A plethora of quantity expressions

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More than enough options

- More than

- At least

- No(t) fewer than

- Upwards of

- Minimally

- A minimum of

- In excess of

- or more

More than enough options

- More than
- *At least*
- *No(t) fewer than*
- Upwards of
- *Minimally*
- *A minimum of*
- In excess of
- *or more*

More than enough options

- More than 4
- *At least 5*
- *No(t) fewer than 5*
- Upwards of 4
- *Minimally 5*
- *A minimum of 5*
- In excess of 4
- *5 or more*

Possible analyses

- Non-obvious semantic differences between expressions

- Pragmatic factors determine nuances of usage and interpretation

- Some combination of the two

Geurts and Nouwen (2007)

- Semantic account of 'at least/most' versus 'more/fewer than'
  - 'At least *n*' seems to require possibility of exactly *n*
  - *At least it isn't raining*
    *More than it isn't raining
  - 'At most 2' !=> 'At most 3'
    'Fewer than 3' => 'Fewer than 4' (cf. Geurts et al. 2010)

Geurts and Nouwen (2007)

- Modality in the semantics of 'at least/most'
  - 'At least n': a group of cardinality n certainly exists, and it is possible that a larger group does
  - 'At most n': it is possible that a group of cardinality n exists, and it is certain that no larger group does

- How does the 'possibility' work?
- Wrong prediction for, e.g., conditionals:
  - *If you have at least four children, you are entitled to extra benefits*

Inconsistent naïve reasoning?

- *Mary had at most two drinks*   !=>
  Mary had at most three drinks

- *Anyone who had at most three drinks is fit to drive.*
  Mary had at most two drinks.
  Is Mary fit to drive?

- Modal meaning seems to be cancelled in (at least) the antecedent of the conditional

Nouwen (2010)

- Class A quantifiers
  - "more than", "fewer than", …
  - Quantity relative to a reference value
- Class B quantifiers
  - "at most/least", "maximally/minimally"…
  - Bounds on a degree property
  - cf. Schwarz, Buccola and Hamilton (2012)

Triangles have [Q] 10 sides

Pragmatic account?

- Nouwen's Class B quantifiers all encode non-strict comparison
  - Some evidence this is harder (Cummins and Katsos 2010), so these forms could be marked

  Triangles have at most 10 sides   +>
  *   S cannot affirm "triangles have fewer than 10 sides"*

- Why no implicature from "fewer than 10"?
  - Possible reason: salience of number used

(At least) two kinds of reasoning task

- Geurts et al. (2010)
  - Does the first sentence entail the second?
    Jane had at most two drinks
    Jane had at most three drinks

- Potential problems
  - Logically untrained participants: how do you obtain entailment without pragmatic intrusion?
  - Asking the question biases participant to draw the inference (Geurts and Pouscoulous 2009)…
  - …or maybe to reject it

(At least) two kinds of reasoning task

- Cummins and Katsos (2010)
  - *Anyone who had at most three drinks is fit to drive*
    Jane had at most two drinks
    Is it true that *Jane is fit to drive*?

- Potential problems
  - More difficult task
  - Risk of unnatural constructions, inviting paraphrase

Compromise

- Combine two tasks:
  - Pragmatic task, following Geurts et al. (2010)
  - Semantic task, following Cummins and Katsos (2010)

  using items based on BNC usage examples

- Question: does a given instance of usage
  - entail the same sentence with a different quantifier?
  - allow the substitution of a different quantifier while preserving assertability?

Possible outcomes

- Relating quantifier A to quantifier B
  - Passes both tests: A could be replaced by B
  - Passes semantic test only: A entails B, but the use of B suggests something that the use of A does not
  - Passes neither test: B means something that A does not
- And then the reverse…
  - Both tests passed both ways: A and B equivalent in meaning
  - Both one way, only semantic the other way: one conveys a pragmatic meaning that the other does not, etc.

Outlook

- Aim to mitigate risk of semantic overanalysis
  - Especially those based on dubious intuitions and atypical imagined examples of usage
- Suggest where a pragmatic account would be feasible
  - Aim to capture differences in meaning at the most general level possible

References

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