The Scarity and Quantificational Domain of Speaker Concession

Yi-Hsun Chen, Rutgers University
yc565@linguistics.rutgers.edu

Evaluative Meanings:
Theoretical and Computational Perspective
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Outline

- Main ideas
- Five puzzles on concessive *at least*
- A formal proposal
- Explaining the five puzzles
- Conclusion
Main Ideas
Concessive *at least*

- Semantic ingredients of *at least* (ultimately, a unified one with epistemic *at least*):
  - A set of alternatives induced by **focus**;
  - A **comparison relation** (i.e., **ordering relation**) between the prejacent and its focus alternatives
  - An **evaluation** of the alternatives based on the interlocutors’ interests and goals in a given discourse (Biezma 2013);
  - The quantificational domain of *at least* must be **propositional**; What gets evaluated is a set of different circumstances (represented by the focus alternatives).
Concessive *at least*

- The pragmatic ingredient:
  - the speaker knows that the relevant higher alternatives are false in the context. (Biezma 2013)

- The piece of information that the relevant higher alternatives are contextually false can be:
  - Either *presupposed*, when the speaker uses concessive *at least*;
  - Or *asserted*, before the speaker uses concessive *at least*. 
Five puzzles on concessive *at least*
Puzzle One: Ambiguity

English sentences containing at least are ambiguous (Kay 1992)

- An epistemic reading (EPI)

(1) EPI: Mary won at least a [silver]$_F$ medal.
   ✓ Ignorance inference

- A concessive reading (CON)

(2) CON: Mary didn’t win a gold medal, but at least she won a [silver]$_F$ medal.
   ✓ Concessive inference: preference and a “settle-for-less” flavor

- Biezma (2013): Only one at least
Ambiguity across languages

The EPI-CON ambiguity is actually far more pervasive than we thought (see also Grosz 2011):

- English: *at minimum*;
- Brazilian Portuguese: *pelo menos*;
- Chinese: *zhishao, zuishao, qima*;
- Japanese: *sukunaku-temo*;
- Italian: *al meno*;
- Maghi, Hindi: *kam se kam*;
- Turkish: *en az*;
- Russian (?)

A morpho-semantic puzzle: quantity adjectives and X-operators
Puzzle Two: Focus-sensitivity

EPI is focus-sensitive.


I observe that…

- CON is also focus-sensitive.
Puzzle Two: Focus-sensitivity

Scenario A: What did Adam do for our party tonight?
   Did he cook the dinner?
   ✓ A contextually given ranking (on what Adam could contribute):
      cook dinner > bring drinks > clean house

(3) a. Adam didn’t cook the dinner, but at least he
   [brought some drinks] \(_F\).
   b. #Adam didn’t cook the dinner, but at least he
      brought [some drinks] \(_F\).
Puzzle Two: Focus-sensitivity

Scenario B: What did Adam bring for our party tonight? Did he bring cakes?

✓ A contextually given ranking (on what Adam could bring):
cakes > drinks > chips

(4) a. #Adam didn’t bring cakes, but at least he [brought drinks]\textsubscript{F}.
   b. Adam didn’t bring cakes, but at least he brought [drinks]\textsubscript{F}.
Puzzle Three: Variety of Scales

EPI is compatible with variety of scales. (Krifka 1999, Coppock & Brochhagen 2013, Kennedy 2015, Mendia 2016, among others)

I observe that…

➢ CON is also compatible with variety of scales.
Puzzle Three: Variety of Scales

(5) **Numerical Scale** (e.g., \(4 \succ 3 \succ 2\))

John at least wrote \([three]_F\) books.

(6) **Plurality Scale** (e.g., \(a \oplus b \oplus c \succ a \oplus b \succ a, b\))

John at least invited \([Adam and Bill]_F\).

(7) **Lexical Scale** (e.g., gold \(\succ\) silver \(\succ\) bronze)

John at least won a \([silver]_F\) medal.

(8) **Pragmatic Scale** (e.g., cherries \(\succ\) apples \(\succ\) bananas)

John at least bought \([apples]_F\).
Puzzle Four: Two Scalar Effects

**Scenario:** Adam, Bill, Chris are playing dice. In each round, whoever gets a bigger number wins. A dice has six number on it: **six** is the **upper bound** and **one** the **lower bound** on the possible results. Adam threw the dice, but Chris missed the result. During his turn, he asked Bill what the result was.

Chris: What number did Adam get?

Did Adam got {one, two, three, four, five, six}?
Puzzle Four: Two Scalar Effects

**TSE**: The focus associate cannot be the element at the-top-of-the scale.

(9) Bill: #Adam at least got [six]$_F$.

**BSE**: The focus associate cannot be the element at the-bottom-of-the scale.

(10) Bill: #Adam didn’t get any number bigger than two, but at least he got [one]$_F$.

