a. *I believe that John is probably a thief*
    - b. *Every student who possibly saw the exam must walk out of the room*
  - (c) Can it cover the behavior of MADVs (vs. MADJs) in questions?
    - (30) a. *Did she possibly leave* ?
    - b. *Why did he possibly do that?*
  - (d) Can our proposal help explain discourse phenomena, such as the difference between ‘regular’ and ‘intensified’ responses (e.g. affirmations and denials, cf. Krifka 2013)?
    - (31) A: *Did John steal the money?*
    - B: **Regular affirmation** - *Yea / Yes*
    - B’: **Intensified affirmation** - *Absolutely yes! / Sure! / No question! /*
    - (32) A: *Did John steal the money?*
    - B : **Regular denial** - *No*
    - B’: **Intensified denial** - *No way! / Hell no!*
  - (e) Is any specific entry of assertions that our data and proposal support more than others? E.g.
    - A dynamic entry with context updates (Krifka 2014, 2015)
    - A dynamic decompositional entry (e.g., with contexts updates, judgment Phrases, etc.) (Krifka 2017)
    - A simple epistemic / belief operator (cf. Meyer 2013)
    - Etc.....?

(f) Is there any motivation / advantages for modeling **other speech acts** (e.g. imperatives, exclamatives) **as gradable** as well?

(g) Should gradability with assertions be used to measure

- **degrees of the speaker's credence of  $p$** , (as suggested above),
  - I.e. to what extent does the speaker believe in  $p$
- or perhaps **degrees of commitment for total credence of  $p$** 
  - i.e. to what degree the speaker is committed to fully believing  $p$ ?
    - If so, how can such commitment degrees be modeled?

**Thank you!**

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## **Gradable Assertion Speech Acts**

Yael Greenberg, Bar Ilan University, [yaelgree@gmail.com](mailto:yaelgree@gmail.com) &  
Lavi Wolf, Ben Gurion University of the Negev, [wolf.lavi@gmail.com](mailto:wolf.lavi@gmail.com)

**Introduction:** This paper builds on two main ideas in the literature. First, that some epistemic modal expressions are gradable (similarly to tall / clean), specifically that they are not quantifiers over possible worlds (Kratzer 1981, 1991, 2012), but denote relations between propositions and degrees of subjective probability / belief, *aka* credence. This has been claimed, for (some) modal adjectives (e.g. *possible/likely*) (Yalcin 2005, 2007, Lassiter 2010, 2015, to appear) for particles like the German *eh-* (Herburger & Rubinstein 2014, 2017, Goncharov & Irimia 2017), and motivated by the ability of such expressions to be compared (*more likely/ eher*), and / or to be modified by e.g. degree modifiers / questions (*How likely?*). Second, that speech acts (SA) can participate in the compositional interpretation and be embedded (e.g. Krifka 2014, 2015, 2017, Cohen & Krifka 2014, Thomas 2014, Beck 2016)<sup>1</sup>. We focus on assertions and on the speech act operator *ASSERT*.

**Our proposal** is to examine a way to integrate these two ideas, and move them one step forward so that **(bare) assertion speech acts are modeled as gradable, and are compositionally modifiable by (overt and covert) degree modifiers.**

### **The starting point motivation for our proposal relies on existing claims concerning**

**Modal adverbs:** Piñón 2006, Wolf & Cohen 2009, Wolf 2015 observe that, unlike modal adjectives (MADJs), modal adverbs (MADVs) act as modifiers of assertion speech acts. E.g. (A) MADVs, but not MADJs can only be embedded in the consequent but not the antecedent of conditionals (cf. Bellert 1977, Nilsen 2004, Piñón 2006, Ernst 2009):

- (1) a. #If John possibly/probably arrived at the office early, I will call the office.  
b. If it's possible/probable that John arrived at the office early, I will call the office.  
(2) a. If John is in the office, it is possible / probable that he arrived there early.  
b. If John is in the office, he possibly / probably arrived there early.

We support such contrasts by data from COCA (Davies, 2008), as seen in e.g. (4):

- (3)a. If it is/it's possible (243) vs. If it is/it's/he is/he's/she is/she's possibly (0)  
b. If possible (1725) vs. If possibly (14; 12 out of these are non-conditional *ifs* as *whether*)  
(B) Only MADVs are speaker-oriented (Nuyts, 2001, Ernst 2009, Nilsen 2004):  
(4) A: It is probable that they have run out of fuel. B: Whose opinion is this?  
(5) A: They have probably run out of fuel. B: #Whose opinion is this?

Following Piñón 2006, Wolf & Cohen 2009 and Wolf 2015 conclude that MADVs combine with *ASSERT* and lower/raise the speaker's credence degree regarding the propositional content she asserts.

**Analysis:** We adopt Wolf's 2015 conclusion, and suggest that if MADVs indeed lower / raise the degree of credence in assertions, then assertions, crucially, even those containing no modal expression, should involve credence degrees to start with. There are several ways to implement this idea, depending on the specific entry for *ASSERT* one favors. Suppose, for example, we follow Thomas' 2014 and Beck's 2016 implementation of Krifka 2014, where *ASSERT* is type  $\langle\langle s, t \rangle, \langle c, c \rangle\rangle$  as in (6), ( $c$  is the type of contexts, including a speaker, hearer, time of utterance and Common Ground ( $c_{sp}, c_h, c_t, C_w$ )):

- (6)  $[[ASSERT]] = \lambda p. \lambda c. \lambda c': c' = \langle c_{sp}, c_h, c_t, C_w \cap \{w: assert(p)(c)\} \rangle$  Where  $assert(p)(c)$  is true iff in  $w$   $c_{sp}$  is committed to behave as though she believes that  $p$  at  $c_t$

<sup>1</sup> But cf. Han 1998, Palmer 1986, Platzack and Rosengren 1997, Rivero and Terzi 1995, Sadock and Zwicky 1985, Condoravdi and Lauer 2012, Lauer 2015 for a non / extra compositional view of speech acts.

We now proceed by making two moves. **First, we take bare assertions to denote degree relations**, by adding a credence degree argument to the denotation of *ASSERT*. Adopting, for example, the entry for *ASSERT* as in (6), this will result in (7), with *ASSERT* being now type  $\langle\langle s, t \rangle, \langle d, \langle c, c \rangle \rangle\rangle$ :

(7)  $[[ASSERT]]: \lambda p. \lambda d. \lambda c. \lambda c': c' = \langle c_{sp}, c_h, c_b, C_w \cap \{w: Assert(p)(d)(c)\} \rangle$ , Where *assert*  $(p)(d)(c)$  is true iff in  $w$  the speaker of  $c$ ,  $c_{sp}$ , is committed to behave as though she believes that  $p$  to a degree  $d$ , at the time  $c_b$ , and the hearer  $c_h$  is a witness to this commitment.

**Second, we propose that similarly to degree modifiers over adjectives** (e.g. *completely*), **MADVs are degree modifiers over gradable speech acts**,  $G$ . Within the framework in (7), for example, we will end up with (8)-(10):

(8)  $[[Probably]]: \lambda G. \lambda p. \lambda d. \lambda c. \lambda c': c' = \langle c_{sp}, c_h, c_b, C_w \cap \{w: \exists d > 0.5 \wedge G(p)(d)(c)\} \rangle$

$[[Possibly]]: \lambda G. \lambda p. \lambda d. \lambda c. \lambda c': c' = \langle c_{sp}, c_h, c_b, C_w \cap \{w: \exists d > 0 \wedge G(p)(d)(c)\} \rangle$

(9)(a) *John is probably a thief*                      b.  $[[Probably(Assert)]]$  (*John is a thief*) ( $c$ )

(10)  $c' = \langle c_{sp}, c_h, c_b, C_w \cap \{w: \exists d > 0.5 \wedge Assert(John\ is\ a\ thief)(d)(c)\} \rangle$

I.e. (9b) combines with a context  $c$  and yields a context  $c'$  which is just like  $c$  except that the CG is updated with the information that the speaker,  $c_s$ , in  $c$  is committed at the time  $c_t$ , to behave as though her credence in “John is a thief” is greater than 0.5.

**Predictions:** We discuss several predictions of our proposal:

**a. MADVs and degree questions**, our proposal predicts that unlike gradable MADJs, which have been shown to be modifiable by degree questions (11), MADVs will not be felicitous with such questions. This is because unlike gradable MADJs (analyzed in the literature as denoting degree relations, and modifiable by degree modifiers), under our analysis MADVs, are themselves degree modifiers (of *ASSERT*) and hence should not be modified by other degree questions due to type mismatch. Indeed, as seen in (12), this prediction is borne out:

(11) *How probable is it that John left?* (12) #*How (much) probably is it that John left?*

We discuss the better status of MADVs with e.g. *very* (as in *Very possibly*) and following Kennedy & McNally (K&M) 2005, Lassiter (to appear) suggest that *very* is not a ‘true’ degree modifier. Rather, it can apply to  $[[possibly\ ASSERT]]$ .

**b. MADVs and (some) epistemic comparatives:** Goncharov & Irimia 2017 propose that some cases of epistemic comparatives in e.g. Rumanian, Bulgarian and Russian are instantiations of the comparative morpheme *-er* in the left periphery of the sentence, operating over a high epistemic covert operator, *EPIST*, expressing degree of speaker’s credence of the proposition (cf. Rubinstein & Herburger 2014, 2017 on German *eher*). Taking this epistemic operator to be, in fact, *ASSERT*, our analysis now predicts that such epistemic comparatives, being degree modifiers, will be compatible with propositional, ‘low’, modal expressions (expressing degree relations), but not with MADVs, which are themselves degree modifiers. This prediction seems to be borne out, at least for Russian, as seen in the contrast between (13b) with the ‘low’ modals and (14b) with MADVs (Goncharov, p.c.):

(13) a. *Ivan mozhet byt’ na rabote.*

*Ivan may be at work - “Ivan may be at work”*

b. *Ivan mozhet byt’ skoree na rabote chem doma.*

*Ivan may be sooner at work than home “It is more plausible that Ivan may be at work than that he is at home”*

(14) a. *Vozmozhno Ivan na rabote. Modal adverb*

*Maybe-adv Ivan at work - “Maybe / perhaps Ivan is at work”*

b. *\*/?? Vozmozhno Ivan skoree na rabote chem doma.*

*maybe Ivan sooner at work than home Intended: “It is “It is more plausible that maybe / perhaps Ivan is be at work than that he is at home”*

**c. The contextual variability of apparently unmodified assertions.** If *ASSERT* denotes a degree relation, and is modifiable by MADVs (and some epistemic comparatives), what happens when assertions appear ‘bare’, i.e. when they do not seem to be modified by any overt degree modifiers?

Our analysis predicts that in such cases apparently unmodified assertions cannot stay unmodified. Instead, they will be modified by a **covert** degree modifier, which will help set the value for the degree argument of *ASSERT*. We suggest that this is indeed the case, and that such a covert degree modifier behaves in a similar way to *POS* with apparently unmodified (upper closed) adjectives.

This prediction is supported by existing observations about the contextual variability of assertions. Following Lewis 1976 Potts 2006 and Davis et al. 2007 propose that pragmatically, Grice’s maxim of quality should be relaxed, as speakers do not always assert propositions with complete certainty, i.e. with subjective probability of 1. Moreover, they suggest that subjective probability varies with context. To quote Potts 2006:

“...In practice [...], we can be lax on quality, as when we brainstorm new ideas or participate in bull sessions (Frankfurt, 1986). Conversely, we can be quite strict on quality, as when we maneuver to land rockets on the moon or instruct our students (perhaps). Therefore, I propose that each context comes with a quality threshold  $C\tau$ ”. (Potts 2006, p. 208).

A similar observation we make is that the probability that the speaker takes assertions e.g. *John is a crook* to have may be higher when this proposition is asserted, for example, as part of a testimony in court than in a casual conversation in a bar.

We now propose that the (apparent) variability of  $C\tau$  with assertions is strikingly similar to the (apparent) variability found with upper-closed gradable adjectives in their ‘positive form’. In general, contextual variability with adjectives is often captured by taking apparently unmodified adjectives to be modified by a covert *POS*, setting the standard of comparison, as in (11):

(11)  $\|POS\| = \lambda G. \lambda x. \exists d d \geq \text{standard}(G, C) \wedge G(x, d)$  (e.g. von Stechow 1984, K&M 2005)

We propose that apparently unmodified assertions are also modified by a covert *POS*, identical in type to MADVs. For example, using the framework for *ASSERT* in (7) above, such a covert *POS* operator will have the denotation in (12), as illustrated in (13)-(14):

(12)  $\|POS\|: \lambda G. \lambda p. \lambda c. \lambda c': c' = \langle c_{sp}, c_h, c_b, C_w \cap \{w: \exists d d \geq \text{standard}(G, C) \wedge G(p)(d)(c)\} \rangle$

(13) a. *John is a thief* b.  $[POS(Assert)](John\ is\ a\ thief)(c)$

(14)  $\lambda c': c' = \langle c_{sp}, c_h, c_b, C_w \cap \{w: \exists d d \geq \text{stand}(ASSERT, C) \wedge Assert(John\ is\ a\ thief)(d)(c)\} \rangle$

In words, (13b) combines with a context  $c$  and yields a new context  $c'$  which is just like  $c$  except that the common ground is updated with the information that the speaker,  $c_s$ , in  $c$  is committed at the time  $c_t$ , to behave as though her credence in “John is a thief” is at least as high as the standard of credence for assertions in the context.

A potential problem with this suggestion is how the contextual variability of assertions, observed in Davis et al and Potts, is compatible with the total closeness of the credence scale, given K&M’s 2005 claim that with upper closed adjectives (like *clean*) the standard of comparison is always at the maximal point. Notice, though, that K&M themselves point out cases where the positive form with such adjectives is used with an (apparently) non-maximal standard (e.g. *The theatre is empty today* when several people are present), and that contextual variability is found there too (compare *The glass is clean* when uttered by a pedant lab worker vs. by a child). This has been either accounted for by insisting on the maximal endpoint standard and deriving apparently lower standards in the positive form from imprecision, using e.g. pragmatic halos (Laserson 1995) as in K&M 2005, (cf. Burnett (2014) for an elaborated view), or by dissociating the standard from scale structure, allowing the former to be contextually supplied after all. In the latter direction the standard can be

restricted to the upper interval of the scale, but is still allowed to vary and be lower than the maximum (as in McNally 2011. cf. also Lassiter (forthcoming) on modal adjectives with probability scales, cf. Klecha 2012).

The crucial point for us is that the contextual variability found with apparently unmodified assertions is indeed similar to the one found with Upper closed adjectives (like *clean*), for example, in being restricted to the upper part of the scale only, and in being affected by precision considerations. Thus, no matter which strategy is chosen for capturing contextual variability with apparently unmodified upper-closed gradable adjectives, we suggest that the same choice can be made for apparently unmodified assertions, with the upper closed credence scale. In the full paper we discuss this point, as well as the contextual factors influencing the (apparent) variability of standard of credence in such cases (strength of evidence, what is at stake, etc.).

**To conclude:** In this paper we are not committed toward any specific entry for *ASSERT*, but rather suggest **a general recipe: Take your favorite entry for *ASSERT*, supplement it with a credence degree argument, and allow degree modifiers to operate over it and manipulate this degree in direct and indirect ways.** Though above we illustrated the implementation of this general recipe with a specific version of Krifka's 2014 entry for *ASSERT* (cf. (6) and (7)), other potential entries should be considered as well, e.g. a simple epistemic / belief operator (cf. Meyer 2013) or Krifka's 2017 decompositional version of *ASSERT*, where modal adverbs expressing the subjective probability regarding *p* are positioned in Judgment Phrase. More research is needed here to see which specific implementation of *ASSERT*, if any, is most suitable for capturing gradability with assertions.

A more general point, though, concerns the fact that our proposal that assertions are gradable, and that they are modifiable by (overt and covert) degree modifiers, is to a large extent inspired by similarities with well-studied propositional constructions involving modified and (apparently) unmodified gradable predicates, which are part of the compositional process. A general take home message of our proposal, then, is that such similarities lend support to the view that speech acts should be part of the compositional process as well (e.g. Krifka 2014, 2015, 2017, Cohen & Krifka 2014, Thomas 2014, Beck 2016).

**Time permitting, we examine challenges and questions for further research,** for example: **(I) Can the proposal account for cases where MADVs are embedded** under, e.g. attitude verbs and relative clauses and can these cases be accounted for by assuming an embedded *ASSERT*? **(II) Can it be extended to cover the behavior of MADVs (vs. MADJs) in questions?** and can this behavior be accounted for by assuming an assertive component in questions speech acts? (Cf. Sauerland & Yatsushiro 2015, Krifka 2015). **(III) Can a view of assertions as degree relation help explain discourse phenomena, such as intensified affirmations and denials?** (cf. Farkas & Bruce 2009) (e.g. *RIGHT!* / *Sure!* / *No question!* Vs. *No way!* / *Hell no!* / *You are far from truth!*)? **(IV) Should gradability with assertions be part of the speaker's credence of *p* as proposed above or over her commitment for a high credence of *p* (cf. Krifka 2017)?** **(V) Can other speech acts, besides assertions, be modeled as gradable as well?**

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# Deriving Social Meanings in an Extended Lewisian Model

The Case of English Rising Declaratives

Sunwoo Jeong

Department of Linguistics

Stanford University

<https://github.com/sunwooj/risingdec>

# The Discourse Context

## Context

- **Declaratives**

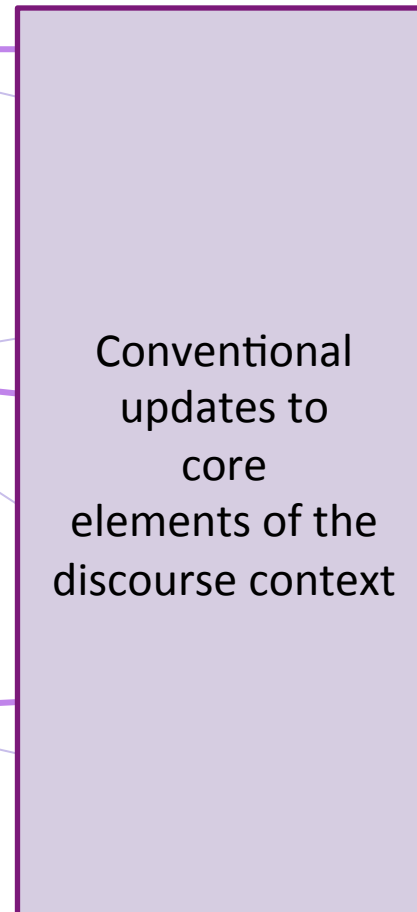
*Lenny went to Yemen.*

- **Interrogatives**

*Did Lenny go to Yemen?*

- **Imperatives**

*(Lenny!) Go to Yemen!*



**Assertion**

**Accusation**

**Question**

**Command**

**Request**

# The Discourse Context

- **Declaratives**

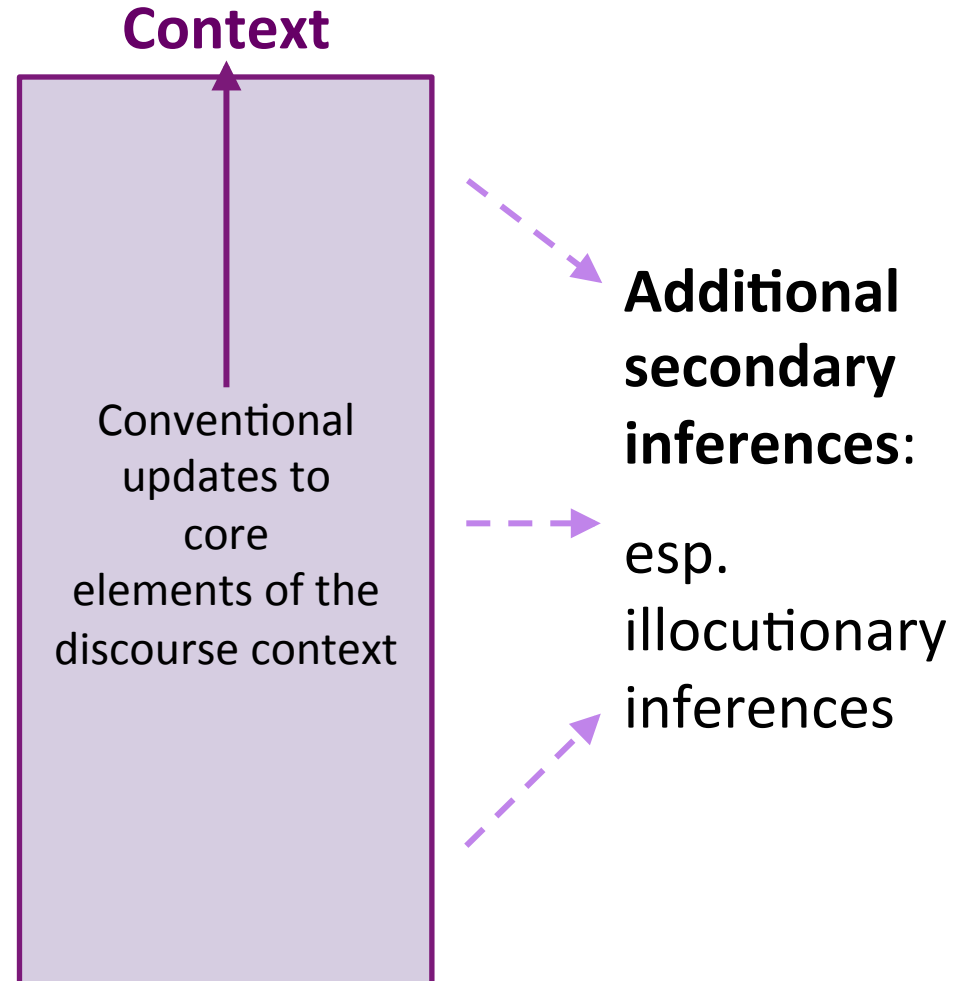
*Lenny went to Yemen.*

- **Interrogatives**

*Did Lenny go to Yemen?*

- **Imperatives**

*(Lenny!) Go to Yemen!*



# The Extended Lewisian Model

## Context

**CG** (common ground)  
Stalnaker (1978)

**Table** (stack of issues)  
Farkas & Bruce (2010)  
cf. Roberts (1996)

**DC<sub>x</sub>** (discourse  
commitment set of X)  
Hamblin (1971)  
Gunlogson (2003)

...

(Krifka 2015, Malamud &  
Stephenson 2015, a.o.)

- Context and the conversational scoreboard
- Modeling the discourse effects of diverse marked and unmarked sentence types
- Predicting felicitous response patterns

Speech acts, follow-up responses, etc.

# Deriving Social Meanings

## Context

**CG** (common ground)  
Stalnaker (1978)

**Table** (stack of issues)  
Farkas & Bruce (2010)  
cf. Roberts (1996)

**DC<sub>x</sub>** (discourse  
commitment set of X)  
Hamblin (1971)  
Gunlogson (2003)

...

(Lauer 2013, Krifka 2015,  
Malamud & Stephenson 2015,  
a.o.)

- Can **social effects** such as **politeness** be derived from this as well?
- Problematizing the notion of **politeness**
  - systematic and predictable (Jeong & Potts 2016)
  - volatile, highly context-dependent

# Refining the Question about Politeness

- Is it a monolithic, first-order inference, or is it rather derived from a combination of other more primitive pragmatic inferences?
- Do linguistic conventions directly prescribe it, or do they rather prescribe more abstract contextual updates that come to have close bearings on politeness inferences?
- In sum, what are the basic units on which politeness effects operate?

# English rising declaratives

- A case study: **English rising declaratives**
- Previous work on politeness effects of English rising declaratives: have focused on a particular subset of the data (assertive uses)
- Expanding the data and establishing a core distinction
  - Inquisitive Rising Declaratives (IRDs)
  - Assertive Rising Declaratives (ARDs)

# English rising declaratives

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  - Assertive Rising Declaratives (ARDs)



# Assertive vs. inquisitive rising declaratives

- **Assertive rising declaratives (ARDs)**: often function as *tentative assertions*
- **Inquisitive rising declaratives (IRDs)**: often function as *biased questions*
- Expected to compete with different canonical alternatives, falling declaratives and polar interrogatives

# Assertive rising declaratives (ARDs)

(B is introducing herself to her new classmates)

B: Hello! My name is Lena? *I'm from Yemen?* **Assertive Rising Declarative (ARD)**

B: Hello! My name is Lena. *I'm from Yemen.* **Falling Declarative (FD)**

cf. B: Hello! My name is Lena. *#Am I from Yemen?*

Levon (2016),  
Podesva (2011), a.o.

A: Did Laura meet a lot of celebrities?

B: (Um...) *Laura met President Obama?* **Assertive Rising Declarative (ARD)**

B: (Um...) *Laura met President Obama.* **Falling Declarative (FD)**

cf. B: *#Did Laura meet president Obama?*

Hirschberg & Ward (1992)  
Malamud & Stevenson (2015)

- Intuition: generally sound *more polite* than their canonical alternatives (falling declaratives)

# Inquisitive rising declaratives (IRDs)

(An actor talking to a stage director)

B: (So,) *I'm from Yemen?*

B: (So,) *Am I from Yemen?*

cf. *#I'm from Yemen-*

Inquisitive Rising Declarative (IRD)

Polar Interrogative (PQ)

Poschmann (2008), Gunlogson (2008)

A: I heard that Laura recently interviewed the president.

B: (What?) *Laura met President Obama?*

B: (What?) *Did Laura meet President Obama?*

cf. *#Laura met president Obama-*

Inquisitive Rising Declarative (IRD)

Polar Interrogative (PQ)

Pierrehumbert & Hirschberg (1990)

Gunlogson (2003), Farkas & Roelofson (2017)

- Intuition: generally sound *less polite* than their canonical alternatives (polar interrogatives)

# ARDs vs. IRDs and their politeness effects

- Analysis to come:
  - ARDs and IRDs are associated with two distinct sets of context-updating conventions
  - These context-updating conventions can generate a wide range of observed patterns, one of which is the perceived difference in their politeness effects

An analysis couched in an extended Lewisian framework
- Before that: strengthening the empirical generalizations

# ARDs vs. IRDs: motivating an experimental study

- No experimental or systematic distinction between ARDs and IRDs established so far
- Can our intuitions about **the difference in politeness effects between ARDs vs. IRDs** be captured more systematically?

## An experimental study!

A more comprehensive account of the experimental results as well as additional analyses can be found in Jeong (2017)

# Experimental hypotheses

- Different politeness effects
  - Other things being equal (content, speaker), **assertive rising declaratives (ARDs)** will be associated with significantly **higher politeness** ratings than its potential alternative, **falling declaratives**
  - Other things being equal (content, speaker), **inquisitive rising declaratives (IRDs)** will be associated with significantly **lower politeness** ratings than its potential alternative, **polar interrogatives**

# Experiment Design

- An experimental study
  - Contingent on whether a given rising declarative is construed as an ARD vs. an IRD, do different politeness effects arise?
- But first: how to probe the core distinction (ARD vs. IRD) experimentally?
  - participants' illocutionary inferences
  - participants inferences on the more likely follow-up response

# Probe 1: illocutionary inferences

## Assertive rising declaratives (ARDs)

A: Did Laura meet a lot of celebrities?

B: (Um...) *Laura met president Obama?*

**Information-giving (assertion)**

Information-seeking (question)

## Inquisitive rising declaratives (ARDs)

A: I heard that Laura recently interviewed the president.

B: (What?) *Laura met president Obama?*

Information-giving (assertion)

**Information-seeking (question)**



# Probe 2: Likely follow-up response (Gunlogson 2008)

- **Oh**: dependently commits the speaker to the addressee's commitment (i.e. the speaker is not a source);
- **Yes**: independently commits the speaker as a separate source.

A: The printer is broken.  
B: *Oh*.

A: The printer is broken.  
B: *Yes*.

# Probe 2: likely follow-up response

## Assertive rising declaratives (ARDs)

A: Did Laura meet a lot of celebrities?

B: (Um...) *Laura met president Obama?*

A: *Oh*, that's exciting.

A: #Yes, she did.

## Inquisitive rising declaratives (IRDs)

A: I heard that Laura recently interviewed the president.

B: (What?) *Laura met president Obama?*

A: *Yes*, didn't you know?

A: #Oh, I see.

# An experimental study

- A perception study that controlled for a variety of factors (content, speaker, etc.) and systematically tested for the difference between ARDs, IRDs, FDs, and PQs
  - Using prosodically manipulated auditory stimuli
- Participants heard a range of auditory stimuli, and judged:
  - More likely illocution / follow-up response
  - A variety of other contextual inferences (e.g., politeness)

# Sample stimuli

- Recordings from 6 native speakers of AE (3 males, 3 females)
- e.g. “Lenny is from Yemen”
  - Falling declarative (NPA - 10 st.)
  - Rising declarative 1 (NPA + 6 st.)
  - Rising declarative 2 (NPA + 8 st.)
  - Rising declarative 3 (NPA + 10 st.)
  - Polar interrogative (NPA + 10 st.)

NPA: Nuclear pitch accent  
st: semitone



# Sample trial: experiment 1

- **Q0:** Please type in what you just heard.



- **Q1:** What is the most likely interpretation of the utterance? (experiment 1 & 2)
  - The speaker is **seeking information**.
  - The speaker is **giving out information**.
  - (The speaker is inviting.)
  - (The speaker is requesting.)

Illocutionary inference

# Sample trial: experiment II & III

- **Q0:** Please type in what you just heard.
- **Q1:** Which of the following is the more likely response from the listener (addressee)?  
(experiment 3)
  - **Oh**, I didn't know that.
  - **Yes**, didn't you know?

Likely follow-up response  
(constraints on future discourse)

# Sample trial: experiment I, II, III

- Q2-Q3

- Q4: How **polite** did the speaker sound?  
(ratings from 0 to 100)

Perceived speaker politeness

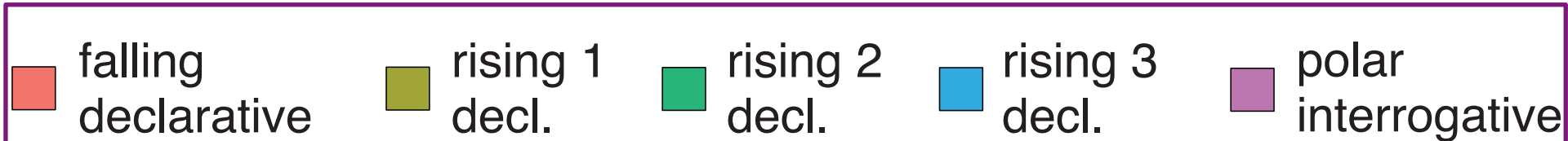
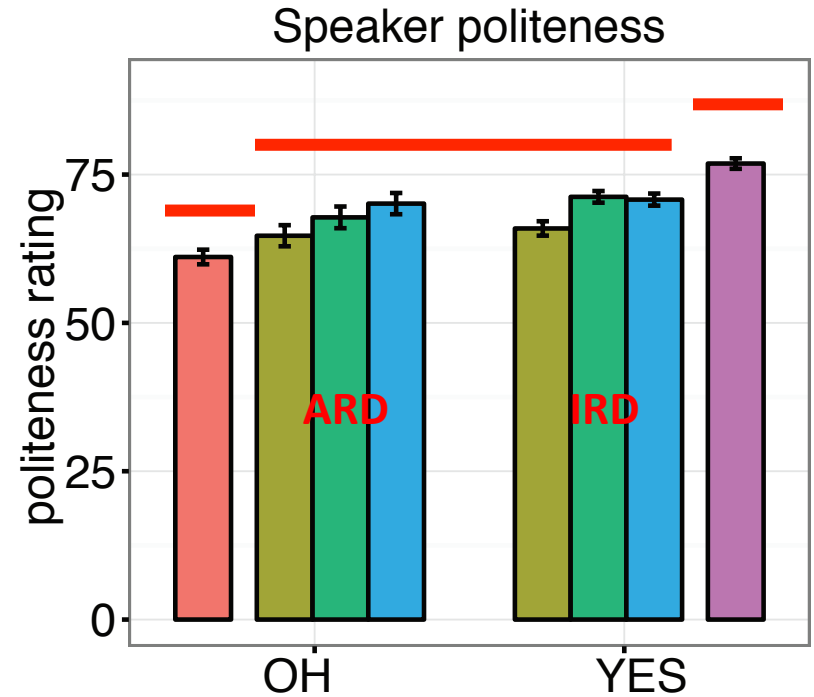
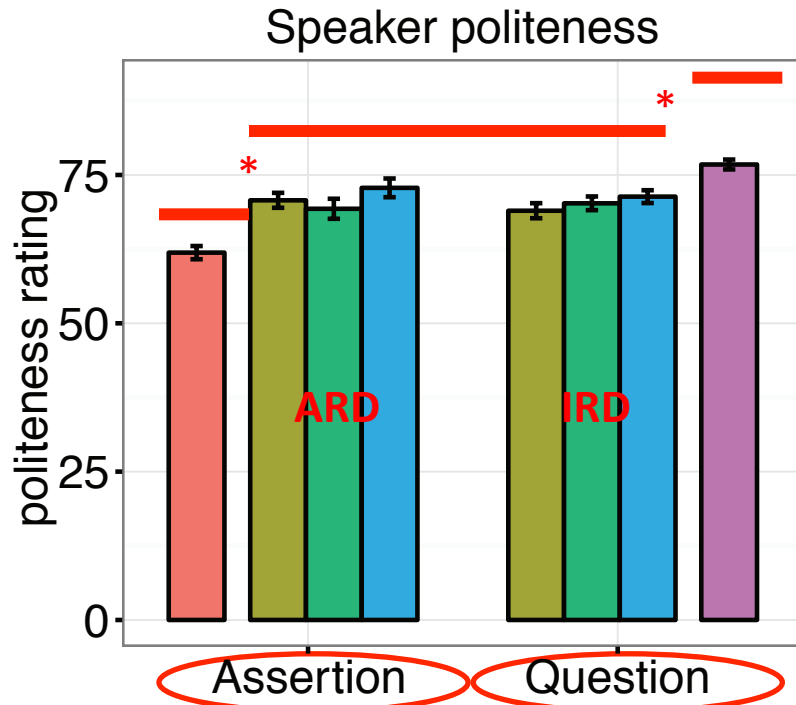
- Q5-Q6

# Procedure

- Three experiments (1, 2, 3) conducted: 5 trials in each experiment
- Experiment 1, 2 & 3 were nearly identical in design; they only differed in the range / number of sentences tested
- 1200 native speakers of American English recruited as participants (400 for each experiment)



# Speaker politeness



# Summary of the results

- In absolute terms, the politeness markings of ARDs and IRDs are about the same
- However, the contrast with their respective alternatives (FDs and PQs) show that their politeness effects are different pragmatically

- **Assertive rising declaratives**: sound significantly *more polite* than standard way of asserting (FDs)
- **Inquisitive rising declaratives**: sound significantly *less polite* than standard way of questioning (PQs)

# The analysis

- Two distinct marked sentence types
  - **ARDs** (assertive)
  - **IRDs** (inquisitive)
- Two distinct sets of context-updating conventions
- Each set partially overlaps with the conventions for FDs and PQs, respectively

Jeong (2017)

(cf. Gunlogson (2003, 2008), Farkas and Bruce (2010), Westera (2013), Malamud & Stephenson (2015), Farkas & Roelofson (2017))

# The analysis

- Basic elements of the discourse context

- **CG** (common ground): set of propositions mutually agreed upon by the participants (Stalnaker 1978)
- **Table**: stack of issues raised (Farkas and Bruce 2010)
- **DC<sub>x</sub>** (commitment set): set of propositions that the participant X has publicly committed to during the conversation up to the relevant time (Gunlogson 2003)
- **CG\*** (projected set): set of possible future CGs, i.e., common grounds (Farkas and Bruce 2010)
- **DC<sub>x</sub>\*** (projected commitment set): set of propositions that interlocutor X is expected to become committed to in the normal course of conversation (Malamud and Stevenson 2015)

# Assertive rising declaratives

- **Assertive rising declaratives** (content:  $p$ )

- Add  $p$  to the Table.
- Add  $p$  to the speaker's current commitment set,  $DC_{sp}$
- Add  $MLI^p$  (a metalinguistic issue about  $p$ ) to the Table

Is  $p$  a relevant enough answer?

Am I in the right social context to utter  $p$ ?

- cf. **Falling declaratives** (content:  $p$ )

- Add  $p$  to the Table
- Add  $p$  to the speaker's current commitment set,  $DC_{sp}$

Jeong(2017)

cf. Westera (2013), Malamud & Stevenson (2015)

# Predictions for ARDs

- Felicity of *Oh*, assertion interpretations, substitutions with falling declaratives
  - ARDs incur full speaker commitment to the proposition  $p$
  - ARDs share the same basic conventions as FDs
- Higher politeness ratings than falling declaratives (given experimentally controlled content/context)
  - ARDs raise an (inquisitive)  $MLI^p$ , whereas FDs do not raise any  $MLI^p$
  - The former thus signals that the speaker wants to explicitly check in with the addressee about the validity, relevance, etc., of her contribution to the discourse

# Inquisitive rising declaratives

- **Inquisitive rising declaratives** (content:  $\{p, \neg p\}$ )
  - Add  $\{p, \neg p\}$  to the Table.
  - Add  $p$  to the projected commitment set of the addressee
  - NB.  $[[\text{Rise-I}]] = \lambda p \lambda q [q = p \vee q = \neg p]$
- cf. **Polar interrogatives** (content:  $\{p, \neg p\}$ )
  - Add  $\{p, \neg p\}$  to the Table
  - NB.  $[[\text{INT}]] = \lambda p \lambda q [q = p \vee q = \neg p]$

Jeong(2017)

cf. Farkas & Roelofson (2017), Gunlogson (2003, 2008)

cf2. Truckenbrodt (2012), Biezma and Rawlins (2012)

# Predictions for IRDs

- Infelicity of *Oh*, question interpretations, substitutions with polar interrogatives
  - IRDs do not give rise to any speaker commitment (its main function is to add an inquisitive issue to the Table)
  - IRDs share the same basic conventions as PQs
- Lower politeness ratings than polar interrogatives (given experimentally controlled content/context)
  - IRDs add the positive answer  $p$  to the addressee's projected commitment set, whereas PQs don't
  - The former thus signals that the speaker is less neutral with respect to the answer she expects from the addressee



# Advantages of an extended Lewisian approach to politeness

- Since politeness effects are analyzed as second order inferences that are derived from more primitive conventions interacting with a variety of contexts, they are expected to be cancellable in certain contexts

A: Why do you hate him so much?

B: Um... *He is a racist idiot?*

*MLP: Is p a good enough answer for you? (or) Isn't p a good enough answer for you already?*

# Conclusion

- There exists two different types of English rising declaratives that differ systematically in a variety of inferences that they generate (one of which is **politeness**)
- These can be captured by positing appropriate conventions for each within an extended Lewisian model of discourse

# Conclusion

- Politeness effects are better analyzed as being derived from more primitive, context-updating conventions, rather than being directly stipulated.
- Implications and some remaining issues
  - Discourse moves as alternatives
  - Ultimate link to indexical meaning (cf. Beltrama 2016, Burnett 2017)

**Thank you!**

<https://github.com/sunwooj/risingdec>

Thanks to: Cleo Condoravdi and Chris Potts for insightful comments, and Donka Farkas, Deniz Rudin, Rob Podesva, and the audience at UCSC clause-type workshop for helpful suggestions. This research was funded in part by NSF BCF 1456077.

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# Deriving Social Meanings in an Extended Lewisian Model

Sunwoo Jeong

*Department of Linguistics, Stanford University*

**Introduction** Extended Lewisian models of conversation (Lewis 1979) have emerged as powerful tools for understanding a wide range of phenomena (Gunlogson 2003, Farkas & Bruce 2010, Malamud & Stephenson 2015, Farkas & Roelofsen 2017; cf. Condoravdi & Lauer 2012, Lauer 2013, Krifka 2015). In this paper, we argue that such models can capture some of the most nuanced and complex phenomena in conversation: politeness and related social effects (McLemore 1991, Podesva 2011, Levon 2016).

Our empirical focus is English rising declaratives (henceforth RD). We first present a series of experimental studies that corroborate the existence of two different types of RDs, each associated with distinct politeness effects. We then posit two sets of conventions to capture this core distinction, as well as the observed politeness patterns. Neither set of conventions is shown to directly prescribe ‘politeness’ per se, but rather to accurately predict where politeness effects will arise and where they won’t (cf. Gunlogson 2003, Malamud & Stephenson 2015, Jeong & Potts 2016).

**Two Types of Rising Declaratives** We hypothesize that there exist two types of RDs: assertive RDs like (1–2) and inquisitive RDs like (3–4). To probe this difference, we can study patterns in follow-up responses (that indicate different commitment statuses): while assertive RDs (1–2) allow *Oh* responses, indicating A’s acknowledgment of B’s commitment to the proposition (e.g., that John has a sister in (1)), inquisitive RDs (3–4) *disallow* *Oh*, indicating a perceived lack of such commitment from the part of B (an adaptation of Gunlogson (2008)’s *Oh* vs. *Yes* diagnostics).

- |     |  |     |   |
|-----|--|-----|---|
| (1) | A: Tell me about John’s family.<br>B: <i>John has a sister?</i> They’re close?<br>A: <i>Oh</i> , I didn’t know that. / A: ? <i>Yes</i> . | (2) | A: Why do you hate him so much?<br>B: ( <i>Because..</i> ) <i>He’s an idiot?</i><br>A: <i>Oh</i> , okay. If you say so. / A: ? <i>Yes</i> . |
| (3) | A: John’s sister is in town.<br>B: ( <i>What?</i> ) <i>John has a sister?</i><br>A: <i>Yes</i> , he does. / A: # <i>Oh</i> .             | (4) | A: Ugh, I can’t stand that ass, Don.<br>B: (doesn’t know Don) <i>He’s an idiot?</i><br>A: <i>Yes</i> , a tremendous one. / A: # <i>Oh</i> . |

The empirical starting point for this paper is that assertive vs. inquisitive RDs are distinct phenomena. Building on this assumption, we also have the intuition that assertive RDs generally sound more polite than standard ways of asserting (i.e., via a falling declarative: *John has a sister.*, in (1); cf. McLemore 1991, Podesva 2011, Levon 2016), whereas inquisitive RDs generally sound *less* polite than standard ways of asking questions (i.e., via a polar interrogative: *Does John have a sister?*, in (3)).

**Experiment** To test these hypotheses, we conducted perception experiments in which 1200 participants (native speakers) heard 5–8 declarative and polar interrogative stimuli systematically manipulated in their intonation (representing a variety of rises and falls), and pooled from sets sharing the same radical and the speaker: e.g., *Ellen is married.*, *Ellen is married?*, *Is Ellen married?*. Upon hearing them, participants answered two types of questions. One (Q1) was a forced choice task that inquired about the more likely follow-up response between: *Oh* vs. *Yes*. Following the initial reasoning, this was used as a probe to distinguish between assertive vs. inquisitive RD interpretations. Others (Q2–5) were a range of gradient rating tasks (0–100) that inquired about various contextual inferences, one of which was the degree of perceived speaker politeness (Q4).

*Two RDs.* The results corroborate the existence of two types of RDs. All three kinds of RD stimuli (representing a variety of rising tunes) elicited significant amounts of both *Oh* and *Yes* responses<sup>1</sup> in Q1, in contrast with falling declaratives (henceforth FDs), which elicited near-categorical *Oh* responses and polar interrogatives (henceforth PQs), which elicited near-categorical *Yes* responses. Combined with other results that demonstrated systematically diverging inferences between RD tokens that elicited *Oh* versus those that elicited *Yes* (one of which we will examine below), these patterns suggest a core distinction between assertive vs. inquisitive RDs.

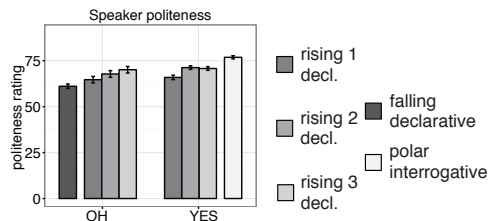


Figure 1: Summary of results

*Politeness.* The results also show that conditional on *Oh/Yes* responses, different politeness effects emerged. Corroborating the hypothesis, assertive RDs were perceived as significantly *more* polite than FDs but inquisitive RDs were perceived as significantly *less* polite than PQs, for the same radical and the speaker. Fig. 1 summarizes this: assertive RDs are the three RD bars plotted over ‘OH’ in the x-axis, inquisitive RDs are those plotted

over ‘YES’; FDs are the leftmost darkest bar and PQs are the rightmost lightest bar. Although in absolute terms, the politeness markings of the two RDs are about the same, their respective contrasts with PQs and FDs show that they are different pragmatically.

