Really: Ambiguity and Question Bias

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Ambiguity puzzle

- English *really* can have two uses: **intensifier** vs. **conversational** (Partee 2004; Romero & Han 2004; a.o.).
- Intensifier *really*: Typically modifies relative adjectives (e.g. *tall*) and implies that the corresponding gradable property applies to a much greater degree than required by the contextual standard.
- Conversational *really*: A propositional modifier that expresses definite certainty about the prejacent proposition.

Examples

- Intensifier vs. conversational *really*:

  (1) Zelda is really tall.
  ≈ *Zelda is very tall.* (intensifier use)

  (2) Zelda REALLY is tall.
  ≈ *The speaker is definitely certain that Zelda is tall.* (conversational use)

- The two uses are distinguished both structurally (low vs. high attachment) and prosodically (optional vs. obligatory focal stress).
- A sentence with conversational *really* most naturally has a pitch accent on the auxiliary verb (i.e. *Zelda REALLY IS tall*). We take this accent to signal the presence of a covert VERUM operator (Gutzmann et al. 2020; Bill & Koev 2021).

Preliminary proposal

- Questions
  - Are we dealing with a proper lexical ambiguity or with two different uses of the same lexical item?
  - Assuming a single lexical entry for *really*, how can the two readings ever arise, given that they seem quite unrelated?
- Proposal
  - There is a single lexical entry for *really*.
  - *Really* is a quantificational degree adverb whose denotation combines with a gradable property P and states that the degree to which P applies exceeds all relevant standards.
  - The apparent ambiguity hinges on what P ranges over: degrees of some individual property (intensifier *really*) or degrees of commitment (conversational *really*).

A third use?

- Romero & Han (2004) argue that *really* has a third "in-actuality" use.

  (3) Gore really won the election though Bush is president.

- Here *really* seems more natural when accented and when occurring before the auxiliary (cf. *Biden* REALLY *has won the election* vs. *?Biden has really won the election*). A conversational use?
- We put the possibility of a third use aside.

The question bias puzzle

- Polar questions with conversational *really* convey a negative speaker bias (Romero & Han 2004).

  (4) Is Kai REALLY from Hawaii?
  $\rightsquigarrow$ *The speaker doubts that Kai is from Hawaii.*

- Polar questions with intensifier *really* need not be biased (e.g. *Are you really hungry?*).
- Beyond conversational *really*, other polar operators may trigger question bias as well (cf. *Is she DEFINITELY going to run for office?* $\rightsquigarrow$ The speaker doubts that she is going to run for office).

Preliminary proposal

- Questions
  - Why does conversational but not intensifier *really* (obligatorily) trigger a question bias?
  - What feature does conversational *really* share with other bias-inducing polar elements, such as *definitely*?
- Proposal
  - Conversational *really* bears contrastive focus marking.
  - This marking presupposes that the negative alternative to the question prejacent is salient in the discourse, which gives rise to the intuition of bias.

The crosslinguistic picture

- The two puzzles are mirrored by counterparts of English *really* in other languages as well (incl. German *wirklich*, Bulgarian *naistina*, Farsi *vaqean*).
- So we are in need of a unified semantics for *really* that derives all of its interpretational effects.

Plan for today

- Degree modification and the ambiguity puzzle
- Polarity focus and the question bias puzzle
- Similar polar elements: *so*, *definitely*, *totally*
- Previous accounts of *really*

Background on degree modification

- We adopt a standard degree semantics where gradable adjectives denote relations between degrees and individuals (Cresswell 1976; von Stechow 1984; Heim 1985; Kennedy & McNally 2005; Morzycki 2016; a.o.).

  (5) $[\![\text{tall}]\!]^c = \lambda d \lambda x \lambda w . d \preceq \mathbf{tall}_w(x)$

- The degree argument is filled and constrained by degree morphology, i.e. degree constructions or degree adverbs.
- We first look at two degree modifiers, *very* and POS, and then show how *really* differs from both.

Very

- *Very* requires that the degree to which the modified gradable property applies exceed the standard of comparison by a significant amount.

  (6) Zelda is very tall.
  $\rightsquigarrow$ *Zelda's height exceeds the relevant norm by a significant amount.*

- ...by a "significant amount"?
  - *Very* enforces a simple comparison to a raised standard produced by restricting the comparison class to objects that meet the modified property (Wheeler 1972): *a very expensive laptop* = a laptop that is expensive relative to the class of expensive laptops
  - *Very* enforces a "boosted" comparison to a regular standard (Kennedy & McNally 1999): *a very expensive laptop* = a laptop whose price exceeds the average laptop price by some large amount
- For ease of comparison with *really*, we adopt the latter mechanism:

  (7) $[\![\text{very}]\!]^c = \lambda P \lambda x \lambda w . \exists d [P(d)(x)(w) \wedge \mathbf{std}_{c,w}(P) \prec\prec_{P,c} d]$

- The positive form of degree constructions entails that the argument exceeds the relevant standard along the specified dimension.

