Gradable Assertion Speech Acts

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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. [[likely]] = $\lambda p_{<s,t>}. \mu_{prob}(p)$

b. [[φ is more likely than ψ]|] = 1 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*)**

- **<u>A question:</u> What do these observations show?**
- **<u>Wolf's 2015 answer</u>** (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 :**
  - <u>First, *ASSERT* involves a credence degree:</u>

(11) Assertion of **φ**: A_x P(**φ**) = v .

- <u>In prose</u>, the speaker *x* performs an assertion *A*, thereby asserting propositional content **φ** with a degree of credence *v*.

  - <u>Second, MADVs combine with *ASSERT* and change the credence degree</u>

(12) a. John is possibly in the office - A_x P (John is in the office) > 0

b. John is probably in the office - A_x P (John is in the office) > 0.5

- <u>In prose</u> 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*)

  - <u>Third, the default credence degree the speaker has towards the propositional content is ≥high.</u>

(13) John is in the office - A_x P (John is in the office) ≥ high

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

<u>Section 2: The current proposal</u>:

- 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]] $_{<<s,t>,<c,c>>}$ $= \lambda p.\lambda c.\ \imath c'\colon c' = \langle c_{sp(eaker)}, c_{h(earer)}, c_t, C_{ow} \cap \{w\colon assert\ (p)(c))\}\rangle$

In prose: *ASSERT*, type <<s,t>, <c,c>>, 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 <<s,t>, <d, <c,c>>>:

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

- 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) [[Probably]]: λG. λp. λd. λc. ιc′: c′=< c_{sp}, c_h, c_t, C_{ow}∩{w: ∃d d>0.5 ∧G(p)(d)(c)}>

[[Possibly]]: λ G. λp.λd. λc. ιc′: c′=< c_{sp}, c_h, c_t, C_{ow}∩{w:∃d d> 0 ∧ G(p)(d)(c)}>

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

(18) ιc′: c′=< c_{sp}, c_h, c_t, C_{ow}∩{w: ∃d d >0.5 ∧ Assert (John is a thief)(d)(c)}>

- 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):[1]

(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”

[1] 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 expressin g‘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 <<s,t>, <d, <c,c>>>.
- 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]]:λG. λp. λc. ιc′: c′=< c_{sp}, c_h, c_t, C_{ow}∩{w: ∃d d≥**standard (G,C)** ∧ G(p)(d)(c)}>*

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

(25) ιc′: c′=< c_{sp}, c_h, c_t, C_{ow} ∩{w: ∃d d≥***standard (****ASSERT**,**C)*∧ *Assert (John is a thief)(d)(c)}>*

In prose, (25b) combines with a context c and yields the context c' which is just like c except 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.

- **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(pper)-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(pper)-closed
- As is well known, Kennedy & McNally 2005 (K&M) suggested that the standard degree for such U(pper)-closed adjectives 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)[2]
    - 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 adjecties should still be at the upper part of the scale.

[2] 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 Cτ. 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 accords with Wolf & Cohen's (2009) and Wolf's (2015), original claim that with (apparently) unmodified assertions the default degree of credence is ≥ *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.**

- **<u>The proposal is still preliminary, and leaves open many questions and directions for further research</u>** <u>(hopefully fruitful ones!), for example:</u>

(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 decompsitional 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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