**Analysis** The two sets of conventions we propose in (5–6) can capture these data. Each set overlaps with the conventions for FDs on the one hand and PQs on the other, which we take to be (5a–b) for the former and (6a) for the latter (Farkas & Bruce 2010; cf. Farkas & Roelofsen 2017). The analysis synthesizes the strengths of previous Lewisian approaches to rising declaratives ((5b) is adapted from Malamud & Stephenson (2015), (6a) from Farkas & Roelofsen (2017), and (6b) from Gunlogson (2003) and Gunlogson (2008)) while overcoming their shortcomings identified in Jeong (2017).

- |   |   |
|---|---|
| <p>(5) Assertive RD (content: <math>p</math>)</p> <p>a. Add <math>p</math> to the <b>Table</b>.</p> <p>b. Add <math>p</math> to the speaker’s current commitment set, <math>DC_{Sp}</math>.</p> <p>c. Add <math>MLI^p</math> to the <b>Table</b>.</p> | <p>(6) Inquisitive RD (content: <math>\{p, \neg p\}</math>)</p> <p>a. Add <math>\{p, \neg p\}</math> to the <b>Table</b>.</p> <p>b. Add <math>p</math> to the addressee’s projected commitment set, <math>DC_{Ad}^*</math>.</p> |
|---|---|

*Oh/Yes Effects.* (5–6) captures the observed *Oh/Yes* distinction. Assertive RDs fully commit the speaker to the proposition (5b) and thus allow *Oh* (which presuppose speaker commitment), whereas inquisitive RDs do not, and are thus infelicitous with *Oh* (resulting in *Yes* responses).

*Politeness Effects.* (5–6) can derive the politeness effects in Fig. 1 as well. First, assertive RDs sound more polite than falling declaratives because the former adds a relevant metalinguistic issue  $MLI^p$  such as: *Is  $p$  a relevant answer?*, or *Am I in the right social context to utter  $p$ ?* to the Table (5c), whereas the latter doesn’t (cf. Malamud & Stephenson 2015). Checking in about a  $MLI^p$  with the addressee naturally gives rise to the inference that the speaker is trying to build rapport with her and be polite. Second, inquisitive RDs sound less polite than polar interrogatives because the former adds  $p$  to the addressee’s projected commitment (6b) whereas the latter doesn’t. Attributing

<sup>1</sup>At the same time, there were also factors that systematically influenced participants’ *Oh* vs. *Yes* responses, such as intonation (weaker rising slopes correlated with greater *Oh* responses), content, etc. (Jeong 2017)

an expected answer to the addressee (instead of leaving it entirely up to the hearer) often gives rise to the inference that the speaker is being less polite than asking the question in a more neutral way.

In addition, the analysis has the advantage of allowing for subtleties and variations in the ultimate social inferences drawn by the listeners. As exemplified in (2), assertive RDs can sometimes sound *impolite*. In (2), *He's an idiot?* seems to give off an air of *Duh, it's obvious; why would you ask me that?*. Since politeness is a second order inference that is derived from (5b) in certain contexts, the analysis can predict that it will not arise when the context is not of the right type (namely, when putting a MLI<sup>p</sup>: *Is p a good enough answer?* leads to the inference that the speaker is uncertain about *p* being informative, because she thinks it should already be in the common ground). Our study thus suggests a more general view about politeness and other social phenomena: they do not derive from independent principles, but rather emerge from more primitive ones.

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## Iffy Endorsements

Magdalena Kaufmann  
University of Connecticut  
(On-going joint work with Stefan Kaufmann)

Questioning Speech Acts, Konstanz, Sep 14-16, 2017

- 1 Introduction
- 2 Imperatives and preferences
- 3 Conditionals and commitments
- 4 Re-evaluating iffy endorsements

# From form to action

- Uttering linguistic expressions typically goes beyond the locutionary (Austin 1962, Searle 1969)
- **Score-theoretic** (Lewis 1979): speech acts in terms of changes of discourse commitments
- Linguistic expressions (lexical material, . . . , discourse particles, clause types, evidentials, . . . ) constrain/determine change
- Agreed upon:  
'Conventional meaning' + 'discourse effects of utterances' +  
'formal contextual models'
- Open question:  
Distribution and combination

# Points

- If commitment state transitions model speech acts, commitment states have to model aspects of the discourse context ('pragmatically realistic')
- Pressure for unified conventional meaning across utterance functions and embedded occurrences risks trivializing aspects of our contextual models
- Imperatives as preferential commitments: Condoravdi & Lauer (2012, 2017; CL)
- Main testing ground: [conditionalized imperatives](#)
- Conditionalizing commitments (Krifka 2017, CL17) vs. commitments to pieces of hypothetical reasoning (Kaufmann & Schwager 2011)

Claim: (Changes in) discourse commitments are **achieved with the help of** conventional meanings and should not **not be identified with** conventional meanings

# Conditionals as a probe

- 1 Introduction
- 2 Imperatives and preferences**
- 3 Conditionals and commitments
- 4 Re-evaluating iffy endorsements

# Imperatives and speaker endorsement

Imperatives serve for a wide variety of speech act types (illocutionary forces) (Schmerling 1982,...), a.o.:

- |     |    |  |                      |
|-----|----|--|----------------------|
| (1) | a. | Open the door.                                     | Command              |
|     | b. | Don't go near that dog!                            | Warning              |
|     | c. | Please be rich.                                    | (Absent) Wish        |
|     | d. | A: How do I get to Harlem?<br>B: Take the A-train. | Disinterested advice |
|     | e. | Have a seat.                                       | Invitation           |

Invariably: some speaker endorsement (Kaufmann in 2006/12;  
Frank's 2007 [Deontic Moore's Paradox](#) for *should*)

- |     |  |                            |
|-----|--|----------------------------|
| (2) | A: How do I get into that building?<br>B: You have to go in through this door. But I don't want you to go through there.<br>B': Go through this door. #But I don't want you to go through there. | Disinterested advice, CL17 |
| (2) | Ok, then go to that damn party! #But I want you to stay here.  | Concession                 |



# Speaker preferences qua conventional meaning

'Imperatives express *speaker wishes*'  $\Rightarrow$  speaker endorsement  
(Bierwisch 1980, Zaefferer 2001, Truckenbrodt 2006, CL12, CL17, Oikonomou 2017, ...)

- Best bet for discourse commitment as imperative meaning.
- Challenge 1: Non-descriptiveness (Bierwisch, Zaefferer: illocutionary layer; CL: self-verifying commitment to public preferences)
- Challenge 2: Disinterested advice, permissions, suggestions

## Road map:

- Risk trivializing relevant notion of preference
- Conditional preference commitments are hard to make sense of
- Alternative: underspecified modal meanings + requirements on discourse parameters  
['felicity/use conditions'; presuppositions or expressive meaning]

## CL: Effective preference structures

- (CL11) A **preference structure** relative to an information state  $W$  is a pair  $\langle P, \leq \rangle$ , where  $P \subseteq \wp(W)$  and  $\leq$  is a partial order on  $P$  (reflexive, transitive, antisymmetric).
- (3) A preference structure  $\langle P, \leq \rangle$  is **consistent** iff any inconsistent subset of  $P$  contains at least two propositions that are ranked w.r.t. each other.
- (4) **Effective preferences**: consistent and realistic  
'preferences the agent takes into account when choosing actions' (CL16)  
'action-relevant preferences' (CL17)

## CL: Commitment states as discourse models

- (CL17:16) A **commitment state** (of an agent at a world) is a pair  $C = \langle C_{PB}, C_{PEP} \rangle$ , where
- $C_{PB}$  is a non-empty set of possible worlds.
  - $C_{PEP}$  is an effective preference structure.
- (CL17:17)  $\langle C_{PB}, C_{PEP} \rangle$   $\text{supports}_{PB}$   $p$  if and only if  $C_{PB} \subseteq p$
- (CL17:18)  $\langle C_{PB}, C_{PEP} \rangle$   $\text{supports}_{PEP}$   $p$  if and only if  
 $p \in \max(C_{PEP})$   
(i.e. not dominated by any  $q \in C_{PEP}$ )

# CL: Commitment states as sentential meanings

- (5) For any agent  $a$  and proposition  $p$ :
- a.  $PB_a(p) := \{w \mid C_a(w) \text{ supports}_{PB} p\}$
  - b.  $PEP_a(p) := \{w \mid C_a(w) \text{ supports}_{PEP} p\}$

Commitment states are admissible only if doxastic and preferential commitments relate so that:

- (6) a.  $PB_a(PB_a(p))$  entails  $PB_a(p)$  C4/density  
 b.  $PB_a(PEP_a(p))$  entails  $PEP_a(p)$  *one way*

## Pragmatic realism 1: Actual vs. public commitments

(CL17) 'we assume that any agent  $a$ , at a given world and time, has a unique commitment state, which we denote as  $C_a(w)$ '

- Public doxastic commitments: going on record, discourse particles, . . .
- Dependent on world/time-pair seems coarse-grained;  $\approx$  'everything  $a$  has committed himself to so far in any conversation (modulo explicit retractions)' (– 'public' or 'actual'?)
- Alternatively: 'public' w.r.t. a particular conversation/the spread out interactions with a particular individual:
  - Speakers in two different communications happening at the same time (Brasoveanu & Farkas 2005)
  - If commitment states persist over time, for agent  $a$ , at each world-time, as many commitment states as individuals  $a$  has talked to (-?)

# CL: Sentential meanings and updates

Constraints on doxastic update with a proposition  $p$ :

(7) If  $\langle C_{PB}, C_{PEP} \rangle + p = \langle C_{PB}^+, C_{PEP}^+ \rangle$  then:

a.  $C_{PB}^+ \subseteq C_{PB}$

monotonic

b.  $C_{PB}^+ \subseteq p$

success

**Imperatives express propositions**; update doxastic commitments  
(Schwager 2006/Kaufmann 2012, 2016; CL12, Lauer 2013).

CL: propositions that describe public effective preferences:

(8)  $\llbracket \text{IMP}(\text{you leave}) \rrbracket^c =$

$$\text{PEP}_{\text{Speaker}}(\lambda w. \text{Addressee leaves in } w)$$

CL12

## Pragmatic realism 2: Promising problem

- Effective preferences determine action choices of the speaker
- Imperative prejacent has to be compatible with all other maximal elements (consistency & maximality)
- Block use for speaker actions

(9) Get tenure. ( $\not\approx$  'I will do all I can so that you get tenure.')

(CL12:34) The speaker takes it to be possible and desirable that, after his utterance, there is no action on his part that is necessary to bring about the realization of the content.

- Too strong?

(10) a. A: My plane leaves at 3.

B: Be at the airport at noon. I'd be happy to give you a ride.

b. Finish your homework before dinner. I'll help you.

## CL: Disinterested advice as default cooperativity

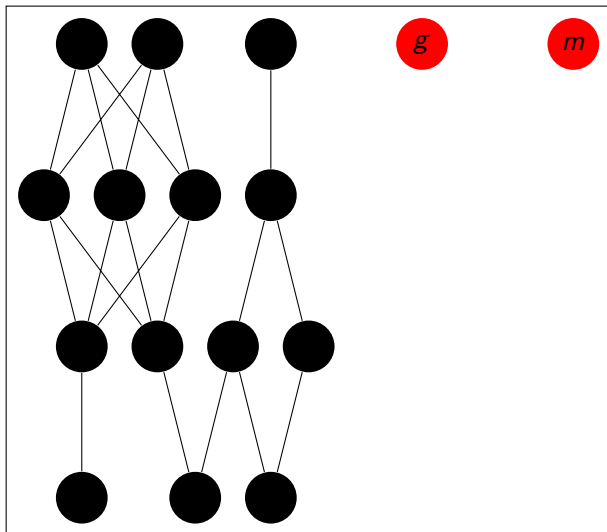
- (11) A: How do I get to Harlem?  
B: Take the A-train.

(CL17:26) **Cooperation by default** An agent  $a$  is cooperative-by-default if she adds any **topical goal**  $g$  of another agent she learns about to her effective preference structure  $EP_a$ , in such a way that for no **self-motivated preference**  $p \in EP_a$ :  $p < g$ .

Practical reasoning when learning about **necessary means** to EP-goals: make means effective preference or demote goal.



# Picturing cooperation by default



## Pragmatic realism and linguistic data

- *want* is restricted to self-motivated preferences (CL17)

(12) A: How do I get to Harlem?  
 B: #I want you to take the A-train.

Same: *intend*, *prefer*; only exception: imperatives?

- Why don't we rank salient self-motivated goals over adopted ones? ('rank as little as possible')
- Imperatives: disinterested advice *how-to*, but also *(not)-to*

(13) a. A: I want to host the department party!  
 B': Buy a bigger table, then. advice-how-to  
 B'': Don't, it's too expensive. advice-not-to

b. A: Should I host the department party this year?  
 B'': Don't do it, it would cost you a lot of money.  
advice-not-to

'you don't host the department party': neither self-motivated, nor from cooperativity by default; impart (ordered) subset of the addressee's

# Probing imperative semantics: conditionals

## Taking stock:

- If imperative semantics is to be specified as commitment change, speaker preferences seemed most plausible
- Disinterested advice and permission remain problematic even for the version that's worked out best (CL)

## Next: (Fregean) contextualist evidence?

- Conditionals (Schwager 2006, Kaufmann & Schwager 2011, CL17)
- Conditionalizing discourse commitments yields counter-intuitive predictions

- 1 Introduction
- 2 Imperatives and preferences
- 3 Conditionals and commitments**
- 4 Re-evaluating iffy endorsements

# Imperatives and endorsement

CL17: Anankastic conditionals with modals can be used to give **advice-how-to** and **advice-why-not-to**.

(CL17:1) If you want to have the workshop dinner at your place, you have to/should/need to buy a bigger dining table.

- a. So start checking out furniture stores.
- b. So don't even think about it! (it = having the dinner at your place)

CL17: Anankastic conditionals with imperatives can be used to give **advice-how-to** **but not** **advice-why-not-to**.

(CL17:2) If you want to have the workshop dinner at your place, buy a bigger dining table!

- a. So start checking out furniture stores.
- b. #So don't even think about it!

*To be modified slightly.*

## Ruling out confound: sameness of modal/imperative

Structure of **advice-why-not-to** examples:

- (14) a. If ... WANT(*goal*), MODAL(*means*). So, IMP ( $\neg$ *goal*)  
 b. #If ... WANT(*goal*), IMPERATIVE(*means*). So, IMP( $\neg$ *goal*)

Sameness of modal/imperative is bad in general:

- (15) #If you want to have the workshop dinner at your place, you have to buy a bigger dining table. So you have to forget about it.

**Advice-why-not-to** with *have to* in reply to imperative anankastic is still bad:

- (16) #If you want to have the workshop dinner at your place, buy a bigger dining table. So you have to/should forget about it.

The issue is indeed with imperative anankastics motivating advice-why-not-to. Or: imperative conditionals are **non-descriptive**, can't be used for assertions about necessary means.

## How much goal endorsement?

- Conditionalized imperatives: speakers are not committed to endorse **prejacent** unconditionally (Kaufmann & Schwager 2011, CL17)

(17) If you get lost, **call me**. (ok: 'In general, I prefer to work undisturbedly.')

- 'the fact that anankastic imperatives cannot be used to give advice on why-not-to suggests that their speakers unconditionally endorse the **goal mentioned in the antecedent**.' (CL17)

- 'unconditionally endorses'  $\rightsquigarrow$  should be: 'I respect whatever goal you have'

(18) If you want to relax, stay home, {and/but} if you want to work, go to the office.

- CL17 derive hypothetical commitments, 'whatever goal' seems sufficient.

## Three options for conditional preferential commitment

(CL17:29) An agent  $a$  is committed to prefer  $q$  conditionally on  $p$  if and only:

- a. ... if/once  $p$  is true. [STRONG]
- b. ... if/once  $p$  comes to believe/know that  $p$  is true. [INTERMEDIATE]
- c. ... if/once  $a$  comes to be committed to believe that  $p$  is true. [WEAK]

- Incentive to find out ('pro STRONG'): no, pro all three - necessary to make use of advice.
- Only WEAK is compatible with pragmatic realism about P(ublic)EPs.
- All three are hard to reconcile with linguistic data (see following).



## Strong and intermediate seem very problematic

- (CL17:29) An agent  $a$  is committed to prefer  $q$  conditionally on  $p$  if and only:
- a. ... if/once  $p$  is true. [STRONG]
  - b. ... if/once  $p$  comes to believe/know that  $p$  is true. [INTERMEDIATE]
  - c. ... if/once  $a$  comes to be committed to believe that  $p$  is true. [WEAK]
- (19) A: I am lost!  
 B: Come on. Stop kidding me, let me work.  
 (PEP(that B works undisturbedly))  
 A: Stop pretending! I'm lost. #You're being inconsistent!  
 (contra STRONG) A': Stop pretending! You know that I'm lost!  
 #You're being inconsistent! (contra INTERMEDIATE)

## Deriving WEAK conditional preferential commitment

- (CL17:29c) An agent  $a$  is committed to prefer  $q$  conditionally on  $p$  if and only if/once  $a$  comes to be committed to believe that  $p$  is true. [WEAK]
- (20) An agent with commitment state  $C$  is committed to prefer  $q$  conditionally on  $p$  iff  $(C+p)$   $\text{supports}_{\text{PEP}}$   $q$

## Deriving weak conditional preferential commitment

- (21)
- If you get lost, call me.
  - NEC[you get lost][IMP(you call me)] (CL1731b)  
NEC: strict, speaker epistemic
  - $\leftrightarrow B_S(\neg \text{Lost} \vee \text{PEP}_S(\text{Call}))$
- (22)
- $C_S + B_S(\text{Lost})(\text{PEP}_S(\text{call})) \text{ supports}_{\text{PB}}$   
 $B_S(\neg \text{Lost} \vee \text{PEP}_S(\text{call}))$
  - $C_S^+ \text{ supports}_{\text{PB}}$   
 $\text{PB}_S(B_S(\neg \text{Lost} \vee \text{PEP}_S(\text{call})))$   
Speaker is publicly committed to believing that she has  
**STRONG conditional endorsement.** *pace CL17*
  - claimed to have:  $C_S^+ + \text{Lost} \text{ supports}_{\text{PB}} \text{PB}_S(\text{PEP}_S(\text{call}))$
  - get:  $C_S^+ \text{ supports}_{\text{PB}} \text{PB}_S(\text{Lost}) \wedge \text{PB}_S(B_S(\neg \text{Lost} \vee \text{PEP}_S(\text{call})))$
  - Need further admissibility condition (Stalnaker 2002 on PB):**  $\text{PB}_S(B_S(p)) \rightarrow \text{PB}_S(p)$
  - $C_S^+ + \text{Lost} \text{ supports}_{\text{PB}} \text{PB}_S(\text{PEP}_S(\text{call}))$
  - $C_S^+ + \text{Lost} \text{ supports}_{\text{PEP}} \text{PEP}_S(\text{call})$

# Even weak conditional preferential commitment is problematic

Predicted to be contradictory (a: by WEAK, b: by all three)

- (23)
- a. If my wife cheated on me last night, don't ever tell me about it.
  - b. I am worried I might go crazy. If I tell you to kill me, don't do it.

Predicted to be void (a: by WEAK, b: by all three)

- (24)
- a. I will never find out if my wife cheated on me. But if she did, send her this envelope.
  - b. If I die before I get tenure, give my books to the grad students.

Intuition:

Iffy endorsements are actual commitments to contingency plans.

- 1 Introduction
- 2 Imperatives and preferences
- 3 Conditionals and commitments
- 4 Re-evaluating iffy endorsements**

## A closer look at advice how-to vs. why-not-to

Much better than imperative anankastics, but not flawless:

- (25) If you want to have the workshop dinner at your place, you have to/should/must buy a bigger dining table.
- So start checking out furniture stores.
  - ??(?)So don't even think about hosting that dinner!  
(*have to* > *should* > *must*)

Flawless:

- (26) If you want to have the workshop dinner at your place, {**you'd have to/you will have to**} buy a bigger dining table.
- So start checking out furniture stores.
  - So don't even think about hosting that dinner!

# Imperative anankastics

CL17: Imperative anankastics motivating advice on why-not are bad because they commit the speaker to

- hold possible that he has an effective preference for the means (which must have come in via one for the goal, PEP(you host the dinner)), and
- PEP(you don't host the dinner)

But: imperative anankastics motivating **advice-why yes** seem weird, too (no conflicting preferences predicted):

Background info: B has long been hoping that A will replace his rotten old dishwasher:

(27) A: {Should I host the department dinner? / I'm considering hosting the department dinner.}

B: If you want to do that, you('ll) have to replace your dishwasher. So yes, do it!

B': ??If you want to do that, replace you dishwasher. So yes, do it!

## A role for discourse structure

- (28) If you want a divorce, set aside \$10.000 for a good lawyer. . . implicit advice why-not-to
- (29) If you really want to host that dinner, buy a bigger table. But I think you shouldn't do it. really want-endorsement
- (30) If you want to be at the airport at noon, leave now. But I was hoping to hang out with you a bit more! So just go a bit later.

(30): *so*  $\rightsquigarrow$  'Because I want to hang out with you'; But: same preferential commitments

Imperative anankastics seem to require two things:

- 'acceptance' of content of modality in antecedent (*what(ever) you want/really want*)
- a particular discourse structure.

Behave non-descriptively, just like main clause imperatives.



## Imperatives as modals (Kaufmann 2016)

At-issue semantics of a standard Kratzer necessity modal.

- Prejacent is a consequence of optimizing according to goals
- Ordering source can, but need not be speaker preferences (as long as discourse status is suitable)

Hypothesis: requirements on discourse status of modality and prejacent explain non-descriptive behavior of conditionals.

## Non-descriptive contexts

- (31) An imperative of the form 'IMP  $p$ ' triggers the following presuppositions on its context of use  $c$ :
- EPISTEMICAUTHORITY( $c$ )
  - NONDESCRIPTIVITY( $c$ )  $:\Leftrightarrow$   
 $(A\text{-PRACTICAL}(c) \wedge \text{ANSWER}(p, \Pi_c)) \vee$   
 $(\text{EXPRESSIVE}(c) \wedge (\text{SOLILOQUY}(c) \vee$   
 $\text{SETTLED}(c, p)))$
- (32) A context  $c$  is **practical** for an agent  $\alpha$  (written  $\alpha\text{-PRACTICAL}(c)$ ), iff
- $\Pi_c$  is a **decision problem** for  $\alpha$ , written  $\Pi_\alpha^\Delta$ , and
  - $g_c$  represents a set of rules, preferences, or goals.
  - The salient modality in  $c$  is *decisive*, that is, CS entails that  $f_c, g_c$  characterize the modality relevant to resolve  $\Pi_\alpha^\Delta$ .

## Non-descriptive contexts continued

- (33) A **decision problem** for an agent  $\alpha$  is a set of non-overlapping propositions where each cell represents a future course of events that is *choosable* for  $\alpha$ .
- (34)
- If  $\alpha$  is an actual participant in  $c$ ,  $\alpha$  will try to find out whether  $\Box^{f,g} p$  for all  $p \in \Pi_{\alpha}^{\Delta}$ .
  - If  $\alpha$  is an actual participant in  $c$  and comes to believe  $\Box^{f,g} q$  for some  $q \in \Pi_{\alpha}^{\Delta}$ , then  $\alpha$  will aim to bring about  $q$ .
  - If  $\beta$  is an actual participant in context  $c$  and believes that  $\Box^{f,g} q$  for any proposition  $q$ , then it is not the case that  $\beta$  wants that  $\neg q$ .
- (35) **EXPRESSIVE( $c$ )**: A context  $c$  is **expressive** iff there is no agent  $\alpha$  such that  $c$  is  $\alpha$ -practical and  $g_c = g_{ScBul}$ , which records the speaker's wishes.

## Decisive modality

- (36)
- If  $\alpha$  is an actual participant in  $c$ ,  $\alpha$  will try to find out whether  $\Box^{f,g} p$  for all  $p \in \Pi_{\alpha}^{\Delta}$ .
  - If  $\alpha$  is an actual participant in  $c$  and comes to believe  $\Box^{f,g} q$  for some  $q \in \Pi_{\alpha}^{\Delta}$ , then  $\alpha$  will aim to bring about  $q$ .
  - If  $\beta$  is an actual participant in context  $c$  and believes that  $\Box^{f,g} q$  for any proposition  $q$ , then it is not the case that  $\beta$  wants (= **effectively prefers**)  $\neg q$ .

Ordering source: possibly different preference structure that is checked against public effective preferences of all participants.

## Decisive modality in anankastic conditionals

Following Kaufmann & Schwager (2011) for proposition.

- Assume: decisive modality projects.
- Imperative evaluated w.r.t.  $f$  (relevant circumstances) and  $g$  (maximal elements of addressee's EPs, CL16)
- Qua indicative conditional:  $\diamond^{S,epi}(\Box^{f,g}(A \text{ hosts department party}))$ .
- Insufficient to block preference against hosting department party, needed: mixed introspection, or strengthen decisive modality [see actual Slides].

## Decision problem in anankastic conditionals

$$(37) \quad \text{NONDESCRIPTIVITY}(c) :\Leftrightarrow \\ (\text{A-PRACTICAL}(c) \wedge \text{ANSWER}(p, \Pi_c)) \\ (\dots \text{ or expressive})$$

(38) If you want to host the department party, IMP [buy a bigger dining table]

- Requires the decision problem to be constituted of alternatives to 'you buy a bigger dining table' - intuitively, 'you host the department party'/'you don't host the department party' are not in there.  
(Eckardt 2011, Oikonomou 2017 on importance of relevant alternatives)
- Imperative anankastics (like other conditionalized imperatives) answer the wrong QUD to be used for description of necessary-means.
- Potential complication: conditional antecedents may determine

# Conclusions

- Identifying imperatives with specific (change in) discourse commitments (public effective preferences) remains problematic
- Imperative anankastic conditionals provide evidence against uniform treatment via public effective preferences of the speaker
- General worries about conditionalizing commitments
- Endorsement effects with imperative anankastics rest on (i) acceptance of addressee preferences as decisive, and (ii) special discourse structure
- First sketch: non-descriptivity derivable from presuppositions postulated in modal operator theory (Kaufmann 2012, 2016)
- More open questions: subjectivity/obviation (Oikonomou 2017, Stegovec t.a.), arguments for weak semantics (von Stechow & Tridopoulos 2015), scope and focus effects (Haida & Repp 2012, Oikonomou 2017).

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## On the Syntax and Semantics of Assertion

Peter Klecha • *Swarthmore College* • p.a.klecha@gmail.com

The well known analysis of *if*-clauses as restrictors of modals (Kratzer, 1986) has proven quite successful in the analysis of conditionals, but faces an apparent counterexample in cases like (1).

(1) If John went to the store, he bought cookies.

Kratzer's response to such cases is to posit a covert epistemic necessity modal, akin to *must*, in ordinary declarative sentences, which can provide something for the *if*-clause to restrict. This analysis, along with the general analysis of *if*-clauses as restrictors, has become widely accepted and cemented in the mainstream theory of modality.

**Problem.** But this theory raises several concerns. For one, if all declaratives contain a covert epistemic necessity modal, why does English not allow speakers to plainly assert a proposition? Why do all assertions have to be modalized? Furthermore, if there is an epistemic necessity modal present in all sentences, what exactly comprises the domain of this modal? Is it the set of worlds consistent with the mutual knowledge/belief of the interlocutors (i.e., the common ground)? If so, all utterances of declaratives should be either false or uninformative, since a true utterance would entail that the hearer already knows its content. Is it the set of worlds consistent with the speaker's knowledge/belief? If so, basically all utterances of declaratives  $\phi$  should be unassailable, since what the speaker is really asserting is "I believe  $\phi$ "; but in fact, of course, assertions are usually not unassailable; what B denies in (2b) is not that A believes that John left – it just denies that John left.

(2) a. A/B: John left.  
b. B/A: That's not true!

Note that one could deny that all assertions are modalized and still maintain Kratzer's account of conditionals – i.e., one could posit that Kratzer's silent epistemic modal exists only when need, i.e., in indicative conditionals. But the same problem remains for indicative conditional sentences: Whose knowledge forms the modal base? This led some (e.g., Stephenson, 2007) to propose relativist accounts of conditionals, whereby a conditional like (1) is treated as having a subjective truth-value, similar to a sentence containing a predicate of personal taste, like (3).

(3) The cookies John bought are tasty.

I pursue an approach that does not require appeal to relativism to explain these ordinary conditionals.

**Proposal.** This paper provides a non-relativist solution to this problem by simply contending that Kratzer's silent modal is not a part of the content of what is asserted, but rather is the operator responsible for the illocutionary force of assertion itself; in other words, all assertions are modalized because assertion itself is modal in nature. Note that this argument is parallel to Kaufmann's (2012) argument that conditional imperatives can be accounted for by her theory that there is an imperative operator in syntax. For Kaufmann this operator is essentially the modal *should*, thus imperatives like (4a) are equivalent to performative utterances of (4b).

- (4) a. Go!  
b. You should go.

However, it needs to be made clear what the difference is between a performative utterance of (4b) and its use as a normal assertion. Likewise, the present proposal regarding assertions is useless unless an explicit model of performative meaning is articulated to explain the exact role of the assertion operator (the target for restriction by *if*-clauses in (1)). I spell out such a model below.

**Performatives.** On my model, all sentences denote propositions. There is a single static update rule. Whenever a sentence is uttered, if its felicity (definedness) conditions are met, it is added to the Social Common Ground (SCG) as in (5).

$$(5) \quad SCG_n + \llbracket S \rrbracket = SCG_{n+1} = SCG_n \cap \llbracket S \rrbracket$$

The SCG for a given community is a body of information which everyone in that community, by normative convention, agrees (to act as if) is true. This model looks just like Stalnaker's (1984), which has been shown to be inadequate as a model of assertions, because assertions do not directly update the common ground, but merely propose to do so. However, explicit performatives like (6) actually do have the behavior Stalnaker's model attributed to assertions: Their update is (when felicitous) automatic and non-negotiable.

- (6) I promise to go.

Thus the explicit performative (6) denotes the ordinary proposition abbreviated in (7) (the proposition it would classically denote if it were considered an ordinary declarative).

$$(7) \quad \llbracket \text{I promise to go} \rrbracket = \lambda w [\exists e [\text{promise}(e, w) \ \& \ \text{Ag}(e, 1, w) \ \& \ \dots]]$$

Uttering it adds that proposition to the SCG, so everyone in the relevant community becomes committed to acting as though it is true; i.e., everyone in the community becomes committed to act as though the speaker has promised the hearer that she will go, whatever else that entails (e.g., that the speaker will be punished if she doesn't go, etc.)

**Commands etc.** Following Kaufmann (2012), (4a) has LF (8a) and denotation (8b).

- (8) a. IMP [ *<you>* go ]  
b.  $\llbracket (a) \rrbracket = \lambda w [\Box_{1,w} \lambda u [\exists e [\text{go}(e, u) \ \& \ \text{Ag}(e, 2, u)]]]$

I take  $\Box_x$  to mean *should (according to x)* similar to Kaufmann, meaning (9a) is a worthy paraphrase of (4a); though it could also be Lauer's (2013) *public effective preference* operator (PEP), in which case the declarative paraphrase of an imperative like (4a) would be something more like (9b).

- (9) a. According to me, you should go. (Kaufmann-style paraphrase)  
b. I promise (to act as though) I want you to go. (Lauer-style paraphrase)

Either would work just as well for the present analysis. Thus when an imperative is (felicitously) uttered, (the relevant community becomes committed to act as though) the hearer is obligated (or preferred) by the speaker to perform the act described by the VP. (NB: The IMP operator only

establishes an obligation on behalf of the speaker, not necessarily the community at large; so unlike in the case of explicit performatives, hearers can respond to imperatives by refusing to commit themselves to undertaking the prescribed action.) Lastly, as Kaufmann argues, it is IMP which is restricted by *if*-clauses in conditional imperatives.

**Assertions.** Assertions like (2a) have LFs like in (10).

(10) [ IMP [ BEL [ John left ] ] ]

The operator BEL is synonymous with *think* or *believe*. Accordingly, (2a) is equivalent to a performative utterance of (11a) or (11b).

- (11) a. According to me, you think should John left. (Kaufmann-style paraphrase)  
b. I promise (to act as though) I want you to think John left. (Lauer-style paraphrase)

So it's BEL which is restricted by conditionals as in (1). This successfully fleshes out Kratzer's original analysis of conditionals, dispensing with the problem for cases with no overt modal raised at the beginning of this abstract. (NB: This is *not* a conditional speech act analysis, because the speech act occurs unconditionally.)

Modeling the illocutionary effect of an assertion of  $\phi$  as creating an obligation or public effective preference for the hearer to believe  $\phi$  captures the essential purpose of assertions: We typically assert  $\phi$  *in order to get the hearer to believe  $\phi$* , a point made by Grice (1957). Additionally, we judge it as odd when a hearer refuses to believe something asserted at them (unless the hearer has good reason; assertions are still negotiable, just as imperatives are). This normative judgment cannot be explained unless there is a normative convention which puts pressure on hearers to believe assertions; I argue that this normative convention is a grammatical convention, i.e., a part of compositional semantics.

On the contrary, the standard wisdom has long been that the illocutionary effect of an assertion of  $\phi$  is to commit the *speaker* to the belief that  $\phi$ . (See Lauer 2013 for a recent version of this.) And typically the speaker surely *does* become committed to believe what she asserts. But this fact can be explained by appeal to pragmatic, rather than grammatical, convention, i.e., Grice's Quality (anyone who asks others to believe  $\phi$  commits themselves to believe  $\phi$ ). Moreover, speaker-commitment theories of assertion cannot explain the non-synonymy of (12a) and (13a), which on (e.g.) Lauer's analysis have essentially the meanings in (12b) and (13b) (which are equivalent); whereas my analysis paraphrases them as in (12c) and (13c) (not equivalent).

- (12) a. John left.  
b. I promise to believe John left.  
c. I want you to believe John left.
- (13) a. I believe John left.  
b. I promise to believe I believe John left.  
c. I want you to believe I believe John left.

**Biscuits.** An advantage of the decompositional approach is that it offers an angle on relevance conditionals, also called biscuit conditionals.

- (14) If you're hungry, John bought cookies.

On my analysis the *if*-clause in (14) restricts IMP, rather than BEL as in (1). The result is that the hearer is only obligated/desired to believe the consequent if the antecedent is true. Conditional perfection leads the hearer to infer that if the antecedent is not true, they are not under any obligation to believe the consequent. A la Franke (2007) the hearer can reason that this is not because the consequent is actually false when the antecedent is false, so the hearer is likely to either believe or disbelieve the consequent regardless of the truth value of the antecedent. But the inference that the information conveyed by the consequent is relevant only if the antecedent is true is derived by a version of Grice's (1975) Relation, namely something like (15).

(15) It is infelicitous to obligate someone to do  $x$  if their doing  $x$  is not relevant to common interests.

So this theory does offer something more like the “conditional speech act” approach (e.g., DeRose and Grandy, 1999), but only for biscuit conditionals. My paper will also thoroughly discuss alternative approaches to indicative conditionals (e.g., Stephenson, 2007), biscuit conditionals (e.g., Franke, 2007) and assertion generally (e.g., Krifka, 2015).

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# Diagnosing the semantic status of evidentials

Natasha Korotkova

SFB 833 “Construction of meaning”, University of Tübingen

Workshop “Questioning Speech Acts”

University of Konstanz  
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# Agenda

- 1 In-depth discussion of the formal mechanisms that govern the use of evidentials focusing on ...
- 2 The modal and the illocutionary family of approaches
  - motivated by superficially different cross-linguistic data
  - make in fact very similar predictions
- 3 New diagnostics that distinguish between alternative approaches

## Warning

- 1 no new data!
- 2 no positive proposal!



# Evidentiality I

Signals the source of the semantically determined information conveyed by an utterance (Chafe and Nichols 1986; Aikhenvald 2004)

**English:** lexical means, e.g. *seem* or adverbials

- (1) Threatened by climate change, Florida **reportedly** bans term 'climate change'.  
*Washington Post*

**Many other languages:** dedicated grammatical means (verbal morphology, clitics, particles, ...) to talk about information source:

DIRECT	INDIRECT	
<ul style="list-style-type: none"> <li>● visual</li> <li>● auditory</li> <li>● other sensory</li> </ul>	INFERENCE <ul style="list-style-type: none"> <li>● reasoning</li> <li>● results</li> </ul>	HEARSAY <ul style="list-style-type: none"> <li>● secondhand</li> <li>● thirdhand</li> <li>● folklore</li> </ul>

(Willett (1988) based on a 32-language sample)

# Evidentiality II

## (2) Cuzco Quechua (Quechuan)

a. *Para-sha-n=mi.* [PERCEPTION]

rain-PROG-3=**DIR**

'It is raining, *I see.*'

b. *Para-sha-n=si.* [HEARSAY]

rain-PROG-3=**REP**

'It is raining, *I hear.*'

c. *Para-sha-n=chá.* [CONJECTURE]

rain-PROG-3=**CONJ**

'It must be raining, *I gather.*'

**Scope proposition:** 'It is raining' (adapted from Faller 2002: 3, ex.2a-c)

**Evidential Requirement (ER):** semantic contribution of evidentials

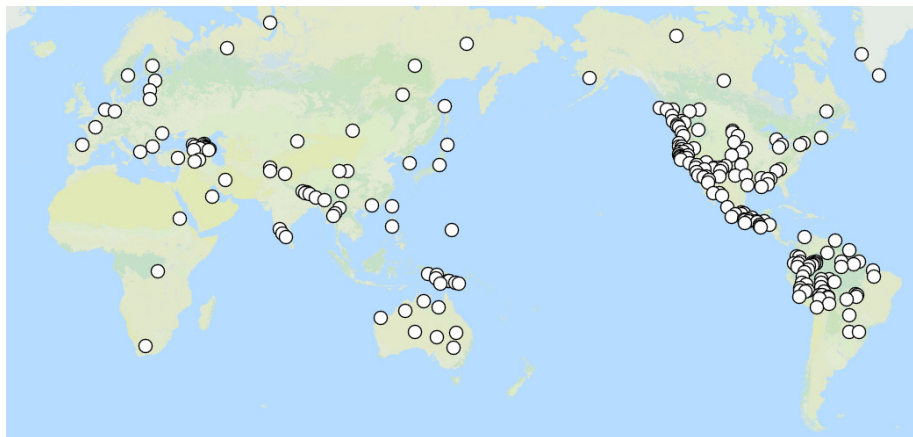
● firsthand = *mi* (2a)

● hearsay = *si* (2b)

● inference = *chá* (2c)

# Types of category I

Focus in typology: grammatical evidentials, present in 237 out of 414 languages surveyed by de Haan (2013b)



(from the World Atlas of Language Structures (WALS) Online (de Haan 2013b,a))

## Types of category II

- Aikhenvald's (2004)'s criteria (see (Boye 2010) on the validity):
  - obligatory use
  - encoding information source should be the primary function
- Formal semantic studies also suffer from category-centrism

**But** Semantic categories don't always map onto morphosyntax, see e.g. (Bittner 2014) on temporality in languages with and without tense

- Evidentiality across categories: highly understudied
  - adverbials such as *allegedly* (see (Krawczyk 2012) on English; (Matthewson 2012) on St'át'imcets *lákw7a*)
  - adjectives such as *alleged*
  - copy-raising constructions such as *looks like* (see (Rett et al. 2013; Winans et al. 2015) on English; (Asudeh and Toivonen 2012) on English and Swedish; (de Haan 2000; Koring 2013) on Dutch)
  - parentheticals (Reinhart 1983; Rooryck 2001; Simons 2007)
  - Moulton's (2009) infinitives
  - ...

# Existing approaches

Views on evidentiality within formal semantics gravitate towards one of the landmarks:

- ① An (Izvorski 1997)-style **modal analysis**: evidential markers are treated as epistemic modals within the Kratzerian framework
- ② A (Faller 2002)-style **illocutionary analysis**: evidential markers are treated as interacting with the structure of speech acts

# Modal approaches I

- First introduced by Izvorski (1997) for Bulgarian (South Slavic)
- Point of departure: similarities between (a) Bulgarian evidential perfect and (b) English *must* and *might*
- Analysis: vanilla epistemic modal plus an indirect evidence presupposition

NB Formalization of the long-standing typological tradition that treats evidentiality as a sub-category of epistemic modality (Bybee 1985; Palmer 1986; van der Auwera and Plungian 1998)

## Modal approaches II

- Similarly-spirited approaches to evidentials: German *sollen* (Ehrich 2001; Faller 2007, 2012); Japanese (McCready and Ogata 2007); Korean (Lee 2013); St'át'imcets (Matthewson, Davis, and Rullman 2007; Matthewson 2012); Tibetan (Garrett 2001); Cuzco Quechua (Faller 2011)
- Further reinforcement of the connection between the two categories: evidential component of the epistemic *must* (von Stechow and Gillies 2010; Lassiter 2016)



## Illocutionary approaches

- First introduced by Faller (2002) for Cuzco Quechua (Quechuan)
- Point of departure: dissimilarities between (a) Quechua evidential enclitics =*mi*, =*si* and =*chá*, and (b) English modal auxiliaries
- Analysis: Cuzco Quechua evidentials operate at a level higher than proposition and modify sincerity conditions
- Later work: Murray (2010, 2014) on Cheyenne (further adopted by Koev (2016) for Bulgarian), similar data and predictions
- Insights are easy to reformulate within other approaches to speech acts, e.g. commitments instead of sincerity conditions; see e.g. (Northrup 2014)

NB Long-standing tradition (dating back to Lyons 1977) to treat epistemics as dealing with speech acts

- ① The **dichotomy view** (Faller 2007; Matthewson et al. 2007):
  - evidentiality is semantically heterogeneous
  - some evidentials are modal, some illocutionary
- ② The **modal view** (Matthewson's recent work; Matthewson 2012)
  - evidentiality is semantically homogeneous
  - all evidentials are modal
- ③ From a purely combinatorial perspective, the not attested illocutionary view

- The illocutionary approach to evidentials in individual languages, and the dichotomy view on cross-linguistic variation, emerged as a response to the dominant modal view
- Let's review the diagnostics!

# Why current diagnostics don't work

# Motivation for the illocutionary view and for the dichotomy

## Cuzco Quechua evidentials ...

- Wide scope wrt clause-mate operators: tense, negation, conditionals
- Non-embeddability: banned from attitude reports and conditional antecedents
- Evidential contradictions: hearsay =*si* gives rise to interpretations such that the speaker is agnostic about, or overtly disagrees with, the truth of the scope proposition

# The pattern and proposed solution

- Facts
  - Some languages (e.g. Quechua): evidentials take obligatory wide scope wrt to clause-mate operators
  - Some other languages (e.g. Japanese, German): evidentials allow narrow scope
- Predictions (Faller 2007; McCready and Ogata 2007):
  - Modal evidentials are supposed to allow narrow scope construals
  - Illocutionary evidentials are expected to only take wide scope
- Assumptions:
  - speech acts are scopally inert (not a given; cf. Krifka 2014, 2015)
  - epistemics are not

# Criticism

- Parameterizing scopal behavior does not require postulating different semantic categories
- Case in point: modals and negation (de Haan 1997; Iatridou and Zeijlstra 2009, 2013; Yanovich 2013)

- (3)
- a. English deontic *must*: always above  $\neg$
  - b. English *have to*: always below  $\neg$
  - c. French *devoir*: both construals

## The bottom line

Scopal behavior is not instrumental in resolving the modal-illocutionary debate

## The pattern and proposed solution

- Epistemics: embeddable (though not under all attitude predicates; Hacquard and Wellwood 2012; Anand and Hacquard 2013)
  - Some languages (Georgian, Turkish, St'át'imcets, Tagalog, ...): evidentials allowed in attitudinal complements
- (4) ✓ [CP ... attitude verb ... [CP ... Ev ... p ... ]]
- Some other languages (Abkhaz, Cheyenne, Quechuan, Tariana, ...): evidentials banned from attitudinal complements
- (5) # [CP ... attitude verb ... [CP ... Ev ... p ... ]]
- Embedding behavior is taken to be indicative of semantics (Faller 2002, 2007; Garrett 2001; Matthewson et al. 2007; Matthewson 2012; Murray 2010, 2016); highly controversial (e.g. syntactic embeddability often confused with interpretational differences)



# Non-semantic alternative (Korotkova 2016b)

- Languages with non-embeddable evidentials lack finite embedding
- Embeddability of evidentials depends on their morphosyntactic category and on the availability of suitable embedders
- Case in point: Turkish *miş*

(6) a. embeddable in tensed clauses:

✓ *Natasha* [ *dün kar yağ-miş* ] *söylü-yor*  
*Natasha* [ yesterday snow precipitate-MIŞ ] say-PROG  
 'Natasha says that *allegedly* it snowed yesterday.'

b. non-embeddable in nominalizations:

\**Natasha* [ *dün kar yağ-dığ-ın-ı-miş*  
*Natasha* [ yesterday snow precipitate-NFUT.NMLZ-3S.POSS-ACC-MIŞ  
 / *yağ-miş-dığ-ın-ı* ] *söylü-yor*  
 / precipitate-MIŞ-NFUT.NMLZ-3S.POSS-ACC ] say-PROG  
 Intended: 'Natasha says that *allegedly* it snowed yesterday.'