  (8) Zelda is tall.
  $\rightsquigarrow$ *Zelda's height exceeds the relevant standard for tallness.*

- The comparison is facilitated by a null morpheme POS, which introduces the standard of comparison.

  (9) $[\![\text{POS}]\!]^c = \lambda P \lambda x \lambda w . \exists d [P(d)(x)(w) \wedge \mathbf{std}_{c,w}(P) \prec d]$

Really

- *Really* achieves a similar effect to *very* by virtue of being a quantificational counterpart to POS.
- *Really* quantifies over contexts "similar" to the current one and states that in each such context the degree to which the gradable property applies lies above the standard.

(10) $[\![\text{really}]\!]^c = \lambda P \lambda x \lambda w . \exists d [P(d)(x)(w) \wedge \forall c' \approx c [\mathbf{std}_{c',w}(P) \prec d]]$

- Intuitively, *really* involves negotiation about standards.

Back to the ambiguity puzzle

- The two uses:

  (11) This road is really wide. (intensifier use)

  (12) This road REALLY ends here. (conversational use)

- Intensifier use: *really* $\approx$ "very"
- Conversational use: *really* $\approx$ "definitely certain"

Intensifier use

- The intensifier use of *really* comes for free:

(13) $[\![[_{\text{DegP}}\ \text{really wide}]]\!]^c$
$= \lambda x \lambda w\,.\,\exists d\,[d \preceq \mathbf{wide}_w(x) \wedge \forall c' \approx c\,[\mathbf{std}_{c',w}([\![\text{wide}]\!]) \prec d\,]]$
$= \lambda x \lambda w\,.\,\forall c' \approx c\,[\mathbf{std}_{c',w}([\![\text{wide}]\!]) \prec \mathbf{wide}_w(x)]$

- Intensifier *really*: All relevant standards are exceeded, including the strictest ones.
- *Very*: A long distance away from the (single contextual) standard.
- Intensifier *really* is thus nearly synonymous with *very*.

Conversational use

- Where does the modal component of conversational *really* come from?
- Conversational *really* composes with a property of degrees of commitment, created by a COM operator (cf. Hamblin 1971; Krifka 2015; 2019; Geurts 2019a; 2019b).

(14) $[\![[_{\text{ComP}}\ \text{COM}\ \phi]]\!]^c = \lambda d \lambda x \lambda w\,.\, d \preceq \mathbf{com}_w(x, [\![\phi]\!]^c)$

- Conversational *really* states that the degree of commitment to the prejacent proposition exceeds all relevant standards of commitment.

(15) $[\![[_{\text{PolP}}\ \text{really}_F\ [_{\text{ComP}}\ \text{COM}\ \phi]]]\!]^c$
$= \lambda x \lambda w\,.\, \exists d\,[d \preceq \mathbf{com}_w(x, [\![\phi]\!]^c) \wedge \forall c' \approx c\,[\mathbf{std}_{c',w}([\![\text{COM}\ \phi]\!]^c) \prec d]]$
$= \lambda x \lambda w\,.\, \forall c' \approx c\,[\mathbf{std}_{c',w}([\![\text{COM}\ \phi]\!]^c) \prec \mathbf{com}_w(x, [\![\phi]\!]^c)]$

- Conversational *really* thus amounts to definite certainty.

More on COM

- COM is a conversational and not a purely epistemic operator (cf. *I* REALLY *am tired* vs. *?I am sure/certain I am tired*; Romero & Han 2004).
- COM, albeit a conversational operator, makes a purely at-issue contribution and takes scope under *really*.
- The presence of COM is overtly manifested in the focus marking and the high structural position of conversational *really*.

Background on alternative semantics for focus

- We follow Rooth's alternative semantics, which models focus as a feature F that marks syntactic constituents and elicits alternatives relevant for interpretation (Rooth 1985; 1992).
- Each linguistic expression is associated with two semantic values: *ordinary* and *alternative/focus*.
- The alternative value of a complex expression is composed from the alternative values of its constituents in a pointwise fashion.