Bill: #Yes, at least he got [one]$_F$. 
A lexical scale: gold medal > silver medal > bronze medal

(11) #Adam at least won a [gold]$_F$ medal. [TSE]

(12) A: We know that Adam has won a medal.
    What medal did Adam win? Did he win silver medal?
B: #Adam didn’t win a silver medal, but at least he won a [bronze]$_F$ medal. [BSE]

➢ To anticipate: TSE and BSE are of different nature!
Puzzle Five: Short Answers

Suppose there are three relevant individuals Adam, Bill and Chris in the discourse.

A: Who did John invite for his party?

B: At least [Adam and Bill]$_F$.  \(\sqrt{\text{EPI, #CON}}\)

B: John didn’t invite all of them/ all the three people, but at least he invited [Adam and Bill]$_F$.  \(\sqrt{\text{CON}}\)
Puzzle Five: Distribution

N&R: The **distribution** of EPI and CON is correlated with the **syntactic position** of **at least**.

(13) *At least* Adam won a [silver]$_F$ medal.  #EPI, √CON
(14) Adam *at least* won a [silver]$_F$ medal.  √EPI, √CON
(15) Adam won *at least* a [silver]$_F$ medal.  √EPI, #CON

- The same syntactic-semantic correlation holds beyond English (e.g., Chinese, Turkish and see also Grosz 2011)
Interim Summary

- Puzzles on *concessive at least*:
  - The cross-linguistic nature of the EPI-CON ambiguity;
  - Focus-sensitivity;
  - Compatibility with various scales;
  - Two scalar effects: TSE and BSE;
  - Not available with short answers;
  - The distribution of CON is correlated with the syntactic position of *at least*. 
A Formal Proposal
Concessive *at least*

- A propositional version

\[
\begin{align*}
\llbracket \text{at least } (C) \rrbracket^w, g &= \\
\lambda \alpha_{<st>}. \exists \gamma[\gamma \in C \land \gamma_w \land \forall \beta[\beta \in C \land \beta \neq \alpha \rightarrow \mu_c(\alpha) < \mu_c(\beta)]]
\end{align*}
\]

Semantic Ingredients of a concessive meaning

- A set of *focus* alternatives
- A *comparison relation* (ordering relation) between the prejacent and its focus alternatives
- An *evaluation* of the focus alternatives (Biezma 2013)
- A *propositional* quantificational domain

Pragmatics: The relevant higher alternatives are known to be false.
Only one *at least*

- A non-propositional version (by the Geach rule)

\[
[[\text{at least } (C)]]_{w,g} = \\
\lambda \alpha_{<\eta, \text{st}} \lambda P_{<\eta} . \exists \gamma \left[ \gamma \in C \land \gamma_w(P) \land \forall \beta [\beta \in C \land \beta \neq \alpha \rightarrow \mu_c(\alpha) < \mu_c(\beta)] \right]
\]

- A non-propositional version (by the backward Geach rule)

\[
[[\text{at least } (C)]]_{w,g} = \\
\lambda \alpha_{<\eta} \lambda P_{<\eta, \text{st}} . \exists \gamma \left[ \gamma \in C \land P_w(\gamma) \land \forall \beta [\beta \in C \land \beta \neq \alpha \rightarrow \mu_c(\alpha) < \mu_c(\beta)] \right]
\]

See Coppock & Beaver (2014) for discussions on type-shifting and exclusive particles.
Focus-Sensitivity

(16) Adam at least [brought drinks]_F.

✓ cook dinner > bring drinks > clean house


(17) a. LF: [at least(C) [[Adam [brought drinks]_F]~C]]

b. α ~C is defined iff

\[ [\alpha]^o \in C \land \exists \alpha' [\alpha' \neq \alpha \land [\alpha']^o \in C] \land C \subseteq [\alpha]^f \]

c. \[(17a)]^w, g = 1 \text{ iff} \]

\[ \exists \gamma [\gamma \in C \land \gamma_w \land \forall \beta [\beta \in C \land \beta \neq (\lambda w. \text{Adam bought}_w \text{ drinks})] \rightarrow \mu_c (\lambda w. \text{Adam bought}_w \text{ drinks}) < \mu_c (\beta)] \]

Assuming the pragmatic requirement is satisfied.
Focus-Sensitivity

(18) Adam at least brought [drinks]_F.
    ✓ cakes >drinks >chips

(19) a. LF: [at least(C) [[Adam brought [drinks]_F]~C]]

b. α ~C is defined iff
   \[\llbracket \alpha \rrbracket \circ \in C \land \exists \alpha' [\alpha' \neq \alpha \land \llbracket \alpha' \rrbracket \circ \in C] \land C \subseteq \llbracket \alpha \rrbracket^f\]

c. \[\llbracket (19a) \rrbracket^w, g = 1 \text{ iff} \]
   \[\exists \gamma [\gamma \in C \land \gamma^w \land \forall \beta [\beta \in C \land \beta \neq (\lambda w. \text{Adam bought}_{w} \text{drinks}) \rightarrow \mu_c (\lambda w. \text{Adam bought}_{w} \text{drinks}) < \mu_c (\beta)]\]

Assuming the pragmatic requirement is satisfied.
Variety of Scales

Numerical Scale (e.g., ...4 > 3 > 2...)