The bottom line

Embedding behavior is not instrumental in resolving the modal-illocutionary debate

# The pattern

- Hearsay markers (most, if not all; AnderBois 2014):

$$\checkmark [ \text{Evp} ] \wedge [ \neg p ]$$

(7) Georgian

*Hearsay context: There is a report that California legalized marijuana.*

$\checkmark$  kalifornia-s k'anonier-i **gauxdia** marihuan-is  
 California-DAT legal-NOM make.3SG:S.3SG:0.**IND:PST** marijuana-GEN  
 gamoq'eneba, da es ar aris martal-i.  
 usage.NOM but it.NOM NEG be.3SG:S.PRES true-NOM  
 'California legalized marijuana, I hear, but that's not true'.

- Epistemics:  $\# [ \text{must } p ] \wedge [ \neg p ]$

(8)  $\#$  There must be water on Mars. But there is no water on Mars.

# An illocutionary analysis (Faller 2002; Murray 2010, 2014)

- Speech acts with hearsay evidentials are not assertions (= there is no proposal to add  $p$  to the common ground)
- Hearsay evidentials and *must* belong to different semantic categories
- But:
  - even if (some) hearsay markers require an illocutionary analysis, why should other evidentials from the same language be assigned the same semantics?
  - semantics doesn't have to map onto morphosyntax, cf. the morphosyntactic vs. semantic behavior of future (Winans 2016 and references therein)

## A modal analysis

- Hearsay evidentials are non-epistemic modals (Ehrich 2001; Faller 2011; Kratzer 2012; Matthewson 2012): e.g. a non-realistic modal base will include non- $p$  worlds (cf. the Hintikka semantics for 'say')
- Moreover ...
  - as Yalcin (2007) points out, the standard Kratzerian semantics predicts the availability of epistemic contradictions (as well as many weak theories of *must*; see Lassiter 2016)
  - Izvorski's (1997) original proposal handles evidential contradictions

### The bottom line

Evidential contradictions are not instrumental in resolving the modal-illocutionary debate

# Revisiting motivation for the illocutionary view and for the dichotomy

- Wide scope wrt clause-mate operators
- Non-embeddability in attitudes
- Evidential contradictions with hearsay markers

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**scopal variability  $\neq$  semantic variation**
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# Revisiting motivation for the illocutionary view and for the dichotomy

- Wide scope wrt clause-mate operators  
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# Revisiting motivation for the illocutionary view and for the dichotomy

- Wide scope wrt clause-mate operators  
**scopal variability  $\neq$  semantic variation**
- Non-embeddability in attitudes  
**morphosyntactic variation  $\neq$  semantic variation**
- Evidential contradictions with hearsay markers  
**can be handled by either theory**

## Summary

- Each family handles the known facts relatively well
- No knock-down arguments for either of them

Additionally, **semantic** heterogeneity is overrated (Korotkova 2016b): evidentials exhibit previously unnoticed uniformity across a range of environments (dialogues, attitudes, questions)

## Special cases

- Sometimes hearsay markers can be used to relay speech acts made by other parties, e.g. questions in Quechua (Faller 2002) and imperatives in Tagalog (Schwager 2010)
- The semantic and pragmatic contribution of these readings is debated (Thomas 2014; AnderBois 2017; Korotkova 2017)
- It is possible that they are best analyzed akin to quotative particles

# Routes to reconciliation

# Recap

- No evidence for genuinely semantic variation
- The lack of variation does not resolve the modal-illocutionary debate
- Current debate does not provide adequate empirical diagnostics that would uniquely identify modal or illocutionary evidentials
  - natural classes are poorly defined
  - the properties of natural classes and the properties of the formalism are often conflated

# An empirical strategy

Faller's (2002) point of departure

Comparison with English *must* and *might*

But risk of mistaking syntax for semantics: not all properties of English modal auxiliaries are due to semantics, and not all are even shared by their relatives across Germanic

But modal auxiliaries lack certain semantic properties that other epistemic elements have: e.g. gradability, cf. modal adjectives such as *probable* (Lassiter 2011, 2017) and lexical expressions such as *70% chance that* (Swanson 2011)

# A theoretical strategy

Matthewson's (2012) point of departure

Probe whether the semantics of an element can be formulated within the Kratzerian apparatus

But the framework accommodates many phenomena dealing with intensional quantification; classifying evidentials as modal based on this criterion is akin to classifying attitude verbs as modal (see e.g. (Hacquard 2013) for discussion)

But the jury is still out for the right semantics for English *must*, see never-ending work in philosophy of language

## Assessment-sensitivity (see (MacFarlane 2014) for an overview)

- Epistemic modals across morphosyntactic categories are not always about the speaker's exclusive knowledge (even in root declaratives)
- Helpful analogy (Weatherson and Egan 2011): the epistemic authority resembles the referent of *we*

### (9) Faultless disagreement (though see Knobe and Yalcin 2014)

*Context: Everyone present acknowledges that Joe might be in Berkeley. No one thinks there are going to be grounds to assert that he is in Boston. The point of conversation is to settle whether he might be in Boston.*

A. Joe **might** be in Boston.

B. That's wrong.

(i). =  $\neg$  'Joe might be in Boston'. **disagreement about  $\diamond p$**

(ii).  $\neq$   $\neg$  'Joe is in Boston'. **disagreement about  $p$**

(adapted from MacFarlane 2011: 148)



# Disagreement with evidentials I

- Some types of disagreement are widely discussed, such as the inability of the interlocutor to challenge the **speaker's** having evidence (see Korotkova (2016a) and references therein)
- Matthewson et al. (2007): quantificational force of evidential statements may be disagreed with
- This is yet another type: do evidentials allow addressee-oriented or 'communal' readings in root declaratives?

# Disagreement with evidentials II

## (10) Georgian

A. *tovl-i mosula*  
 snow-NOM come.IND.PST  
 'It snowed, I hear/infer.'

B. *es ar aris martal-i*  
 it.NOM NEG be.3SG:S.PRES true-NOM  
 'That's not true.'

(i) = 'It is not the case that it snowed'

(ii) ≠ 'It is not the case that you heard/infer that it snowed'.

(iii) ≠ 'Given what I hear/infer, it didn't snow'. [ADDRESSEE-ORIENTED]

(iv) ≠ 'Given what we all hear/infer, it didn't snow'. [COMMUNAL-ORIENTED]

- Evidentials in root declaratives are always *I*-statements
- But what about the evidential component of epistemics?

- Lack of tools that would diagnose illocutionary evidentials:
  - still little understanding of the repertoire of speech act modification in natural language
  - no sound non-negative procedure that would identify a speech act modifier
  - many properties that initially motivated the illocutionary analysis can be reformulated without making reference to speech acts
- Solution: an overlooked distinction between **private beliefs** and **discourse commitments**

# Conditional endorsement I

## Guiding parallel: research on imperatives

- Kaufmann (2012): a deontic analysis of imperatives
- Lauer and Condoravdi (2016): only imperatives require endorsement

(11) *Context: We are planning a dinner after a workshop. Sven has suggested that we have it at his small apartment.*

CLEO. But if you want to have a dinner at your place, you **should** move to a bigger place before the workshop happens.

**Cleo's goal could be to make Sven give up his preference**

SVEN. Okay, I've been thinking of moving anyways.

CLEO. That is not what I meant: I wanted to convince you that you should not have a party at your place.

(Lauer and Condoravdi 2016: ex.30)

## Conditional endorsement II

### Guiding parallel: research on imperatives

- Kaufmann (2012): a deontic analysis of imperatives
- Lauer and Condoravdi (2016): only imperatives require endorsement

(12) *Context: We are planning a dinner after a workshop. Sven has suggested that we have it at his small apartment.*

CLEO. But if you want to have a dinner at your place, **move** to a bigger place before the workshop happens.

**Cleo's goal could not be to make Sven give up his preference**

SVEN. Okay, I've been thinking of moving anyways.

CLEO. #That is not what I meant: I wanted to convince you that you should not have a party at your place.

(Lauer and Condoravdi 2016: ex.31)

# This talk

- Long-overdue discussion of the theories of evidentiality
- The current debate on the semantic status of evidentials lacks formally-explicit tools that would differentiate between the existing approaches
- New theory-neutral diagnostics that may resolve the debate
- ...future research will determine if they work

Thank you!

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## DIAGNOSING THE SEMANTIC STATUS OF EVIDENTIALS

Natasha Korotkova (University of Tübingen)

Evidentials are expressions that signal the source of the semantically determined information conveyed by an utterance and are often analyzed as dealing with speech acts. The talk is devoted to a metasemantic discussion of the status of evidentials. According to one line of research (Matthewson 2012), all evidentials are garden variety epistemic modals. According to another (Faller 2007; Matthewson et al. 2007), evidentials across languages fall into two semantic classes: (i) *modal*; and (ii) *illocutionary*. I show that current theories, even though motivated by superficially different cross-linguistic data, make in fact very similar predictions. I then provide new empirical diagnostics that would distinguish between alternative approaches.

**Shortcomings of existing diagnostics** The *modal* view on evidentiality, rooted in the typological tradition, was pioneered by Izvorski's (1997) analysis of Bulgarian evidential perfect as a Kratzerian epistemic modal with an indirect evidence presupposition. Superficially different data gave rise to *illocutionary* approaches, wherein evidentials deal with the structure of speech acts (Cuzco Quechua, Faller 2002; Cheyenne, Murray 2010, 2014). Below I show that properties that have initially motivated illocutionary approaches can in fact be handled within theories of each type, and thus do not constitute an argument in favor of either of them (pace Matthewson (2012), who regards the mere possibility of a modal analysis as evidence for the modal view).

- EVIDENTIAL CONTRADICTIONS Across languages (AnderBois 2014), hearsay markers allow statements of the form  $[EVp] \wedge [\neg p]$ , where the speaker knows the scope proposition to be false. For example, sentences such as Georgian (1) allow explicit follow-ups *But that is not true*:

- (1) *Hearsay context: There is a report that California legalized marijuana.*  
kalifornia-s k'anonier-i **gauxdia** marihuan-is gamoq'eneba.  
California-DAT legal-NOM make.3SG:S.3SG:O.**IND:PST** marijuana-GEN usage.NOM  
'California legalized marijuana, I hear'.

*Might* and *must*, on the other hand, do not allow flat-out contradictions: #*There must be water on Mars, but there isn't* (though see Lassiter 2016). Faller (2002); Murray (2010) take the contrast between (a) hearsay markers and (b) English modal auxiliaries as a strong argument for an illocutionary analysis wherein contradictions are licit because hearsay markers merely present their scope proposition without asserting it. Such evidentials are argued to be a distinct semantic category from epistemics. However, a modal analysis of evidential contradictions is also possible. Faller (2011) (see also Kratzer 2012) treats hearsay markers as modals with a non-realistic modal base, wherein the world of evaluation is not one of the  $p$ -worlds. Furthermore, as Yalcin (2007) points out, the standard Kratzerian analysis of epistemic modals does not rule out epistemic contradictions. By extension, (Izvorski 1997)-style approaches predict the availability of evidential contradictions. Therefore, this property is not an argument for or against any of the existing views.

- SCOPE Scope with respect to clause-mate operators (e.g. tense) is often used as a semantic diagnostic (Faller 2007; McCready and Ogata 2007, a.o.): modal evidentials are supposed to allow narrow scope construals, while illocutionary evidentials are expected to only take wide scope. This view assumes that speech acts are scopally inert and equates scopal variability with semantic variation. However, Krifka (2014) argues that speech acts may scopally interact with some operators. Furthermore, parameterizing scopal behavior does not require postulating different semantic categories, cf. research on modals and negation (Iatridou and Zeijlstra 2013; Yanovich 2013). Thus, scopal behavior of evidentials is not an argument for or against any of the existing views.

**What makes a speech act** Given that many properties that initially motivated the illocutionary view can be reformulated without making reference to speech acts, it is essential to come up with tools that would diagnose potential illocutionary evidentials and speech-act-hood in general. I propose that the difference between *private beliefs* and *discourse commitments* (cf. [Gunlogson 2003](#)) should be used as a baseline, and provide a guiding parallel from research on imperatives. Imperatives can be treated similarly to deontic modals ([Kaufmann 2012](#)). However, [Lauer and Condoravdi \(2016\)](#) highlight a commitment-based difference between the two: only imperatives (2a), but not vanilla deontics (2b), require conditional endorsement in conditionalized sentences:

(2) *Context: Sven suggests that we have the workshop dinner at his small apartment.*

- |   |  |
|---|--|
| <p>a. <i>Cleo:</i> If you want to have a dinner at your place, <b>move</b> to a bigger place.<br/> <i>Sven:</i> Okay, I've been thinking of moving anyways.<br/> <i>Cleo:</i> #That's not what I meant: I wanted to convince you to not host a party.</p> | <p>b. <i>Cleo:</i> If you want to have a dinner at your place, you <b>should</b> move to a bigger place.<br/> <i>Sven:</i> Okay, I've been thinking of moving anyways.<br/> <i>Cleo:</i> ✓That's not what I meant: I wanted to convince you to not host a party.</p> |
|---|--|

(adapted from [Lauer and Condoravdi 2016](#): ex.30-31)

With an imperative (2a), Cleo's goal is to outline a way to achieve Sven's preference. With a modal (2b), Cleo's goal could also be to make him give up his preference. Until such new data become available for evidentials, the illocutionary view is not justified empirically, even though it is possible to treat them as dealing with communicative intentions (cf. [AnderBois 2017](#); [Korotkova 2017](#)).

**What makes an epistemic modal** The literature does not offer a clear-cut procedure for identifying epistemic modals. [Faller \(2002\)](#) uses English modal auxiliaries as a baseline, but they lack semantic properties that other expressions of modality have (e.g. gradability; [Lassiter 2015](#)) or have syntactic quirks not shared even by their Germanic cousins. [Matthewson \(2012\)](#) proceeds by probing whether the semantics for evidentials can be expressed within the Kratzerian apparatus. However, classifying evidentials as modals based on this criterion is akin to classifying attitude verbs as modals (cf. [Hacquard 2013](#)). I propose that *assessment-sensitivity* should be used as a property defining epistemic modality as a semantic category. Even in root declarative sentences, it is not straightforward whose body of knowledge a modal is after ([Weatherson and Egan 2011](#); [MacFarlane 2014](#)), which gives rise to complex patterns e.g. of (dis)agreement about modal claims:

(3) *Context: Everyone acknowledges that Joe might be in Berkeley. No one thinks there are going to be grounds to assert that he is in Boston. The point is to settle whether he might be in Boston.*

- |  |  |
|--|--|
| <p>A: Joe <b>might</b> be in Boston.<br/>         B: That's wrong.</p> | <p>(i) <math>= \neg</math> 'Joe might be in Boston'. <b>disagreement about</b> <math>\diamond p</math><br/>         (ii) <math>\neq \neg</math> 'Joe is in Boston'. <b>disagreement about</b> <math>p</math></p> |
|--|--|

(adapted from [MacFarlane 2011](#): 148)

(3) is an example of disagreement about the likelihood of  $p$ , and such dialogues are often taken to argue that epistemics track publicly available knowledge ([von Stechow and Gillies 2008, 2010, 2011](#)). Until such new data become available for evidentials, the modal view is not justified empirically, even though it is possible to treat them as dealing with beliefs in view of some body of knowledge.

**Conclusion** The goal of the talk is to provide a long-overdue discussion of the theories of evidentiality. I start by showing that the current debate on the semantic status of evidentials lacks formally-explicit tools that would differentiate between the existing approaches. I then offer new theory-neutral diagnostics

that may resolve the debate and that may therefore shed light on the place of evidentiality among other categories.

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# English mirative contours and particles\*

Questioning Speech Acts, 14-16 September 2017  
Kelsey Kraus · UC Santa Cruz · knkraus@ucsc.edu

## 1 Introduction

Broadly, this talk attempts to connect **intonational meaning** with **discourse particle meaning**, with a specific focus on what I identify as **mirative strategies** in English.

QUESTION: How does the pragmatic interpretation of discourse particles interact with intonation?

This talk will argue for three general points:

1. Semantic investigations of discourse particles must be sensitive to prosody
2. We can use prosodic meaning to help diagnose discourse particle meaning
3. In English, we can use prosody to tease apart the different pragmatic contributions between *oh* and *huh*

- (1) A: Joe left the stove on.  
a. B: Oh. No it isn't.  
b. B: #Huh. No it isn't.

Deconstructing the pragmatic contributions of contours and particles allows us to:

- make predictions about how particles will behave with particular contours
- make precise calculations about the epistemic state of a speaker at the time of utterance

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- identify which contours and particles pragmatically “clash”, resulting in pragmatically incoherent discourse states
- make testable claims about the pragmatic contributions of particles and prosodic contours

## Roadmap

The structure of the talk is as follows:

- Introduce an updated Table Model (Farkas & Bruce 2010)
- Outline the prosodic contours of interest in terms of shape, meaning, and function
- A look at mirativity and mirative strategies
- Two English discourse particles, *oh* and *huh*
- Bringing it together: compositionality
- Paths forward

## 2 Decomposing meaning

### 2.1 Basic assumptions: the table model

I assume the Tabletop model, which is a commitment-based framework of common-ground management following Gunlogson (2001) and Farkas & Bruce (2010).

In this view:

- Assertions are proposals to update the conversation by adding propositions to the *table*, a stack of propositions under discussion

- By *raising an issue*, a speaker adds content to the table
- Participants can accept or reject proposals in order to grow the *common ground*
- Expanding the common ground amounts to shrinking the *context set*, narrowing down the set of worlds in the running for the actual world
- Asserting a sentence both places the content of that proposition on the table, and adds it to the *projected set*, projecting future states of the conversation after successful resolution of the issue
- The model also tracks the *discourse commitments* of the participants, representing public commitments that have not yet been accepted as common ground

This can be schematized in (2):

- (2) a. Context before utterance:

<b>DC<sub>A</sub></b>	<b>Table</b>	<b>DC<sub>B</sub></b>

$$cg : s_0, ps = \{s_0\}$$

- b. **A:** The stove is on. =  $p$

- c. Update context with  $p$ :

<b>DC<sub>A</sub></b>	<b>Table</b>	<b>DC<sub>B</sub></b>
$p$	$\{p\}$	

$$cg : s_0 = s_1, ps = \{\{s_0 \cup p\}\}$$

## 2.2 English intonational contours

Much of the work on prosodic meaning has focused on the difference between rising and falling intonation in declaratives and interrogatives (c.f. Gunlogson (2001), Gunlogson (2008), Farkas & Bruce (2010), Malamud & Stephenson (2015), Krifka (2015), Farkas & Roelofsen (2017)).

- (3) a. Jill watches the West Wing.  
b. Jill watches the West Wing?

I set aside final rises and instead focus on three types of final falls:

- Neutral final fall  $H^* L-L\%$   
Typical of a standard assertion, no special pragmatic effect
- Excited final fall  $\uparrow H^* L-L\%$   
Also asserts  $p$ , but higher pitch is indicative of positively skewed information
- Surprise-Redundancy Contour (SRC)  $(H)-L^* H^* L-L\%$   
“expresses [...] the view that one’s interlocutor should have already known what one is saying” Ladd (2008).

When the performance of an utterance is manipulated with one of these contours, there is a significant effect on the interpretation of the speaker’s epistemic state:

- (4) a. She spread butter on the sourdough. *Neutral*  
b. She spread butter on the sourdough! *Excited*  
c. She spread butter on the sourdough!? SRC

I assume that each of these contours contribute **speaker oriented commentary** about a speaker’s *expectations* in the current discourse context.

WHAT ARE THE CONTOURS?

First, a ToBI cheat sheet:

H	high accent tone
L	low accent tone
L%/H%	low/high (final) boundary tone
*	pitch accent

**Neutral final falls:**

- (5) **H\* L-L%**: a gradual rise to a peak sentential accent followed by a gradual fall to a low boundary tone (Féry 1993, Hayes 1995)

**Excited final falls:**

- (6)  **$\uparrow H^* L-L\%$** : Steep rise to a peak sentential accent, with a steep fall to a low boundary tone (Gussenhoven 2002)

### Surprise-Redundancy Contour:

- (7) **(H)-L\* H\* L-L%**: high pitch associated with the primary sentential accent, and contrasting low pitch on the utterance's second most prominent syllable (Sag & Lieberman 1975, Ladd 1980)

Each of these contours has a particular canonical interpretation when paired with a particular utterance type. I argue two things:

- Prosodic interpretations inherently comment on the speaker's expectations in a discourse
- These expectations are placed into the speaker's discourse commitments at the time of utterance as not-at-issue content

Take the case of neutral falling intonation:

- ▷ Neutral final falls have the force of an assertion
- ▷ Assertions require commitment to the truth of the utterance
- ▷ Speakers must act as though they believe the truth of an utterance
- ▷ Believing the truth of an utterance betrays certain expectations about that utterance

This is information that is anchored to the speaker, but which is nevertheless communicated to the listener.

→ Crucially this information is **not-at-issue**

### Proposal:

The discourse effects of neutral and excited intonation patterns are as follows:

- (8) **Neutral final falls** adds the following to the speaker's DC list:  
 $Exp_{spkr}(p) \approx 1$
- (9) **Excited final falls** adds the following to the speaker's DC list:  
 $Exp_{spkr}(p) \approx 1 \wedge Boul_{spkr}(p) > Boul_{spkr}(\neg p)$

In the modified Table model:

- (10) a. Context before utterance:

$DC_A$	Table	$DC_B$
--------	-------	--------

$cg : s_0, ps = \{s_0\}$

- b. **A:** Jill got her car washed. =  $p$

- c. Update context with  $p$ :

$DC_A$	Table	$DC_B$
$p \wedge Exp_A(p) \approx 1$	{ $p$ }	

$cg : s_0 = s_1, ps = \{\{s_0 \cup p\}\}$

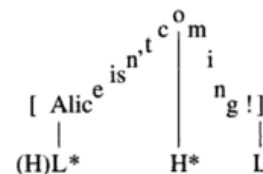
Having this information present in the discourse allows a transparent way of integrating a speaker's comments about propositions into the greater model of discourse:

- Addressees can incorporate a speaker's thoughts and expectations into a response without needing to commit to them

The SRC is a bit more complicated.

- Whereas neutral and excited contours may be uttered out of the blue, the SRC must be anaphoric to a salient proposition
- We can interpret (11) only if we have already established some things about Alice:

- (11) *Context: We have previously established that Alice is vacationing in Bermuda. This means she cannot come to our party in Santa Cruz. My interlocutor remarks that Alice isn't around. I respond:*



Alice isn't coming!

Hayes 1995, p.18

This is more complex than the other final falls:

- It relies on the speaker’s expectations about the uttered proposition as well as expectations about the status of propositions entered collectively into the common ground

• Because of this, I assume that it is a **mirative strategy** in English

(12) The **Surprise Redundancy Contour** is anaphoric to a salient  $p$  and is admissible for discourse-salient participants  $x$  when:

- $q$  is the proposition expressed by the speaker (uttered content or the presuppositions introduced by a question),
- add the following to the speaker’s  $DC$ s:  
 $\text{Exp}_{\text{spkr}}(q) \approx 1 \wedge \forall x \in \text{Disc. Context} [\text{Exp}_x(p|q) \approx 0]$

In the example from before, where the speaker and hearer both have information about Alice’s whereabouts, when the speaker asks where Alice might be, the speaker can respond, anchoring to the salient  $p$  from their previous conversation:

- (13) a. Infer from B: *Alice should be here here* = salient  $p$   
 b. **B**: Alice isn’t coming?! =  $q$   
 c. Update context with  $p$ :

$DC_A$	<b>Table</b> { $q$ }	$DC_B$ $q, [\text{Exp}_B(q) \approx 1$ $\wedge \text{Exp}_{A,B}(p q) \approx 0]$
--------	-------------------------	--

$cg : s0 = s1, ps = \{\{s0 \cup p\}, \{s0 \cup q\}\}$

### 3 Mirative particles and prosody

Miratives are the grammatical encoding of a participant’s epistemic state at the time of utterance. They can encode:

- the common ground status of a proposition
- a speaker’s surprise or (violated) expectations
- how the speaker has integrated (or plans to integrate) a proposition into their belief set<sup>1</sup>

<sup>1</sup>For more detailed accounts of mirativity, see among others, DeLancey (1998, 2001), Aikenvald (2004, 2012), Rett & Murray (2013).

The SRC is an English mirative strategy:

- For assertions, the SRC is indicative of speaker attitude toward a proposition, specifically, surprise that a conversation participant didn’t know a fact (Sag & Lieberman 1975, Ladd 1980):

(14) A: (*In a natural history museum*) What’s that?

B: It’s a saber-toothed tiger!  
 H L\* H\*-L%

- It can also be used in constituent questions with rhetorical effect:

(15) A: I don’t want to eat this grilled cheese.

B: Then why did you order it?  
 L\* H\* L%

- Bartels (1999) proposes that the contour induces a “should have known” inference: the speaker projects a state of the common ground that the hearer has either overlooked, or has not taken into account.
- This is contrary to the expectations of the speaker, and they indicate this with their marked intonation

#### 3.1 Discourse particles

Past interpretations of discourse particles have ignored the prosodic environments that they occur in.

But manipulating the performance of the utterance has a significant effect on how we interpret the speaker’s epistemic state.

- (16) A: We’re out of flour.  $p$   
 B: Oh. **Neutral fall**,  $\text{Expect}_A p \approx 1$   
 B’: Oh? (rise) *Request more info regarding p*  
 B’’: Oh!? **SRC**, *insinuate*  $\neg p$   
 B’’’: # Oh! **Excited**, *Infelicitous*

A similar state of affairs holds for *huh*, with minor exceptions:

- (17) A: We're out of flour.  $p$   
 B: Huh. **Neutral fall**,  $Expect_A p \approx 1$   
 B': Huh? (rise) *Request more info regarding p*  
 B'': Huh!?! **SRC**, *insinuate*  $\neg p$   
 B''': Huh! **Excited**, *Infelicitous*

Gunlogson (2008) analyzes neutral falling cases of *oh* in an commitment-based model of discourse, where the particle is used to accept and commit the speaker to the previous utterance.

But while *oh* and *huh* overlap in many contexts, their distribution is not the same:

- (18) A: We're out of flour.  
 a. B: Oh. No we're not.  
 b. B: #Huh. No we're not.
- *huh* is widely thought to be synonymous with *oh*<sup>2</sup>
  - Further, *oh*'s contribution in (18a) does not commit B to the content of A's utterance.

Instead of registering commitment, I assume that these discourse particles, like intonation, contribute information about a speaker's *expectations* in a discourse.

- ▷ Like intonation, I assume that discourse particles contribute **not-at-issue content**, which is registered on a participant's list of DCs.

WHY?

→ For one, their contributions can't be challenged:

- (19) A: These bananas have gone rotten.  
 B: Huh.  
 A: # That's not true. You knew all along.

I also assume that the discourse particles *oh* and *huh* are another **mirative strategy** in English: they both make public a speaker's violated expectations.

<sup>2</sup>Gunlogson (2008) does not make any claims about *huh* in her work.

- (20) *oh* and *huh* are anaphoric to a proposition  $p$  salient in the discourse s.t.:
- a. *oh*( $p$ ) adds the following to the speaker's DCs:  
 $Exp_{spkr}(p) \leq Exp_{spkr}(\neg p)$
  - b. *huh*( $p$ ) adds the following to the speaker's DCs:  
 $Exp_{spkr}(p) \leq Exp_{spkr}(\neg p) \wedge Exp_{spkr}(p) > 0$

### A simple example:

- (21) A: Those bananas have gone rotten.  
 B: Huh.

- (22) Context after A's utterance: ⇒

<b>DC<sub>A</sub></b>	<b>Table</b>	<b>DC<sub>B</sub></b>
$p, Exp_A(p) \approx 1$	$\{p\}$	

$cg : s0, ps = \{\{s0 \cup p\}\}$

Context after B utters *huh*:

<b>DC<sub>A</sub></b>	<b>Table</b>	<b>DC<sub>B</sub></b>
$p, Exp_A(p) \approx 1$	$\{p\}$	$Exp_B(p) \leq Exp_B(\neg p)$ $\wedge Exp_B(p) > 0$

$cg : s0 = s1, ps = \{\{s0 \cup p\}\}$

Answering only with the particle:

- updates the speaker's discourse commitments with her expectations
- The falling contour on the particle invites the listener to infer that B has accepted their contribution
- in a subsequent step, this can grow the common ground and clear  $p$  from the table.

## 4 Putting it together

Decomposing particles and contours allows for a compositional approach with the following in mind:



Separate pragmatic computation of discourse particles and of prosodic contours allows us to make predictions about the distribution of both at particular points in a discourse.

The particular pragmatic contributions of particles and intonation are compositional, and their felicity is based on the particular contexts that they are uttered in.

- Controlling for context makes differences between *oh* and *huh* even clearer.
- Contexts that build certain discourse expectations can pull apart the differences between *oh* and *huh* utterances

#### 4.1 Contextual restrictions

In many contexts and with many contours, *oh* and *huh* behave the same. But there are particular places where they pull apart.

##### Sudden realization/Out of the Blue + Neutral, falling:

- (23) a. Oh. It's raining.  
b. Huh. It's raining.

##### Correct a fact + Neutral, falling:

- (24) A: Sandy is from Nebraska.  
B: Oh. She's from California.  
B': # Huh. She's from California.

The following table outlines particle and contour patterns of grammaticality when *oh* and *huh* are used with Neutral, Excited and SRC contours.<sup>3</sup>

##### Sudden Realization + SRC:

- (25) a. #Oh!?. It's raining!?  
b. Huh!? It's raining!?

<sup>3</sup>Examples of all contexts can be found in Appendix A.

Table 1: Utterance contexts and contours for the particles *oh* and *huh*

<i>Neutral falling contour</i>	Ex	<i>oh</i> +H*L%	<i>huh</i> +H*L%
Sudden Realization	(23)	✓	✓
Implied Speaker Responsibility	(32)	✓	✓
Eavesdropping	(33)	✓	✓
Accept a fact	(34)	*	*
Contradict a statement	(37)	✓	*
Correct a fact	(24)	✓	*
Solidarity, situational gravity: high	(36)	✓	*
Solidarity, situational gravity: low	(35)	✓	✓
<i>Excited contour</i>	Ex	<i>oh</i> +↑H*L%	<i>huh</i> +↑H*L%
Sudden Realization	(40)	✓	✓
Implied Speaker Responsibility	(41)	✓	✓
Eavesdropping	(42)	✓	✓
Accept a fact	(47)	✓	✓
Contradict a statement	(44)	✓	*
Correct a fact	(43)	✓	*
Solidarity, situational gravity: high	(45)	*	*
Solidarity, situational gravity: low	(46)	*	*
<i>Surprise-redundancy contour</i>	Ex	<i>oh</i> +SRC	<i>huh</i> +SRC
Sudden Realization	(25)	*	✓
Implied Speaker Responsibility	(48)	✓	✓
Eavesdropping	(49)	✓	✓
Accept a fact	(50)	✓	✓
Contradict a statement	(53)	*/?	✓
Correct a fact	(54)	✓	✓
Solidarity, situational gravity: high	(51)	✓	✓
Solidarity, situational gravity: low	(52)	✓	✓

- The distribution of *huh* is a subset of *oh* in neutral falling and excited contexts
- The distribution of *oh* is a subset of *huh* in SRC contexts
- Shifts in acceptability across contexts and contours indicate that contour-specific pragmatic calculations are relevant:
  - ▷ Fact acceptance, for example, cannot co-occur with the neutral falling contour and any of the particles, but changing to an excited or SRC contour shifts grammaticality judgments

One place where the particles pull apart is in cases of fact correction with neutral prosody:

- (26) A: Sandy is from Nebraska.

B: Oh. She's from California.  
 H\*-L% H\*-L%

B': #Huh. She's from California.

Using the Farkas & Bruce (2010) Tabletop model and the proposed meanings of the particles and contours, we can derive the difference between *oh* and *huh* in **neutral fact correction cases**:

- For *oh*:
  - ▷ Knowing a fact  $q$  about the world implies high expectation for it to be true:  
 $\text{Exp}_{\text{spkr}}(q) \approx 1$ .
  - ▷ If  $p$  would make  $q$  false, a speaker can signal this discrepancy with *oh*:  
 If you believe  $q$ , you don't believe  $p$  to be true.  
 That is,  $\text{Exp}(p) \leq \text{Exp}(\neg p)$
- For *huh*:
  - ▷ Knowing a fact  $q$  about the world implies high expectation for it to be true:  
 $\text{Exp}_{\text{spkr}}(q) \approx 1$ .
  - ▷ If  $p$  would make  $q$  false, a speaker **cannot** signal this discrepancy with *huh*:  
 The restriction that expectation for  $p > 0$  leads to a pragmatic inconsistency

The listener can infer the following:

(27) Context after A's utterance:  $\Rightarrow$

<b>DC<sub>A</sub></b>	<b>Table</b>	<b>DC<sub>B</sub></b>
$p, \text{Exp}_A(p) \approx 1$	{ $p$ }	

$cg : s_0, ps = \{\{p\}\}$

Context after B utters *huh* +  $q$ :

<b>DC<sub>A</sub></b>	<b>Table</b>	<b>DC<sub>B</sub></b>
$p, \text{Exp}_A(p) \approx 1$	$\frac{\{q\}}{\{p\}}$	$q, \text{Exp}_B(q) \approx 1, [\text{Exp}_B(p) \leq \text{Exp}_B(\neg p) \wedge \text{Exp}_B(p) > 0]$

$cg : s_0 = s_1, ps = \{\{s_0 \cup p\}, \{s_0 \cup q\}\}$

a. **Falling contour:**  $\text{Exp}_B(q) \approx 1$

b. **huh:**  $\text{Exp}_B(p) \leq \text{Exp}_B(\neg p) \wedge \text{Exp}_B(p) > 0$

c. **Pragmatic inconsistency:**  $q \rightarrow \neg p$ , infer  $\neg p = 1$ . Since  $q$  and  $p$  are contrary, one cannot commit to  $q$  being true and to  $p$  being possible if  $p$  must be  $> 0$ .

If B knows his information is correct, there is no way for her to signal that with *huh*.

Putting uncertainty back into play reverses this:

- (28) A: Sandy is from Nebraska.  
 B: Oh. I thought she was from California.  
 B': Huh. I thought she was from California.

The opposite pattern emerges from the **SRC paired with out-of-the-blue contexts**:

- (29) *Speaker walks out of windowless building, with no expectation for the weather*
- a. #Oh? It's raining!?
  - b. Huh!? It' raining!?

When the speaker addresses herself, a Quantity implicature arises from

- the interaction of the SRC + particle meaning
- the SRC anchored to the utterance

The listener assumes that the speaker must have had some reason for using *oh* over *huh* They deduce that the speaker expects  $q$  to be the case:

(30) *The fact that it's raining = p It is raining = q*

Context after B utters *oh* +  $q$ :

<b>DC<sub>A</sub></b>	<b>Table</b>
$q, [\text{Exp}_A(q) \approx 1 \wedge \text{Exp}_{A,B}(p q) \approx 0]$	$\frac{\{q\}}{\{p\}}$

$cg : s_0 = s_1, ps = \{\{s_0 \cup p\}, \{s_0 \cup q\}\}$

- a. **SRC:**  $\text{Exp}_B(q) \approx 1 \wedge \text{Exp}_B(p|q) \approx 0$
- b. **oh:**  $\text{Exp}_B(p) \leq \text{Exp}_B(\neg p)$

- c. **Pragmatic inconsistency:**  $q = \neg p$ . Speaker believes  $q = 1$ , infer  $\neg p = 1$ .  
 There is no restriction that  $p$  be 0.  
 The speaker is both the addressee and the source of  $q$ ; they hold one belief about the actual facts in the world,  $p$ , and another about their expectations,  $q = \neg p$ .

## 5 Future directions and Conclusions

### 5.1 German Modal Particles

One goal is to extend this methodology to German Modal particles (*doch*, *ja*, *eben*, *halt*), which are also markers of mirativity (Krifka 2013, Kraus 2015).

- Can the same particle + contour additive relation be established here as well?

Some departures from the English methodology include:

- Fewer factors to control for:  
 German modal particles are integrated into the utterance as a whole and do not form their own intonational phrases
- Modal particles in German that can be variably stressed. The prominence that they carry should be part of the pragmatic reasoning about the particle.

### 5.2 Conclusions

This work has identified two discourse particles and one prosodic contour that are **English mirative strategies**.

It has also argued:

- Discourse particles must be analyzed with their prosodic environment in mind
- We must separate the pragmatic contribution of discourse particles from the prosodic contours they occur with

Thank you!

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## Appendix A

### Neutral falling contour + contexts

#### Utterances and contexts:

The following contexts overlap with *huh* and *oh*:

- (31) a. Oh. It's raining. Sudden realization  
 b. Huh. It' raining.
- (32) A: There's no baking powder! Implied speaker responsibility  
 B: Oh. You didn't put it on the list.  
 B': Huh. You didn't put it on the list.
- (33) *Character speaking to other characters in a film:*  
 A: It's Tess Ocean! Eavesdropping  
 B: *Moviegoer, observing the film:* Oh. It's clearly Julia Roberts.  
 B': Huh. It's clearly Julia Roberts.
- (34) A: *Alex Trebek, on Jeopardy:* What's the capital of Delaware?  
 B: Dover. Accept a fact

- A: It is Dover.  
 B: # Oh. I was right.  
 B': # Huh. I was right.

- (35) A: I spilled coffee on my new shoes. **Low** situational gravity  
 B: Oh. That's awful.  
 B': Huh. That's awful.

But *oh* and *huh* pull away in the following situations:

- (36) A: I just found out I have cancer. **High** situational gravity  
 B: Oh. That's awful.  
 B': # Huh. That's awful.
- (37) A: The server's down. Direct contradiction  
 B: Oh. no it isn't. (It just looks like that).  
 B': # Huh. No it isn't.
- (38) A: Sandy is from Nebraska. Fact Correction  
 B: Oh. She's from California.  
 B': # Huh. She's from California.
- (39) A: Sandy is from Nebraska.  
 B: Oh. I thought she was from California.  
 B': Huh. I thought she was from California.

### Excited contour + contexts

Judgments stay the same, only speaker affect changes (calculated from prosody):

- (40) a. Oh! It's raining! Sudden Realization  
 b. Huh! It' raining!
- (41) A: There's no baking powder! Speaker Responsibility  
 B: Oh! You didn't put it on the list!  
 B': Huh! You didn't put it on the list!

- (42) *Character speaking to other characters in a film:*  
 A: It's Tess Ocean! Eavesdropping  
 B: *Moviegoer, observing the film:* Oh! It's clearly Julia Roberts!  
 B': Huh! It's clearly Julia Roberts!
- (43) A: Sandy is from Nebraska. Fact Correction  
 B: Oh! She's from California!  
 B': # Huh! She's from California!
- (44) A: The server's down. Contradiction  
 B: Oh! no it isn't! (It just looks like that).  
 B': # Huh! No it isn't!

Changes from neutral contexts, *oh* and *huh* behave the same:

- (45) A: I just found out I have cancer. **High** situational gravity  
 B: # Oh! That's awful!  
 B': # Huh! That's awful!
- (46) A: I spilled coffee on my new shoes. **Low** situational gravity  
 B: ?/# Oh! That's awful!  
 B': ?/# Huh!. That's awful!
- (47) A: *Alex Trebek, on Jeopardy:* What's the capital of Delaware?  
 B: Dover. Accept a fact  
 A: It is Dover.  
 B: Oh! I was right!  
 B': Huh! I was right!

## SRC + contexts

Cases of overlap: where *oh* and *huh* are all licit:

- (48) A: There's no baking powder! Speaker Responsibility  
 B: Oh? You didn't put it on the list!/?  
 B': Huh? You didn't put it on the list!
- (49) *Character speaking to other characters in a film:*  
 A: It's Tess Ocean! Eavesdropping  
 B: *Moviegoer, observing the film:* Oh? It's clearly Julia Roberts!

- B': Huh? It's clearly Julia Roberts!
- (50) A: *Alex Trebek, on Jeopardy:* What's the capital of Delaware?  
 B: Dover. Accept a fact  
 A: It is Dover.  
 B: Oh? I was right?/?  
 B': Huh? I was right?!/!
- (51) A: I just found out I have cancer. **High** situational gravity  
 B: Oh? That's awful!  
 B': Huh? That's awful!
- (52) A: I spilled coffee on my new shoes. **Low** situational gravity  
 B: Oh? That's awful!  
 B': Huh? That's awful!

*Huh* is licit in all cases outlined in the table. In three cases, *oh* is not:

- (53) A: Sandy is from Nebraska. Fact Correction  
 B: #Oh? She's from California!  
 B': Huh? She's from California!
- (54) A: The server's down. Contradiction  
 B: #Oh? no it isn't! (It just looks like that).  
 B': Huh? No it isn't!
- (55) a. #Oh? It's raining? Sudden Realization  
 b. Huh? It' raining?

**Overview:** The interaction of discourse particles with prosodic cues aids a listener’s interpretation of speaker attitudes in a discourse. Yet most work on discourse particles takes the prosodic environment for granted. This is due in part to two factors: (i) **prosodic tunes** contribute clear speaker attitudes and semantic meaning, but are difficult to extract from information given by syntactic position or the physical manifestation of a speech stream, and (ii) the meaning of **discourse particles** is difficult to pinpoint in general. Adding reference to syntactic and prosodic environments muddles the picture even more. The contributions of discourse particles and intonation are integral to understanding discourse navigation, yet both operate outside of the traditional approaches to syntactic, semantic or phonological investigation. This work experimentally investigates the semantic contribution of three particles (*oh*, *huh*, *what*) and one prosodic contour (*surprise-redundancy contour (SRC)*) as **mirative** strategies in English.