Contrastive focus

- Contrastive focus imposes two conditions on the antecedent referent C: C is a member of the alternative value of the focus domain and C differs from the ordinary value of that domain.
- These two conditions are enforced by a *squiggle operator* $\sim$ that c-commands the focused constituent α and marks the focus domain.

(16) SQUIGGLE SEMANTICS
$[\ldots \alpha_F \ldots]_\phi \sim C$ is felicitous only if $C \in [\![\phi]\!]_a$ and $C \neq [\![\phi]\!]_o$.

Polarity focus

- Just like focus can mark any other phrase, it can also mark a polar operator, like negation.

(17) A: Mary drinks beer.
B: No, Mary does NOT drink beer.

(18) a. $[_{\text{PolP}}\ \text{not}_F\ [_{\text{TP}}\ \text{Mary}\ [_{\text{VP}}\ \text{drinks beer}]]]_\phi \sim C$

b. $C = [\![\text{Mary drinks beer}]\!]_o = \lambda w\,.\,drink_w(mary, beer)$
$[\![\phi]\!]_o = \lambda w\,.\,\neg drink_w(mary, beer)$
$[\![\text{not}_F]\!]_a = \left\{ \begin{array}{l} \lambda p \lambda w\,.\,p(w), \\ \lambda p \lambda w\,.\,\neg p(w) \end{array} \right\}$
$[\![\phi]\!]_a = \left\{ \begin{array}{l} \lambda w\,.\,drink_w(mary, beer), \\ \lambda w\,.\,\neg drink_w(mary, beer) \end{array} \right\}$

c. $C \in [\![\phi]\!]_a$ ✓, $C \neq [\![\phi]\!]_o$ ✓

- This variety of focus is called *polarity focus* (cf. Höhle 1992).

Back to the question bias puzzle

- Conversational *really* in polar questions gives rise to negative bias on the part of the speaker.

  (19) Is this REALLY an Apple Watch?
  $\rightsquigarrow$ *The speaker doubts that this is an Apple Watch.*

- Since being an Apple Watch is not a gradable property, the above use of *really* must be a conversational one.
- The bias inference is not cancelable. The above question is incompatible with the neutrality marker *by any chance* (Sadock 1971).

Explaining the question bias puzzle (informally)

- Conversational *really* is a polar element that carries a focus marking, i.e. polarity focus.
- On the one hand, the polarity focus points at the presence of a salient propositional antecedent which is of the opposite polarity to that of the focus domain.
- On the other hand, by uttering a polar question, the speaker is questioning the content of the focus domain.
- The combined effect of these two factors leads to the intuition that the speaker is biased for the antecedent proposition and against the focus domain proposition. Hence the negative bias.

High negation

- We assume that high (or "light") negation is a polar opposite of *really*.
- High negation takes a gradable property and an individual, and states that the degree to which the property applies to the individual is the minimum of the relevant scale.

(20) $[\![\text{not}^{high}]\!]^c_o = \lambda P \lambda x \lambda w . \forall d [P(d)(x)(w) \rightarrow d = \mathbf{min}(S_P)]$

- When composed with ComP, high negation entails that the relevant agent lacks any degree of commitment to the prejacent proposition.
- Assuming opinionatedness, the agent is fully committed to the complement of that proposition (negation is pushed inside COM).

(21) a. $[\![[_{\text{ComP}}\ \text{COM}\ \phi]]\!]^c_o = \lambda d \lambda x \lambda w . d \preceq \mathbf{com}_w(x, [\![\phi]\!]^c_o)$

b. $[\![[_{\text{PolP}}\ \text{not}^{high}_F\ [_{\text{ComP}}\ \text{COM}\ \phi]]]\!]^c_o$
$= \lambda x \lambda w . \forall d [d \preceq \mathbf{com}_w(x, [\![\phi]\!]^c_o) \rightarrow d = \mathbf{min}(S_{[\![\text{COM}\ \phi]\!]^c_o})]$
$= \lambda x \lambda w . \mathbf{com}_w(x, [\![\phi]\!]^c_o) = \mathbf{min}(S_{[\![\text{COM}\ \phi]\!]^c_o})$
$= \lambda x \lambda w . \mathbf{com}_w(x, \overline{[\![\phi]\!]}^c_o) = \mathbf{max}(S_{[\![\text{COM}\ \phi]\!]^c_o})$

Explaining the question bias puzzle (formally)

(22) Is this REALLY$_F$ an Apple Watch?

a. $[_{\text{CP}}\ \text{Q}\ [_{\text{PolP}}\ \text{really}_F\ [_{\text{ComP}}\ \text{COM}\ [_{\text{TP}}\ \text{this an Apple Watch}]]]]_\phi \sim C]$

b. $[\![\phi]\!]^c_o = [\![\text{really}_F\ [\text{COM this an Apple Watch}]]\!]^c_o$