Plurality Scale (e.g., a ⊕ b ⊕ c > a ⊕ b > a, b)

Lexical Scale (e.g., gold > silver > bronze)

Pragmatic Scale (e.g., cherries > apples > bananas)

The dimension of $\mu_c$ is:

- contextually given;
- sensitive to interlocutors’ interests and goals in a given discourse (Biezma 2013)
The Top-of-the-Scale Effect (TSE)

(20) #Adam at least got [six]_F.

(21) a. LF: [at least](C) [[Adam brought [six]_F] ~ C]]

b. [at least (C)]^w.g =

λα<st>.∃γ[γ ∈ C ∧ γ_w ∧ ∀β[β ∈ C ∧ β ≠ α → μ_c(α) < μ_c(β)]]

c. C ∩ SUP = {Adam got six} A singleton set!

- The use of at least is vacuous (regardless of a concessive or epistemic one), i.e., equals to the bare form without at least
- TSE arises from a violation of semantic vacuity (Khatib 2013)
Semantic Vacuity

Al Khatib (2013):
Semantic operators **cannot** be used *vacuously*.

(22) #John only saw [every student]_<sub>F</sub>.

(23) Of Mary and Sue, #John only saw [Mary and Sue]_<sub>F</sub>.
   √John only saw [Mary]_<sub>F</sub>.
   √John only saw [Sue]_<sub>F</sub>. 
The Bottom-of-the-Scale Effect (BSE)

(24) #Adam at least got [one]$_F$.

(25) a. LF: [at least(C) [[Adam brought [one]$_F$]~C]]

b. $[[\text{at least (C)}]]^w \circ g =$

$$\lambda \alpha_{<st>} \cdot \exists \gamma [\gamma \in C \land \gamma_w \land \forall \beta [\beta \in C \land \beta \neq \alpha \rightarrow \mu_c(\alpha) < \mu_c(\beta)]]$$

Adam got one, Adam got two,

Adam got three, Adam got four,

Adam got five, Adam got six

c. $C = \text{SUP} = C \cap \text{SUP} =$

BSE arises from discourse uninformativity and can be repaired.

Sarcasm/ joking: an intentional flouting the maxim of quantity.
Short Answers

(26) A: Who did John invite?

B: At least [Adam and Bill]_F. √EPI, #CON

- My claim: the quantificational domain of concessive at least has to be propositional.
- The idea: What gets evaluated is a set of different circumstances (i.e., a set of propositional focus alternatives).

(27) a. [At least (C) [[Adam and Bill]_F] ~C]]
   b. [At least (C) [[Adam and Bill]_F] ~C]] [∀x John invited x]
   c. [At least (C) [[John invited [Adam and Bill]_F] ~C]]

✓ Compatible with 27a, b; Incompatible with 27c.
The distribution of CON

Sentential \textbf{at least} & Preverbal \textbf{at least}: \sqrt{\text{CON}}

(28) a. \([_{\text{IP}} \text{ at least } (C) \ [_{\text{IP}}[_{\text{IP}} \text{ Adam won a } [\text{silver}]_F \text{ medal}]] \sim C]\]
   b. \([_{\text{vP}} \text{ at least } (C)[_{\text{vP}}[_{\text{vP}} \text{ Adam won a } [\text{silver}]_F \text{ medal}]] \sim C]\]

Prenominal \textbf{at least}: \#CON

(29) \([_{\text{DP}} \text{ at least } (C) \ [_{\text{DP}}[_{\text{DP}} \text{ a } [\text{silver}]_F \text{ medal}] \sim C]] \ [\lambda x \text{ Adam won } x]\]

- A note on the distribution of EPI:

(30) \#At least/ \#Only/ \#Even Adam won a [silver]_F medal.
Conclusion

- **Concessive *at least***:
  - The cross-linguistic nature of the EPI-CON ambiguity;
  - Focus-sensitivity;
  - Compatibility with various scales;
  - Two scalar effects: TSE and BSE;
  - Not available with short answers;
  - The distribution of CON is correlated with the syntactic position of *at least*.

- The idea: only one *at least*
  - $\mu_c$ is an *evaluative* measure function in concessive *at least*
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References


References


The status of the higher alternatives

Presupposition vs. Assertion

✓ An invitation priority ranking: Adam $\succ$ Bill $\succ$ Chris

B: No, but at least he invited [Bill]$_F$.

B: Yes, at least he invited [Bill]$_F$.
A: Wait a minute! John didn’t invite Adam?
Biezma (2013)

A: How was your date?
B: Not bad, at least he was smart.

An Evaluative Scale
(based on discourse participants’ interests and goals in a context)

Great: smart & tall & funny
Good: smart & tall & ¬funny, smart & funny & ¬tall
       tall & funny & ¬smart
Ok:    smart & ¬tall & ¬funny,  
       tall & ¬funny & ¬smart,  
       funny & ¬tall & ¬smart
Bad:   ¬smart & ¬tall & ¬funny