**Particles and Mirativity:** Miratives are a grammatical category that is often discussed in tandem with languages with overt evidential markings. miratives broadly encode a participant’s epistemic state at the time of utterance (DeLancey, 1997). Though many miratives go hand in hand with evidentials, mirativity is inherently distinct from evidentiality. Aikenvahld (2012) narrows the field in her survey, and proposes five meanings that are consistent with mirative interpretations that need not overlap with evidentials. Her defining features (surprise, sudden discovery/realization, new information, counterexpectation, and unprepared mind) need not reference the kind of evidence that a speaker has. Rather, they deal with how a speaker can react to an utterance. This paper fits English into the realm of mirativity, identifying the discourse particles *oh*, *huh* and *what* as mirative markers that give information about a speaker’s expectations in a discourse:

- (1) The discourse particles *oh*, *huh* and *what* are anaphoric to a proposition  $p$  salient in the discourse, and add the following to the speaker’s discourse commitments (DCs):
  - a. ***oh***:  $\text{Exp}_{\text{spkr}}(p) \leq \text{Exp}_{\text{spkr}}(\neg p)$
  - b. ***huh***:  $\text{Exp}_{\text{spkr}}(p) \leq \text{Exp}_{\text{spkr}}(\neg p) \wedge \text{Exp}_{\text{spkr}}(p) > 0$
  - c. ***what***:  $\text{Exp}_{\text{spkr}}(p) < 1$

Using a modified Tabletop model (Gunlogson, 2001, Farkas & Bruce, 2010), this approach assumes that discourse particles and prosodic contours contribute speaker-oriented commentary to a participant’s DCs. I assume that intonation is a way for the speaker to comment on her own expectations for how a conversation should be navigated. Thus, neutral, falling prosody puts a speaker’s expectations for  $p$  at approximately 1 in their DCs. The SRC also relies on speaker expectation. This contour consists of a high pitch on the primary sentential accent and contrasting low pitch on the utterance’s second most prominent syllable, giving a “scooped” rising to falling contour. The contour has the pragmatic effect of indicating a speaker’s surprise at a proposition or event, given their current expectations and beliefs about the world (Sag & Lieberman, 1975). The SRC is clearly a mirative strategy. Consider the difference in (2a-b):

- (2)
 

a. Huh. Steven isn’t coming. <b>H*</b> H* -L%	b. Huh?! Steven isn’t coming! <b>L*</b> H* -L%
--	---

In (2a), the speaker uses *huh* to signal her realization of an unexpected event and she pairs it with neutral, falling intonation; she can utter this if she has been waiting for an hour at a cafe, and receives a message from Steven indicating his regrets. In (2b), if the speaker and the listener have previously established that Steven is out of town, when her partner indicates that Steven might meet them for lunch, the speaker can utter this sentence, paired with the SRC. This contributes a “should have known” inference, and is a reminder for her listener to either provide new information, or check the information that he already has access to. The contribution of the particle in (2a) with neutral, falling intonation betrays the speaker’s knowledge state at the time of utterance. But the particle and contour in (2b) adds another layer of pragmatic interpretation: the SRC provides the listener with an explanation of





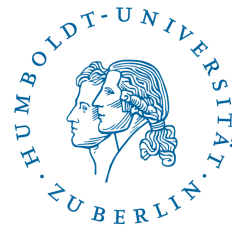
# Conditional Sentences as Conditional Speech Acts

Workshop Questioning Speech Acts  
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Manfred Krifka  
krifka@leibniz-zas.de



Leibniz-Zentrum  
Allgemeine Sprachwissenschaft



## Two analyses of conditionals



- ◆ Two examples of conditional sentences:
  - 1) If Fred was at the party, the party was fun.
  - 2) If 27419 is divisible by 7, I will propose to Mary.
- ◆ Analysis as conditional propositions (CP):

conditional sentence has **truth conditions**, e.g. Stalnaker, Lewis, Kratzer:  
Stalnaker 1968:  $[\varphi > \psi] = \lambda i[\psi(\text{ms}(i, \varphi))]$ ,  
 $\text{ms}(i, \varphi)$  = the world maximally similar to  $i$  such that  $\varphi$  is true in that world  
Explains embedding of conditionals:

  - 3) Wilma knows that if Fred was at the party, the party was fun.
- ◆ Conditional assertion / speech act (CS):

suppositional theory, e.g. Edgington, Vanderveken, Starr:  
Under the condition that Fred was at the party it is asserted that it was fun.  
Explains different speech acts, e.g. questions, exclamatives:

  - 4) If Fred was at the party, was the party fun?
  - 5) If Fred had been at the party, how fun it would have been!

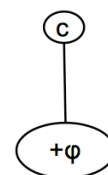
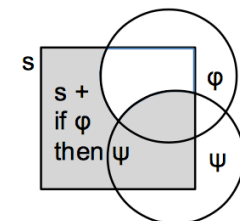
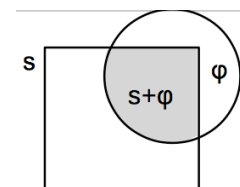


## Some views on conditionals

- ◆ Linguistic semantics: overwhelmingly CP  
Philosophy of language: mixed CS / CP
- ◆ Quine 1950: CS  
“An affirmation of the form ‘if p, then q’ is commonly felt less as an affirmation of a conditional than as a conditional affirmation of the consequent.”
- ◆ Stalnaker 2009: CP or CS?  
“While there are some complex constructions with indicative conditionals as constituents, the embedding possibilities seem, intuitively, to be highly constrained. (...) The proponent of a non-truth-conditional [CA] account needs to explain what embeddings there are, but the proponent of a truth-conditional [CP] account must explain why embedded conditionals don’t seem to be interpretable in full generality.”
- ◆ My goals: defend CS
  - Develop a formal framework for CS, this is done within Commitment Space Semantics (Cohen & Krifka 2014, Krifka 2015).
  - Explain (restrictions of) embeddings of conditional clauses
  - Propose a unifying account for indicative and counterfactual conditionals

## Modeling the Common Ground

- ◆ Common Ground: Information considered to be shared
- ◆ Modeling by context sets (propositions):
  - s: set of possible worlds (= proposition)
  - $s + \varphi = s \cap \varphi$ , update with proposition  $\varphi$  as intersection
  - $s + [\text{if } \varphi \text{ then } \psi] = s - [[s + \varphi] - [s + \varphi + \psi]]$ , update with conditional (Heim 1983)
  - Update with tautologies meaningless,  $s + \text{‘27419 is divisible by 7’} = s$
- ◆ Modeling by sets of propositions
  - c: sets of propositions
  - c not inconsistent: no  $\varphi$  such that  $c \models \varphi$  and  $c \models \neg\varphi$ , where  $\models$  may be a weaker notion of derivability
  - $c + \varphi = c \cup \{\varphi\}$ , update with proposition as adding proposition
  - update as a function:  
 $c + f(\varphi) = f(\varphi)(c) = \lambda c'[c' \cup \{\varphi\}](c) = c \cup \{\varphi\}$

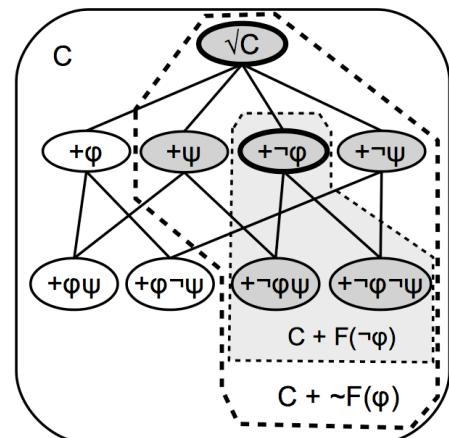
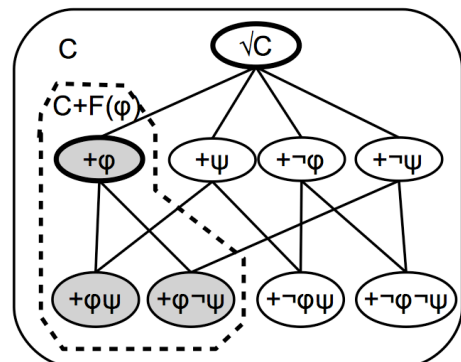


## Commitment States

- ◆ Propositions enter common ground by speech acts, e.g. assertion (Ch. S. Peirce, Brandom, McFarlane, Lauer):
- 6) A, to B: The party was fun.
  - a. A commits to the truth of the proposition 'the party was fun'
  - b. (a) carries a risk for A if the proposition turns out to be false.
  - c. (a, b) constitute a reason for B to believe 'the party was fun'
  - d. A knows that B knows (a-d), B knows that A knows (a-d)
  - e. From (a-d): A communicates to B that the party was fun (Grice, nn-meaning).
- ◆ Update of common ground:
  - a.  $c + A \vdash \varphi = c'$  update with proposition 'A is committed to truth of  $\varphi$ '
  - b. If accepted by B:  $c' + \varphi = c''$
- ◆ This is a conversational implicature that can be cancelled:
- 7) Believe it or not, the party was fun.
- ◆ As  $c$  contains commitments, we call it a **commitment state**
- ◆ Commitment operator  $\vdash$  possibly represented in syntax, e.g. verb second in German, declarative affixes in Korean  
Suggested analysis for German:  $[_{ActP} \cdot [_{CommitP} \vdash [_{TP} \text{the party was fun}]]]$
- ◆ Other acts, e.g. exclamatives, require other operators.

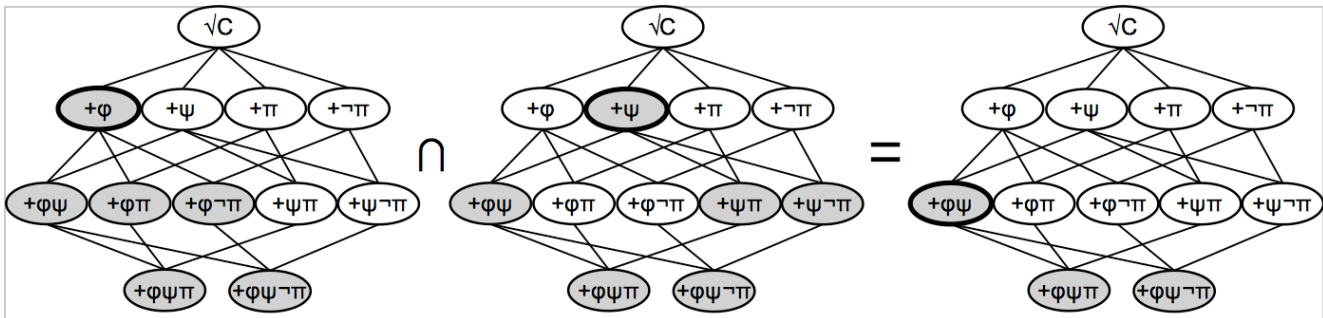
## Commitment Spaces

- ◆ Commitment Spaces (CS):  
commitment states with future development,  
cf. Cohen & Krifka 2014, Krifka 2014, 2015
- ◆ A CS is a set  $C$  of commitment states  $c$  with  $\cap C \in C$  and  $\cap C \neq \emptyset$ ;  
 $\cap C$  is the **root** of  $C$ , written  $\sqrt{C}$
- ◆ Update:  $C + \varphi = \{c \in C \mid \varphi \in c\}$ ,  
as function:  $F(\varphi) = \lambda C \{c \in C \mid \varphi \in c\}$
- ◆ Denegation of speech acts  
(cf. Searle 1969, Hare 1970, Dummett 1973)
- 8) I don't promise to come.
- 9) I don't claim that Fred spoiled the party.  
Formal representation of denegation:  
 $C + \sim A = C - [C + A]$   
this is dynamic negation in Heim 1983
- ◆ Speech acts that do not change the root:  
**meta speech acts** (cf. Cohen & Krifka 2014)



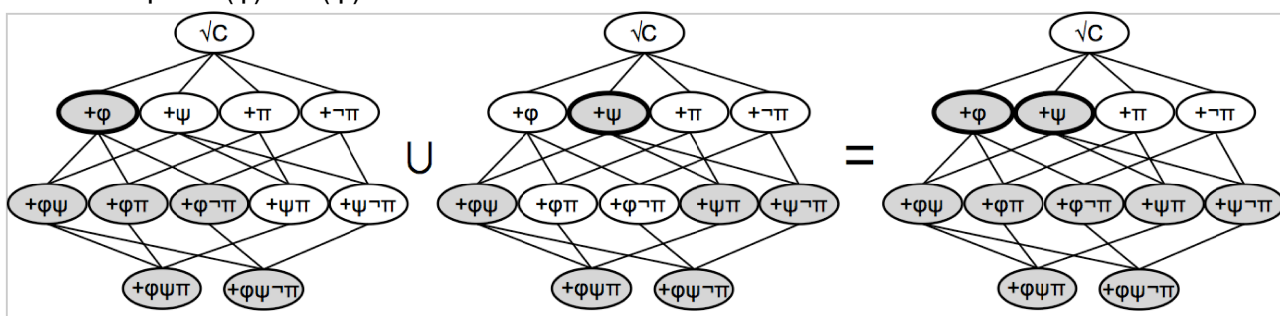
## Boolean Operations on CSs

- ◆ Speech acts  $\mathfrak{A}$  as functions from CS to CS:  $\lambda C \{c \in C \mid \dots\}$
- ◆ Denegation:  $\sim \mathfrak{A} = \lambda C [C - [C + \mathfrak{A}]]$
- ◆ Dynamic conjunction:  $[\mathfrak{A}; \mathfrak{B}] = \mathfrak{B}(\mathfrak{A}(C))$ , function composition
- ◆ Boolean conjunction:  $[\mathfrak{A} \& \mathfrak{B}] = \lambda C [\mathfrak{A}(C) \cap \mathfrak{B}(C)]$ , set intersection
- ◆ Example:  $F(\varphi) \& F(\psi)$ , same result as  $F(\varphi) ; F(\psi)$



## Boolean operations: Disjunction

- ◆ Boolean Disjunction:  $[\mathfrak{A} \vee \mathfrak{B}] = \lambda C [\mathfrak{A}(C) \cup \mathfrak{B}(C)]$
- ◆ Example:  $F(\varphi) \vee F(\psi)$

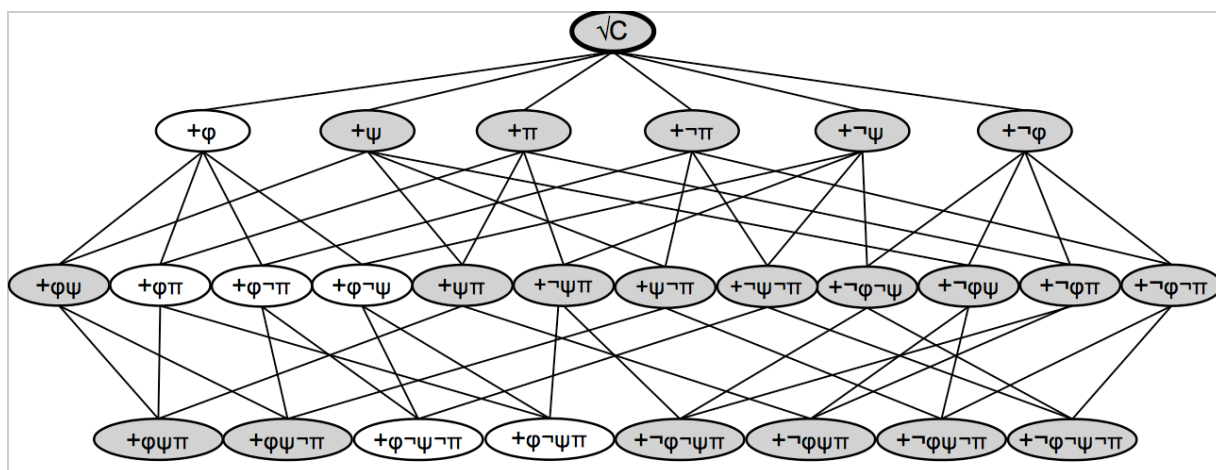


- ◆ Note: Disjunction does not necessarily lead to single-rooted CS  
Problem of speech-act disjunction,  
cf. Dummett 1973, Merin 1991, Krifka 2001, Gärtner & Michaelis 2010
- ◆ Solution: allow for multi-rooted commitment spaces;  
 $\sqrt{C}$ , the **set** of roots of  $C$ , =<sub>def</sub>  $\{c \in C \mid \neg \exists c' \in C [c' \subset c]\}$
- ◆ In this reconstruction, we have Boolean laws,  
e.g. double negation:  $\sim \sim \mathfrak{A} = \mathfrak{A}$ , de Morgan:  $\sim [\mathfrak{A} \vee \mathfrak{B}] = [\sim \mathfrak{A} \& \sim \mathfrak{B}]$
- ◆ But there is pragmatic pressure to avoid multi-rooted CSs

10) It is raining, or it is snowing understood as: It is raining or snowing.

## Conditional speech acts

- ◆ Conditionals express a **conditional update** of a commitment space that is effective in possible future developments of the root.
- ◆ **if  $\varphi$  then  $\psi$** : If we are in a position to affirm  $\varphi$ , we can also affirm  $\psi$ .
  - hypothetical conditionals in Hare 1970
  - Krifka 2014 for biscuit conditionals
- ◆ Proposal for conditionals:  $[\varphi \Rightarrow \psi] = \lambda C \{c \in C \mid \varphi \in c \rightarrow \psi \in c\}$
- ◆ Note that this is a meta-speech act: it does not change the root



## Conditional speech acts

- ◆ Conditionals in terms of updates:
  - $[\mathcal{A} \Rightarrow \mathcal{B}] = \lambda C \{c \in C \mid c \in \mathcal{A}(C) \rightarrow c \in \mathcal{B}(\mathcal{A}(C))\}$
  - $[\mathcal{A} \Rightarrow \mathcal{B}] = [[\mathcal{A}; \mathcal{B}] \vee \sim \mathcal{A}]$  (cf. Peirce / Ramsey condition)
  - $[\mathcal{A} \Rightarrow \mathcal{B}] = [\sim \mathcal{A} \vee \mathcal{B}]$  (if no anaphoric bindings between A and B)
- ◆ Antecedent not a speech act (cf. Hare 1970);  
if/wenn updates without commitment;  
verb final order in German, embedded clauses without illocutionary force:

11) Wenn Fred auf der Party war, [dann war die Party lustig].

lack of speech act operators in antecedent

12) If Fred (\*presumably) was at the party, then the party (presumably) was fun.

- ◆ Conditional speech act analysis of conditionals,  
acknowledging that antecedent is a proposition, not a speech act:  
 $[\varphi \Rightarrow \mathcal{B}] = [F(\varphi) \Rightarrow \mathcal{B}] = [\sim F(\varphi) \vee \mathcal{B}]$

- ◆ possible syntactic implementation for conditional assertion:

$\llbracket [\text{ActP} [\text{CP } \textit{if } \varphi] [\textit{then } [\text{ActP} \cdot [\text{CommitP} \vdash [\text{TP } \psi]]]]] \rrbracket^S = [F(\varphi) \Rightarrow \text{S} \vdash \psi]$ , S: speaker

## Conditional speech acts

- ◆ Pragmatic requirements for  $[\varphi \Rightarrow \mathfrak{B}]$ :  
Grice 1988, Warmbröd 1983, Veltman 1985:
  - Update of C with  $F(\varphi)$  must be pragmatically possible i.e. informative and
  - Update of  $C + F(\varphi) + \mathfrak{B}$  must be pragmatically possible not excluded
- ◆ Theory allows for other speech acts, e.g. imperatives, exclamatives; questions:  
 $C + S_1$  to  $S_2$ : if  $\varphi$  then QUEST  $\psi = C + [[F(\varphi); ?(S_2 \vdash \psi)] \vee \sim F(\varphi)]$   
see Krifka 2015, Cohen & Krifka (today) for modeling of questions
- ◆ Conversational theory of conditionals; analysis of if  $\varphi$  then ASSERT( $\psi$ ) as:
  - if  $\varphi$  becomes established in CG, then S is committed for truth of  $\psi$ ;
  - not: if  $\varphi$  is true, then speaker vouches for truth of  $\psi$
- 13) If Goldbach's conjecture holds, then I will give you one million euros.
  - 'If it becomes established that G's conjecture holds, I will give you 1Mio €'
  - S can be forced to accept "objective" truth, decided by independent referees
- 14) Father, on deathbed to daughter: If you marry, you will be happy.
  - Future development of CS is generalized to times after participants even exist

## Embedding of Conditionals

- ◆ What does this analysis of speech acts tell us about the complex issue of embedding of conditionals?
- ◆ Cases to be considered:
  - Conjunction of conditionals: ✓
  - Disjunction of conditionals: %
  - Negation of conditionals: %
  - Conditional consequents: ✓
  - Conditional antecedents: %
  - Conditionals in propositional attitudes: ✓

## Embedding: Conjunctions ✓

- ◆ Dynamic conjunction = Boolean conjunction (without anaphoric bindings)
 
$$[[\mathcal{A} \Rightarrow \mathcal{B}] ; [\mathcal{A}' \Rightarrow \mathcal{B}']]$$

$$= [\mathcal{A} \Rightarrow \mathcal{B}] \& [\mathcal{A}' \Rightarrow \mathcal{B}']$$

$$= [\mathcal{B} \vee \neg \mathcal{A}] \& [\mathcal{B}' \vee \neg \mathcal{A}']$$
- ◆ This gives us transitivity:
 
$$[C + [\mathcal{A} \Rightarrow \mathcal{B}] \& [\mathcal{B} \Rightarrow \mathcal{C}]] \subseteq C + [\mathcal{A} \Rightarrow \mathcal{C}]$$
- ◆ For CP analysis, transitivity needs stipulation about ms relation:
  - $[\varphi > \psi] \wedge [\psi > \pi] = \lambda i[\psi(\text{ms}(i, \varphi)) \wedge \pi(\text{ms}(i, \psi))]$ ,
  - $[\varphi > \pi] = \lambda i[\pi(\text{ms}(i, \varphi))]$ ,
  - $[\varphi > \psi] \wedge [\psi > \pi] \subseteq [\varphi > \pi]$  **if**  $\text{ms}(i, \varphi) = \text{ms}(i, \psi)$

## Embeddings: Disjunctions %

- ◆ Disjunction of conditionals often considered problematic (cf. Barker 1995, Edgington 1995, Abbott 2004, Stalnaker 2009).
- 15) If you open the green box, you'll get 10 euros,  
or if you open the red box you'll have to pay 5 euros.
- ◆ We have the following equivalence (also for material implication)
 
$$[[\mathcal{A} \Rightarrow \mathcal{B}] \vee [\mathcal{A}' \Rightarrow \mathcal{B}']] = [[\sim \mathcal{A} \vee \mathcal{B}] \vee [\sim \mathcal{A}' \vee \mathcal{B}']]$$

$$= [[\sim \mathcal{A} \vee \mathcal{B}'] \vee [\sim \mathcal{A}' \vee \mathcal{B}]] = [[\mathcal{A} \Rightarrow \mathcal{B}'] \vee [\mathcal{A}' \Rightarrow \mathcal{B}]]$$
- ◆ This makes (15) equivalent to (16):
- 16) If you open the green box, you'll pay five euros,  
or if you open the red box, you'll get 10 euros
- ◆ Typically the two antecedents are mutually exclusive, resulting in a tautology:
  - a.  $[[\mathcal{A} \Rightarrow \mathcal{B}] \vee [\mathcal{A}' \Rightarrow \mathcal{B}']] = [[\mathcal{A} \& \mathcal{A}'] \Rightarrow [\mathcal{B} \vee \mathcal{B}']]$
  - b. if  $C + [\mathcal{A} \& \mathcal{A}'] = \emptyset$ , this results in a tautology,  
antecedents of disjunctions are easily understood as mutually exclusive
  - c. Following Gajewski (2002), systematic tautology results in ungrammaticality.

## Embeddings: Disjunctions %



- ◆ For the CP theory, conditionals should not be difficult to disjoin;
  - $[\varphi > \psi] \vee [\varphi' > \psi']$  is not equivalent to  $[\varphi > \psi'] \vee [\varphi' > \psi]$ ,
  - if  $\varphi' = \neg\varphi$ , this does not result in a tautology.
- ◆ Some disjoined conditionals are easy to understand, cf. Barker 1995:  
17) Either the cheque will arrive today, if George has put it into the mail,  
or it will come with him tomorrow, if he hasn't.
- ◆ Parenthetical analysis:  
18) The cheque will arrive today (if George has put it into the mail)  
or will come with him tomorrow (if he hasn't).  
 $[\text{ASSERT}(\psi) \vee \text{ASSERT}(\pi)]; [F(\varphi) \Rightarrow \text{ASSERT}(\psi)]; [F(\neg\varphi) \Rightarrow \text{ASSERT}(\omega)]$   
Entails correctly that one of the consequents is true.

## Embeddings: Negation %



- ◆ Regular syntactic negation does not scope over if-part:  
19) If Fred was at the party, the party wasn't fun.  
Predicted by CS theory, as conditional is a speech act, not a proposition.
- ◆ The closest equivalent to negation that could apply is denegation:  
 $\sim[\mathfrak{A} \Rightarrow \mathfrak{B}] = \sim[\sim\mathfrak{A} \vee \mathfrak{B}] = [\mathfrak{A} \& \sim\mathfrak{B}]$   
But the following clauses are not equivalent  
(i) I don't claim that if the glass dropped, it broke.  
(ii) The glass dropped and/but I don't claim that it broke.  
Reason: Pragmatics requires that  $\mathfrak{A}$  is informative,  
hence (i) implicates that it is not established that the glass broke,  
in contrast to (ii).  
Another reason: (ii) establishes the proposition the glass dropped  
without any assertive commitment, just by antecedent.

## Embeddings: Negation %

- ◆ Forcing wide scope negation: Barker 1995, metalinguistic negation:
  - 20) It's not the case that if God is dead, then everything is permitted.
  - 'Assumption that God is dead does not license the assertion that everything is permitted.'
- ◆ Punčochář 2015, cf. also Hare 1970:
  - negation of *if  $\varphi$  then  $\psi$*  amounts to: Possibly:  $\varphi$  but not  $\psi$
- ◆ Implementation in Commitment Space Semantics:
  - $C + \diamond \mathcal{A} =_{\text{def}} C$  iff  $C + \mathcal{A}$  is defined,
  - i.e. leads to a set of consistent commitment states.
- ◆ Speech act negation  $\diamond \sim \mathcal{A}$
- ◆ Use of *no* to express this kind of negation:
  - 21)  $S_1$ : This number is prime.
  - $S_2$ : No. It might have very high prime factors.
- ◆ Applied to conditionals:
  - $C + \diamond \sim [\mathcal{A} \Rightarrow \mathcal{B}] = C$  iff  $C + \sim [\mathcal{A} \Rightarrow \mathcal{B}] \neq \emptyset$
  - iff  $C + [\mathcal{A} \& \sim \mathcal{B}] \neq \emptyset$
  - i.e. in  $C$ ,  $\mathcal{A}$  can be assumed without assuming  $\mathcal{B}$

## Embeddings: Negation %

- ◆ Égré & Politzer 2013 assume three different negations:
  - $\text{neg} [\varphi \rightarrow \psi] \Leftrightarrow \varphi \wedge \neg \psi$ , if speaker is informed about truth of  $\varphi$
  - $\text{neg} [\varphi > \psi] \Leftrightarrow \varphi > \neg \psi$ , if sufficient evidence that  $\varphi$  is a reason for  $\neg \psi$
  - $\text{neg} [\varphi > \psi] \Leftrightarrow \neg [\varphi > \psi] \Leftrightarrow [\varphi > \neg \Box \psi]$ , basic form
- ◆ Reason: Different elaborations of the negation of conditionals,
  - 22)  $S_1$ : If it is a square chip, it will be black.
  - $S_2$ : No (negates this proposition)
    - (i) there is a square chip that is not black.
    - (ii) (all) square chips are not black.
    - (iii) square chips may be black.
- ◆ However, we do not have to assume different negations;
  - (i), (ii) and (iii) give different types of contradicting evidence.
- ◆ This explanation can be transferred to the analysis of negation here:
  - 23)  $S_1$ :  $C + [F(\varphi) \Rightarrow F(\psi)]$ .
  - $S_2$ : No (rejects this move)
    - (i)  $C + [F(\varphi) \& F(\neg \psi)]$
    - (ii)  $C + [F(\varphi) \Rightarrow F(\neg \psi)]$
    - (iii)  $C + \diamond \sim [F(\varphi) \Rightarrow F(\psi)]$



## Embeddings: Conditional consequents ✓



- ◆ Easy to implement, as consequents are speech acts:

$$\begin{aligned} [\mathcal{A} \Rightarrow [\mathcal{B} \Rightarrow \mathcal{C}]] &= [\sim\mathcal{A} \vee [\sim\mathcal{B} \vee \mathcal{C}]] \\ &= [[\sim\mathcal{A} \vee \sim\mathcal{B}] \vee \mathcal{C}] \\ &= [[\mathcal{A} \& \mathcal{B}] \vee \mathcal{C}] = [[\mathcal{A} \& \mathcal{B}] \Rightarrow \mathcal{C}] \end{aligned}$$

24) If all Greeks are wise, then if Fred is Greek, he is wise.

entails: If all Greeks are wise and Fred is a Greek, then he is wise.

- ◆ CP analysis achieves this result under stipulation:

- $[\varphi > [\psi > \pi]] = \lambda i[[\psi > \pi](ms(i, \varphi))]$   
 $= \lambda i[\lambda i'[\pi(ms(i', \psi))](ms(i, \varphi))]$       Necessary assumption:  
 $= \lambda i[\pi(ms(ms(i, \varphi), \psi))]$        $ms(ms(i, \varphi), \psi)$
- $[[\varphi \wedge \psi] > \pi] = \lambda i[\pi(ms(i, [\varphi \wedge \psi]))]$        $= ms(i, [\varphi \wedge \psi])$

- ◆ Possible counterexample (Barker 1995):

25) If Fred is a millionaire, then even if he does fail the entry requirement, we should (still) let him join the club.

Problem: scope of *even* cannot extend over conditional after conjunction of antecedents

## Embeddings: Conditional antecedents %



- ◆ Conditional antecedents are difficult to interpret (cf. Edgington, 1995, Gibbard, 1981)

26) If Kripke was there if Strawson was there, then Anscombe was there.

- ◆ Explanation:

Antecedent must be a proposition, but conditional is a speech act!

- ◆ Sometimes conditional antecedents appear fine (Gibbard):

27) If the glass broke if it was dropped, it was fragile.

- Read with stress on *broke*, whereas *if it was dropped* is deaccented
- This is evidence for *if it was dropped* to be topic of the whole sentence.
- Facilitates reading *If the glass was dropped, then if it broke, it was fragile*; this is a conditional consequent, which is fine.

- ◆ Notice that for CP theorists, conditional antecedents should be fine

$$[[\varphi > \psi] > \pi] = \lambda i[\pi(ms(i, \lambda i'[\psi(ms(i', \varphi))]))].$$

## Embeddings: Propositional attitudes

- 28) Bill thinks / regrets / hopes / doubts that if Mary applies, she will get the job.  
 29) Bill thinks / regrets / hopes / doubts that Mary will get the job if she applies.  
 30) A: If Mary applies, she will get the job. B: I believe that, too. / I doubt that.
- ◆  $[_{CP} \text{that } [_{TenseP} \dots ]]$  suggests an TP (propositional) analysis of conditionals
  - ◆ Krifka 2014: Coercion of assertion to proposition,  $\mathcal{A} \rightsquigarrow$  'A is assertable'
    - (28)  $\rightsquigarrow$  Bill thinks / regrets / hopes / doubts
      - that it is assertable that if Mary applies, she will get the job,
      - that whenever established that Mary applies, it is assertable that she will get the job
  - ◆ Assertability of A at a commitment space C:
    - A speaker S is justified in initiating C + A,
    - a speaker S that initiates C + A has a winning strategy, i.e. can ultimately defend this update.
  - ◆ Possibly similar with:
- 31) It is (not) the case that if Mary applies, she will get the job;  
 'it is (not) assertable that if Mary applies, she will get the job'
- ◆ Evidence for this coercion: discourse / speech act operators in *that* clauses
- 32) they thought that, frankly, they made more complex choices every day in Safeway than when they went into the ballot box
- ◆ As in other cases of coercion, required by selection of lexical operator, e.g. *think, doubt* ...,

## Counterfactual conditionals

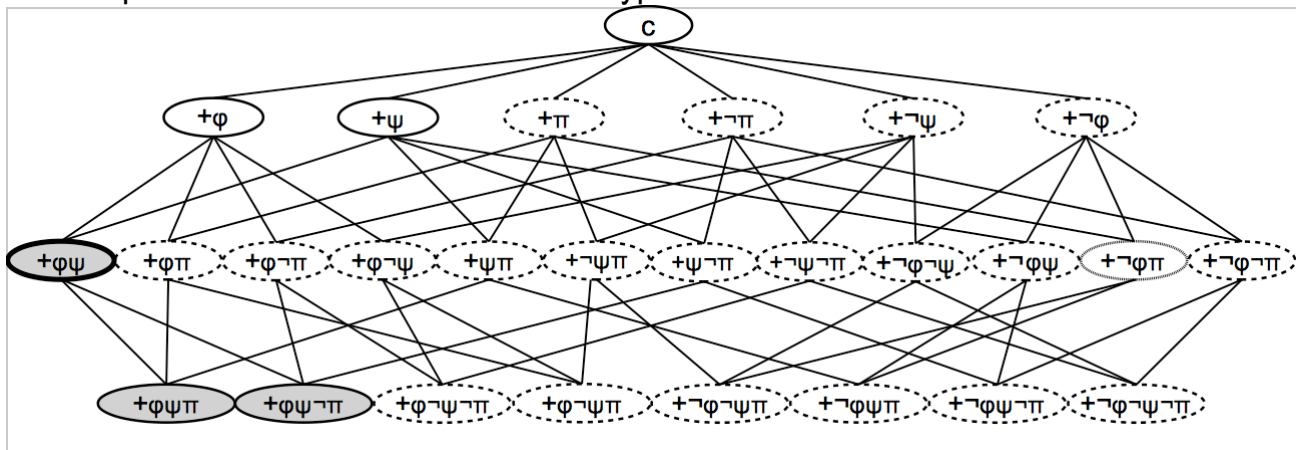
- ◆ Indicative conditionals considered so far:  
 The antecedent can be informatively added to the commitment space, e.g. C + if  $\varphi$  then ASSERT  $\psi$  pragmatically implicates that C +  $F(\varphi) \neq \emptyset$
  - ◆ This is systematically violated with counterfactual conditionals:
- 33) If Mary had applied, she would have gotten the job.  
 34) If 27413 had been divisible by 7, Fred would have proposed to Mary.
- ◆ Proposal:
    - The counterfactual conditional requires **thinning out** the commitment states so that the antecedent  $F(\varphi)$  can be asserted.
    - This requires "going back" to a hypothetical larger commitment space in which the actual commitment space is embedded.
  - ◆ This leads to the notion of a **commitment space with background**, that captures the (possibly hypothetical) commitment space (**background**) "before" the **actual** commitment space

# Commitment Space with Background

- ◆ A commitment space with background is a pair of commitment spaces  $\langle C_b, C_a \rangle$ , where
  - $C_a \subseteq C_b$
  - $\forall c \in C_b [c < C_a \rightarrow c \in C_a]$ , where  $c < C_a$  iff  $\exists c' \in C_a [c \subseteq c']$ , i.e.  $C_a$  is a "bottom" part of  $C_b$

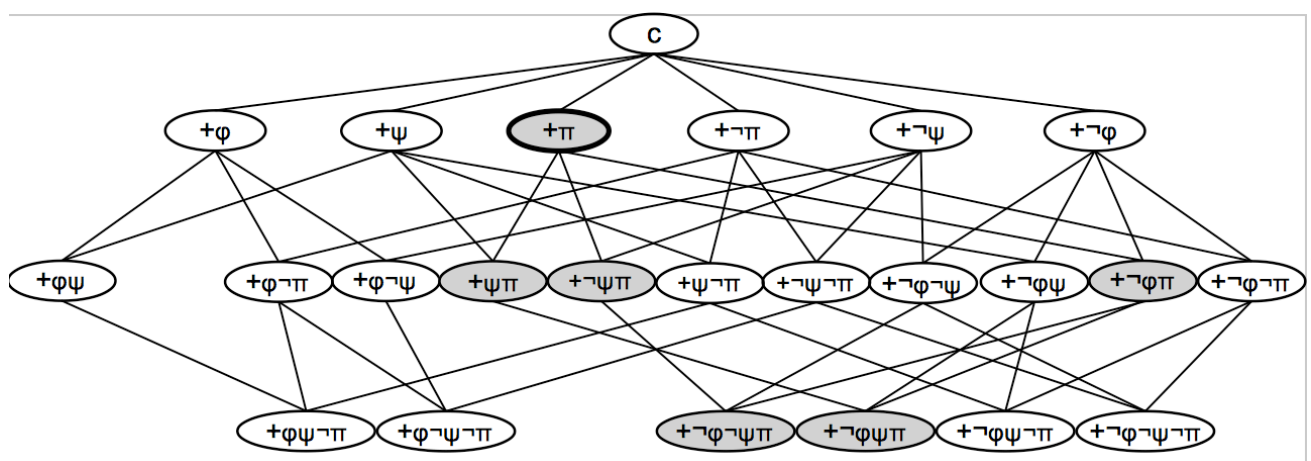
◆ Example:  $\langle C, C+F(\varphi)+F(\psi) \rangle$

root: fat border, actual commitment space: gray  
 past commitment states: solid hypothetical commitment states: dotted



# Update of CS with background

- ◆ Regular update of a commitment space with background:  $\langle C_b, C_a \rangle + \mathcal{A} = \langle \{c \in C_b \mid \neg [C_a + \mathcal{A}] < c\}, [C_a + \mathcal{A}] \rangle$ , where  $C < c$ :  $\exists c' \in c [c' < c]$ 
  - Regular update of commitment space  $C_a$
  - Eliminating commitment states "under"  $C_a$  in background
- ◆ Update with denegation "prunes" background CS, here:  $\langle C, C+F(\pi) \rangle + \sim F(\varphi)$



# Update of CS w background by conditional

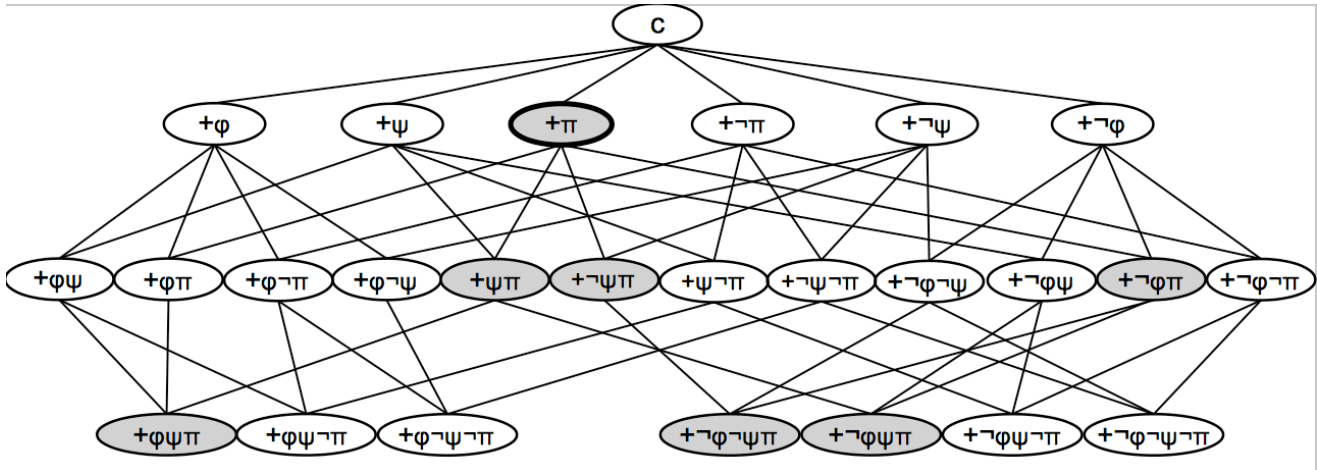


◆ As conditional update involves denegation, we also observe pruning

◆ Example:

$$\langle C_b, C_a + F(\pi) \rangle + [\varphi \Rightarrow F(\psi)]$$

$$= \langle C_b, C_a + F(\pi) \rangle + [\sim F(\varphi) \vee F(\psi)]$$



# Counterfactual conditionals



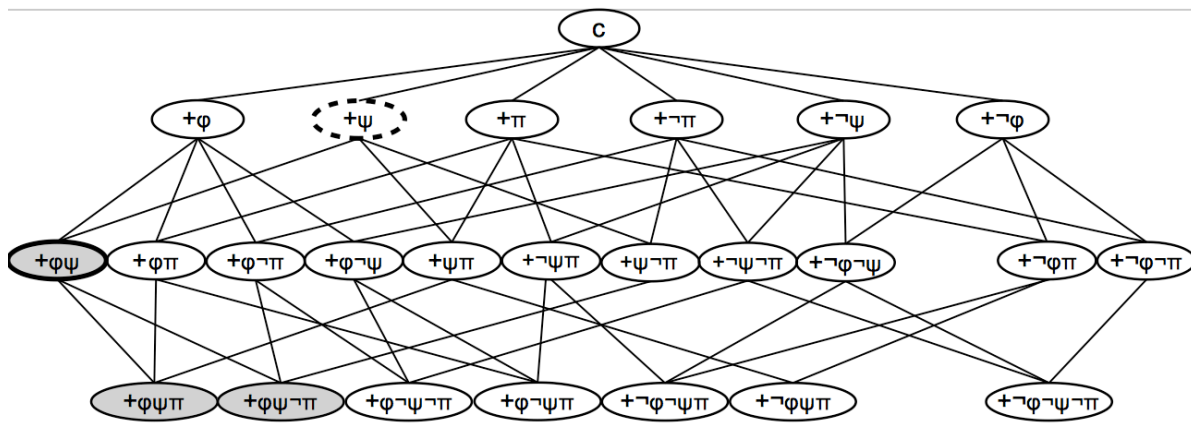
◆ Update with counterfactual conditional:

- Let  $C_a$  be  $C_b + F(\varphi) + F(\psi)$
- $\langle C_b, C_a \rangle + [F(\neg\varphi) \Rightarrow F(\pi)] = \dots C_a + \sim F(\neg\varphi) \dots = \dots C_a - C_a + F(\neg\varphi) \dots$ ,
- but  $C_a + F(\neg\varphi)$  not felicitous, as  $\forall c \in C_a: \neg\varphi \notin c$

◆ Revisionary update: go back to c.state where update is be defined:

- $C +_R F(\varphi) = \{ms(c, \varphi) + f(\varphi) \mid c \in C\}$ ,  
 $ms(c, \varphi)$  = the c.state maximally similar to c that can be updated with  $\varphi$

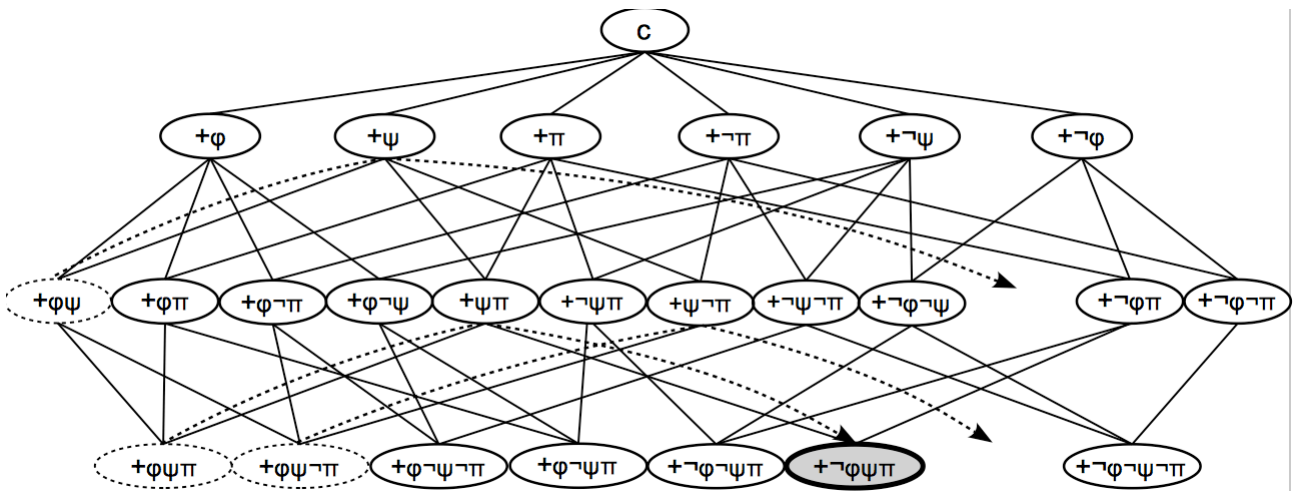
◆ Going back to dotted c.state; update with  $[\neg\varphi \Rightarrow F(\pi)]$ ; effect on background



# Counterfactual conditionals



- ◆ Counterfactual conditional informs about hypothetical commitment states, which may have an effect under revisionary update,
- ◆ Example:  
 $C_b + F(\varphi) + F(\psi) + (\text{counterfactual}) [\neg\varphi \Rightarrow F(\pi)] + (\text{revisionary}) F(\neg\varphi)$
- ◆ Notice that the effect of the counterfactual conditional remains, it is guaranteed that  $\pi$  is in the resulting commitment space



# Counterfactuals and “fake past”



- ◆ Explaining of “fake past tense” in counterfactual conditionals  
 Dudman 1984, Iatridou 2000, Ritter & Wiltschko 2014, Karawani 2014, Romero 2014
  - Past tense shifts commitment space from actual to a “past” commitment space; this does not have to be a state that the actual conversation passed through, but might be a hypothetical commitment space.
  - As conversation happens in time, leading to increasing commitments, this is a natural transfer from the temporal to the conversational dimension.
- ◆ Ippolito 2008 treats “fake tense” as real tense, going back in real time where the counterfactual assumption was still possible.  
 Problem with time-independent clauses:

35) If 27413 had been divisible by 7, I would have proposed to Mary.