$[\![\text{really}_F]\!]^c_a = [\![\text{not}^{high}_F]\!]^c_a = \{[\![\text{really}_F]\!]^c_o, [\![\text{not}^{high}_F]\!]^c_o\}$

$[\![\phi]\!]^c_a = \left\{ \begin{array}{l} [\![\text{really}_F\ [\text{COM this an Apple Watch}]]\!]^c_o, \\ [\![\text{not}^{high}_F\ [\text{COM this an Apple Watch}]]\!]^c_o \end{array} \right\}$

$C = [\![\text{not}^{high}_F\ [\text{COM this an Apple Watch}]]\!]^c_o$

c. $C \in [\![\phi]\!]^c_a$ ✓, $C \neq [\![\phi]\!]^c_o$ ✓

Bias in high negation questions

- High negation in polar questions triggers a *positive* speaker bias, as compared to the negative bias of (conversational) *really*.

  (23) Isn't^{high} this an Apple Watch?
  $\rightsquigarrow$ *The speaker believes that this is an Apple Watch.*

- The derivation of bias is parallel to that with *really*, with the roles of the positive and the negative alternatives being reversed.

Extensions: Similar polar elements in English

- Three similar polar elements in English: *so*, *definitely*, *totally* (Laka 1990; Barker 2002; Beltrama 2018).
- Summary of findings (data omitted):

Element	Intensifier use	Conversational use	Question bias
really	Yes	Yes	Yes
so	Yes	Yes	(n.a.)
definitely	Yes	Yes	Yes
totally	Yes	Yes	(n.a.)

Table: Distribution of polarity elements across targeted properties.

- These elements differ from *really* (and each other) in two further respects: the choice of responsible agent in conversational uses (speaker or hearer) and the type of modified predicate (relative or absolute).

Previous accounts

- Barker (2002), Partee (2004)
  - *Really* and similar adverbs raise the relevant standard (in some way) and convey that the modified predicate applies even under this stricter standard.

    (24) $[\![\text{really}]\!]^c = \lambda P \lambda x \lambda w . \mathbf{std}_w(P) \prec \mu_{P,w}(x) \wedge \forall w' \in c [\mathbf{std}_{w'}(P) \prec \mu_{P,w'}(x)]$

  - 😐 Quantification over possible worlds, not contexts.
  - ☹ No explanation of question bias.
- Romero & Han (2004)
  - Conversational *really* is the overt realization of a VERUM operator, which conveys certainty that the prejacent proposition should be added to the common ground.

    (25) $[\![\text{VERUM}_x]\!] = \lambda p \lambda w . \forall w' \in Epi_{x,w} \forall w'' \in Conv_{x,w'} [p \in CG_{x,w''}]$
    $=: ForSureCG_x$

  - ☺ Derives the question bias puzzle along similar lines.
  - ☹ Has nothing to say about intensifier *really*.

The answering pattern of polar questions with conversational *really*

- Polar questions with conversational *really* give rise to a plain answering pattern, which may suggest that we are dealing with a regular/non-modal question partition (Romero 2015), unlike what we predict.

  (26) Is Jane REALLY coming to the party?
  - a. Yes. $\rightsquigarrow$ *Jane is coming to the party.*
  - b. No. $\rightsquigarrow$ *Jane is not coming to the party.*

- On our account, a *really*-question comes with two pairs of propositions: the alternative value of the focus domain and the ordinary question meaning.
- If we assume that response particles may target either pair of propositions, although the stronger (underlined) option is preferred, we derive the correct answering pattern.

  (27) Is Jane REALLY coming to the party?
  - a. $\{Really(Com(p)), Not^{high}(Com(p))\}$ (alt value of f-domain)
  - b. $\{Really(Com(p)), \neg Really(Com(p))\}$ (ord question meaning)
    - i. Yes. $\rightsquigarrow Really(Com(p))$
    - ii. No. $\rightsquigarrow \neg Really(Com(p))$ or $\underline{Not^{high}(Com(p))}$

Conclusion

- *Really* is a quantificational degree adverb with a single meaning.
- Depending on the linguistic environment, it can be read as an intensifier or a conversational operator.
- Conversational *really* is obligatorily focused (as a reflex of COM) and gives rise to negative speaker bias in polar questions.
- Similar interpretational effects are found in other polar elements in English as well as in *really*-counterparts in other languages.

Thank you!