

Conversational Eliciture in a Bayesian Model of Language Interpretation

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Whereas sentence (1a) states that the employee was fired and was embezzling money, it also strongly invites the inference that the employee was fired *because* of the embezzling. An analogous inference is lacking in (1b), however: one does not normally infer that the firing was caused by the employee's hair color.

- (1) (1a) The boss fired the employee who was embezzling money.
(1b) The boss fired the employee who has red hair.

My talk will come in three connected parts (theoretical, experimental, computational). I will first argue (joint work with Jonathan Cohen) that these inferences do not follow directly from the procedures that have been claimed to underlie other sorts of pragmatic enrichment, such as from a violation of communicative (e.g., Gricean) norms based on principles of rationality/cooperativity (as in IMPLICATURE), or the need to complete/expand a proposition so as to appropriately fix truth-conditional content (as in Bach's IMPLICITURE or a Relevance Theory's EXPLICATURE). I will argue instead that they follow from more basic, general cognitive strategies for building mental models of the world that are known to be used to establish the coherence of passages across clauses. For want of a term of art, we brand the phenomenon as CONVERSATIONAL ELICITURE, selected to capture the fact that a speaker, by choosing a particular form of reference, intends to elicit such inferences on the part of her hearer.

I will then demonstrate how the importance of accounting for such inferences goes beyond the recovery of implicit communicated content, using pronoun interpretation as an example (joint work with Hannah Rohde). A passage completion experiment was conducted using stimuli like (1a-b) as context sentences, presented to participants with or without an additional pronoun prompt. Whereas accounts of pronoun interpretation that appeal primarily to surface-level contextual factors find little to distinguish contexts (1a-b), a Bayesian analysis (Kehler et al. 2008; Kehler & Rohde 2013) predicts a difference, through an interconnected chain of referential and coherence-driven dependencies. The results confirm that pronoun

*Contains joint work with Jonathan Cohen and with Hannah Rohde

interpretation biases, but not production biases, are sensitive to whether an eliciture is drawn, revealing precisely the asymmetry predicted by the Bayesian analysis.

Finally, I will briefly discuss the lessons this research carries for computational work. Computational approaches to language understanding are often reactive: language input triggers a search for an interpretation. Human language understanding, on the other hand, is proactive: comprehenders use context to create ‘top-down’ expectations about the ensuing message and integrate them with the ‘bottom-up’ evidence provided by the speaker’s utterance. The Bayesian model naturally captures these two contributors via its prior and likelihood terms. Because the work described above revealed that much of the complexity in human pronoun interpretation resides in contextual factors that condition the prior – the part of the equation that is independent of pronominalization – these results suggest a path for training systems with fine-grained contextual factors without the need for large annotated corpora.

References

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