36) If 27419 was divisible by three, I would propose to Mary.

- ◆ Going from  $c$  to a commitment state  $c' \subset c$  with fewer assumptions to make a counterfactual assertion may involve going to different worlds for which a commitment state  $c$  is possible. (cf. See Krifka 2014 for a model with branching worlds)

## Wrapping up

- ◆ Modeling conditionals as conditional speech acts is possible!
- ◆ There are advantages over modeling as conditional propositions:
  - Flexibility as to speech act type of consequent
  - Restrictions for embedding of conditionals
  - Logical properties of conditionals without stipulations about accessibility relation.
- ◆ The price to pay:
  - Certain embeddings require a coercion from speech acts to propositions, e.g. from assertions to assertability
  - Conditionals are not statements about the world, but about commitment spaces in conversation; this requires idealizing assumptions about rationality of participants, extending commitment spaces beyond current conversation.
- ◆ A theory of counterfactuals
  - Counterfactuals not about non-real worlds but about thinned-out commitment states
  - Allows for counterfactual conditionals with logically false antecedents
  - Suggests a way to deal with fake past

# Conditional Sentences as Conditional Speech Acts

Manfred Krifka

Leibniz-Zentrum Allgemeine Sprachwissenschaft & Humboldt-Universität zu Berlin  
krifka@leibniz-zas.de

Take a conditional sentence like **(1)** *If Fred was at the party, the party was fun* (schematically, if  $\varphi$ , then  $\psi$ ). Standard semantic analyses of conditional clauses in formal semantics assume that they are **conditional propositions (CP)** that may be true or false with respect to a world/time or situation index (e.g., Stalnaker, Lewis, Kratzer). For example, Stalnaker (1968) analyzed them as proposition  $[\varphi > \psi]$ , which is true at an index  $i$  such that the index  $i'$  most similar to  $i$  such that  $\varphi$  is true at  $i$  is such that  $\psi$  is true at  $i'$  as well. Alternatively, (1) may express that the conditional probability  $P(\psi | \varphi)$  is greater than some threshold value (e.g., Adams). However, line of argumentation, mostly in philosophy of language, contends that conditional sentences like (1) express **conditional assertions (CA)**: Under the condition that  $\varphi$  is true, it is asserted that  $\psi$  is true as well (e.g. Edgington, Vanderveken, Starr). Quine (1950) considered CA to be the default theory, and it offers a straightforward explanation of the intuition behind conditionals that were voiced by Charles S. Peirce and Frank Ramsey: To argue for a conditional ‘if  $\varphi$  then  $\psi$ ’ amounts to adding  $\varphi$  hypothetically to one’s stock of knowledge, and then argue for the truth of  $\psi$ .

A strong argument for the CP view is that **conditionals can be embedded**, e.g. by propositional attitude predicates: **(2)** *Sue thinks that if Fred was at the party, the party was fun*. A strong argument for the CA view is that **the embedding options are restricted**; in particular, it is problematic to negate or disjoin them, or to have conditional clause with conditional antecedent. As Stalnaker (2009) put it, “the proponent of a non-truth-conditional [CA] account needs to explain what embeddings there are, but the proponent of a truth-conditional [CP] account must explain why embedded conditionals don’t seem to be interpretable in full generality.” Furthermore, the CP theory has nothing to say about **other conditional speech acts**, like questions **(3)** *If Fred was there, was the party fun?*, imperatives **(4)** *If Fred is there, tell him that he should call me*, or exclamatives **(5)** *If Fred was there, how fun the party must have been!*

One argument in favor of the CP view is that truth-conditional theories for conditionals are worked out in great formal detail, which cannot be claimed for CA theories. In this talk I will take up this challenge and develop a **formal framework for the modeling of the CA view**. I will explain the embeddings of conditional clauses and their restrictions, and I will sketch a unifying account for indicative and counterfactual conditionals in this framework. While I do think that conditional propositions have to be entertained as well, there is clear evidence for conditional assertions and other speech acts that are not reducible to propositions.

I will model conditional assertions with **Commitment Spaces (CS)**, as proposed in and Cohen & Krifka (2014) and Krifka (2015). This framework starts out with **commitment states**  $c$ , sets of propositions that represent the information that the interlocutors assume to be shared at a particular point in conversation. The assertion of a proposition  $\varphi$  by a speaker  $S_1$  consists in adding to  $c$  the proposition  $S_1 \vdash \varphi$ , that  $S_1$  is committed to the truth of  $\varphi$ ; in typical circumstances, the proposition  $\varphi$  is added to  $c$  as well as a conversational implicature. **Commitment spaces**  $C$  are sets of commitment states that represent a commitment state and its possible continuations in the course of conversation. We call  $\sqrt{C}$  the set of smallest commitment states of  $C$ , the **roots** of  $C$ ; ideally, a CS has a single non-empty root. Updating  $C$  with a proposition  $\varphi$  consists in adding  $\varphi$  to the roots of  $C$ , written as  $C + F(\varphi) = F(\varphi)(C) = \{c \in C \mid \exists c' \in \sqrt{C} [c \cup \{\varphi\} \subseteq c']\}$ , in which all commitment states  $c$  contain the proposition  $\varphi$ .  $F(\varphi)$  is a CS update function that changes the input CS  $C$  to an output CS.

Commitment Spaces are advantageous over mere commitment states, as certain operations over speech acts can be expressed on that level. For example, **denegations** of a commitment update like **(6)** *I don’t claim that the party was fun* can be seen as involving a subtraction; if  $\mathfrak{A}$  is a CS update

function, then  $C + \sim\mathcal{A} = C - [C + \mathcal{A}]$ . The result is a set of commitment states in which the proposition  $\phi$  does not occur. Boolean **conjunction** and **disjunction** can be expressed as set intersection and union on CSs:  $C + [\mathcal{A} \& \mathcal{B}] = [C + \mathcal{A}] \cap [C + \mathcal{B}]$  and  $C + [\mathcal{A} \vee \mathcal{B}] = [C + \mathcal{A}] \cup [C + \mathcal{B}]$ . Also, **questions** can be modeled as restrictions of a CS to those continuations in which the addressee assert one of a number of proposition.

**Conditionals assertions** can be modeled as CS updates as follows: ‘if  $\phi$  then assert:  $\psi$ ’ is interpreted as: Whenever the CS develops in such a way that  $\phi$  is established in a commitment state  $c$ , the assertion that  $\psi$  is established in  $c$ . This effectively removes those commitment states  $c$  in  $C$  for which  $\phi \in c$  but  $\psi \notin c$ . We can express this as  $C + \text{‘if } \phi, S \vdash \psi\text{’} = C + [\sim F(\phi) \vee F(S \vdash \psi)]$ , that is,  $C$  will be updated with the disjunction of the denegation  $\sim F(\phi)$  with the consequent  $F(S \vdash \phi)$ , that  $S$  is committed to  $\phi$ . This is reminiscent of the predicate logic equivalence  $[a \rightarrow b] = \neg a \vee b$ .

I will show that the known **problem cases** for embedded speech acts can be resolved. **Disjunction** of conditionals turn out to be problematic because they convey that the antecedents are exhaustive, in which case the sentence expresses a systematic tautology. Cases like (7) *Either the cheque will arrive today, if George has put it into the mail, or it will come with him tomorrow, if he hasn’t* (Barker 1995) are good because the *if*-clauses are parentheticals. **Negation** of conditionals like (8) *It is not the case that if there is no God, everything is permitted* are problematic because they would involve negation of a speech act. I will argue with Punčochář 2015 that they only allow for a negation ‘possibly not’, which can be expressed on speech acts, and I will explain the observations of Egré & Politzer 2013 concerning negated conditionals. **Conditional antecedents** are bad because the antecedent position is not a speech act; cases like (8) *If the glass broke if it was dropped, it was fragile* (Gibbard) are interpretable because there is prosodic evidence that *if (the glass) was dropped* is topic and scopes over the whole sentence. Cases of conjunction of conditionals and conditional consequences, which are easy to interpret, turn out to have a straightforward interpretation. I will also show how **conditional questions** can be interpreted: The commitment space is restricted in such a way that every point in the future development at which the antecedent proposition is added to a commitment space, the continuations of that commitment space are restricted to be answers to that question. For example, (3) states that whenever it becomes established that Fred was at the party, the next move is restricted to assertions whether or not the party was fun.

If conditional clauses are (conditional) speech acts, the question arises why then can be embedded by **propositional attitude** operators as in (2). For conditional assertions, one line of argument is that they undergo a coercion from a speech act  $\mathcal{A}$  to the proposition ‘it is assertable that  $\mathcal{A}$ ’. A speech act is assertable if the current undisputed information allows to make that speech act without expecting fatal challenges. For example, (1) is assertable if it is known that Fred is someone that, when present, makes parties fun. Another line of argument is that beliefs are structures similarly as commitment spaces, namely as a private set of propositions that a subject believes, and a structure of possible enrichments of such believes; to believe in a conditional structure then would mean that whenever one comes to belief the antecedent, one also believes the consequent.

The proposed reconstruction of conditional assertions **makes the consequent assertion dependent on whether the antecedent proposition becomes part of the common ground**, not on whether it is true in the real world. There are clear cases of such conditionals; e.g. John can say (9) *If the number 27419 is divisible by 7, I will give you 10 Euros* (in the sense of ‘if 27419 turns out to be divisible by 7, ...’). However, a view centered around the notion of common ground is problematic. What if the speaker simply does not accept that the proposition is true? The analysis of conditional speech acts developed here is based on a rational conduct of the interlocutors. Also, if a father tells his daughter on his death bed, (10) *If you marry, you will be happy*, then he does not expect that the common ground will go on to admit the proposition ‘the daughter marries’. The notion of a commitment space has to be generalized to admit hypothetical states, or we have to accept conditional propositions as well. As an alternative, I will point the proposal of Krifka (2014), which allows for making speech acts dependent on the factual truths of antecedents. In this theory, the development of commitment spaces is part of the objective development of the world.



# A Machine Learning Perspective on the Pragmatics of Indirect Commands

Matthew Lamm\*  
Stanford Linguistics  
Stanford NLP Group  
mlamm@stanford.edu

Mihail Eric\*  
Stanford Computer Science  
Stanford NLP Group  
meric@cs.stanford.edu

A major goal of computational linguistics research is to enable organic, language-mediated interaction between humans and artificial agents. In a common scenario of such interaction, a human issues a command in the imperative mood—e.g. *Pick up the box*—and a robot acts in turn [14, 15]. While this utterance-action paradigm presents its own set of challenges [13], it greatly simplifies the diversity of ways in which natural language can be used to elicit action of an agent, be it human or artificial [2, 10, 7, 3, 6]. Computational semantics must leverage the key insight from early speech act theory that most clause types, even vanilla declaratives, instantiate as performative requests in certain contexts [1, 12, 9].

To this end, we employ machine learning to study the use of performative commands in the Cards corpus, a set of transcripts from a web-based game that is constrained so as to require a high degree of linguistic and strategic collaboration [4, 5, 11]. For example, players are tasked with navigating a maze-like gameboard in search of six cards of the same suit, but since a player can hold at most three cards at a time, they must coordinate their efforts to win the game.

The Cards corpus is particularly well-suited to studying the pragmatics of commands because it records both utterances made as well as the actions taken during the course of a game. Where commands are concerned, we can observe who acts in response to an utterance, and test hypotheses about the discourse conditions surrounding an utterance-action exchange.

We focus on a subclass of performative commands that are ubiquitous in the Cards corpus: Non-agentive declaratives about the locations of objects, e.g. “The five of hearts is in the top left corner,” hereafter referred to as locatives. Despite that their semantics makes no reference to either an agent or an action—thus distinguishing them from conventional imperatives—locatives can be interpreted as commands when embedded in particular discourse contexts. In the Cards game, it is frequently the case that an addressee will respond to such an utterance by fetching the card mentioned.

We hypothesize that the illocutionary effect of a locative utterance is a function of contextual features that variably constrain the actions of discourse participants, e.g. the card

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\* Authors contributed equally

Model	$F_1$
<i>Random</i>	23.5
<i>Bigram</i>	58.9
Explicit Goal	76.2
Full Hand	<b>82.3</b>

Table 1:  $F_1$  performance as reported on the test set. Note our baselines are italicized.

mentioned is relevant to a winning collaborative strategy, but the speaker cannot act by picking it up as such.

To test this idea, we manually annotate a dataset of 94 locative utterances in the Cards transcripts that we deem to be truly ambiguous, out of context, between informative and command readings. We also annotate their respective transcripts for a simplified representation of the tabular common ground model described in [8]. Here, we identify the common ground with the state of a game as reflected by the utterances made by both players up to a specific point in time. Finally, we train machine learning classifiers on features of the common ground to predict whether the addressee will act on the information provided by the speaker.

We train standard logistic regression classifiers on the following features.

- **Explicit Goal:** This binary feature is triggered in two cases: 1) When the suit of card mentioned matches the agreed-upon suit strategy in the common ground and 2) When the card mentioned appears in the set of cards the addressee claims to need. This models the prediction that locative utterances are more likely to elicit follow-up action of an addressee when they are relevant to a common goal.
- **Full Hands:** This binary feature is triggered when the speaker has three cards of the same suit as the card mentioned, and which are associated with some winning six-card straight, but the addressee does not. This models the prediction that locative utterances are likely to be indirect commands when they provide information relevant to winning, but only the addressee can act as such.

Two baseline classifiers benchmark our predictive task. Our random baseline predicts the addressee follow-up using a Bernoulli distribution weighted according to the class priors of the training data. The second baseline incorporates surface-level dialogue context via bigram features of all the utterances exchanged between players up to and including the locative utterance in question. We also experimented with a unigram baseline, but found it inferior to that trained on bigrams.

We report the results of our experiments using an  $F_1$  measure and a 0.8/0.2 train/test split of our data in Table 1. We find that of the two baselines, the bigram model performs better. This bigram model also uses 2,916 distinct lexical features which makes it a highly overspecified model for our moderate data size. In contrast, we test our two context-sensitive features one at a time with our logistic regression model, as we are interested in seeing how successfully they encode agents’ pragmatic inferences. We find that both of our single-feature context-sensitive models significantly outperform our baselines, thus confirming the hypothesis that discourse context plays an important role in the interpretation of non-agentive declaratives as indirect commands.

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# Moore's paradox and hedging with 'I believe': An attempt.

Sven Lauer  
University of Konstanz

*Questioning Speech Acts*  
Konstanz, September 14 - 16, 2017

**Wanted:** A compositional analysis that jointly predicts two well-known observations:

- The fact that *I believe* often (but not always) **functions as a hedge**:
  - (1) I believe/think it is raining.  
     $\rightsquigarrow Sp$  is not certain that it is raining.
- **Moore's paradox**, i.e. the infelicity / contradictoriness of sentences like (2).
  - (2) #It is not raining but I believe it is (raining).

The desideratum of **compositionality** amounts to this:

- (3) should have the same kind of content as (4) and (5), modulo the belief subject / tense.
  - (3) I believe  $p$ .
  - (4) John believes  $p$ .
  - (5) I believed that  $p$ .
- All declarative sentences, including sentences of the form in (3) should receive (as declaratives) a **uniform sentential force**.
  - The different effects of asserting, e.g., (6) and (7) should result from their different contents.
    - (6) It is raining.
    - (7) I believe it is raining

## Plot

- In **Section 1**, we take a closer look at the two phenomena and bring out a **tension** between (natural explanations of) them.
- In **Section 2**:
  - I take stock, formulate two more desiderata for an analysis of (*I*) *believe*-sentences.
  - Make plausible that the tension between the two phenomena call for a theory of **graded belief**.
  - Briefly say why I don't think **probability theory** is the way to go.
- In **Section 3**, I introduce Spohn's **ranking theory**.
- In **Section 4**, I use this theory in the interpretation of a **propositional language with belief-operators**.
- In **Section 5**, I review the **considerable success** with respect to the desiderata identified in the first half of the talk.
- In the **rest of the day**, various speakers (Klecha, Greenberg/Lavi, Mari) will surely challenge my analysis by discussing various facts that my analysis does not cover.

# 1 Two observations, and a dilemma.

## 1.1 Hedging with 'I believe'

- *I believe that p* often indicates that the speaker is not entirely certain that *p*, cf. (1).

(1) I believe/think it is raining. Bel<sub>Sp</sub>(*p*)  
    ↪ *Sp* is not certain that *p*.

- However, this is not always the case, in particular the inference can be suspended by using an adverb like *firmly*:<sup>1</sup>

(8) I firmly believe that it is raining.  
    ↪ *Sp* is uncertain whether it is raining.

- A natural way to account for this is as an **implicature**, derived (roughly) as follows:
  - The speaker of (1) could have asserted *It is raining*, which is shorter/less complex.
  - He must have had a reason to do so.
  - Maybe he did not want to commit to *It is raining* to be true, and chose to only commit to the claim that he **believes** it is raining.
  - One reason for this may be that he is not quite sure whether it is raining.

↪ *I believe p* is a way of avoiding (fully) committing to *p*.

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<sup>1</sup>Question: Is such modification possible with *I think* and friends? If not, why not?

## 1.2 Moore's paradox

- Moore's paradox (Moore 1942, 1944): (9) sounds 'contradictory'.

(9) It is raining but I don't believe it (is raining).  $p \wedge \neg \text{Bel}_{Sp}(p)$   
or:  $p \wedge \text{Bel}_{Sp}(\neg p)$

- And yet, (9) appears to have a perfectly consistent content, cf. (10a) and (10b).

(10) a. It is raining but John does not believe it (is raining).  
b. It was raining but I did not believe it (was raining).

- Throughout most of this talk, I will focus on the sentence in (2), to avoid having to worry about neg-raising.

(2) #It is not raining, but I believe it (is raining).  $\neg p \wedge \text{Bel}_{Sp}(p)$

- A natural way to account for this is as follows:

- With uttering  $\neg p$ , the speaker commits to taking  $p$  to be false.
- At the same time, with uttering *I believe p*, she commits to taking  $p$  to be true.
- Thus (2) gives rise to incompatible commitments.
- Hence it is odd to assert it (even though it could be true).

↪ *I believe p* commits the speaker to  $p$ .

## 1.3 A dilemma

- There is a tension between the two 'natural explanantions' just sketched.
- Let  $A_{Sp}$  be an operator representing the consequences of assertion of a declarative.
  - 'doxastic commitment' / commitment to believe (Condoravdi and Lauer 2011, Lauer 2013)
  - 'assertoric commitment' (Krifka 2014)
  - 'truth commitment' (Searle 1969, Krifka 2015)
  - ...
- Note: Such commitment is in principle **independent** from belief.

(11)  $\text{Bel}_{Sp}(p) \not\Leftarrow A_{Sp}(p)$



### The dilemma:

Should the following ‘mixed introspection’ principle be valid?

(12) MIXED INTROSPECTION:  $A_{Sp}(\text{Bel}_{Sp}(p)) \rightarrow A_{Sp}(p)$

- The ‘natural explanation’ for **hedging with ‘believe’** says **NO!**
  - Or else, asserting ‘*I believe p*’ is not a way to avoid asserting *p*.
- The ‘natural explanation’ for **Moore’s paradox** says **YES!**
  - Or else, ‘*I believe p*’ does not create a commitment that is incompatible with the one triggered by ‘ $\neg p$ ’.

- Aside: MIXED INTROSPECTION is independent from both introspection for belief (13) and introspection for assertoric commitment (14)/

(13) INTROSPECTION FOR BELIEF:  $\text{Bel}_{Sp}(\text{Bel}_{Sp}(p)) \rightarrow \text{Bel}_{Sp}(p)$

(14) INTROSPECTION FOR ASSERTORIC COMMITMENT:  $A_{Sp}(A_{Sp}(p)) \rightarrow A_{Sp}(p)$

- (13) is commonly assumed for (rational) belief, especially in logical approaches.
- (14) is a crucial assumption in Condoravdi and Lauer (2011)’s account of explicit performatives.

## 2 Diagnosis: Weakness and strength

- Intuitively, MIXED INTROSPECTION (12) should fail because ‘*I believe p*’ (in some contexts) induces a **weaker** commitment than ‘*p*’.
- At the same time, the commitment should **not be too weak**.
  - It must be strong enough to explain **Moore’s paradox**.
  - And it arguably should be strong enough to predicts the following two observations:
    - (15) **Strength:** *I believe p* and *I believe  $\neg p$*  are incompatible.
    - (16) **Closure:** A speaker who asserts *I believe p* and *I believe q* is also committed to *I believe  $p \wedge q$* .
- **Strength**, in particular, requires that the commitment induced by ‘*I believe p*’ is stronger than that by *Might p*, cf. (17).
  - (17) It might be raining, but it might also not be raining.

## 2.1 Graded belief

- So we need a ‘medium-strong’ commitment for *I believe*-sentences.
- This motivates employing a theory of **graded belief** that allows us to distinguish more levels than possibility and necessity.
- Let us try **probability theory** (cf., e.g. Swanson 2006, Lassiter 2011, 2017 on epistemic *must*).
- Set aside compositionality and assume:
  1. ‘*I believe that p*’ commits the speaker to  $P_{Sp}(p) > \beta$ .
  2. ‘*p*’ commits the speaker to  $P_{Sp}(p) > \alpha$ .

where  $\alpha, \beta \geq 0.5$ .

- Such a theory is set-up to do well on **Moore’s paradox** and **Strength**.
  - Because a probability distribution can assign probability  $> 0.5$  to at most one of  $p$  and  $\neg p$ .
- However, such a probabilistic-threshold theory can deliver on at most one of **Hedging** and **Closure**.
  - To account for **Hedging**, it must be that  $\beta < \alpha \leq 1$ .
  - But then  $\beta < 1$ , and hence **Closure** is not accounted for.

**Wanted:** A theory of graded belief (and assertion) that meets the following desiderata:

- (18) **Hedging:**  
 $\text{Bel}_{Sp}(p)$  induces a weaker commitment than  $p$ .
- (19) **Moore’s paradox:**  
 $\neg p$  and  $\text{Bel}_{Sp}(p)$  induce incompatible commitments.
- (20) **Strength:**  
 $\text{Bel}_{Sp}(p)$  and  $\text{Bel}_{Sp}(\neg p)$  induce incompatible commitments.
- (21) **Closure:**  
 $\text{Bel}_{Sp}(p)$  and  $\text{Bel}_{Sp}(q)$  jointly commit the agent to  $\text{Bel}_{Sp}(p \wedge q)$

### 3 Ranking Theory

- **Ranking theory** (Spohn 1988, 1990, 2012) is an alternative theory of graded belief.
- One of its advertised features is that it predicts closure for belief.
- So let's have a closer look.

**Definition 1** (Pointwise ranking functions, after Spohn 2012, p. 70). *Given a set of worlds  $W$ , a complete pointwise (negative) ranking function is any function  $\kappa : W \rightarrow (\mathbb{N} \cup \{\infty\})$  such that  $\kappa^{-1}(0) \neq \emptyset$ .*

- A complete pointwise ranking function simply assigns each world a natural number (or  $\infty$ ).
- The only constraint is that **some** worlds must be assigned 0.
- This is a 'negative' ranking function because the intended interpretation is that it measures the 'disbelief' in worlds.
  - $\kappa(w) = 0$  indicates that  $w$  is one of the "most expected" worlds according to the belief agent.
  - $\kappa(v) > \kappa(w)$  indicates that  $w$  is 'more expected' by the belief agent than  $v$ .

**Definition 2** (Lift). *Given a complete pointwise ranking function  $\kappa$ , its **lift** ( $\kappa^\dagger$ ) is that function  $\wp(W) \rightarrow (\mathbb{N} \cup \{\infty\})$  such that*

1.  $\kappa^\dagger(\emptyset) = \infty$
2. for any non-empty  $A \subseteq W : \kappa^\dagger(A) = \min \{ \kappa(w) \mid w \in A \}$

. *Note: It is guaranteed that  $\kappa^\dagger(W) = 0$ .  $\kappa^\dagger$  is a 'completely minimitive negative ranking function'.*

- Such a negative ranking function for propositions modes **disbelief in propositions**.
- I.e.,  $\kappa^\dagger$  tells us of each proposition how 'surprising' it would be for the agent.
- We could work with negative ranking functions throughout, but **positive ranking functions** are more intuitive.

**Definition 3** (Positive lift, after Spohn 2012, p. 75). *Given a complete pointwise ranking function  $\kappa$ , its **positive lift** ( $\kappa^+$ ) is that function  $\wp(W) \rightarrow (\mathbb{N} \cup \{\infty\})$  such that for all non-empty  $A \subseteq W$ :*

$$\kappa^+(A) = \kappa^+(W - A)$$

- The positive lift of a ranking function gives us a measure of **belief** (rather than disbelief) for a proposition. In particular, the following hold:
  1. The contradictory proposition always has rank zero:  $\kappa^+(\emptyset) = 0$
  2. The tautological proposition always has infinite rank:  $\kappa^+(W) = \infty$
  3. For any  $A, B \subseteq W$ :  $\kappa^+(A \cap B) = \min(\kappa^+(A), \kappa^+(B))$ .

More generally:  $\mathcal{B} \subseteq \wp(W)$ :  $\kappa^+(\bigcap \mathcal{B}) = \min \{\kappa^+(B) \mid B \in \mathcal{B}\}$ .

Any function that satisfies these properties (and is defined for all  $A \subseteq W$ ) is called a **completely minimitive positive ranking function on  $W$** .

- A useful thing to keep in mind: For any  $A$  **at least one of  $A$  and  $W - A$  must have rank zero**.

## 4 The object language: Syntax and semantics.

### 4.1 Syntax

For simplicity, we use a standard propositional language, enriched with a family of modal operators for belief:

**Definition 4** (Language). *Let  $P$  and  $A$  be disjoint sets (of proposition letters and agent names). Then  $\mathcal{L}_{P,A}$  is the smallest set such that*

1.  $P \subseteq \mathcal{L}_{P,A}$  *(proposition letters are formulas)*
2. If  $\phi \in \mathcal{L}_{P,A}$ , then  $\neg\phi \in \mathcal{L}_{P,A}$ . *(negation of formulas)*
3. If  $\phi, \psi \in \mathcal{L}_{P,A}$ , then  $(\phi \wedge \psi) \in \mathcal{L}_{P,A}$ . *(conjunction of formulas)*
4. If  $\phi \in \mathcal{L}_{P,A}$  and  $a \in A$ , then  $(\text{Bel}_a\phi) \in \mathcal{L}_{P,A}$ . *(belief formulas)*

*Other connectives introduced as the usual abbreviations.*

- Thus we have arbitrary Boolean combinations.

$$(22) \quad p \wedge (\text{Bel}_a q)$$

$$(23) \quad \neg p \wedge \neg(\text{Bel}_{S_p} \neg q)$$

etc.

- Belief operators can nest, regardless of the agent involved:

$$(24) \quad (\text{Bel}_a(\text{Bel}_b p))$$

$$(25) \quad (\text{Bel}_a(\text{Bel}_a p))$$

### 4.2 Semantics

Models are standard possible-worlds one, with two additions:

**Definition 5** (Models). *A **model** for  $\mathcal{L}_{P,A}$  is a quadruple  $M = \langle W, I, K, \beta \rangle$ , such that*

1.  $W$  is a set of possible worlds,
2.  $I : W \times P \rightarrow \{0, 1\}$  assigns each world a valuation for the proposition letters.
3.  $K$  a function that assigns to each agent-world pair complete pointwise ranking function.
4.  $\beta \in \mathbb{N}$  is the threshold for belief ascriptions.<sup>2</sup>

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<sup>2</sup>Of course, in a more realistic system, we probably would let  $\beta$  be a contextual parameter.

With this, we can define a standard propositional semantics. The only interesting clause is 4:

**Definition 6** (Denotation function). *Given a model  $M = \langle W, I, K, \beta \rangle$ , the denotation function  $\llbracket \cdot \rrbracket^M : \mathcal{L}_{P,A} \rightarrow \wp(W)$  is as follows:*

1.  $\llbracket p \rrbracket^M = \{w \in W \mid I(w, p) = 1\}$ , for all  $p \in P$ .
2.  $\llbracket \neg \phi \rrbracket^M = W - \llbracket \phi \rrbracket^M$ .
3.  $\llbracket \phi \wedge \psi \rrbracket^M = \llbracket \phi \rrbracket^M \cap \llbracket \psi \rrbracket^M$ .
4.  $\llbracket \text{Bel}_a \phi \rrbracket^M = \{w \in W \mid K(a, w)^+(\phi) > \beta\}$

### 4.3 Introspection

To guarantee introspection, we define *admissibility* for ranking functions and models.

**Definition 7** (Admissibility of ranking functions). *Given  $M = \langle W, I, K, \theta \rangle$ , a pointwise ranking function  $\kappa$  is **admissible for  $a \in A$**  iff*

$$\forall v \in \kappa^{-1}(o) : K(v, a) = \kappa$$

That is,  $\kappa$  is admissible for  $a$  only if  $a$ 's ranking function is the same as  $\kappa$  all worlds in receiving a negative rank  $o$  (The 'core' of the ranking function.)<sup>3</sup>

**Definition 8** (Admissibility for models). *A model is **admissible** iff  $\forall w \in W, a \in A : K(w, a)$  is admissible for  $a$ .*

- That is, a model is admissible iff  $K$  only assigns admissible ranking functions.
- Admissibility ensures introspection, the following sense:

**Fact 9.** (Collapse) *For any admissible model  $M : \llbracket \text{Bel}_a(\text{Bel}_a \phi) \rrbracket^M \supseteq \llbracket \text{Bel}_a \phi \rrbracket^M$  for all  $a, \phi$ .*

*Proof.* Suppose  $w \in \llbracket \text{Bel}_a(\text{Bel}_a \phi) \rrbracket$ . Then  $K(a, w)^+(\llbracket \text{Bel}_a \phi \rrbracket) \geq \beta$  and hence for all  $v$  such that  $K(a, w)(v) \leq \beta : v \in \llbracket \text{Bel}_a \phi \rrbracket$ . Let  $v'$  be such that  $K(w, a)(v') = o$ . As we have just seen,  $v' \in \llbracket \text{Bel}_a \phi \rrbracket$ . Hence  $K(a, v')^+(\llbracket \phi \rrbracket) \geq \beta$ . But, by admissibility:  $K(a, v') = K(a, w)$ . So  $K(a, w)^+(\llbracket \phi \rrbracket) \geq \beta$ . But then,  $w \in \llbracket \text{Bel}_a(\phi) \rrbracket$ . □

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<sup>3</sup>This notion of admissibility is actually too weak to deal with belief revision. But it will do for our (static) purposes here.

## 5 Declarative force

### 5.1 Commitment states

- Fixing a model  $M$  for a language  $\mathcal{L}_{P,A}$ , the commitments an agent has are represented as **constraints on ranking functions**:

(26) A **commitment state**  $C_a$  for  $a \in A$  is partial truth-function of pointwise ranking functions such that  $C_a(\kappa)$  is defined iff  $\kappa$  is admissible for  $a$ .

- There are two distinguished commitment states:

(27)  $\perp = \lambda\kappa.0$  (the contradictory state)

(28)  $\top = \lambda\kappa.1$  (the uncommitted state)

### 5.2 Updates for commitment states

- Declarative force is modeled via the following update operation on commitment states:

(29)  $C + \phi = \lambda\kappa.C(\kappa) \ \& \ \kappa^+(\llbracket \phi \rrbracket^M) > \alpha$  (declarative update)

- Support is standardly (Veltman 1996-style) defined as vacuous update:

(30)  $C \models \phi$  iff  $C + \phi = C$  (support)

## 6 Success

### 6.1 Hedging explained

- In general:

(31)  $C_a + \text{Bel}_a(\phi) \neq \phi$

- I.e., updating with  $\text{Bel}_a(\phi)$  does not commit the speaker to  $\phi$ .
- This is so because the update with  $\text{Bel}_a(\phi)$  only requires (by admissibility) that

$$\kappa(\llbracket \phi \rrbracket) > \beta$$

- This does not exclude that  $\kappa(\llbracket \phi \rrbracket) \leq \alpha$ , since  $\alpha > \beta$ .

## 6.2 Moore's paradox explained

- For any agent  $a$  and commitment state  $C_a$ :

$$(32) \quad C_a + (\neg\phi \wedge \mathbf{Bel}_a\phi) = \perp$$

$\hookrightarrow$  *It is not raining, but I believe it is* is inconsistent.

$$(33) \quad C_a + (\phi \wedge \mathbf{Bel}_a\neg\phi) = \perp$$

$\hookrightarrow$  *It is raining, but I believe it is not raining.* is inconsistent.

$$(34) \quad C_a + (\phi \wedge \neg\mathbf{Bel}_a\phi) = \perp$$

$\hookrightarrow$  *It is raining, but I don't believe it is raining.* is inconsistent.

- For (32) this is so because the first conjunct requires  $\kappa^+(\phi) = 0$ , but the second requires  $\kappa^+ > \theta \geq 0$ .
- Reasoning for the other cases is analogous.
- N.B.: It can easily be that  $\llbracket \neg\phi \wedge (\mathbf{Bel}_a\phi) \rrbracket \neq \emptyset$ .

## 7 Strength explained

- For any  $a$  and commitment state  $C_a$ :

$$(35) \quad C_a + (\mathbf{Bel}_a\phi) + (\mathbf{Bel}_a\neg\phi) = \perp$$

- The first update requires  $\kappa^+(\phi) > \beta \geq 0$ .
- The second update requires  $\kappa^+(\neg\phi) > \beta \geq 0$ .
- But a ranking function can assign positive rank to at most one of  $\phi$  and  $\neg\phi$ .

## 8 Closure explained

- For any  $a$  and commitmentstate  $C_a$ :

$$(36) \quad C + (\mathbf{Bel}_a\phi) + (\mathbf{Bel}_a\psi) \models \mathbf{Bel}_a(\phi \wedge \psi)$$

- $\mathbf{Bel}_a\phi$  requires that  $\kappa^+(\phi) > \beta$ .
- $\mathbf{Bel}_a\psi$  requires that  $\kappa^+(\psi) > \beta$ .
- But then, it must also be that  $\min(\kappa^+(\phi), \kappa^+(\psi)) > \beta$ .
- $\mathbf{Bel}_a(\phi \wedge \psi)$  requires that
- But that is already required by  $C_a + (\mathbf{Bel}_a\phi) + (\mathbf{Bel}_a\psi)$ .



## 9 Conclusion

In summary:

- If we want to maintain what I have called the ‘natural explanation’ of **Moore’s paradox** and **Hedging with ‘believe’**, we need to employ a theory of **graded belief** to avoid the dilemma from Section 1.
- If we also want to account for **Closure**, then **probability theory will not do**.
- However, **ranking theory** gives us an elegant tool for accounting for all three facts (and **Strength**) at the same time.

Some questions:

- We’ll hear (much) more about belief ascriptions later today and throughout this workshop (e.g. in Klecha and Mari’s talks).
  - Can their observations be accounted for in a ranking-theoretic framework?
  - Or do their observations point to crucial weaknesses in that framework?
- I have talked about (categorical) commitment to **graded belief**.
  - Could we also do with **graded commitment** à la Greenberg/Lavi?
  - And could we do so **compositionally**?
  - (This would seem to require a ‘speech-act’ analysis of *believe*?)
  - (They might like that. So might Krifka.)

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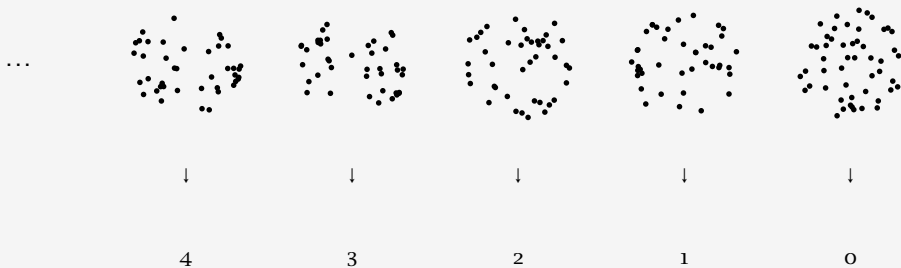
# Moore's paradox and hedging with 'I believe': An attempt.

or: 'I believe' in a ranking-theoretic analysis of 'believe'

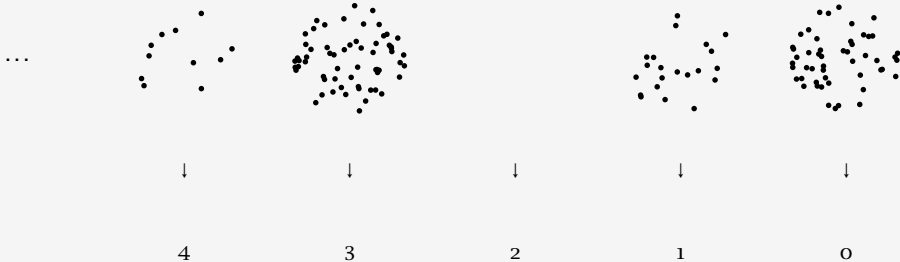
Sven Lauer  
University of Konstanz

**Questioning Speech Acts**  
Konstanz, September 14 – 16, 2017

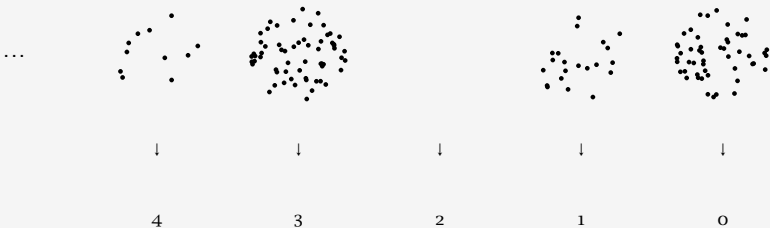
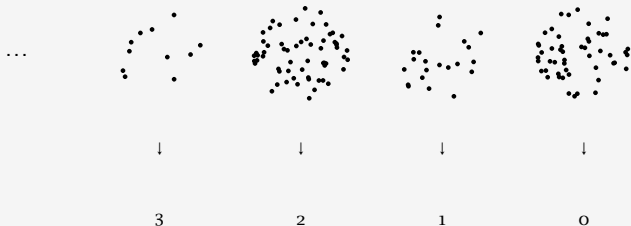
## A pointwise ranking function



## Another pointwise ranking function



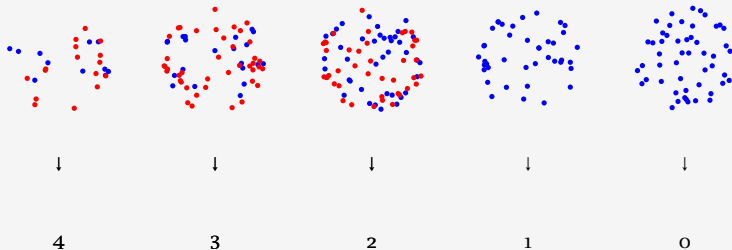
# Numbers matter


 $\neq$ 


# Lifting to propositions

Rain worlds

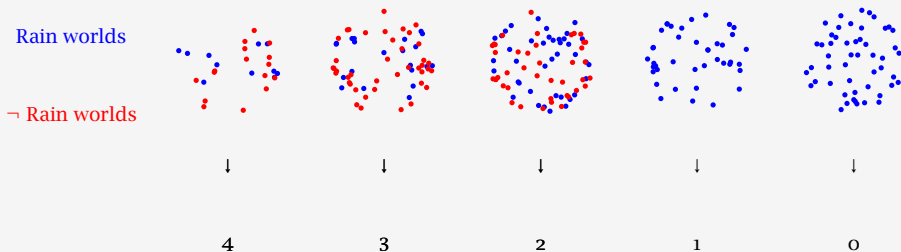
$\neg$  Rain worlds



**Definition 2:** for any non-empty  $A \subseteq W : \kappa^\uparrow(A) = \min \{ \kappa(w) \mid w \in A \}$

- $\kappa^\uparrow(\text{It is not raining}) = 2$
- $\kappa^\uparrow(\text{It is raining}) = 0$

# Positive ranks

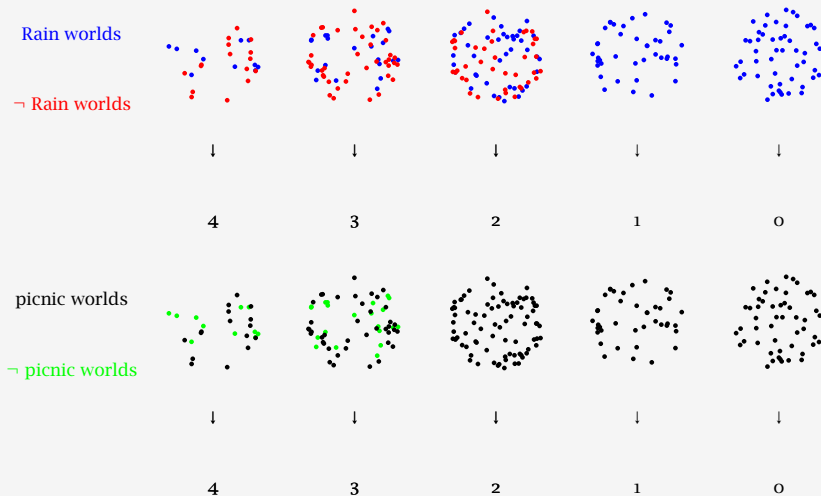


**Definition 3:** Positive rank = negative rank of complement

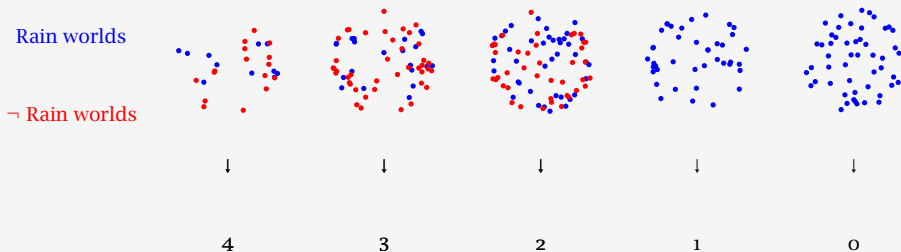
- $\kappa^+(\text{It is not raining}) = 0$
- $\kappa^+(\text{It is raining}) = 2$



# Intersecting propositions



# Positive ranks



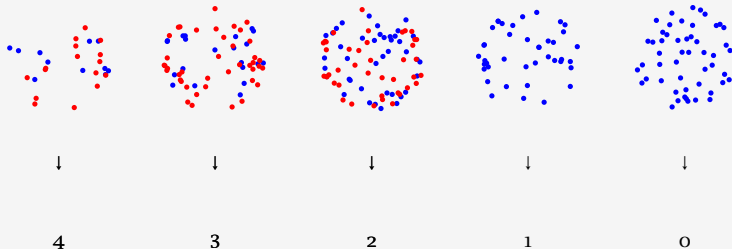
**Definition 3:** Positive rank = negative rank of complement

- $\kappa^+(\text{It is not raining}) = 0$
- $\kappa^+(\text{It is raining}) = 2$

# Hedging explained

Rain worlds

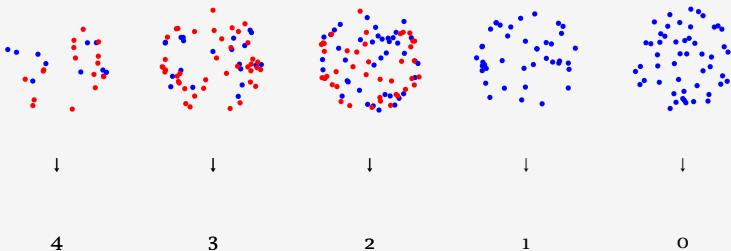
$\neg$  Rain worlds



- Suppose  $\beta = 0$  and  $\alpha = 3$ .
- Then the above rating function can satisfy  $C_a + \text{Bel}_a(\phi)$ .
- But it does not satisfy  $C_a + \phi$ .

## Moore's paradox explained

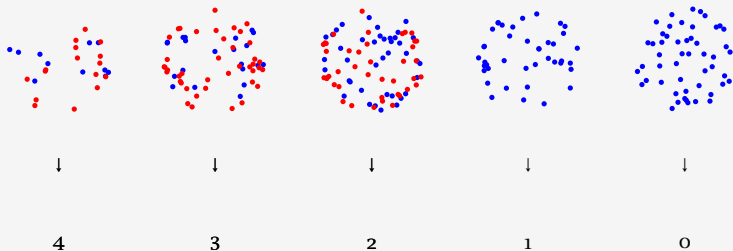
Rain worlds

 $\neg$  Rain worlds(1)  $\neg Rain \wedge Bel_a(Rain)$ Suppose:  $\beta = 0, \alpha = 1$ 

- Asserting  $\neg Rain$  requires  $\kappa^+(\neg Rain) > 1 > 0$
- Asserting  $Bel_a(Rain)$  requires  $\kappa^+(Rain) > 0$
- Impossible!

