**Guess Who’s Coming (and Going): Bringing Perspective to the Rational Speech Acts Framework**

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**PERSPECTIVAL EXPRESSIONS**

Expressions like *come* and *to the right* are perspectival: in order to interpret them, the listener must decide from whose point-of-view they are being used. We propose a Rational Speech Acts model of interpreting perspectival expressions, positing that listeners reason jointly about the speaker's intended message and their choice of perspective.

**PERSPECTIVAL MOTION VERBS**

1. *Thera is coming to Northampton in an hour*
2. *Thera says that I am coming to the cafe.*

   • Convey information about the perspective holder’s location as well as their literal meaning (that someone is in motion)
   • Their perspectival component is presuppositional (Oshima 2006; Barlew 2017)
   • In English, allow 3 kinds of perspective-holders: speaker, addressee, and subjects of attitude verbs.

**LEXICAL SEMANTICS**

Semantics of *come* (Barlew 2017):
For any world w, perspective a, destination d, and entity x, \([\text{Come}(x, d)] \wedge a = T\) if:
   a) **Motion implication**: \([\exists e. \text{Move}(x, e) \wedge \text{Dest}(d, e)] \wedge a = T\)
   b) **Anchoring implication**: \([\exists y. \text{Loc}(y, d)] \wedge a = T\)

Semantics of *go*:
For any world w, perspective a, destination d, and entity x, \([\text{Go}(x, d)] \wedge a = T\) if:
   a) **Motion implication**: \([\exists e. \text{Move}(x, e) \wedge \text{Dest}(d, e)] \wedge a = T\)

**MODELING PERSPECTIVE**

**GOALS**
- Show how the listener decides which perspective is in use and generate experimentally falsifiable predictions
- Capture the preference for speaker perspectives explored in Harris (2012) and Roberts (2015)
- Show how the anti-perspectival interpretation of *go* can arise through pragmatic competition with *come*, as posited by Wilkins & Hill (1995) and Sudo (2018)

**RATIONAL SPEECH ACTS MODEL**

- Listeners interpret utterances according to a mental model of how the speaker picks an utterance (Frank & Goodman 2012).
- Has been applied to a variety of phenomena, including projective content (Qing et al. 2016); scalar implicatures (Potts et al. 2016); and lexical uncertainty (Bergen et al. 2012; Kao et al. 2014; Bergen et al. 2016).

**PERSPECTIVAL RSA MODEL**

**Literal listener:**
\[
L_0(w | m, a) \propto [m]^{w,a} p(w)
\]

**Literal speaker:**
\[
S_0(m | w, a) \propto \text{softmax}(\log L_0(w | m, a) - \text{Cost}(m) - \text{Cost}(a))
\]

**Pragmatic listener:**
\[
L_1(w, a | m) \propto S_0(m | w, a)p(w)p(a)
\]

As in lexical uncertainty RSA models (Bergen et al. 2012; Kao et al. 2014), the pragmatic listener reasons jointly over two terms, in this case, world and perspective.

**COST FUNCTIONS**

The perspective cost function penalizes non-speaker perspectives, reflecting the preference for speaker perspectives explored in Harris (2012). The utterance cost function penalizes complexity (Bergen et al. 2012).

**SET OF UTTERANCES**

- *X is going to Northampton*
- *X is coming to Northampton*

**SET OF PERSPECTIVES**

- **Sarah’s (speaker)**
- **Lydia’s (listener)**

**MODEL PREDICTIONS**

We implemented the model in WebPPL (Goodman & Stuhlmüller 2014) and ran 100,000 iterations using Markov Chain Monte Carlo sampling. We set uniform priors over utterances, worlds, and perspectives, and explored parameter settings of \((0,0.25,0.5,0.75,1.0)\) for perspective cost.

**THE LEXICAL SEMANTICS OF GO**

Our model shows how the anti-perspectival interpretation of *go* can arise via pragmatic competition with *come* even if its lexical semantics are not perspectival (Wilkins & Hill 1995; Sudo 2018).

**CONCLUSION**

We propose a RSA model for perspectival expressions.

**Key insights:**
1. Perspectival interpretations of *go* can arise through pragmatic competition even without a perspectival lexical semantics
2. Listeners should favor worlds that are consistent with multiple perspectives.

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