## Strength explained

Rain worlds

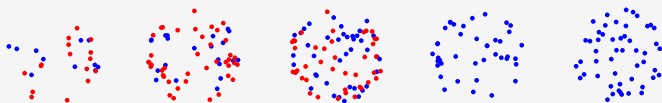
 $\neg$  Rain worlds(2)  $\text{Bel}_a(\neg \text{Rain}) \wedge \text{Bel}_a(\text{Rain})$ Suppose:  $\beta = 0, \alpha = 1$ 

- Asserting  $\text{Bel}_a(\neg \text{Rain})$  requires  $\kappa^+(\neg \text{Rain}) > 0$
- Asserting  $\text{Bel}_a(\text{Rain})$  requires  $\kappa^+(\text{Rain}) > 0$
- Impossible!

# Closure explained

Rain worlds

→ Rain worlds



↓

↓

↓

↓

↓

4

3

2

1

0

picnic worlds

→ picnic worlds



↓

↓

↓

↓

↓

4

3

2

1

0

## Moore's paradox and hedging with 'I believe': An attempt.

Sven Lauer, University of Konstanz

**Wanted:** A compositional analysis that jointly predicts two well-known observations: (i) '*I believe*' is frequently used as a **hedge**, cf. (1) (ii) **Moore's paradox**, cf. (2). The desideratum of compositionality amounts to this: '*I believe p*' should have the same kind of content as '*John believes p*', modulo the belief subject; and '*p*' and '*I believe p*' should be assigned the same conventional force, with their different effects following from their different contents.

**Hedging with 'I believe'.** '*I believe that p*' often indicates that the speaker is not entirely certain that *p*, cf. (1). A natural way to account for this as an **implicature**, derived on the basis of the fact that the speaker chose to say '*I believe that p*', instead of '*p*'. One reason for doing so may be that she does not want to commit to *p*, and instead only commits to the claim that she believes that *p*.

(1) I believe/think it is raining.  $\rightsquigarrow$   $S_p$  is not certain that *p*.  $\text{Bel}_{S_p}(p)$

**Moore's paradox (Moore 1942, 1944).** (2) seems to have a perfectly consistent content (cf. '*It is not raining, but John believes it is*'), yet it sounds "incoherent" (We focus on (2) instead of the (classic) '*It is raining but I don't believe it*' to side-step questions about neg-raising). A natural way to account for this is the following: With uttering  $\neg p$ , the speaker commits to taking *p* to be false, but with uttering  $\text{Bel}_{S_p}(p)$ , she commits to taking *p* to be true. Thus, (2) induces incompatible commitments.

(2) #It is not raining, but I believe it is (raining).  $\neg p \wedge \text{Bel}_{S_p}(p)$

**A dilemma.** There is a tension between the two 'natural explanations' sketched above. To bring this tension out more clearly, let  $A_{S_p}$  be an operator representing the consequences of assertion of a declarative ('doxastic commitment', Condoravdi and Lauer 2011, Lauer 2013, 'assertoric commitment' Krifka 2014, 'truth commitment' Searle 1969, Krifka 2015, etc.). Then we are faced with the question whether the 'mixed introspection' principle in (3) should be valid (N.B., mixed introspection is in principle independent from introspection for 'believe':  $\text{Bel}_{S_p}(\text{Bel}_{S_p}(p)) \rightarrow \text{Bel}_{S_p}(p)$ ).

(3) MIXED INTROSPECTION:  $A_{S_p}(\text{Bel}_{S_p}(p)) \rightarrow A_{S_p}(p)$

The 'natural explanation' for **hedging with 'believe'** requires that (3) be **not valid** (else, asserting 'I believe *p*' is not a way to avoid asserting *p*). On the other hand, the 'natural explanation' for **Moore's paradox** seems to rely on the assumption that (3) **is valid**.

**Diagnosis.** Intuitively, (3) should fail because asserting 'I believe that *p*' induces (at least in some contexts) a **weaker** commitment than asserting '*p*'. At the same time, this commitment should **not be too weak**: It must be strong enough to explain Moore's paradox, and also (arguably) the two observations labelled **Strength** and **Closure** below. In particular, **Strength** requires that the commitment induced by 'I believe *p*' is stronger than that induced by '*Might p*'.

**(Strength)** '*I believe p*' and '*I believe  $\neg p$* ' are incompatible.

**(Closure)** A speaker who asserts '*I believe p*' and '*I believe q*' is also committed to '*I believe  $p \wedge q$* '.

**Graded belief.** The need for 'medium-strong' commitment for '*believe*'-ascriptions motivates moving to a theory of graded belief, such as probability theory (cf. Swanson 2006, Lassiter 2011, 2017 on epistemic '*must*'). Setting aside compositionality, assume that '*I believe that p*' commits its speaker to her subjective probability distribution satisfying  $P_{S_p}(p) > \theta$  and that asserting '*p*' commits her to  $P_{S_p}(p) > \alpha$ , where  $\alpha, \theta \geq 0.5$ . Such a theory is set-up to do well on **Moore's paradox** and **Strength**, but it can only predict at most one of **Hedging** and **Closure**: To predict **Hedging**, it must be that  $\theta < \alpha \leq 1$ . But then, **Closure** does not hold.

We hence explore an account in terms of a different theory of graded belief: The **ranking theory** of Spohn (1988, 1990, 2012).

**Definition 1** (Language). For  $P$  and  $A$  disjoint sets (proposition letters, agents),  $\mathcal{L}_{P,A}$  is the smallest superset of  $P$  closed under negation  $\neg$  and conjunction  $\wedge$ , s.t. if  $\phi \in \mathcal{L}_{P,A}$ ,  $a \in A$ , then  $(\text{Bel}_a \phi) \in \mathcal{L}_{P,A}$ .

**Definition 2** (Models). A **model** for  $\mathcal{L}_{P,A}$  is a quadruple  $M = \langle W, I, K, \theta \rangle$ , such that  $W$  is a set of possible worlds,  $I : W \times P \rightarrow \{0, 1\}$  an interpretation function for the proposition letters,  $K$  a function that assigns to each agent-world pair complete pointwise ranking function and  $\theta \in \mathbb{N}$ .

**Definition 3** (Ranking functions, after Spohn 2012, p. 70/75). Given  $M = \langle W, I, K, \theta \rangle$ , a **complete pointwise ranking function** is a function  $\kappa : W \rightarrow (\mathbb{N} \cup \{\infty\})$  such that  $\kappa^{-1}(0) \neq \emptyset$ . Given such a function  $\kappa$ , its **positive lift** ( $\kappa^+$ ) is that function  $\wp(W) \rightarrow (\mathbb{N} \cup \{\infty\})$  such that  $\kappa^+(\emptyset) = 0$ ,  $\kappa^+(W) = \infty$  and for any non-empty  $A \subset W : \kappa^+(A) = \min \{\kappa(v) \mid v \in (W - A)\}$ . For any  $\kappa$ ,  $\kappa^+$  is a completely minimitive ranking function. In particular,  $\kappa^+(\bigcap \mathcal{B}) = \min \{\kappa^+(B) \mid B \in \mathcal{B}\}$  for all  $\mathcal{B} \in \wp(W)$ .

**Definition 4** (Denotation). Given a model  $M = \langle W, I, K, \theta \rangle$ , the **denotation function**  $\llbracket \cdot \rrbracket^M : \mathcal{L}_{P,A} \rightarrow \wp(W)$  is as follows: Proposition letters are interpreted via  $I$ , Boolean combinations are interpreted in the usual way ( $\neg$  as complement on  $W$ ,  $\wedge$  as  $\cap$ ), and  $\llbracket \text{Bel}_a \phi \rrbracket^M = \{w \in W \mid K(a, w)^+(\phi) > \theta\}$ .

We define *admissibility* for ranking functions and models, ensuring introspection for belief (Fact 6).

**Definition 5.** Given  $M = \langle W, I, K, \theta \rangle$ , a pointwise ranking function  $\kappa$  is **admissible** for  $a \in A$  iff  $\forall v \in \kappa^{-1}(0) : K(v, a) = \kappa$ . A model is *admissible* iff  $\forall w \in W, a \in A : K(w, a)$  is admissible for  $a$ .

**Fact 6.** (Collapse) For any admissible model  $M : \llbracket \text{Bel}_a(\text{Bel}_a \phi) \rrbracket^M \supseteq \llbracket \text{Bel}_a \phi \rrbracket^M$  for all  $a, \phi$ .

**Declarative force** Fixing a model  $M$  for a language  $\mathcal{L}_{P,A}$ , the commitments an agent has are represented as *constraints on ranking functions*. Thus a **commitment state** is partial truth-function of pointwise ranking functions such that  $C_a(\kappa)$  is defined iff  $\kappa$  is admissible for  $a$ . There are two distinguished commitment states  $\perp = \lambda\kappa.0$  (the contradictory state) and  $\top = \lambda\kappa.1$  (the uncommitted state). We further define the **update to commitment states** that happens when a speaker utters a declarative sentence as in (4), and, in terms of it, a notion of **support** à la Veltman (1996) in (5).

$$(4) \quad C + \phi = \lambda\kappa.C(\kappa) \ \& \ \kappa^+(\phi) > \alpha \qquad (5) \quad C \models \phi \text{ iff } C + \phi = C$$

Success of the account is witnessed by the following three facts:

**Fact 7** (Hedging with ‘belief’ explained). For any  $C_a : C_a + \text{Bel}_a(\phi) \neq \phi$  unless  $C_a \models \phi$ .

This is so because  $C_a + (\text{Bel}_a \phi)$  only requires (in virtue of admissibility) that  $\kappa^+(\phi) > \theta$ , while  $\phi$  requires  $\kappa^+(\phi) > \alpha$ , and  $\theta < \alpha$ .

**Fact 8** (Moore’s paradox explained). For any agent  $a$  and commitment state  $C_a :$

$$(i) \ C_a + (\neg\phi \wedge \text{Bel}_a \phi) = \perp \qquad (ii) \ C_a + (\phi \wedge \text{Bel}_a \neg\phi) = \perp \qquad (iii) \ C_a + (\phi \wedge \neg\text{Bel}_a \phi) = \perp$$

For (i) this is so because the first conjunct requires  $\kappa^+(\phi) = 0$ , but the second requires  $\kappa^+ > \theta \geq 0$ . Reasoning for the other cases is analogous. N.B.: It can easily be that  $\llbracket \neg\phi \wedge (\text{Bel}_a \phi) \rrbracket \neq \emptyset$ .

**Fact 9** (Strength and closure explained). For any agent  $a$  and commitment state  $C_a :$

$$(i) \ C_a + (\text{Bel}_a \phi) + (\text{Bel}_a \neg\phi) = \perp \qquad (ii) \ C + (\text{Bel}_a \phi) + (\text{Bel}_a \psi) \models \text{Bel}_a(\phi \wedge \psi)$$

For (i): The first update requires  $\kappa^+(\phi) > \theta \geq 0$ , the second  $\kappa^+(\neg\phi) > \theta \geq 0$ . But a ranking function can assign positive rank to at most one of  $\phi$  and  $\neg\phi$ . For (ii):  $\text{Bel}_a(\phi \wedge \psi)$  requires that  $\min(\kappa^+(\phi), \kappa^+(\psi)) > \theta$ , but that is already required by  $C_a + (\text{Bel}_a \phi) + (\text{Bel}_a \psi)$ .



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# Belief and assertion. Evidence from mood shift

**Alda Mari**

INSTITUT JEAN NICOD , CNRS/ENS/EHESS/PSL

QUESTIONING SPEECH ACTS

Konstanz September 13-16

University of Konstanz

# Plan

Is belief weak or strong?

Belief is strong

Belief is weak

Mood-choice: the homogeneity view and the strength of belief

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# Belief and assertion

- ▶ Entitlement equality: "when you have sufficient evidence to entitle you to believe something, you have sufficient evidence to entitle you to assert something". (Hawthorne et al. 2016: 1394)

# Belief and assertion

Belief entails and is entailed by assertion (Bach & Harnish 1979, Lauer 2013). - And behaves on a par with certainty.-

- (1)
  - a. It rains, #but I do not believe/I am not certain that it rains
  - b. I believe/I am certain that it rains, #but it does not rain.

# Belief and assertion

Strong belief:

Conclusion 1: Belief is strong. It is as strong as certainty and assertion.

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## Belief vs. assertion

- (2)
- a. It is raining, #but I am not sure it is raining.
  - b. I believe that it is raining, but I am not sure that it is raining.

(Howthorne et al. 2015)

*Believe* is also asymmetrically entailed by *be certain* and *know*.

- (3)
- a. I am sure that it rains, #but I do not believe it.
  - b. I believe that it rains, but I am not certain.

(Howthorne et al. 2015)

# Belief is weak

Conclusion 2: Knowledge, certainty and assertion are stronger than belief.

# Questions

- ▶ Is belief weak or strong ?
- ▶ What is the relation between assertion and belief-statements?

The view from Italian and mood shift.

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# Mood choice

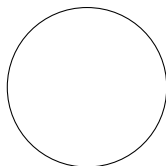
Common assumption (see discussion in Portner, forthcoming)

- ▶ Mood choice is the phenomenon whereby the verbal mood in an embedded clause is determined by a matrix predicate. Such predicates have a modal semantics.

# Hintikka

Hintikka (1962) semantics

(4) ' $\alpha$  believe  $p$ ' is true in  $w$  iff  $\forall w' \in \text{Dox}_\alpha(w)$ ,  $p$  is true in  $w'$ .



$\text{Dox}_i$  only  $p$  worlds

# Homogeneity and indicative

Semantic approaches (Giannakidou, 1999; Farkas, 2003; Villalta, 2008; Anand and Hacquard, 2013):

- ▶ Absence of alternatives in the modal base (i.e. **homogeneity**) triggers **indicative**.
- ▶ Presence of alternatives ( $\{p, q\}, \{p, \neg p\}$ ) (i.e. **non-homogeneity**) triggers **subjunctive**.
- ▶ BELIEVE is an indicative selector
- ▶ BELIEVE = BE CERTAIN
- ▶ Parallel to DREAM, IMAGINE (with a fictional modal base)
- Ok for French, Greek, Romanian, ....

# Problems

Homogeneity-based theories stumble on the Italian facts:  
Mood shift with BELIEVE in Italian (*credere*):

- (5) Credo che Maria sia.SUBJ / é.IND incinta. –  
I believe that Mary is pregnant.



# Problems

Homogeneity-based theories stumble on the Italian facts:

Mood shift with BELIEVE in Italian (*credere*):

- (5) Credo che Maria sia.SUBJ / é.IND incinta. –  
I believe that Mary is pregnant.

And also: BE CERTAIN (*essere certo/sicuro*) and BE CONVINCED (*essere convinto*) license the **subjunctive** ! (Mari, 2016)

- (6) Sono sicura che Maria sia.SUBJ / é.IND incinta. –  
I am certain that Mary is pregnant.
- (7) Sono convinta che Maria sia.SUBJ / é.IND incinta. –  
I am convinced that Mary is pregnant.

# Problems

Homogeneity-based theories stumble on the Italian facts:

Mood shift with BELIEVE in Italian (*credere*):

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I am certain that Mary is pregnant.

- (7) Sono convinta che Maria sia.SUBJ / é.IND incinta. –  
I am convinced that Mary is pregnant.

And also (previously unseen): IMAGINE (*immaginare*) ! (Mari, 2016)

- (8) Immagino che Maria sia.SUBJ / é.IND incinta. –  
I imagine that Mary is pregnant.

# Is Italian belief weak ?

- ▶ What is the difference between the indicative and the subjunctive versions ?
- ▶ Weak or strong belief ? In what respect ?

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# Key distinction

(meaning or use ? does not matter for now)

1. **Solipsistic-Fictional** Pure imagination, dream.
2. **Inquisitive-Fictional**: Conjecture about the truthiness of  $p$ . 'I do not know, but according to my imagination,  $p$ '

# Indicative-fictional

Solipsistic mental space;  
**indicative.**

- (9)
- a. Ha sognato che era.**IND** andato in Italia.  
He dreamt that he went to Italy.
  - b. Immaginava che andava.**IND** in Italia.  
He imagined that he was going to Italy.

# Subjunctive-fictional

Previously unseen :

'Imagine' as conjecture

- (10) Immagino che tu fossi.SUBJ in ritardo, visto il traffico.  
I imagine you were late, given the traffic jam.

Intuitively: 'I do not know' component; evidence.



Hence ...

1. IMAGINE uses a private space. Indicative.
2. IMAGINE is used to convey conjecture. Subjunctive.

# BELIEF: same distinction

- ▶ Expressive-credere – Credence.
- ▶ Inquisitive-credere – Conjecture

# Sharpening the proposal for BELIEF

- ▶ **Expressive-credere – Credence.**

The indicative-credere does not require knowability (it requires non-knowability?), it is a pure expression of credence.

- ▶ **Inquisitive-credere – Conjecture**

The subjunctive-credere requires that  $p$  be knowable, i.e. can be assigned a truth value otherwise than 'subjectively', i.e. relatively to an individual anchor.

Methodology: Consider contexts where,  $p$  cannot be known, i.e. unless a shareable parameter is accommodated, there is no fact of the matter about  $p$ : futurity and predicates of personal taste.

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# Futurity and knowability

- ▶ Present and past are settled and *knowable*, and the future does not exist yet, hence it is *not knowable*. If the time of evaluation of  $p$  is future,  $p$  cannot be known at the utterance time (see for recent discussion Giannakidou and Mari, 2017).
- ▶ We can **accommodate** a plan or a decision, and  $p$  is settled and 'knowable' w.r.t this plan or decision.

# Subjunctive / Indicative, future orientation and knowledge

Future orientation is possible with the subjunctive.

- (11) [We are organizing a party and John is invited. Usually John does not come to parties, however, he is very much in love with Mary and Mary is coming for sure.]  
Credo che venga.**SUBJ** anche Gianni questa volta.  
I believe that John is coming too this time.

see discussion in Mari, 2016

# Subjunctive / Indicative, future orientation and knowledge

Future orientation with indicative:

- (12) [My son has a tendency to forget stuff at school. My husband wants to buy an expensive scarf and asks me whether it is a good idea, or whether I believe that he will lose it.]
- Credo che la perderà.**IND.FUT.**
  - #Credo che la perda.**SUBJ.**  
I believe that he will lose it.

# Subjunctive / Indicative, future orientation and knowledge

The subjunctive is possible only when there is a plan or information in the background of which  $p$  is settled.

$p$  is 'knowable'.

- (13)
- a. Credo che le Olimpiadi si svolgano.SUBJ a Tokyo.  
I believe that the Olympics will take place in Tokyo.
  - b. (#)Credo che la Francia perda.SUBJ, questa sera.  
I believe that France will loose, tonight.



# Subjunctive / Indicative, future orientation and knowledge

The subjunctive is possible only when there is a plan or information in the background of which  $p$  is settled.

$p$  is 'knowable'.

- (13) a. Credo che le Olimpiadi si svolgano.SUBJ a Tokyo.  
I believe that the Olympics will take place in Tokyo.
- b. (#)Credo che la Francia perda.SUBJ, questa sera.  
I believe that France will lose, tonight.

**Conclusion: if  $p$  is not knowable, the subjunctive cannot be used.**

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# Predicates of personal taste (PPT)

No matter what your theory is, there is no 'fact of the matter' with PPT (Lasersohn, 2005; Stephenson, 2006) - unlike with epistemic modals.

With PPT,  $p$  is not metaphysically or circumstantially settled,  $p$  is not 'knowable'.

(14) The soup is tasty.

E.g. the tastiness of the soup is not intrinsic to the soup, it is not a 'fact of the matter' of the soup.

As with futurity is it possible to accommodate some form of 'objectivity': a standard of tastiness (as in the case of wines). There is some 'fact of the matter' about  $p$ .

Given the standard  $p$  is either true or false and  $p$  can be 'known'.

# PPT - and insults

In the middle of an argument :

- (15)    a.    Credo che sei.**IND** un cretino.  
      b.    Credo che tu sia.**SUBJ** un cretino.  
          'I believe that you are stupid.'

- ▶ (15-a) states a personal opinion about the stupidity of the addressee, based on a *subjective* evaluation (internal perception).
- ▶ (15-b) I am suggesting that *p* can be assigned a truth value by accommodating some shareable criterion of stupidity (it is felt as more insulting). I.e. I am raising the question of the stupidity of the addressee.

see discussion in Mari, 2016

## Into the unknown ....

- (16) a. Gianni crede che esistono.**IND** i marziani.  
b. Gianni crede che esistano.**SUBJ** i marziani.  
'Gianni believes that martians exist.'
- ▶ (16-a) states a personal opinion about the martians.
  - ▶ (16-b) raises the question about the existence of the martians.

# Anti-subjective predicates

(17) Che giorno è oggi ? (What day is today?)

a. Credo che è.**IND** martedì.

b. Credo che sia.**SUBJ** martedì.

'Gianni believes that martians exist.'

- ▶ (17-a) states a personal opinion (not very informative).
- ▶ (17-b) raises the question about whether it is Tuesday, conveys lack of knowledge.

## Main point of assertion - Indicative

- (18) a. Sei.**IND** bella, credo.  
You are good-looking, I believe.  
Assertion weakener  $\neq$
- b. Credo che sei.**IND** bella.  
I believe that you are good looking.  
Belief description.

And:

'No you do not believe it', is a possible reply only to (18-b).



## Main point of assertion - Subjunctive

- (19) a. \*Sia.SUBJ bella, credo.  
You are good-looking, I believe.
- b. Credo che tu sia.SUBJ bella.  
I believe that you are good looking.

And:

'No you do not believe it', is a possible reply to (19-b). The belief is at issue here as well.

(see Simons, 2007; AnderBois, 2015 for discussion).

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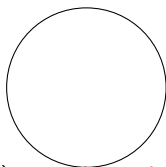
Consequences

# Expressive credere

**'Bare' Hintikka semantics** (see Figure 1): **solipsistic mental state**.

Expressive: **credence**

1. **Expressive**: one layer of meaning; doxastic only **indicative**



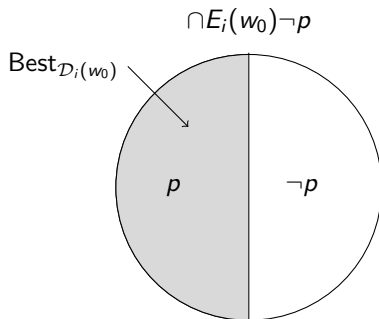
$\cap \mathcal{D}_i(w_0)$  ***p*-worlds only**

# Inquisitive credere

'Knowability' triggers a knowledge layer.

Inquisitive: conjecture

- ▶ Two-layers (doxastic + epistemic layer): doxastic certainty and epistemic uncertainty.



# Diasemy

- ▶ Diasemy, two BELIEVES: credence vs. conjecture.
- ▶ Common core: Credence is also part of the conjecture: doxastic certainty and epistemic uncertainty.
- ▶ Languages that have preferences set in such a way that subjunctive is preferred to the indicative allows us see the two meanings (see e.g. Gärtner and Eythórsson, 2017)
- ▶ Advantages: explain polysemy cross-classes (fictional, asking, ....)

# From modal bases to common ground

A signal is detected (lack of knowledge) and it is hardwired in the semantics. Still not satisfactory, missing the point.

**Why 'knowability' ?**

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# What is 'knowability'

Subjunctive conveys that

- ▶ Truth can be assessed.
- ▶ Not necessarily a metaphysical truth, but at least truth with respect to a restricted set of worlds (returned by plans, or standards - which we can *share*).
- ▶ We can *collectively* narrow down the set of worlds to what we consider to be the actual one.



# The relation to the common ground

Looking at BELIEF from the standpoint of communication:

- ▶ Belief as Credence: does not aim at solving a question.
- ▶ Belief as Conjecture: aims at solving a question.

# Revisiting the subjunctive-indicative distinction

(20) Mood choice - a different criterion.

The subjunctive-indicative distinction with epistemic predicates signals different relations between private spaces and public spaces (common ground or others).

see Giorgi and Pianesi 1996.

# Proposal

- ▶ Attitudes feature **update instructions** change the commitments of the participants in the conversation (see notion of speech acts in Szabolsci, 1982; Krifka, 2014,2015)
- ▶ Public spaces (sets of worlds): negotiation spaces  $\mathcal{N}$  and common ground  $\mathcal{C}$  (Farkas and Bruce (2010:88)); negotiation spaces are supersets of common grounds.
  - ▶ Assertions add  $p$  to  $\mathcal{N}$  and project a future  $\mathcal{C}$  that includes the asserted proposition
  - ▶ Questions add at least two alternatives to  $\mathcal{N}$  and projects a set of  $\mathcal{C}$ s, each containing only one of the possible answers to the question.
- ▶ Private space (sets of worlds):  $s$ .

# Proposal

I will **not** subscribe to  
 $\mathcal{N}$  and  $\mathcal{C}$  are subsets of the doxastic space  $s$  of  $\alpha$ .

On this view one cannot account for the fact that a belief is consistently held privately, without being held publicly. I will argue that this type of beliefs exist and they even come in different sorts.

# Proposal

- ▶ This is the reflex of how believes are formed and on the basis of what evidence. We consider public commitment (the addition of  $p$  to  $\mathcal{N}$ ) as requiring higher evidential standards (the case of lies set aside) than private commitment (the addition of  $p$  to  $s$ ), which can be based on preferences and non rational evidence.

# Implementation

BELIEF-statements and update instructions.

- ▶ Assertion 'A believes  $p$ ': the proposition BELIEVE- $p$  is added to  $\mathcal{N}$
- ▶ What about  $p$  ?
- ▶  $p$  is introduced by the update instruction contributed by the attitude. (see also Portner, 2007 on modals)

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(21) Proposal for BELIEF:  
Mary believes that  $p$   
ASSERT Mary believes-PRESENT that  $p$

# The meaning of BELIEF - and the speech acts

- (22)  $\llbracket \text{credere} \rrbracket^s = \lambda p. \forall w' \in s(p(w'))$   
Update instruction.  $\mathcal{N} [p] = (\mathcal{N} \cap p) \ \& \ (\mathcal{N} - p \neq \emptyset)$
- (23) PRESENT : does not eliminate  $\neg p$  worlds from  $\mathcal{N}$ .



# Mood

Mood is not a polarity item (*pace* Giannakidou, 1999/2016; in some way also Farkas, 2003).

→ Verbal mood, just as sentential mood, instructs as how to update the (local) context.

- (24)
- a. Update instruction of subjunctive (update non-assertively):  
 $W' [p_{subj}] = (W' \cap p_{subj}) \ \& \ (W' - p_{subj} \neq \emptyset)$
  - b. Update instruction of indicative (update assertively):  
 $W' [p_{ind}] = (W' \cap p_{ind}) \ \& \ (W' - p_{ind} = \emptyset)$

# The inquisitive belief.

- ▶ Subjunctive instructs to update  $\mathcal{N}$  non-assertively.

(25) Inquisitive-belief.  $\llbracket \alpha \textit{credere } p_{sub} \rrbracket^s = 1$  iff  $\forall w' \in s(p(w'))$   
Update instruction.  $(\mathcal{N} \cap p) \ \& \ (\mathcal{N} - p \neq \emptyset)$

Belief is strong in the private space and weak in the public space.

# The inquisitive belief.

- ▶ The belief that  $p$  is privately consistently held, but the public attitude is inquisitive.

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Subsequent discourse can update  $\mathcal{N}$  assertively, given extra evidence.

- (26) Crede che esistano.SUBJ i Marziani; anzi, ne è sicuro.  
'He believes that Martians exists, and in fact he is certain about it.'

'Certainty' can assertively add  $p$  to  $\mathcal{N}$  (but, unlike, 'knowledge' it does not presuppose that  $p$  is decided in  $\mathcal{C}$ ).

## The expressive belief.

When the update instructions of the attitudes and the embedded proposition clash,  $\mathcal{N}$  is not updated. This results in what we call **expressive-belief**.

(27) Expressive-belief.  $\llbracket \alpha \text{ credere } p_{ind} \rrbracket^s = \forall w' \in s(p(w'))$

By using the indicative, the speaker intends to present  $p$  as a belief privately or *solipsistically* held by the attitude holder, that is to say a belief that it is not deemed to be added to the public sphere.

# The expressive belief.

- ▶ The belief that  $p$  is privately consistently held, but there is no public commitment.
- ▶ The more 'endogenous' the evidence, the more exclusively private is the commitment.
- ▶ 'Expressive'-belief, typically used in religious texts.

# Plan

Is belief weak or strong?

Belief is strong

Belief is weak

Mood-choice: the homogeneity view and the strength of belief

BELIEVE in Italian: new data and proposal

First steps: Fictional predicates

Futurity

Predicates of personal taste

Analysis: First hypothesis: diasemy (Mari, 2016)

Beyond diasemy: mood as the mediator between credence and commitment

Consequences

# 1. Belief vs. Assertion: No entitlement equality

Recall: Entitlement equality: If you are committed in the private space then you are ready to be committed in the public space.

Credence entails commitment in the public space.



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Rejection of the entitlement equality.

- ▶ Credere+indicative: 'privately committed' (= credence) but neutral publicly ( $p$  can be true or false or none).
- ▶ Credere+subjunctive: 'privately' committed (= credence) and publicly partially committed.
- ▶ Lies: commitment in the public, but not in the private space.

## 2. Belief vs. Assertion: engagement and denials.

Different ways of (non-)engaging with the interlocutors as revealed by denial strategies.

Assertion: 'it is not true' !

- ▶ Expressive use: No public commitment. Typically religious talk.  
Only possible denial strategy : 'faultless disagreement'.

(28) A. Credo che Dio esiste.**IND.** - I believe that God exists.  
B. #No, hai torto/non é vero. - #You are wrong/#It is not true

No handle for any type of denial. Solipsistic space and solipsistic talk.

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- ▶ Inquisitive use: in the public context it is weaker than assertion. Denial strategy: you can be wrong, but not false.

(29) A. Credo che Gianni sia.**SUBJ** a casa.  
B. #Non é vero / Ti sbagli.

### 3. BELIEF and BE CERTAIN: the evidential signal

Be certain (I believe it, but I am not certain)

- ▶ BE CERTAIN is an indirect evidential - inference.

(30) Looking at a car.  
#I am certain that it is nice.

(31) The ball is either in A, B or C.  
It is neither in A nor in B.  
I am certain that it is in C.

- ▶ Update Instruction: CONDITIONAL (granted inferential evidence entailing  $p$ ) ASSERTION: eliminate  $\neg p$  worlds.
- ▶ NB we can have *be certain* with subjunctive as well ! Sometimes we cannot eliminate  $\neg p$  worlds (not discussed here).

### 3. BELIEF and BE CERTAIN: the evidential signal

- ▶ Update instructions correlate with evidentiality restrictions.
  - ▶ BELIEVE : uses factual evidence *and* internal perception hence cannot eliminate  $\neg p$  worlds from the negotiation space.
  - ▶ BE CERTAIN: indirect evidence that can entail  $p$  hence, it can eliminate  $\neg p$  worlds from the negotiation space.

# Conclusion

Why is the subjunctive overwhelmingly used with non-factives epistemics (and I find that)

- ▶ Subjunctive indicates that there is an operation on the public space and truthfulness of  $p$  is investigated.
- ▶ Indicative is relegated to a solipsistic space in a solipsistic talk.

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Why is the subjunctive overwhelmingly used with non-factives epistemics (and I find that)

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In common conversations:

Subjunctive overwhelmingly used because we rarely engage in solipsistic talks!

By looking at mood from the standpoint of communication, and given what the contribution of mood is, we can better understand why subjunctive is overwhelmingly used with non-factive epistemics (and find that but this will be for another talk).

# Conclusion

Thank you !



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## Belief and assertion. Evidence from mood shift.

Alda Mari

Institut Jean Nicod, CNRS/ENS/EHESS/PSL

**Question and proposal** According to the influential view stemming from Frege's work (Frege, 1918), the speech act of assertion is the result of the communicative intention of making visible some internal state or thought. Insofar as asserting is making a belief known, the assertion of the belief that  $p$  (1-a) and the assertion of  $p$  (1-b) would amount to one and the same act (see for recent work, Lauer, 2013).

- (1) a. I believe that it is raining.  
b. It is raining.

In support of this view, the following Moorean paradoxical sentences show that  $Bp$  ('believe  $p$ ) and  $Ap$  ('assert  $p$ ') are equivalent.

- (2) a. I believe that it rains, #but it does not rain.  
b. It rains, #but I do not believe that it rains.

While (2-b) can be reasonably endorsed at least for sincere assertions, (2-a) is problematic in view of a different set of facts. In particular, the minimal pair in (3) shows that belief is weaker than bare assertion, given the possibility of the 'I am not certain' continuation with the latter only (Hawthorne et al. 2016). The question thus arises of whether belief is strong (as strong as assertion) or weak.

- (3) a. It is raining, #but I am not certain that it is raining.  
b. I believe that it is raining, but I am not certain that it is raining.

We add new elements to the debate from the standpoint of mood choice in languages that allow both indicative and subjunctive under 'believe'-predicates. These languages are notoriously left out by current theories (a.o. Farkas, 2003; Villalta, 2008; Anand and Hacquard 2013; Giannakidou, 2016) which (i) postulate a Hintikkaean semantics for belief (4) and (ii) work under the assumption that the subjunctive is triggered by the presence of alternatives in the modal base. Since the Hintikkaean doxastic space is homogeneous, 'believe'-predicates are considered to be indicative selectors across languages.

- (4) Let  $\text{Dox}_\alpha(w)$  be the set of worlds compatible with what  $\alpha$  believes in  $w$ .  
' $\alpha$  believe  $p$ ' is true in  $w$  iff  $\forall w' \in \text{Dox}_\alpha(w), p$  is true in  $w'$ .

Italian licenses both subjunctive and indicative under *credere* ('believe'). We will consider mood shift as key entry into the semantics of belief, and we will ask whether belief is monosemous or polysemous, weak or strong.

The main novelty of our account is that epistemic attitudes feature an *update instruction* akin to speech acts (à la Krifka, 2015) that indicates how (and whether) the common ground (and more precisely the negotiation space, cf. *infra*) is to be updated. We revisit the initial distinction in Hamblin (1970) according to which speech acts and attitude predicates contribute two different types of commitments, namely public and private respectively and elaborate a proposal according to which representational attitudes (epistemic and fictional at least<sup>1</sup>) *lexically encode speech-act-like content* and are thus to be understood in complementary distribution with assertions, imperatives and questions.

**Data** We show that, in Italian, the subjunctive is chosen when  $p$  is **knowable**, that is to say, it can be assigned a truth value in the context of utterance. To prove this, we privilege contexts where  $p$  is not knowable such as futurity (Condoravdi, 2002) and predicates of personal taste (Lasnik, 2005; Stephenson, 2007). We assume that, in both these contexts, truthiness of  $p$  cannot be assessed, unless plans/decisions (with futurity) and standard (shareable by the participants) (with predicates of personal taste) are accommodated.  $p$  is thus assigned a truth value and is knowable with respect to the worlds that comply with the plan/decisions/standards.

1. Predicates of personal taste. (5-a) and (4-b) have two different interpretations. By uttering (5-a), the speaker intends to make his/her own belief known. By uttering (5-b), and choosing the subjunctive, the speaker intends to convey that s/he is trying to prove the stupidity of the addressee, which s/he treats as a matter that can be settled. With (5-a), s/he is only expressing her/his own state of mind. (5-b) conveys

<sup>1</sup>We will extend the analysis to fictional predicates in the long version.

instead that the attitude holder does not know whether the addressee is actually stupid. Scenario: two friends are arguing with each other.

- (5) a. Credo davvero che sei.IND un cretino. / b. Credo davvero che tu sia.SUBJ un cretino.  
I really believe that you are stupid.

2. Futurity. We also newly note that the subjunctive in embedded clauses is compatible with futurity only if the matter is already settled at the time of utterance (6-a) and  $p$  is knowable. (Note that even for metaphysical determinists the future is not knowable). When this is not the case as in (6-b), only the indicative - plus future tense - is possible.

- (6) a. Credo che le Olimpiadi del 2020 si svolgano.SUBJ a Tokyo.  
I believe that the Olympics of 2020 will take place in Tokyo.  
b. #Credo che la Francia perda.SUBJ domani. – I believe that France will loose tomorrow.

3. Martians A third set of facts shows that the subjunctive is preferred when a question is posed.

- (7) a. Gianni crede che esistono.SUBJ i Marziani.  
b. Gianni crede che esistano.IND i Marziani.  
'Gianni believes that the Martians exist.'

By uttering (7-a), the speaker reports a mental attitude of Gianni (probably suggesting that Gianni is somehow on the wrong track in believing that martians exist). By choosing to use the subjunctive (7-b), the speaker not only reports a belief of Gianni, but also raises the question of whether martians exist.

This observation allows to conclude that, with the subjunctive,  $p$  becomes a question (a QUD, see Ginzburg, 1996; Roberts, 1996/2012) and the sentence does no longer only describe the mental state of the attitude holder. We must note, though, that the main predicate does not have a parenthetical use (Simons, 2007),<sup>2</sup> as the impossibility of being dislocated show ((8), the subjunctive is ungrammatical in main clauses in Italian) - For cross-linguistic comparison and variation AnderBois, 2016.-

- (8) \*I Marziani esistano.SUBJ, crede.  
The Martians exist, believe.3SG.PRES

**Analysis 1. Articulating public and private commitments.** Overall, the subjunctive is used to convey uncertainty about the truthiness of  $p$ . One straightforward way to capture this observation would consist in hardwiring in the semantics the lack of knowledge component (Mari, 2016). However, this would not explain why 'knowability' of  $p$  is triggered by the subjunctive.

Moving to consideration of how knowledge is interactively built in conversations (Stalnaker, 1978; Roberts, /1996/2012), we submit that the subjunctive is chosen to raise a question (it poses a QUD, Roberts, *ibid.*), with the goal of narrowing down  $\mathcal{C}$  (defined as the set of propositions shared by the participants in the conversation) to the actual world (or to what the participants agree to consider the actual world). Unlike in Simons, 2009; AnderBois, 2016  $p$  is not the main point of assertion, and it is not used assertively. To implement our main idea about non-assertiveness of  $p$ , we revisit the meaning of the attitudes - and 'believe' in particular -, considering their contribution in attempting to update  $\mathcal{C}$ . We argue that representational attitudes contribute to both the private and the public (modal) spaces.

Old and much of recent work on speech acts has proposed fruitful revisitations of the notion of common ground, and, more broadly, of doxastic spaces (see e.g. Hamblin, 1970; Clark and Schaefer 1989; Frakas and Bruce, 2010; Ginzburg, 2011; Krifka, 2015). With Farkas and Bruce (*ibid.*) we assume that projected sets (which we relabel 'negotiation spaces'  $\mathcal{N}$ ) and  $\mathcal{C}$  must be distinguished. Negotiation spaces are supersets of common grounds (see also Portner, 2007). According to Farkas and Bruce (2010:88), assertions (by adding  $p$  to  $\mathcal{N}$ ) project a future  $\mathcal{C}$  that includes the asserted proposition, whereas a question (by adding at least two alternatives to  $\mathcal{N}$ ) projects a set of  $\mathcal{C}$ s, each containing only one of the possible answers to the question. This is a feature that we will maintain in our account, where negotiation spaces rather than the common ground will play a role (in order to be added to the common ground either the ratification or an answer from the addressee is needed, a move which we do not consider here, for now).

<sup>2</sup>Even if the ability of being dislocated is not considered as reliable test, with 'believe/think', it prototypically reveals their ability to be used parenthetically, see discussion in Simons, 2007.

To shed some light on the difference between (1-a) and (1-b) we will abandon two generally held assumptions.

The first assumption that we abandon is that  $\mathcal{N}$  and  $\mathcal{C}$  are subsets of the doxastic space  $\mathcal{D}$  of  $\alpha$  (or doxastic commitments, see Farkas and Bruce 2010:86). With no further specifications, on this assumption, one cannot account for the fact that a belief is consistently held privately, without being held publicly. Let us assume that (1-a) states that  $p$  is decided in  $\mathcal{D}$  (i.e it follows from  $\mathcal{D}$ ; e.g. Farkas, 1982,2003; Anand and Hacquard, 2015; Giannakidou 2016) and that (1-b) states that  $p$  is decided in  $\mathcal{N}$  (i.e.  $p$  follows from  $\mathcal{N}$ ). (1-a) is predicted to entail (1-b): If  $\alpha$  holds the belief that  $p$  ( $p$  is decided in  $\mathcal{D}$ ), then  $\neg p$  is no longer an option in  $\mathcal{N}$  (note that this predicts (2-a), which we will explain otherwise, once we have disentangled bare assertions from belief statements).

Moreover, for sincere assertions, it is also assumed, as per Grice, that, if  $p$  is decided in  $\mathcal{N}$ , then  $p$  is decided in  $\mathcal{D}$  (see the ‘perspective’ section below). On this assumption (1-b) entails (1-a), see also (2-b). We return to this assumption later in the perspectives and we do not consider it here.

We claim that, in order to distinguish between the bare assertions and belief-statements not only private (ie. space  $s$ , with  $s$  being the set of worlds compatible with the beliefs of the assessor) and public spaces ( $\mathcal{N}$ ) must be explicitly distinguished (see Hamblin, 1970; Gunlogson, 2001) but the possible articulations between these two must also be spelled out. Overall, different interpretations of belief statements reveal different articulations between  $s$ ,  $\mathcal{N}$  and  $\mathcal{C}$ . The Italian data lead us to propose that  $\mathcal{N}$  can turn to be a superset of  $s$ , when the speaker is ready to be privately, but only partially publicly committed.

This is not a violation of any maxim, but the reflex of how beliefs are formed and on the basis of what evidence. We consider public commitment (the addition of  $p$  to  $\mathcal{N}$ ) as requiring higher evidential standards (the case of lies set aside) than private commitment (the addition of  $p$  to  $s$ ), which can be based on preferences and non rational evidence.

The possibility of privately committing without publicly committing (or only partially publicly committing, i.e. the addition of both  $p$  and  $\neg p$  to  $\mathcal{N}$ ) gives a handle to disentangle assertion and belief and makes a new case, besides lies, to separate the public and the private spheres of belief as not mutually entailing.

2. Revisiting the meaning of the attitudes. On the assumption that the illocutionary makeup of a bare assertion is ASSERT,  $p$ , we propose that the illocutionary makeup of a belief sentence is as in (9).

(9) ASSERT John believes-PRESENT  $p$

While the higher ASSERT updates  $\mathcal{N}$  with the proposition [ $\alpha$  believe  $p$ ], PRESENT is in charge of updating  $\mathcal{N}$  with  $p$ , non-assertively. PRESENT is what we call an *update instruction*. Update instructions are *triggered lexically*, by the attitudes; their semantics is akin to the one of speech acts à la Krifka (2015) as they provide an instruction as to how to move  $\mathcal{N}$  forward.

We propose that epistemic attitudes feature a static and a dynamic meaning. They describe the doxastic state of the speaker, (this is the *private* facet of belief), and they instruct as how to update the negotiation space (this is the *public* facet of belief). Given a model  $M = \langle W, V, \mathcal{A} \rangle$ , let  $\mathcal{C} \subset W$  be commitment state and  $s \subset W$  the doxastic state of the attitude holder  $\alpha$  ( $\alpha \in \mathcal{A}$ ) and  $\mathcal{N} \subset W$  the negotiation space.

The lexical entry for *credere* (‘believe’) is in (10). Let  $p \subset W$ .  $s$  is a Hintikkaean doxastic space containing  $p$  worlds. Note that, when updating  $\mathcal{N}$  with  $p$ ,  $\neg p$  worlds are not eliminated from  $\mathcal{N}$ .

(10)  $\llbracket \textit{credere} \rrbracket^s = \lambda p. \forall w' \in s(p(w'))$   
Update instruction.  $\mathcal{N} [p] = (\mathcal{N} \cap p) \ \& \ (\mathcal{N} - p \neq \emptyset)$

3. Revisiting the meaning of mood. We do not consider mood on the verb in the embedded clause as a polarity item (*pace* Giannakidou, 2016; see Mari, 2017). We rather assign to verbal mood an update instruction, thus narrowing the distance between verbal and sentential mood (see also Portner, 2017). Let  $W'$  be a subset of  $W$ . The non-at-issue update instructions triggered by mood are in (11) ( $p_{subj/ind}$  are propositions whose main predicate is in the subjunctive/indicative).

(11) a. Update instruction of subjunctive (update non-assertively):  
 $W' [p_{subj}] = (W' \cap p_{subj}) \ \& \ (W' - p_{subj} \neq \emptyset)$   
b. Update instruction of indicative (update assertively):  
 $W' [p_{ind}] = (W' \cap p_{ind}) \ \& \ (W' - p_{ind} = \emptyset)$

Subjunctive enhances a question-like update; indicative enhances a assertive like update (see Mari, 2015,2017).

4. Bringing together attitudes and mood: inquisitive and expressive belief. **Inquisitive belief.** As subjunctive instructs to update non-assertively,  $\mathcal{N}$  is updated with  $p$ . This triggers what we call ‘inquisitive’ belief, that it is to say,  $\mathcal{N}$  contains future common grounds in which  $p$  can be added and future common grounds in which  $\neg p$  can be added.

- (12) Inquisitive-belief.  $\llbracket \alpha \textit{credere } p_{sub} \rrbracket^s = 1$  iff  $\forall w' \in s(p(w'))$   
Update instruction.  $(\mathcal{N} \cap p) \ \& \ (\mathcal{N} - p \neq \emptyset)$

Inquisitive belief shows the mismatch between the private and the public sphere that we mentioned above. The belief that  $p$  is privately consistently held by the attitude holder, but her public attitude is inquisitive rather than assertive, thus revealing a lack of public commitment, in spite of a private commitment. This mismatch is the reflection of the evidential conditions under which inquisitive belief is held. The evidence can be such that it is sufficient for the attitude holder to privately form the belief that  $p$ , but is it not sufficient to lead the attitude holder to publicly commit to  $p$ . Note that subsequent discourse can update  $\mathcal{N}$  assertively, given extra evidence, see (3-b) (see also Mari, 2016).

- (13) Crede che esistano.SUBJ i Marziani; anzi, ne è sicuro.  
‘He believes that Martians exists, and in fact he is certain about it.’

We will submit that ‘certainty’ assertively adds  $p$  to  $\mathcal{N}$  (but, unlike, ‘knowledge’ it does not presuppose that  $p$  is decided in  $\mathcal{C}$ ).

When the update instructions of the attitudes and the embedded proposition clash,  $\mathcal{N}$  is not updated. This results in what we call **expressive-belief**.

- (14) Expressive-belief.  $\llbracket \alpha \textit{credere } p_{ind} \rrbracket^s = \forall w' \in s(p(w'))$

By using the indicative, the speaker intends to present  $p$  as a belief privately or *solipsistically* held by the attitude holder, that is to say a belief that it is not deemed to be added to the public sphere.

### Predictions

1. This analysis predicts the distributions of moods in Italian. The use of the subjunctive generates what we have labeled the ‘inquisitive’-use of *credere*: a question is posed (e.g. (4-b) where the Olympics will take place / (5-a) weather the addressee is stupid). When the indicative is chosen, the ‘expressive’ use of *credere* is generated (4-a. and 5-b), whereby the speaker goes solipsistic, and does not aim at posing a question, but only at expressing his/her own point of view (or the point of view of the attitude holder). Overall, expressive-belief reveals less confidence in the evidence held by the assessor than inquisitive belief, as no engagement in the public space is triggered. Inquisitive-belief poses instead the question  $?p$ .

2. We explain the multiple discrepancies between belief and assertion and are able to distinguish: public full commitment (sincere assertion); no public commitment (expressive-belief); partial public commitment (inquisitive-belief); no private commitment (lies). Belief, we argue, is privately strong but publicly weak. With sincere assertions, public commitment entails private commitment. This explains (2-a):  $A \neg p$  entails  $B \neg p$ , which is in contraction with the first conjunct  $Bp$ .

3. We can safely spell out patterns of denials: assertions are denied with "it is not true" (and alike); expressive-belief gives rise to faultless disagreement; inquisitive belief supports a "you are wrong" type of denial, as it is weaker than assertion in the public space (we argue that the ‘you are wrong’ type of denial is conventionally associated to non-assertive expressions like epistemic modals, see Giannakidou and Mari, 2017).

4. We will tentatively propose that representational attitudes (epistemic and fictional) across all languages introduce update instructions. In languages that lack mood, the choice between the two interpretations (partial update with inquisitive belief or lack of update with expressive belief) is driven contextually.

**Perspectives** We submit that when  $p$  is decided in  $\mathcal{N}$ , or even in  $\mathcal{C}$ , but the speaker uses the subjunctive, an effect of ‘distancing’ is obtained (as this contradict the Gricean-like maxim according to which if  $p$  is decided in  $\mathcal{N}$ , it is also decided in  $s$ ). This can happen with epistemic factives, such as Italian and French *capire/comprendre* (*understand*), or *admettre* (*admit*). We will call this type of distancing ‘partial endorsement.’ These observations leads us to question the evidential underpinnings of belief and acceptance, which we leave out here for future research.

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## Modal Evidentials in Questions

Tyler Peterson  
email: t.peterson@auckland.ac.nz  
web: peterson.ac.nz/qsqa.pdf

University of Auckland

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## Grammatical evidentiality

- ▶ Grammatical evidentiality is the encoding the expression of knowledge, or the source, of information one has for a proposition (e.g., Anderson 1986; Aikhenvald 2004; Willet 1988; San Roque et al 2013; a.o.)

- (2) Context: Later that day Bob mentions the hand-cutting incident to Gwen; she meets Bob later that day and mentions out of concern:

kots-i-n=kat=hl 'on'-n  
cut-TR-2sg=REP=CND hand-2sg

“[I heard] You cut your hand.”

## Grammatical evidentiality

- ▶ Grammatical evidentiality is the encoding the expression of knowledge, or the source, of information one has for a proposition (e.g., Anderson 1986; Aikhenvald 2004; Willet 1988; San Roque et al 2013; a.o.)

- (1) Context: Bob and Roy are fishing. Bob is cutting up bait; he notices blood on the rocks at Roy's feet. Bob says to Roy:

kots-i-n=*ima*=hl 'on'-n  
cut-TR-2sg=MOD=CND hand-2sg

“You **might**'ve cut your hand.”

## Grammatical evidentiality

- ▶ Grammatical evidentials are a cross-linguistically a very diverse phenomenon; some things we know about them:
  - ▶ Grammatical evidential are paradigmatic
  - ▶ In some languages they are a special kind of epistemic modal
  - ▶ In other languages they are 'something else': evidential meanings are non-propositional
  - ▶ Some languages have both kinds
  - ▶ They are *information-giving utterances* (which may be declaratives/assertions or other kinds of '*presenting*' speech acts)
- ★ They are not restricted to declarative utterances

## Questions/Interrogatives

- ▶ A 'major' clause type, which can be identified by a specific kind of structure using specific elements (i.e. wh-words)
- ▶ They are *information-seeking utterances*
- ★ They can contain **grammatical evidentials** (cf. San Roque et al 2013)

## Ordinary and Conjectural Questions

- ▶ The insertion of the modal evidential =*ima* into an Ordinary Question creates a non-interrogative utterance, translated by speakers using 'I wonder...', or a *Conjectural Question*:

- (4) a. Ordinary Question  
 naa 'an-t kiŋam-(t)=hl x̄biist 'as John  
 who S.REL-3 give-3=CND box OBL John  
 "Who gave the box to John?"
- b. Conjectural Question  
 naa=*ima* 'an-t kiŋam-(t)=hl x̄biist 'as John  
 who=MOD S.REL-3 give-3=CND box OBL John  
 "I wonder who gave the box to John."  
 ≠ Who **might've** given the box to John?

## Ordinary and Conjectural Statements

- ▶ In Gitksan, the insertion of the modal evidential =*ima* into a sentence – an *Ordinary Statement* – creates a modalized utterance, translated by speakers using the modals *might* or *must* – a *Conjectural Statement*:

- (3) a. Ordinary Statement  
 stin=hl x̄biist tust  
 be.heavy=CND box DEM  
 "That box is heavy."
- b. Conjectural Statement  
 stin=*ima*=hl x̄biist tust  
 be.heavy=MOD=CND box DEM  
 "That box might/must be heavy."

## Are CQ utterances questions... or something else?

- ▶ Towards an assessment: three different but interrelated notions of question (Higginbotham 1996):
  - ▶ **Syntactic**: An instance of a certain sort of linguistic structure.
  - ▶ **Semantic**: An utterance with a certain type of denotation.
  - ▶ **Pragmatic**: A specific sort of speech act.
- ▶ Conjectural Questions in Gitksan are syntactically and semantically Ordinary Questions, but that pragmatically they see to do something else...

## How do we analyze Conjectural Questions?

- ▶ Ideally, we want to derive the meaning of Conjectural Questions using only the independently-needed semantics for the elements contained within Conjectural Questions
- ▶ Thus, an analysis of Conjectural Questions follows from independently-needed
  1. Semantics of the evidential modal = *ima*
  2. Semantics of questions

## The Plan

1. Examine the meaning of the modal evidential = *ima*
2. The semantics of questions
3. Put the pieces together:
  - ▶ The empirical tests
  - ▶ Following predictions of a typology
  - ▶ Following predictions of the theory
4. Conjectural Questions cross-linguistically and their link to evidentiality
5. Maybe it's something else?
6. Further predictions: *Extended Interrogatives*

## Why is this interesting and/or important?

**What we know cross-linguistically:** Modals are propositional and can thus be inserted into other clause types

**Therefore:** Evidentials-as-modals must also be able to be inserted into other clause types

**Research question:** What affect do evidentials-as-modals have in other clause types?

## The pragmatics of Ordinary Questions (OQ)

- (5) 'John looks like an interesting syntactician.'  
**OQ: 'What does he know about semantics?'**  
[Possible answers: *He knows a lot about semantics; He doesn't know a lot about semantics; etc.*]
- ▶ Ordinary Questions
    1. are a request by the speaker for information from the addressee
    2. are an interrogative clause whose answer is not known to the Speaker, but the Speaker thinks the Addressee may know it
    3. require an answer in order for the dialogue to be felicitous

## The pragmatics of Rhetorical Questions (RQ)

- (6) 'I don't think we should have John on our short list.'  
**RQ: '(After all,) what does he know about semantics?'**  
 [Implicates he knows nothing about semantics.]

### ► Rhetorical Questions

- are statements implicating some other kind of meaning (cf. Caponigro & Sprouse 2007 a.o.)
- are interrogative clauses whose answer is known to the Speaker and the Addressee, and they both also know that the other knows the answer as well
- don't require an answer, but answering is possible
- may be answered by either the Speaker or the Addressee



## Speaker/Addressee knowledge

- This gives us a three-way typology of question-types based on expectations of Speaker/Addressee knowledge of the answer:

	S knows Answer	S believes that A knows Answer
Ordinary Questions	No	Yes
Rhetorical Questions	Yes	Yes
Conjectural Questions	No	No



## The pragmatics of Conjectural Questions (CQ)

- (7) 'There's a big vase of roses on your desk.'  
**OQ: 'Who sent them to you?'**  
**OQ: 'Who might've sent them to you?'**  
**CQ: 'I wonder who sent them to you...'**

### ► A Conjectural Question

- is a statement expressing uncertainty or wondering
- can implicate other meanings (you might have a secret admirer)
- is an interrogative clause whose answer is not known to the Speaker nor the Addressee, and they both also think that the other does not know the answer
- *invites*, but does not *require*, an answer from the Addressee
- may be answered by either the Speaker or the Addressee



## Speaker/Addressee knowledge

- This fact that evidentials shift perspective in questions is well-known in the literature (Murray 2010; Korotkova 2016)

### Cheyenne

- a. Declarative  
 ná-hó'téhevá-**màse**  
 1-win-rpt.1sg  
 'I won, I heard.'
- b. Question  
 mo=ná-hó'téhevá-**màse**  
 y/n=1-win-rpt.1sg  
 'Given what you heard, did I win?'



## Basic observations

1. CQs are syntactically questions
2. CQs are semantically questions
3. CQs are pragmatically **not** (really) questions

- ▶ A fairly standard approach (Hamblin 1973; see Groenendijk and Stokhof 1982, 1984 for an alternative view): a question denotes a set of propositions, each of which is a (partial) answer to the question
- ▶ The question set contains both true and false answers (as in Hamblin 1973, but unlike in Karttunen 1977):

- (9)  $\llbracket \text{does Bob smoke} \rrbracket^w = \{ \text{that Bob smokes, that Bob does not smoke} \}$
- (10)  $\llbracket \text{who left me the fish} \rrbracket^w = \{ \text{that Ryan left me this fish, that Meagan left me this fish, that Ileana left me this fish, ...} \} = \{ p : \exists x [p = \text{that } x \text{ left me this fish}] \}$
- (11)  $\llbracket \text{who } \diamond \text{ left me the fish} \rrbracket^w = \{ \text{that Ryan } \diamond \text{ left me this fish, that Meagan } \diamond \text{ left me this fish, that Gwen } \diamond \text{ left me this fish, ...} \} = \{ p : \exists x [p = \text{that } x \text{ left } \diamond \text{ me this fish}] \}$

- ▶ CQs have the structure associated with questions
  - ▶ CQs take the characteristic syntactic form of questions, with either a wh-element or the usual yes-no question particle
  - ▶ CQs syntactically embed in the same manner as ordinary questions

- (8) **naa**; 'an-t kiɲam-(t)=hl t; x̣biist 'as John=**a**  
**who** S.REL-3 give-3=CND box OBL John=INTERROG  
 "Who gave the box to John?"

- ▶ CQs can have, but do not require an answer: the CQ in a., either the Speaker **or** the Addressee can respond with b.:

- (12) a. Conjectural Question  
 na=**ima** 'an-t stil-(t)=s John=**a**  
 who=**MOD** S.REL-3 accompany-3=PND John=INTERROG  
 'I wonder who went with John.'
- b. Conjectural (evidential) Answer  
 Bill=**ima**  
 Bill=**MOD**  
 'Maybe it was Bill.'

- ▶ CQs differ from RQs in terms of Addressee knowledge: in an RQ, typically both the Speaker and Addressee know the answer
- ▶ CQs, in contrast, are typically bad in situations in which the Addressee can be assumed to know the answer (cf. also Rocci 2007:147)

(13) **nee=ima=hl** xwdax-n=a  
 CONTR=MOD=CND hungry-2sg=INTERROG  
 'I wonder if you're hungry.'

(14) **nee=ima=hl** wis-t=a  
 CONTR=MOD=CND rain-3=INTERROG  
 'I wonder if it's raining.'

## An analysis in three parts:

1. The independently motivated modal semantics of =ima, and the role of presupposition in encoding evidential meaning
2. The independently motivated semantics of questions
3. Combining the parts: the role of evidence presuppositions in questions in deriving the effects of Conjectural Questions

## Speaker/Addressee knowledge + Expectation

	S knows Answer	A knows Answer	Answer required
<i>Ordinary Questions</i>	No	Yes	Yes
<i>Conjectural Questions</i>	No	No	No
<i>Rhetorical Questions</i>	Yes	Yes	No

## The semantics of =ima

- ▶ The meaning of =ima has two components to it (Peterson 2010, to appear):
  - ▶ It is an evidential
  - ▶ It is an epistemic modal

## Evidentials and modals

- ▶ **Modals** are grammatical elements that encode a speaker's evaluation of the possibility or probability a proposition relevant to some body of knowledge or source of information

- (15) John **must** be at home.  
epistemic = [Because he's always at home at this time]  
report = [Because a friend told me]  
deontic = [Because his parent's curfew]



## The semantics of =ima

- ▶ It fills the expressive space of an epistemic modal, and it is always translated into English as one
- ▶ It passes the empirical tests for modality
- ▶ You cannot use a modal if you have direct knowledge of the prejacent:

- (17) #ye'e=*ima*=hl wan asun, ii kya'a-ŷ loo-t 'a=hl  
walk=MOD=CND deer LOC CONJ see-1sg OBL-3 LOC=CND  
spakaytkan  
forest  
#A deer might be around here, and I see it in the forest.  
Consultant's comment: 'There's no point saying *it might be around here* if you can see the deer yourself.'



## Evidentials and modals in Gitksan

- ▶ **Evidentials** are elements that encode specific sources of information:

- (16) a. t'a=*ima*=t John  
at.home=MOD=PND John  
"John **must/might** be at home."  
epistemic = [Because he's always at home at this time]"
- b. t'a=*kat*=t John  
at.home=REP=PND John  
"[I heard] John **must/might** be at home"  
report = [Because a friend told me]
- c. *tim* t'a=s John  
FUT at.home=PND John  
"John **must** be at home."  
deontic = [Because his parent's curfew]



## =ima is a modal

- (18) Coordination test: contradiction and contingency
- a. #The horse ran away and the horse **didn't** run away.  $p \wedge \neg p$
- b. **Maybe** the horse ran away and **maybe** the horse **didn't** run away.  $\diamond p \wedge \diamond \neg p$







## A (brief) semantics of questions

- ▶ The meaning of a question is the set of possible answers to it (Hamblin 1973)

(23)  $[[\text{is that box heavy}]]^w = \{\text{that box is heavy, that box is not heavy}\}$

(24)  $[[\text{who gave this shirt to John}]]^w = \{\text{that Gwen gave this shirt to John, that Leiwa gave this shirt to John, that Holly gave this shirt to John, ...}\}$



## The role of presupposition in questions

- ▶ Usually, one cannot detect this conjunction of presuppositions, as each proposition in the question set introduces exactly the same presupposition
- ▶ But what about cases where each member of the Hamblin set introduces a *different* presupposition?



## The role of presupposition in questions

- ▶ Presupposition triggers can be inserted into questions, so their presuppositions are distributed to the set of possible answers:

(25) Does Henry smoke too?  
{that Henry smokes too, that Henry doesn't smoke too}  
(all propositions in the question set presuppose that some salient  $x$  other than Henry smokes)

(26) Has Jason *stopped* smoking?  
{that Jason has stopped smoking [presupposing Jason smoked before], that Jason has not stopped smoking [presupposing Jason smoked before]}  
(all propositions in the question set presuppose that Jason smokes)



## The role of presupposition in questions

- (27) Who here doesn't drink anymore?  
{that Tyler doesn't drink any more, that Lisa doesn't drink any more, ...}  
(presupposes of each  $x$  in the contextually salient group that  $x$  used to drink)
- (28) Who went to Paris again?  
{that Scott went to Paris again, that Edna went to Paris again, ...}  
(presupposes of each  $x$  in the contextually salient group that  $x$  has been to Paris)



## The role of presupposition in questions

- ▶ Evidence that the 'combined' presupposition exists is found in the interpretations in a. and b.: the exclusive particle *only* presupposes that its embedded proposition is true:

- (29) a. Which countries have only two cities?  
{that Canada has only two cities, that Iceland has only two cities, ...}  
(presupposes of each country *x* that *x* has two cities.)
- b. #Which countries have only two capitals?  
{that Canada has only two capital cities, that Iceland has only two capital cities, ...}  
(presupposes of each country *x* that *x* has two capitals.)

## The role of modality in questions

- ▶ Modality is also distributed to the set of possible answers:

- (30)  $\llbracket \text{who } \diamond \text{'ve given this shirt to John} \rrbracket^w = \{ \text{that Gwen } \diamond \text{'ve given this shirt to John, that Leiwa } \diamond \text{'ve given this shirt to John, ...} \}$

## The role of presupposition in questions

- ▶ The conjoined presupposition of a. is therefore that each country has two cities. While this is not true for strictly every country in the world (cf. Vatican City or Tuvalu), the assumption is nevertheless fairly commonly held, and therefore the question is felicitous
- ▶ b. is odd: although some countries do have two capital cities (e.g., Bolivia, Swaziland) it is definitely infelicitous to presuppose this of each country

## Combining the pieces

- ▶ =*ima* has both a modal meaning and a presupposed meaning: both meanings associated with =*ima* distribute to the set of possible answers:

- (31)  $\text{naa}=\text{ima}$  'an-t kiŋam-(t)=hl xhlaŋsxw 'a=s John  
who=MOD S.REL-3 give-3=CND shirt OBL=PND John  
"I wonder who gave this shirt to John."

= {that Gwen  $\diamond$ 've given this shirt to John [presupposing there is inferential evidence that Gwen gave this shirt to John], that Leiwa  $\diamond$ 've given this shirt to John [presupposing there is inferential evidence that Leiwa gave this shirt to John], ...}



## Typology

- ▶ Conjectural Questions occur cross-linguistically
- ▶ They always occur with the 'least-specified' evidential

## Ntʔəkpəmxćín (Thompson Salish)

- (33) a. Conjectural Statement  
y'e-mín-s=**nke**            e=Meagan    e=ti  
good-REL-3.sub=**INFER** DET=Meagan DET=tea  
'Meagan must like the tea. / Apparently, Meagan likes tea.'
- b. Conjectural Question  
**ké?**=ws=**nke**            k=s-y'e-mín=s  
**whether**=SBJN=**INFER** IRL=NOM-good-REL=3.poss  
e=Meagan    e=ti  
DET=Meagan DET=tea  
'I wonder whether Meagan likes the tea.'

## St'át'imcets (Salish)

- (32) a. Conjectural Statement  
lán=**k'a**            kwán-ens-as  
already=**INFER** take-DIR-3.ERG  
ni=n-s-mets-cál=a  
DET.ABS=1sg.POSS-NOM=write-ACT=EXIS  
'She must have already got my letter.'
- b. Conjectural Question  
lan=as=**há=k'a**            kwán-ens-as  
already=3.SBJN=**YNQ**=**INFER** take-DIR-3.ERG  
ni=n-s-mets-cál=a  
DET.ABS=1sg.POSS-NOM=write-ACT=EXIS  
'I wonder if she's already got my letter.'

## Quechua

- (34) a. Ordinary Question  
may-pi    Robertocha  
where-LOC Bob  
'Where's Bob?'
- b. Conjectural Question  
may-pi-chá  
where-LOC-INFER  
'Who knows? He could be anywhere!'

## CQs and the least-specified evidence

- ▶ Conjectural Questions in Gitksan and these languages only occur with the 'weakest' or 'least-specified evidential
- ▶ *n'akw* is specialized for sensory information

(35) *n'akw*=hl *x-miyeen*-(t)=s Jason=a  
EVID=CND consume-smoke-3sg=PND Jason=INTERROG  
"It looks like Jason smokes."  
"Jason must be smoking."  
≠ "I wonder if Jason smokes."

## Is this predicted? Experimental: *Extended Interrogatives*

Are wh-exclamatives – which can be labeled *exclamative questions* (EQ) – predicted by this typology?

	S knows Answer	S believes that A knows Answer
Ordinary Questions (OQ)	No	Yes
Rhetorical Questions (RQ)	Yes	Yes
Conjectural Questions (CQ)	No	No
<b>Exclamatory Questions (EQ)</b>	<b>Yes</b>	<b>(No)</b>

## Evidential *n'akw*

- (36) Context: A friend is at bat in a baseball game. A couple of really easy pitches were thrown his way, but he missed them. His frustrated teammates yell out

*n'akw*=hl *sins*-t  
EVID=CND blind-3sg

**Conjectural Statement:** "He must be blind!"

**Rhetorical Question:** "Is he blind or something?"

**Exclamative-ish:** "Looks how blind this guy is!"

## Reportatives

- ▶ Reportatives typically cannot be used in CQs:

- (37) a. **taxgwi** tim bakw-*m*  
**when** FUT arrive.pl-1pl  
'When is it we'll get there?'
- b. **taxgwi=k<sub>at</sub>** tim bakw-*m*  
**when=REP** FUT arrive.pl-1pl  
'When is it (did they say/did you hear) we'll get there?'
- c. **silkwsax** t'aahlakw=**k<sub>at</sub>**  
noon tomorrow=rep  
'(I heard/They said) at noon tomorrow.'

## Reportatives

- ▶ Predicts that these questions would introduce conjoined presuppositions, too, to the effect that there is mixed or contradictory *reportative* evidence, in the same way that conjectural questions introduce a conjoined presupposition that there is mixed or contradictory conjectural evidence
- ▶ 'Reports are mixed'? One usually knows the source of the information in the source of a report

## Wh-indefinites as ignorance readings

- ▶ Wh-indefinites seem to be suited to ignorance readings, with or without the question environment:

(39) Gitksan (Brown 2015: 7, ex.28 in Korotkova 2016)

gi'nám'y 'as naa gi  
give.1sg PREP who DIST

'I gave it to someone'.

Consultants comment: If you don't remember who you gave it to...

## Could it be something else?

- ▶ Korotkova 2016: sentences that contain a wh-word and an evidential receive a speaker's ignorance interpretation
- ▶ Wh-words can be used in non-interrogative environments

(38) Korean (Yun 2012: 285, ex.1 in Korotkova 2016)

Yuna-ka nwukwu-lul mann-a  
Yuna-NOM who-ACC meet-INT

- (i) 'Yuna is seeing someone (I don't know or don't care who).'
- (ii) 'Is Yuna seeing someone (I don't know or don't care who)?'
- (iii) 'Who is Yuna seeing?'

## Could it be something else? Inquisitiveness

- ▶ Groenendijk and Roelofsen 2009: CQs fill in a space predicted by *inquisitive semantics*

	Informative	Inquisitive	SA
'I gave it to Bill'	+	-	assertion
'I gave it to someone'	+	+	assertion and question
'Who did you give it to?'	-	+	question

	Informative	Inquisitive	SA
<i>Ordinary Statement</i>	+	-	assertion
<i>Conjectural Question</i>	+	+	assertion and question
<i>Ordinary Question</i>	-	+	question

## Issues

- ▶ What does this analysis say about verbs such as 'wonder' and other ways of doing wonder-like statements?
- ▶ How does our current (theoretical) thinking on exclamatives fit into this? (Portner & Zanuttini 2000, 2004 and many others)

## In sum

- ▶ **Empirical tests:** Coordination of elements (grammatical evidentials) to test for modal properties
- ▶ **Testing predictions**
  - ▶ **Functionally:** the types of (extended) interrogatives based on a set of parameters (Speaker and Addressee knowledge)
  - ▶ **Theoretically:** the semantics of questions and the conjoining of presuppositions to explain reduced interrogative force
- ▶ Let predictions guide further investigations (i.e. 'combinations' of different types of questions)

## Wonder-like statements cross-linguistically

**A hypothesis about a more articulated structure:** CQs embed OQs in many languages to achieve wonder-like statements

- (40)
- German reflexive:  
[CQ Ich frage mich, [OQ wer hat dieses Shirt mit John]]
  - Italian reflexive:  
[CQ Mi chiedo [OQ chi ha dato questa maglia a Giovanni]]
  - Swedish verb of wonder:  
[CQ Jag undrar [OQ vem som gav denna skjorta till Jon]]
  - Māori?!

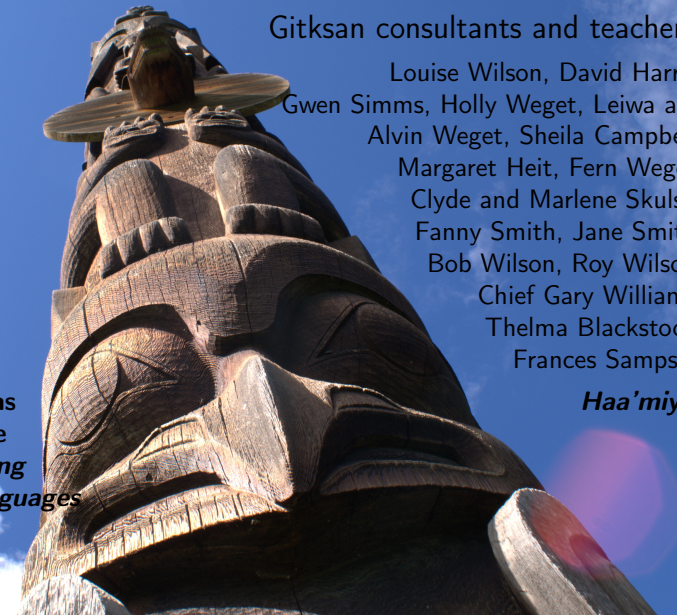
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*Haa'miya!*

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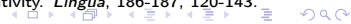
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## Modal Evidentials in Questions

Tyler Peterson  
University of Auckland

**Overview.** When added to a question, a grammatical evidential can result in an utterance which lacks interrogative force. This is shown in (1) for in Gitksan: when the evidential =*ima* is added to a question, as in (1a), it turns it into a statement of uncertainty or wondering, as in (1b).

- (1) a. na ‘ant stil-(t)=s John=a  
who S.REL accompany-3=PN.DET John=INTERG  
‘Who went with John?’
- b. na=*ima* ‘ant stil-(t)=s John=a  
who=*EVID* S.REL accompany-3=PN.DET John=INTERG  
‘I wonder who went with John.’ (Gitksan)

We call the kind of utterance in (1b) *evidential questions* (EvQs). We provide an analysis of EvQs which derives their semantics and pragmatics from independently-motivated elements: (i) a Hamblin-style analysis of questions, (ii) a modal semantics for the evidential, and (iii) the evidence presuppositions introduced by the evidential. We argue that the evidential distributes its presuppositions to each of the propositions in the denotation of the question, and that the union of these presuppositions is the source of the reduced interrogative force of the EvQ. We also provide a typology of question constructions based on all four possibilities with respect to speaker and hearer knowledge.

**Data.** As well as in Gitksan, we find EvQs in at least three other languages of the Americas: Nl̓eʔkepmxcín (Thompson Salish), St’át’imcets (Lillooet Salish), as in (2), and Cuzco Quechua as in (3).

- (2) a. cúz’=ha ts7as s=Bill  
going.to=YNQ come NOM=Bill  
‘Is Bill going to come?’
- b. cúz’=ha=*k’a* ts7as s=Bill  
going.to=YNQ=*EVID* come NOM=Bill  
‘I wonder if Bill is going to come.’ (St’át’imcets)
- (3) a. may-manta chay runa?  
where-from that person  
‘Where’s that person from?’
- b. may-manta-*chá*  
where-from-*EVID*  
‘Who knows?/Wherever!/He could be from anywhere.’ (Cuzco Quechua)

EvQs do not correspond to rhetorical questions; a rhetorical question is uttered in a context in which both the speaker and the addressee know the answer, while an ordinary question is uttered in a context in which the speaker does not, and the addressee may or may not, know the answer (Caponigro & Sprouse 2007). An EvQ, on the other hand, indicates both that the speaker does not know the answer and that the speaker expects that the hearer also does not know the answer:

- (4) *Question-types based on expectations of speaker/addressee knowledge of the answer:*

	<b>Speaker knows answer</b>	<b>Speaker believes Addressee knows answer</b>
<i>Ordinary Questions (OQ)</i>	No	Yes
<i>Evidential Questions (EvQ)</i>	No	No
<i>Rhetorical Questions (RQ)</i>	Yes	Yes
<i>Exclamatory 'Question' (ExQ)</i>	Yes	(No)

**Analysis of OQs and EvQs.** We adopt a common analysis of questions as denoting Hamblin sets: sets of propositions containing all possible answers, as shown in (5-6).

- (5) Denotation of (1a): {that Gwen went with John, that Alvin went with John, ...}  
 (6) Denotation of (2a): {that Bill is going to come, that Bill is not going to come}

We argue that (1b), (2b), and (3b) are still structurally and semantically questions: they still denote Hamblin sets, but their interrogative force is reduced by the addition of the evidential. Following previous work (Matthewson et al. 2007, Faller 2002, Littell et al. 2010, Peterson 2010), we assume that the conjectural evidential is, or has as part of its semantics, an epistemic possibility modal. We then claim that the conjectural evidential distributes over each of the propositions in the Hamblin set. The result is a set of propositions, each of which makes a possibility assertion. We argue that the EQs have a reduced interrogative force, due to the fact that the evidential – unlike a plain English modal – also introduces a *presupposition of inferential evidence* to each proposition in the set, as shown in (7-8).

- (7) Denotation of (1b), including [*presuppositions*]: {that Bill is going to come [*presupposing there is evidence that he will come*], that Bill is not going to come [*presupposing there is evidence that he won't come*]}  
 (8) Denotation of (2b): {that the person is possibly from Lima [*presupposing there is evidence he is from Lima*], that the person is possibly from Cuzco [*presupposing there is evidence he is from Cuzco*], ...}

We argue that the presupposition introduced by a question is the conjunction of the presuppositions of its Hamblin-set of answers. The resulting presupposition – that there is mixed or conflicting evidence – is crucial in signaling to the hearer that they are not expected to know the answer. This correctly predicts that EvQs are bad in situations in which the addressee clearly *does* know the answer, as in (9) (cf. also Rocci 2007:147). We thus derive the effect of changing the speech-act function of the utterance, without having to stipulate an extra speech-act operator, and while using only independently-motivated semantics for questions and for evidentials.

**RQs and ExQs as mirativity.** Rhetorical questions usually affirm something both the speaker and addressee already know, usually for the effect of expressing sarcasm. Similarly, wh-exclamatives have the semantics of a question, but pragmatically function as statements of surprise or unexpectedness; they are not requests for information, as the speaker knows the 'answer'. In Gitksan neither OCs nor EvQs can be used to express a rhetorical question. Additionally, wh-exclamatives in Gitksan are not based on the syntax or semantics of questions, nor do they have an exclamatory intonational contour as they do English. Rather, in Gitksan the use of another evidential *n'akw* can, in certain specific contexts, take a declarative sentence and

turn it into either an RQ or, based on the parameters in (4), what we call an *exclamatory question* (ExQ). In (9), the speaker is frustrated the batter in a baseball game keeps missing the ball:

- (9) *n'akw=hl sins-t*  
EVID=CND blind-3sg  
RHETORICAL QUESTION (RQ): 'Is he blind?'  
WH-EXCLAMATIVE (ExQ): 'How blind this guy is!'  
(DECLARATIVE: 'Looks like he's blind.')

We claim that it is not the evidential content of *n'akw* that leads to this effect, but rather the modal content that is asserted in a context where the speaker 'knows the answer', which in normal contexts would lead to infelicity (i.e. you can't say 'it *must* be raining' if you know that it is raining). We speculate that the 'misuse' of the indirect *n'akw* in a direct evidence contexts modifies the speech act from a declarative to a mirative. As such, RQs and ExQs in these languages can be linked to *mirativity*, the grammatical encoding of surprise (Peterson 2016).

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# Intonation as a Speech Act Modifier: Rising Declaratives and Imperatives\*

Deniz Rudin == drudin@ucsc.edu

Questioning Speech Acts, 14 Sept. 2017, Konstanz

## Outline

A talk in two parts:

### I. Predominantly theoretical, on Rising Declaratives (RDs)

- ▷ Farkas & Bruce (2010): discourse model incorporating commitment and projection
- ▷ more moving parts allows for precise characterization of further speech acts
- ▷ I argue that RDs fit the profile of one such speech act
- ▷ I argue that rising/falling intonation manipulates commitment, allowing a fully compositional account of RDs

### II. Predominantly empirical, on Rising Imperatives (RIs)

- ▷ I examine the behavior of (apparent) RIs in English
- ▷ I argue that these are not questions + ellipsis or fragment answers, i.e., they seem to really be imperatives with rising intonation
- ▷ I sketch an account of RIs that is parallel to the account of RDs given in Part I

## 1 Rising Declaratives

First, a preliminary note: I assume Jeong's (2017a, 2017b) distinction between Inquisitive and Assertive RDs, and take them to be associated with the L\* H-H% tune and the H\* H-H% tune, respectively. Because I only deal with Inquisitive RDs here, I will simply say RD when I mean Inquisitive RD, and I will simply say 'rising intonation' when I mean the L\* H-H% tune.

Also, a notational convention: an end-of-sentence period indicates that the sentence is accompanied by the H\* L-L% tune; an end-of-sentence question mark indicates that the sentence is accompanied by the L\* H-H% tune.

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- ▷ this account synthesizes many empirical observations and analytical ideas from prior work
- ▷ my goals are twofold:

I. Derive the behavior of RDs from the primitives independently proposed by Farkas & Bruce (2010) for asserting and questioning acts—no ad hoc extra components in the discourse model

II. Explain *why* RDs behave like they do, by deriving their behavior entirely from the contribution of rising intonation and the contribution of declarative form<sup>1</sup>

## 1.1 The Empirical Facts

I take four empirical phenomena to be desiderata for evaluating the success of an account of RDs. For any RD  $p?$  whose falling declarative counterpart denotes the proposition  $p$ :

### I. An utterance of $p?$ does not commit the speaker to $p$

- (1) A: Paul got fired.
  - a. B: Oh.
  - b. B: Wow, I had no idea!
- (2) A: Did Paul get fired?
  - a. B: #Oh.
  - b. B: #Wow, I had no idea!
- (3) A: Paul got fired?
  - a. B: #Oh.
  - b. B: #Wow, I had no idea!

- ▷ responses indicating receipt of information are felicitous with falling declaratives, but infelicitous with interrogatives and RDs
- ▷ q.v. Gunlogson (2008), Jeong (2017b), a.o.

### II. An utterance of $p?$ elicits addressee response about whether $p$ is true

- (4) A: Paul went to Harvard.
  - a. B: Yes, he did.
  - b. B: My mom went to Yale.

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<sup>1</sup>This section is a (sharply) condensed version of Rudin (2017), which contains a much more detailed account of the empirical facts, and of the relation of my proposal to various others. Email me for the manuscript if you're interested.

- (5) **A:** Did Paul go to Harvard?  
 a. **B:** Yes, he did.  
 b. **B:** #My mom went to Yale.
- (6) **A:** Paul went to Harvard?  
 a. **B:** Yes, he did.  
 b. **B:** #My mom went to Yale.

▷ following up immediately by offering related information is felicitous with falling declaratives, but infelicitous with interrogatives and RDs

### III. An utterance of $p?$ can allow an inference that the speaker has either positive or negative epistemic bias toward $p$ , depending on context

(7) POSITIVE BIAS

[Context: The ship's second-in-command has just been woken from hypersleep after the captain has been killed in an accident. He is consulting with the android who runs the ship about the logistics of their colonization voyage. The second-in-command says:]  
 We have eight more recharge cycles to go before we get to Origae-6?

▷ inference: the speaker is double-checking that  $p$  is true

(8) NEGATIVE BIAS

[Context: George Stephanopoulos is interviewing Donald Trump.]  
**DT:** I think I've made a lot of sacrifices. I work very, very hard. I've created thousands of jobs, tens of thousands of jobs, built great structures. I've had tremendous success. I think I've done a lot.  
**GS:** Those are sacrifices?

▷ inference: the speaker is expressing skepticism about whether  $p$  is true

Previous accounts have often hard-coded either positive (e.g. Gunlogson 2008, Malamud & Stephenson 2015, Westera 2017) or negative (e.g. Farkas & Roelofsen 2017) bias into their accounts of RDs.

The availability of inferences of both positive and negative bias in different contexts suggests instead that the explanation of these inferences should be derived from more flexible, context-sensitive pragmatics.

### IV. An utterance of $p?$ is only felicitous if the speaker has reason to suspect that the addressee believes $p$

- (9) [Context: The second-in-command is talking to one of his passengers, who is unaware of the details of the logistics of the voyage. He says:]  
 #We have eight more recharge cycles to go before we get to Origae-6?

- (10) [Context: George Stephanopoulos is interviewing Donald Trump.]  
**DT:** I work very, very hard. I've created thousands of jobs, tens of thousands of jobs, built great structures. I've had tremendous success. I think I've done a lot.  
**GS:** #Those are sacrifices?
- ▷ the speaker's biases are the same in these examples as they are in their contextual variants above
  - ▷ the contexts here remove the speaker's reason to suspect that their addressee believes  $p$ , and infelicity results
  - ▷ q.v. Gunlogson (2001), Jeong (2017b)

## 1.2 The Account

In broad strokes:

- ▷ take up a suggestion of Truckenbrodt (2006): that falling and rising intonation signal commitment and lack of commitment
- ▷ show that formalizing this idea in the discourse model of Farkas & Bruce (2010) allows us to explain the behavior of RDs as sketched above

### 1.2.1 Background on Farkas & Bruce (2010)

The Farkas & Bruce (2010) discourse model has five components:

- (11)
- a. COMMON GROUND ( $cg$ )  
The set of all propositions that all discourse participants are publicly committed to
  - b. CONTEXT SET ( $cs$ )  
The set of all worlds that are compatible with all propositions in the Common Ground ( $= \cap cg$ )
  - c. DISCOURSE COMMITMENTS  
For all discourse participants  $X$ , there is a set  $DC_X$  of propositions  $X$  has publicly committed to that are not yet in  $cg$
  - d. THE TABLE  
A push-down stack of Questions Under Discussion (QUDs—q.v. Roberts 1996, Ginzburg 1996), the uppermost element of which is the current QUD
  - e. PROJECTED SET ( $ps$ )  
The set of all Common Grounds that could result by adding an element of the current QUD to the current  $cg$ —i.e. by answering the current QUD

Conversation is driven by the desire to shrink  $cs$  (prompting Issue-raising) and by the desire to empty the Table (prompting Issue-resolution).





To summarize: Farkas & Bruce's (2010) model allows us to decompose conventional discourse effects into the results of setting two binary switches:

- ▷ commitment vs. no commitment
- ▷ unitary projection vs. multiple projection

They give an account of asserting and questioning speech acts as the results of two particularly natural settings of these switches.

My argument: RDs involve no commitment, like questioning acts, but involve unitary projection, like asserting acts—a less natural pairing, but not an incoherent one.

### 1.2.2 The core of the account

#### (15) INTERROGATIVE VS. DECLARATIVE SENTENCES

- a. Utterances of interrogative sentences place their Hamblin denotations on the Table
  - b. Utterances of declarative sentences place the set containing the proposition they denote on the Table
- ▷ i.e. declarative sentences raise singleton Issues, and interrogative sentences raise non-singleton Issues
  - ▷ cf. Farkas & Roelofsen (2017)

I assume the following conventional discourse effects for rising and falling intonation, following Truckenbrodt (2006):

#### (16) FALLING INTONATION

The H\* L-L% tune indicates that the speaker is committing to the content of the Issue they've raised.

Formally: an utterance by  $A$  of a sentence  $s$  raising an Issue  $I$  that is accompanied by the H\* L-L% tune adds  $\cup I$  to  $DC_A$ .

#### (17) RISING INTONATION

The L\* H-H% tune indicates that the speaker is not committing to the content of the Issue they've raised.

Formally: an utterance by  $A$  of a sentence  $s$  raising an Issue  $I$  that is accompanied by the L\* H-H% makes no changes to  $DC_A$ .

Note that this derives the speech acts of asserting and questioning defined by Farkas & Bruce (2010):

- ▷ an utterance of a falling declarative will raise the Issue  $\{p\}$ , by virtue of the sentence's declarative form, and add  $\cup\{p\}$  ( $= p$ ) to the speaker's  $DC$ , by virtue of its falling intonation

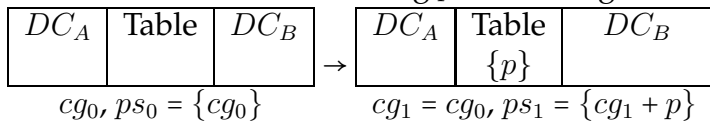
- ▷ an utterance of a rising interrogative will raise the Issue denoted by the sentence, by virtue of its interrogative form, and leave the speaker's *DC* untouched, by virtue of its rising intonation

### 1.2.3 Accounting for RDs

On this view, we can derive the behavior of an RD from its declarative form and its rising intonation:

- ▷ declarative form: raises a singleton Issue
- ▷ rising intonation: adds nothing to speaker's *DC*

(18) *A* utters a sentence *s* denoting *p* with rising intonation



How does this account for the empirical facts?

#### I. Lack of commitment

On this account, lack of commitment comes directly from the sentence's rising intonation.

#### II. Elicitation of response

Same explanation as for questions:

- ▷ speaker has raised an Issue without making a commitment that could resolve it
- ▷ so addressee response is necessary in order to remove the Issue from the Table

#### III. Speaker epistemic bias

Inferences of speaker epistemic bias follow from competition with falling declaratives.

- ▷ the speaker chose to raise the Issue  $\{p\}$  without committing to *p*
- ▷ they could've used a form that would've done so (a falling declarative)
- ▷ so: they must have a reason to avoid commitment to *p*

Crucially: in order for the choice of an RD to be felicitous, the speaker must only have *some* reason not to commit to *p*—there are many possible reasons to avoid a commitment!

- ▷ the speaker might be not quite sure that *p* is true, though they suspect it is
- ▷ the speaker might want to be deferential to the addressee's expertise by letting them make the initial commitment (q.v. Gunlogson 2008)
- ▷ the speaker might think *p* is false
- ▷ and so on

Different contexts will allow different inferences about what the speaker's reason for avoiding commitment is, allowing for inferences of both positive and negative epistemic bias in different contexts.

#### IV. Anticipation of addressee commitment

RDs are also in competition with polar interrogatives.

- ▷ the speaker chose to project only a future Common Ground that includes  $p$ <sup>2</sup>
- ▷ they could've used a form that would've also projected a future Common Ground that includes  $\neg p$  (a polar interrogative)
- ▷ so: they must have a reason to believe  $\neg p$  cannot become Common Ground

When the speaker uses an RD, they raise the Issue of whether  $p$  is true, and indicate that they think it is not possible for  $\neg p$  to become Common Ground.

It can only be the case that  $\neg p$  cannot become Common Ground if somebody makes an incompatible commitment—recall that with a falling declarative, it is natural that the speaker does not project a Common Ground including  $\neg p$ , as their commitment to  $p$  makes such a Common Ground impossible.

However, in the case of an RD, the speaker has indicated that they're *not* committing to  $p$ —if the speaker won't commit to  $p$ , the only way it can be impossible for  $\neg p$  to become Common Ground is if the addressee commits to  $p$ .

- ▷ pragmatically, the use of an RD indicates the speaker's expectation that the addressee will commit to  $p$

### 1.3 Summary

- ▷ an RD elicits addressee response about whether  $p$  is true, and predicts that they will say it is
- ▷ in effect, an RD solicits addressee commitment to  $p$ , which is cooperative only when the speaker thinks the addressee believes  $p$
- ▷ why might a speaker want to elicit addressee commitment to  $p$ ?

Maybe she takes the addressee to be an expert, and wants the addressee to confirm her hunch that  $p$  is true (cf. Gunlogson 2008).

Or maybe she disagrees with or is skeptical  $p$ , and wants to get the addressee's commit to it on record to provoke a confrontation.

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<sup>2</sup>That RDs project only *cgs* including  $p$ , despite not altering the context set, is central to Krifka's (2015) account of RDs as well.

## 2 Rising Imperatives

### 2.1 The Basic Facts

- ▷ very little prior work on RIs
- ▷ exception: Portner (2015)
- ▷ notes that intonation helps distinguish between more suggestiony and more com-mandy interpretations of imperatives, but remains agnostic about the specifics of the relevant intonational tunes<sup>3</sup>
- ▷ proposes an account of the effect of rising intonation on imperatives that is parallel to Gunlogson’s (2001) account of RDs, assuming the account of imperatives from Portner (2004):
- ▷ imperatives with falling intonation convey that the speaker treats the imperative as a priority, while imperatives with rising intonation convey that the addressee treats the imperative as a priority

I want to look specifically at imperatives accompanied by the L\* H-H% contour. These are actually quite common, e.g.:

(19) Buy me a drink?

(20) Let’s go?

Intuition (following Portner): RIs sound much more tentative/suggestiony than falling imperatives.

(21) **A:** I really like this present grandma gave me.

a. **B:** Write her a thank-you note.

b. **B:** Write her a thank-you note?

Impressionistically speaking:

- ▷ in (21a) **B** seems to be *telling* **A** to write her grandmother a thank-you note
- ▷ in (21b) **B** seems to be only pointing out that it is a possible course of action

Let’s put some empirical teeth on this intuition. Observe the following:

(22) **A:** I’m having trouble managing my time lately. I don’t know what my plans should be for this evening, do you have any advice?

a. **B:** Work on your paper? Blow it off and go to the beach?

b. **B:** Work on your paper. #Blow it off and go to the beach.

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<sup>3</sup>For other work on the interaction of imperatives and intonation, see Jeong & Condoravdi (2017), Keough et al. (2016)

Sequences of contradictory imperatives, which are infelicitous with falling intonation, are possible with rising intonation.

- ▷ compatible with the intuition that RIs are always merely suggestions
- ▷ one can cooperatively highlight a variety of different courses of action, even mutually incompatible ones
- ▷ but one cannot cooperatively ask that someone *pursue* mutually incompatible courses of action

This distinction doesn't follow from Portner's (2015) account, in which the rising imperatives would all be proposing updates to the same to-do list.

I'll propose instead that intonation modulates whether or not the speaker **endorses** that the addressee obey the imperative, taking inspiration from Condoravdi & Lauer (2017).

But before I sketch that account: how can we be sure that these are really imperatives?

## 2.2 RIs vs Fragment Answers

What if these are just fragment answers (Merchant 2004, Stainton 2005)?

- (23) **A:** I keep telling the guy who I broke up with that I'm not interested in talking to him, but he won't stop texting me. What should I do?
- a. **B:** Don't text him back anymore?
  - b. **B:** Not text him back anymore?

- ▷ the question 'what should I do?' licenses fragment answers
- ▷ we can tell that (23b) is a fragment, because it's not a possible imperative
- ▷ we can use the grammaticality of (23b) as a test for whether we're in a context that licenses fragments of the relevant kind

If we alter the context so that it no longer licenses fragment answers, rising imperatives are still possible:

- (24) **A:** I keep telling the guy who I broke up with that I'm not interested in talking to him, but he won't stop texting me. Do you have any advice?
- a. **B:** Don't text him back anymore?
  - b. **B:** \*Not text him back anymore?

- ▷ RIs are possible in contexts where fragment answers are ungrammatical
- ▷ so they can't all be fragments

## 2.3 RIs vs Left-Edge Ellipsis

What if these are just questions that have undergone ellipsis at their left edge (q.v. e.g. Weir 2016), like ‘Wanna see a movie?’

- ▷ plausible paraphrase for ‘Buy me a drink?’: ‘(Do you wanna) buy me a drink?’

I have two arguments that rising imperatives cannot be reduced to questions with left-edge ellipsis.

First, left-edge ellipsis is prosodically licensed, and only possible at the left edge of an intonational phrase:<sup>4</sup>

- (25) a. (Have you) seen the new Star Wars?  
b. I’m asking you whether \*(you have) seen the new Star Wars.
- (26) a. (I) won’t bother seeing it, I think.  
b. I think \*(I) won’t bother seeing it.

However, it’s possible to see a rising imperative that is not at the left edge of an intonational phrase:<sup>5</sup>

- (27) **A:** I’m having trouble managing my time lately. I don’t know what my plans should be for this evening, do you have any advice?  
**B:** Maybe work on your paper?

Second, it’s difficult to see how an ellipsis account could deal with negated RIs:

- (28) Don’t text him back anymore?

This could not possibly be derived via left-edge ellipsis from a question:

- ▷ if this were a question, ‘don’t’ would be sitting in C, to the *left* of the putatively elided subject
- ▷ no way to elide the subject without also eliding ‘don’t’

## 2.4 Lingering Questions

My empirical claims:

- ▷ apparent RIs in English can’t be reduced to sentence fragments
- ▷ apparent RIs in English can’t be reduced to questions with left edge ellipsis
- ▷ this suggests that they really are what they appear to be: rising imperatives

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<sup>4</sup>See Weir (2016) for copious further examples.

<sup>5</sup>Independent question, which I’m not going to touch with a ten-foot pole today: what exactly is ‘maybe’ doing here? How does ‘maybe’ interact with the meaning of an imperative?

This doesn't rule out them being some fourth thing, but I don't see what that would be.

Question I don't have the answer to: what is the cross-linguistic status of rising imperatives?

- ▷ turns out to be tough to investigate
- ▷ first one must find out whether a language has sentences that work like English RDs
- ▷ only then can one check whether that language's strategy for forming RD-like sentences can be applied to imperatives

Question I don't have the answer to: what is the cross-linguistic status of rising declaratives?

## 2.5 Analytical Sketch

This analysis is under construction quite actively at the moment—critical thoughts very welcome.

- ▷ I borrow heavily from Portner (2004) and Condoravdi & Lauer (2012, 2017)
- ▷ I'm less clear on how to deal with RIs from the point of view of Kaufmann (2012) or Starr (2017)

### 2.5.1 Basic Assumptions

- ▷ assumption, following Portner (2004):
- ▷ imperatives are proposals targeting the addressee's goal state
- ▷ assumption, following Condoravdi & Lauer (2012):
- ▷ the relevant goal state is an EFFECTIVE PREFERENCE STRUCTURE

Uttering an imperative that denotes  $p$  is a proposal that the addressee modify their effective preference structure such that  $p$  is a maximal element of it.

### 2.5.2 Endorsement vs Commitment

Proposal: as commitment is to declarative sentences, so endorsement is to imperative sentences.<sup>6</sup>

- ▷ for any imperative sentence  $s$  denoting  $p$ :
- ▷ uttering  $s$  puts forward  $p$  as an effective preference the addressee could adopt

---

<sup>6</sup>Cf. Condoravdi & Lauer 2017, who take endorsement to play a crucial role in imperatives, though they do not go as far as I do here.

- ▷ when *A* utters *s* with falling intonation, she endorses that the addressee adopt *p* as an effective preference
- ▷ uttering *s* with rising intonation does not proffer the speaker's endorsement

We can think about endorsement in the following way:

- ▷ when *A* endorses that *B* adopt a preference, *A* compels *B* to do so by whatever authority she has
- ▷ so if *A* puts *p* forward as an effective preference that *B* could adopt, but does not endorse it, *A* is leaving it up to *B* whether or not to adopt that preference, rather than compelling her to do so

This captures the fact that RIs seem like pure suggestions, and the fact that it's not infelicitous to string together sequences of mutually incompatible RIs.

## Conclusion

There's obviously a lot of work left to be done here.

Goals I hope to have achieved in discussion of RIs:

- ▷ argue that these really are imperatives
- ▷ put some empirical teeth on the way their behavior differs from falling imperatives

Primary goals for future development of this account:

- ▷ unify the account of RIs more fully with the account of RDs
- ▷ work through how this data could be accounted for from the viewpoints of Kaufmann (2012) and Starr (2017)

Thanks for listening!

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## Intonation as a Speech Act Modifier: Rising Declaratives and Imperatives

Deniz Rudin — University of California, Santa Cruz

**1. The goal of the paper:** to derive the conventional discourse effect of rising declaratives (RDs) compositionally, from the contribution of declarative form and the contribution of rising intonation. I do so by analyzing intonational contours in English as discourse effect modifiers modulating whether the speaker commits to the content they put on the Table.

**2. Empirical facts and prior work** I use  $p?$  to represent an RD whose falling-intonation counterpart denotes  $p$ . Krifka (2015—K) analyzes  $p?$  as limiting the possible future evolutions of the context set to those in which it entails  $p$ —we can gloss this as  $p?$  ANTICIPATING ADDRESSEE COMMITMENT to  $p$  (cf. Gunlogson 2001). Farkas & Roelofsen (2017—F&R) treat RDs as semantically identical to polar questions, with an additional discourse effect supplied by markedness. They take  $p?$  to communicate that the strength of the speaker’s doxastic preference for  $p$  over  $\neg p$  is at most low—we can gloss this as SKEPTICISM toward  $p$ . Gunlogson (2008—G) expresses the opposite intuition: that an utterance of  $p?$  indicates the speaker’s willingness to commit to  $p$  contingent on the addressee’s commitment to  $p$ —on this account  $p?$  signals EPISTEMIC DEFERENCE. F&R and G are both (partly) right: in some contexts, RDs indicate epistemic deference (1); in others they indicate skepticism (2):

- |  |  |
|--|--|
| (1) THE HAIRCUT CASE (cf. G)   | (2) THE SUNSET CASE (cf. F&R)  |
| a. [ <i>Context: A’s addressee’s hair looks shorter than yesterday.</i> ]<br>A: You got a haircut? | a. [ <i>Context: A is looking at a sunset that her addressee is praising.</i> ]<br>A: That’s a beautiful sunset? |
| b. [ <i>Context: A’s addressee’s hair looks the same as yesterday.</i> ]<br>A: #You got a haircut? | b. [ <i>Context: A’s addressee is known for finding sunsets drab.</i> ]<br>A: #That’s a beautiful sunset?        |

RDs anticipate addressee response:  $p?$  is only felicitous if the speaker suspects that the addressee believes  $p$ . Finally, it would be uncooperative for the addressee not to respond to the RDs in (1a) and (2a), just as it would be uncooperative not to respond to an interrogative sentence. My proposal unifies the insights of prior work by deriving the behavior of RDs from their form and intonation, rather than stipulating their discourse effect *ad hoc*.

**3. Background assumptions** I assume the commitment-based discourse model of Farkas & Bruce (2010—F&B), following recent work on RDs (e.g. F&R, Malamud & Stephenson 2015). A model  $M$  contains, in addition to the familiar Common Ground ( $cg$ ) and Context Set ( $cs$ ), a set of discourse commitments  $dc(x)$  for every participant  $x$ , a stack of Issues (set of propositions) called the Table ( $T$ ), the topmost element of which represents the Question Under Discussion (QUD), and the Projected Set ( $ps$ ), the set of all possible  $cg$ s that could result from resolving the QUD. The QUD is resolved (popped off the stack) once one of its members  $p$  enters  $cg$ , which only happens once all participants have committed to  $p$  (possibly by tacit consent after one of them commits). I assume that declarative sentences raise singleton Issues (perhaps generated by type-shifting the proposition they denote to the singleton set containing it, though these denotations follow directly from assuming Inquisitive Semantics, as F&R do) and that interrogative sentences raise non-singleton Issues (which are simply their denotations, assuming the standard Hamblin 1973 analysis).

**4. The core proposal** I propose that the BASIC DISCOURSE EFFECT of an utterance of a sentence  $s$  is to add the Issue raised by  $s$  to  $T$ . A speaker  $x$ ’s use of falling or rising intonation

on a sentence that raises the Issue  $I$  modifies that effect as follows: falling intonation adds  $\cup I$  to  $dc(x)$  (cf. the basic discourse effect in F&R); rising intonation adds nothing to  $dc(x)$ .

(3) The model  $M1$  resulting from  $x$  uttering a falling declarative denoting  $p$  in  $M$ :  
 $dc(x)^{M1} = dc(x)^M + p$ ;  $T^{M1} = T^M + p$ ;  $ps^{M1} = \{cg^M + p\}$

(4) The model  $M1$  resulting from  $x$  uttering a polar interrogative denoting  $\{p, \neg p\}$  in  $M$ :  
 $dc(x)^{M1} = dc(x)^M$ ;  $T^{M1} = T^M + \{p, \neg p\}$ ;  $ps^{M1} = \{cg^M + p, cg^M + \neg p\}$

The proposal derives the basic effects of asserting and questioning stipulated by F&B.  $ps$  represents expected addressee response: assertions anticipate addressee agreement, projecting acceptance of  $p$ ; an unbiased question anticipates either a positive or a negative answer.

(5) The model  $M1$  resulting from  $x$  uttering a rising declarative denoting  $p$  in  $M$ :  
 $dc(x)^{M1} = dc(x)^M$ ;  $T^{M1} = T^M + p$ ;  $ps^{M1} = \{cg^M + p\}$

$p?$  adds nothing to  $dc(x)$ , necessitating addressee response to resolve the Issue it raises, like a question; it projects only a  $cg$  updated with  $p$ , anticipating addressee commitment, like an assertion. Inferences about speaker attitude toward  $p$  are pragmatic inferences given the speaker's choice to use a form that doesn't commit them to  $p$  (they could've used falling intonation)—inferences of epistemic deference come in contexts where the speaker has reason to believe  $p$ , but takes their addressee to be more expert, explaining why they don't make the initial commitment (1); inferences of skepticism come in contexts where the best explanation for the speaker's avoiding committing to  $p$  is that they don't believe it to be true (2).

**5. Extension to Imperatives** English imperatives also host rising intonation (6a):

(6) **A:** Do you have any ideas about how I should spend my afternoon?

a. **B:** Hmm... Work on your paper? Blow it off and go to the beach?

b. **B:** Hmm... Work on your paper. #Blow it off and go to the beach.

c. **B:** Hmm... \*Work on your paper any more?

(cf. Hmm... Should you work on your paper any more?)

d. **B:** {Don't/\*Not} work on your paper, that's for sure!

(cf. **A:** What should I do today? **B:** Not work on your paper, that's for sure!)

These appear to be genuine imperatives, as opposed to fragment answers (Merchant 2004, Stainton 2005) or questions that have undergone left-edge ellipsis (Weir 2016). If they were questions with left-edge ellipsis, they would be able to host NPIs, but they can't (6c) and if they were fragment answers they should be able to host negation without do-support (6d).

The behavior of these rising imperatives is derived straightforwardly from the interaction between an off-the-shelf semantics for imperatives and my proposal for the discourse effect of rising intonation. Consider for instance the fact that a sequence of mutually incompatible rising imperatives is acceptable (6a), with the feel of a list of suggestions, whereas a sequence of mutually incompatible falling imperatives isn't (6b).

This fact is captured by an account of rising intonation in which it 'calls off' the speaker's commitment to the content of that imperative. If one chooses a semantics for imperatives that reduces them to propositions (e.g. Kaufmann 2012, Condoravdi & Lauer 2012), the parallel is particularly clear: the speaker puts both propositions on the Table, but doesn't commit to either, thus avoiding making self-contradictory commitments. The same story works for a semantics that treats imperatives as non-propositional updates (e.g. Charlow 2014, Starr 2017): the proposal to carry out the update is placed on the Table, but the speaker does not commit to favoring that the update go through, again leaving it up to the addressee.

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# Questioning Performatives

*Dietmar Zaefferer*

LMU Munich  
Theoretical Linguistics and MCMP

Workshop  
*Questioning Speech Acts*  
Konstanz  
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# 1. Introduction

## 1.1. Four decades

Zum Verhältnis von Wahrheitsbedingungssemantik und Sprechakttheorie

On the relation between truth-conditional semantics and Speech-act Theory

40 years ago Irene Heim's Master's Thesis appeared in the working papers of SFB 99 (DFG Research Unit 99)

Heim (1977: 50):

"Denn propositionale Gehalte haben Äußerungen nur bezüglich bestimmter illocutionärer Rollen, und Witz hätte daher auch nur eine Semantik, die den Äußerungen beides zuweist: illokutionäre Rolle und propositionalen Gehalt."

"Utterances have propositional contents only with regard to specific illocutionary forces, and therefore a semantic theory would be worthwhile only if it assigns to utterances both: an illo-cutionary force and a propositional content."



Zaefferer (1984: 24):

"»Jede explizit performative Äußerung ist (unter anderem) eine Deklaration.«  
(Heim 1977: 52)"

"»Every explicit performative utterance is (among other things) a declaration.«  
(Heim 1977: 52)"

Ambiguity view: Declarative sentences can be interpreted either as

- declarations (with success conditions) or as
- assertives (with truth conditions).

Searle 1989:

Instead of

deriving the performative interpretation from the assertive use,

he derives the assertive interpretation from the performative use

Reason: Committing to the existence of an intention

≠

Expressing an intention

Zaefferer (2006: 463) on declarations:

"Although Searle's defining characteristic of this class, "that the successful performance of one of its members brings about the correspondence between the propositional content and reality" (1975:358), has been adopted, both his assumption of a double direction of fit and his claim that a successful performance results in "some alternation in the status or condition of the referred to object or objects" (1975:358) are rejected."

Both declarations (performatives) and assertives are epistemic telics, the difference is in the kind of reference.

- Truckenbrodt 2009
- Condoravdi & Lauer 2011
- Eckardt 2012
- Condoravdi 2013

agree in trying to catch both animals with a single analytic device.

## 1.2. A little warm-up exercise

Please read the following slide silently  
and note your reaction  
on a piece of paper, on your laptop or simply in your mind.

Please do keep to the honor code  
and don't cheat by peeking at your neighbor's note.

*(1) Is this the most unusual question you've ever been asked?*

## 2. Performatives as a touchstone for speech act theories

### Performatives

- have played a crucial role in the birth of modern speech act theory.
- continue to be the topic of a controversial debate.

(Witness the current event.)

Here come some (hopefully) uncontroversial assumptions and some corollaries:

## Assumption 1

In all human languages complete root sentences must have a grammatical sentence mood marker.



## Assumption 2

Sentence mood markers indicate the most basic illocutionary forces.

## Corollary 1

There is no complete root sentence without a basic illocutionary force, therefore every utterance of a complete root sentence can be interpreted at both the locutionary and the illocutionary level.

### Assumption 3

Explicit performative illocutions (EPIs) are distinct from implicit performative illocutions (regular illocutions, RIs) in that they contain a lexical specification of the intended force of that very illocution.

## Corollary 2

EPIs refer to themselves and assign themselves a force predicate:  
They are self-referential and self-labeling.

## Assumption 4

Explicit performative illocutions (EPIs) are preferred over their regular counterparts whenever the agent wants to specify the intended force of an utterance beyond the sentence mood meaning.

### Corollary 3

EPIs that paraphrase the sentence mood meaning are redundant, therefore their effect can only be stylistic in nature.

## Assumption 5

Apart from the above EPIs are completely ordinary creatures.

## Corollary 4

An adequate speech act theory should be able  
to deal with EPIs as what they are:

Marked, but ordinary devices of lexically indicating force.

No special apparatus should therefore be needed for dealing with them.



### **3. Wanted: A simple theory with a natural definition of performatives**

#### **3.1. Simplicity**

A simple theory does not require a special apparatus for performatives.

## 3.2. Naturalness

A natural definition cuts the animal at the joints.

Searle's problems with performatives derive in part from his improper account of Assertives,

"whose point is to commit the speaker to the truth of the expressed proposition and whose expressed state is belief, by the claim that both are dimensions and that the "degree of belief and commitment may approach or even reach zero..." (Searle 1975:355). How can a belief or commitment with degree zero be identified? This leaves the words-to-world direction of fit as the only reliable definitional criterion." (Zaefferer 2006: 454)

Many researches have spilled a lot of ink in trying to explain a property of performatives they are supposed to have by definition:

The property of being self-verifying (or self-guaranteeing in Searle's terms).

It is a widely assumed dogma that performatives are self-verifying by definition and not only in fully felicitous cases.

Here are corpus data (thanks to Mark Bowker) that undermine this dogma:

(2) *I admit that I have not read the entire thread.*

(3) *I will admit that I have not read the entire list of comments.*

Although (2) is clearly self-verifying, (3) cannot possibly be, due to its future tense.

Of course, this formula can and should be read as shorthand for  
'If pressed I will admit ...'  
and hence entails that the speaker admits,  
still it does not verify itself,  
but the inferred 'I admit ...'.

The following data harvested from the web may be even more convincing:

(4) *We hereby inform you that our online store requires the use of cookies.*

(5) *We hereby inform you once more that we have a payment instrument issued in your favor awaiting processing.*

(6) *We hereby repeat our protest mailed to you in September 2010, against the scandalous behavior of the Turkish judiciary.*

Whereas (4) is a flawless case of self-verification (with the obvious exception of mentioning and other non-standard uses),

(5) suffers from a presupposition failure if there was no earlier information with that content, and

(6) is simply false if this is the first time the protest is mailed to the pertinent addressee.

Keeping self-verification as a definitional property of performatives means that

(4) is a good case,

(5) a doubtful one, and

(6) not a performative at all.

This a possible option, however, I submit that it is more fruitful to call all three of them performatives, with

(3) being completely successful and

(4) and (5) being only partially (with decreasing degrees) successful

under the indicated circumstances.



### 3.3. Instrumentality

Austin's view should be taken literally and seriously:

The locutionary act is the *instrument* effecting the illocutionary act

"A very common and important type of, one would think, indubitable performative has the verb in the second or third person (singular or plural) and the verb in the passive voice: so person and voice anyway are not essential.

Some examples of this type are:

(1) You are hereby authorized to pay ....

(2) Passengers are warned to cross the track by the bridge only.

Indeed the verb may be 'impersonal' in such cases with the passive, for example:

(3) Notice is hereby given that trespassers will be prosecuted.

This type is usually found on formal or legal occasions; and it is characteristic of it that, in writing at least, the word 'hereby' is often and perhaps can always be inserted; this serves to indicate that the utterance (in writing) of the sentence is, as it is said, the instrument effecting the act of warning, authorizing, &c. 'Hereby' is a useful criterion that the utterance is performative." (Austin 1962:57)

Compare Bühler's view: Language is a tool (organon)

## 4. Exploring the range of performatives

### 4.1. Single-level and multiple-level performatives

(The first three a. sentences harvested from the internet)

(7) a. You are hereby advised to inform your employees about the new e-mail guidelines

b. Inform your employees about the new e-mail guidelines!

(8) a. I hereby let you know that I'm allowing growing medical cannabis under strict conditions.

b. I'm allowing growing medical cannabis under strict conditions.

(9) a. You are hereby offered a Fixed-Term Appointment with the United Nations Population Fund.

b. You can get a Fixed-Term Appointment with the United Nations Population Fund.

(9) a. I abbreviate explicit performative illocution with EPI.

b. EPI is short for explicit performative illocution.

(10) a. I greet you (from Konstanz).

b.  $\emptyset$

## 4.2. Root and embedded performatives

(11) *I am happy*

*to have permission*

*to welcome you again to the Tagesthemen.*

< [https://www.youtube.com/watch?v=QFV273j\\_uNI](https://www.youtube.com/watch?v=QFV273j_uNI) >

entails: He welcomes us.

### 4.3. Single-sentence and multiple-sentence performatives

(12) *Leave, and that's an order* (Searle 1989: 550f.)

(13) *Subscribe to it, that's an order.*

(14) *STAY SAFE, EVERYONE!! That's an order.*

(15) A: "Ich komme."

B: "Bestimmt?"

A: "Das war ein Versprechen." (Heim 1977: 49)

(16) *Invitation for proposals for Use and Development ...*

*The **hereby** requested proposals must include: minimum 10 years experience in upmarket restaurant management ...*

#### 4.4. Single-topic and multiple-topic performatives

(17) a. *We hereby announce that parking permits are available in the office.*

b. *This is an announcement that parking permits are available in the office.*

(17') a. *We use this very utterance to announce that parking permits are ...*

b. *This very utterance is an announcement that parking permits are ...*

Multiple-topic performatives are more informative than single-topic performatives insofar as they encode a means-and-end relation between the utterance they refer to and the intended illocution.

(17'') b. *By this very utterance an announcement is made that parking permits are ...*

#### 4.4. Predicative and attributive performatives

Here comes a special challenge for any theory of performatives

(not only the Davidson and Grewendorf performative prefix account):

- (18) a. *I hereby state that the facts above set forth are true and correct*  
b. *By using this website, you accept the hereby stated terms and conditions with no exceptions or restrictions.*



- (18) a. *You are hereby invited to submit proposals for Use and Development.*
- b. *Invitation for proposals for Use and Development ... The hereby requested proposals must include: minimum 10 years experience in upmarket restaurant management; ...*

#### **4.6. Declarative-sentence mood and other-mood performatives**

The second widely accepted dogma I want to attack here derives from the self-verification dogma I tried to debunk above.

It says that performative sentences, the instruments for performing explicit performative il-locutions, have to be in the declarative sentence mood.

But:

#### 4.6. Declarative-sentence mood and other-mood performatives

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But:

*(19) Give yourself an self-fulfilling order!*

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But:

(19) *Give yourself an self-fulfilling order!*

(20) *Give yourself this very order!*

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But:

(19) *Give yourself an self-fulfilling order!*

(20) *Give yourself this very order!*

(21) *Is this a crazy kind of exclamation!*

#### 4.6. Declarative-sentence mood and other-mood performatives

The second widely accepted dogma I want to attack here derives from the self-verification dogma I tried to debunk above.

It says that performative sentences, the instruments for performing explicit performative il-locutions, have to be in the declarative sentence mood.

But:

(19) *Give yourself an self-fulfilling order!*

(20) *Give yourself this very order!*

(21) *Is this a crazy kind of exclamation!*

(22) *What a funny exclamation do I hereby make!*

## **5. Questioning performatives with questioning performatives**

They may be far-fetched, but you understand them:

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(23) *Do I hereby ask you a well-formed question?*



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(25) *Are you hereby asked a question you don't like?*

## 5. Questioning performatives with questioning performatives

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(23) *Do I hereby ask you a well-formed question?*

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(26) *Is what I ask you right now a question?*

## 5. Questioning performatives with questioning performatives

They may be far-fetched, but you understand them:

(23) *Do I hereby ask you a well-formed question?*

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(25) *Are you hereby asked a question you don't like?*

(26) *Is what I ask you right now a question?*

(27) *Is this a question that probably nobody has thought about before?*

## **6. AbST: A semantics that accounts for performatives at no charge**

### **6.0. Agent-based Situation Theory: Ontological prerequisites**

Three major ontological categories

- situations: containers of inventities and eventities
- inventities: inventory entities such as things with spatial meronomy
- eventities: events and similar entities with temporal meronomy

## 6.1. Reference and topics

Agents cannot attend to everything at the same time. Their attention shifts

- (a) reactively, driven by a percept, or
- (b) actively, driven by an intention.

To *refer* is to

- direct attention to or
- keep attention on

the core of a (prospective) topic.

A *topic* consists of a *core* (the topical entity) and a *regard* (the critical feature of the entity).

Topics can be epistemic or plain.

An entity  $x$  is an *open topic* with respect to the feature  $f$  for an agent  $A$  in an interval of time  $t$  iff

there is a propositional  $p$  entertained by  $A$  in  $t$  such that  $f(x)$  is an open feature in  $p$ .

An entity  $x$  is an *closed topic* with respect to the feature  $f$  for an agent  $A$  in an interval of time  $t$  iff

there is a propositional  $p$  entertained by  $A$  in  $t$  such that  $f(x)$  is a closed feature in  $p$ .

An entity  $x$  is an *active topic* with respect to the feature  $f$  for an agent  $A$  in an interval of time  $t$  iff

there is a propositional  $p$  entertained by  $A$  in  $t$  such that  $f(x)$  is an active feature in  $p$ .

An entity  $x$  is an *inert topic* with respect to the feature  $f$  for an agent  $A$  in an interval of time  $t$  iff

there is a propositional  $p$  entertained by  $A$  in  $t$  such that  $f(x)$  is an inert feature in  $p$ .



An agent *A* *refers* to an entity *x* iff

- (a) *A* directs the attention of *A'* to *x* (possibly  $A' = A$ )
- (b) *A* does so in order to further elaborate on *x*

- "Explicit reference is the communicative capacity to intentionally pick out a specific object in the environment and make that object a manifest topic for shared attention" (Leavens et al. 2008)
- "Reference is a relation that obtains between expressions and what speakers use expressions to talk about." (Reimer 2010)

## 6.2. A systematics of phoric relations

Phoric relations are either

- apophoric (pointer and target disjoint) or
- idiophoric (pointer and target non-disjoint)

Apophoric relations are either

- endophoric (pointer and target inside the same discourse) or
- exophoric (pointer inside a discourse, target outside)

Endophorics are either

- anaphoric (pointer points back to target) or
- cataphoric (pointer points forward to target) or
- amphiphoric (pointer points to both sides to target)

Exophorics are either

- anaphoric (pointer points to previously accessible target) or
- cataphoric (pointer points to subsequently accessible target) or
- paraphoric (pointer points to simultaneously accessible target)

Idiophoric relations (cases of self-reference) are either

- holophoric (pointer properly included in target) or
- merophoric (target properly included in pointer) or
- autophoric (pointer and target coincide)

## 6.3. Kinds of propositional contents and of locutionary acts

### 6.3.1. Proposition

A proposition is an inert closed epistemic topic.

NOTE: Depending on the distribution of core and regard, the same sentence (in written form) can code different propositions:

(28) a. *What happened?*

b. *What did John do?*

c. *Who rushed out?*

(29) *John rushed out.*

a. s-topic  $t_0$ :  $c(t_0)$ : object situation in the past

$r(t_0)$ : salient event in  $c(t_0)$  was rushing out of John

b. i-topic  $t_1$ :  $c(t_1)$ : John

$r(t_1)$ : behavior of  $c(t_1)$  was rushing out

c. e-topic  $t_2$ :  $c(t_2)$ : rushing out-event in the past

$r(t_2)$ : agent of  $c(t_2)$  was John

### 6.3.2. Pro-position

A pro-position is an open epistemic topic.

NOTE: Pro-positions can be inert (e.g. in plain nescience), or active (in inquisitiveness)

(30) a. [I know] *what happened*.

b. *What happened?*

a. s-topic  $t_0$ :  $c(t_0)$ : object situation

$r(t_0)$ :  $^0$ salient event in  $c(t_0)$

b. s-topic  $t_1$ :  $c(t_1)$ : object situation

$r(t_1)$ :  $\uparrow^0$ salient event in  $c(t_0)$

### 6.3.3. Pro-positional

A pro-positional is an active closed topic.

(31) a. *Come here!*

b. *Let me know what happened!*

a. i-topic  $t_0$ :  $c(t_0)$ : addressee

$r(t_0)$ :  $\uparrow c(t_0)$  comes to speaker

b. i-topic  $t_1$ :  $c(t_1)$ : addressee

$r(t_1)$ :  $\uparrow c(t_1)$  lets speaker know what happened

## 6.4. Mental spaces

Philipp Pfaller's PhD thesis

On top of emotion (non-)sharing and attention (non-)sharing

There are 24 (four times three times two) dynamic mental spaces

The content of *fields* is real.

The content of *grounds* may be pretend play.

Private is the unshared part of individual, private and common are disjoint

	Field			Ground		
	Private	Individual	Common	Private	Individual	Common
Epistemic	EPF	EIF	ECF	EPG	EIG	<b>ECG</b>
Inquisitive	IPF	IIF	ICF	IPG	IIG	<b>ICG</b>
Nescience	NPF	NIF	NCF	NPG	NIG	NCG
Agentive	APF	AIF	ACF	APG	AIG	<b>ACG</b>

## 6.5. Basic building blocks of an ontology of illocutionary acts

**Atelic illocutions:** No clearly distinguishable goal that can be reached or missed (*Wow!*)

**Telic illocutions:** Clearly distinguishable goal that can be reached or missed (*Hist!*)

**Epistemic telics:** The defining goal of an epistemic telic utterance is reached if its locution has produced activated knowledge of the propositional content, a proposition, in the relevant agents.



**Inquisitive telics:** The defining goal of an inquisitive telic utterance is reached if its locution has produced activated inquisitiveness regarding the propositional content, a pro-position, in the relevant agents.

## **Agentive telics:**

The defining goal of an inquisitive telic utterance is reached if its locution has produced an activated agenda including the propositional content, a propositional, in the relevant agents.

## 7. Redefining performativity

### 7.1. Desiderata for a natural definition of performativity

A natural definition of performativity leaves space for performatives that are

- self-verifying (true in virtue of their felicitous utterance)
- self-falsifying (false in virtue of their felicitous utterance) and
- non-self-deciding (neither true nor false in virtue of their felicitous utterance)

as well as for performatives that are

self-veri-priming (true answer must be positive),

self-falsi-priming (true answer must be negative) and

non-self-priming (true answer can be positive or negative).

## 7.2. A natural definition of performativity

(D<sub>perf</sub>)

Performing a locutionary act  $L$  counts as

attempting to perform the explicit performative illocutionary act  $I$

iff

there is a (closed or open) e-topic  $T$  such that

(a)  $L$  codes  $T$ ,

(b) the core of  $T$  is  $L$  itself, and

(c) the regard of  $T$  is its use for performing  $I$ .

Searle's defining property of self-guaranteeingness

should be replaced by

ontological dependence:

The effect possibly brought about by using the locution as an instrument is ontologically dependent on the performance of the locution:

no instrument, no effect.

The same holds for the locution's self-reference:

no referring device, no referent.

The very existence of the utterance's topic (what it is about) depends on the utterance being made.

This is the defining difference between idiophoric and apophoric uses.

## 8. Applying the AbST theory and the revised definition

(2) *I admit that I have not read the entire thread.*

Basic force (sentence mood meaning of the declarative):

epistemic telic (volition regarding activated knowledge)

i-topic  $t_0$ :  $c(t_0)$ : agent

$r(t_0)$ :  $c(t_0)$  admits:  $c(t_0)$  has not read the entire thread

idiophoric use

e-topic  $t_1$ :  $c(t_1)$ : locution  $t_1$  **made in the utterance situation (metasituation)**

$r(t_1)$ : is used by  $c(t_0)$  for admitting that ...

apophoric use

e-topic  $t_2$ :  $c(t_2)$ : locution  $t_2$  **in some object situation  $\neq$  metasituation**

$r(t_2)$ : is used by  $c(t_0)$  for admitting that ...

(27) *Is this a question that probably nobody has thought about before?*

Basic force (sentence mood meaning of the interrogative):

inquisitive telic (volition regarding activated inquisitiveness)

idiophoric use

e-topic  $t_1$ :  $c(t_1)$ : locution  $t_1$  **made in the utterance situation (metasituation)**

$r(t_1)$ :  $\uparrow^0$  [ $c(t_1)$  is used for asking if  $c(t_1)$  is a question ...]

apophoric use

e-topic  $t_2$ :  $c(t_2)$ : locution  $t_2$  **in some object situation  $\neq$  metasituation**

$r(t_2)$ :  $\uparrow^0$  [ $c(t_2)$  is used for asking if  $c(t_2)$  is a question ...]

## 9. Conclusion

### 9.1. Simplicity

A simple theory does not require a special apparatus for performatives.

To account for the interpretability of some utterances as apophoric or as idiophoric (performatives), AbST does not need any special apparatus.

Its account comes at a welcome side-effect of its treatment of reference and phoricity, at no additional charge.



## 9.2. Naturalness

A natural definition carves nature at its joints.

Our definition does not eliminate cases that are closely related to the core canonical cases.

[According of the principle 'of dividing things again by classes, where the natural joints are, and not trying to break any part, after the manner of a bad butcher' (Plato, Phaedrus 265e)]

### 9.3. Instrumentality

AbST takes Austin's view literally and seriously:

The locutionary act is the *instrument* effecting the illocutionary act

I hope that the account outlined above comes closer to a proper treatment of performatives than its competitors.

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*Last, but not least:*

*Thank you for sharing attention on both  
the cores and the regards of our active open topics:*

*Do questioning performatives really question performatives?*

*And if so, what could be the lesson learnt?*

## Questioning Performatives

Dietmar Zaefferer

*Theoretical Linguistics and MCMP*  
*Ludwig-Maximilians University Munich*  
zaefferer@lmu.de

The history of modern Speech Act theory began with a remarkable case of error culture: J.L. Austin abandoned (a 'sea-change' in his own words) his old performative/constative distinction in favor of "a whole group of senses [...] in which to say anything must always be to do something" (Austin 1962:92), prime among them the locutionary and the illocutionary act, while keeping the distinction between primary and explicit performatives.

This paper aims to contribute to a reconceptualization of explicit performatives that seems underway (perhaps a further sea-change; cf. e.g. Eckardt 2012, Condoravdi 2013, Hofmann 2015) in claiming that subsequent discussions, instead of looking for a more fruitful general concept, have stuck too narrowly to the few examples provided by Austin and Searle, disregarding thus Wittgenstein's (1953) warning: "A main cause of philosophical disease – a one-sided diet: one nourishes one's thinking only with one kind of example." (PI §593)

This one-sided diet is reflected in the usual assumptions made in large parts of the literature (cf. e.g. Condoravdi&Lauer 2011: 1; referring to Searle 1989):

- (a) Performative utterances are performances of the act named by the performative verb;
- (b) performative utterances are self-referential and self-verifying;
- (c) performative utterances achieve (a) and (b) in virtue of their literal meaning.

Here two non-trivial assumptions are presupposed:

- (d) Performatives contain a performative verb, and
- (e) performatives have the form of a declarative sentence (else they could not be self-verifying given that sentences of other types lack truth conditions).

This paper argues that a more diversified diet leads to a more comprehensive notion of performatives that may be able to provide solutions for currently open debates. It also outlines a formal account for it. It rejects (a), part of (b) as well as (d) and (e) above, and it accepts (c) only after replacement of (a) and (b) by less restrictive and thus more fruitful assumptions.

I agree with Eckardt (2012:24-26) that the diversity of linguistic expressions that can be used performatively is larger than commonly assumed. I substantiate this by introducing two categories not mentioned there and in almost the complete literature: (i) Performatives without a performative verb, a category of third-person performatives that should be added to the ones Eckardt discusses, and (ii) non-declarative (most prominently interrogative) performatives.

Ad (d). The disregard of performatives without a performative verb seems to be a minor oversight since it is easy to replace 'performative verb' by 'performative predicate,' covering thus both verbal and nominal predicates. However, the structures of these two kinds of performative sentences differ in interesting respects, cf. (1) a. taken from the internet, and (1) b.:

- (1) a. *This is an announcement that parking permits are available in the office.*
- b. *I hereby announce that parking permits are available in the office.*

Whereas (1) a. refers only to the relevant action, (1) b. in addition refers to the speaker; whereas (1) a. assigns its referent a one-place predicate that specifies the illocution type 'announcement' and its content, (1) b. assigns its referents a relation between an agent and the

means she uses to the end of bringing about a token of the illocution type 'announcement' and its content. The synonymy of *hereby* with *by this* is supported by corpus data such as (2):

(2) *By this, we announce that JDF Regular Practice will be conducted tomorrow.*

This means-and-end analysis also suggests that performatives are not strictly self-referential, because the deictic argument of the *by*-relation is the means-argument and the other argument is the end-argument, and assuming that they coincide, i.e. that performatives are autotelic, is not an inviting idea. In order to be self-verifying they don't have to be strictly self-referential.

Ad (b). It is a widely assumed dogma that performatives are self-verifying by definition and not only in fully felicitous cases. Here are some corpus data that undermine this dogma:

(3) *We hereby inform you that our online store requires the use of cookies.*

(4) *We hereby inform you once more that we have a payment instrument issued in your favor awaiting processing.*

(5) *We hereby repeat our protest mailed to you in September 2010, against the scandalous behavior of the Turkish judiciary.*

Whereas (3) is a flawless case of self-verification (with the obvious exception of mentioning and other non-standard uses), (4) suffers from a presupposition failure if there was no earlier information with that content, and (5) is simply false if this is the first time the protest is mailed to the pertinent addressee. Keeping self-verification as a definitional property of performatives means that (1) is a good case, (2) a doubtful one, and (3) not a performative at all. This a possible option, however, it seems to be more attractive to call all three of them performatives, with (3) being completely and (4) and (5) only partially successful.

Down-grading self-verification from a definitional to an intended property of performatives means increasing the definitional weight of (strict or loose) self-referentiality and raises the question of how to distinguish performatives from other self-referential utterances. I propose to assume with Austin (1962) and Goldman (2007) and against Davidson (1989) a fine-grained notion of speech act components: Locutionary and illocutionary acts are different, so if a locutionary act refers to an illocution, there is no strict self-reference, but what Zaefferer (2006) calls holophoricity, a part-to-whole reference. And if a locutionary act refers to something else than an illocution, it cannot be a performative. Here are some non-performatives:

Locutionary act *L* refers to (traces of a) graphic act *G*:

- |        |   |                                |
|--------|---|--------------------------------|
| (6) a. | <i>This is a sequence of black marks.</i>       | <i>L</i> verified by <i>G</i>  |
| b.     | <i>This is a sequence of green marks.</i>       | <i>L</i> falsified by <i>G</i> |
| c.     | <i>This is a sequence of marks you dislike.</i> | <i>L</i> undecided by <i>G</i> |

Ad (d). Assuming that the main purpose of illocutions is to propose a Common Ground update and that declarative, interrogative and imperative clauses are standard means for updates to the Epistemic, Inquisitive and Agentive Common Ground, respectively, it makes sense to look for performatives in the guise of non-declaratives, if self-verification is not required:

(7) a. *Do I hereby ask you a question?*

    b. *Is this a question?*

(8) *Is this a statement?*

(9) *Is this the most unusual question you've ever been asked?*

Since a truthful answer to (7) a.-b. can only be positive and to (8) only negative, they can be called self-veri-priming and self-falsi-priming, i.e. prompting by their very content such an answer. The content of (9) does not suffice to prompt an answer, so it is non-self-priming.

In view of these data I suggest to define performatives in terms of their intended illocution:



An agent *A* performs an explicit performative illocutionary act *I* of type *T* iff  
A performs a locutionary act *L* such that in doing so (a) *A* intends to perform *I* as token of *T*  
(b) *A* primarily refers to *I*, and  
(c) *A* tentatively assigns *I* the type *T*.

This leaves space for self-verifying, self-falsifying and non-self-deciding performatives as well as for their self-veri-priming, self-falsi-priming and non-self-priming variants.

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