

The Bidirectional Influence between Coherence Establishment and Pronoun Interpretation

Stevenson et al. (1994) demonstrated an apparent asymmetry between the production and interpretation of pronouns in passage completion studies. For instance, when writing completions to Source-Goal transfer-of-possession passages with a pronoun prompt (1a), participants are equally likely to interpret the pronoun to refer to the non-subject Goal (*Bill* in 1a) as to the subject-position Source (*John*). However, in passages with a full-stop prompt (1b), participants were much more likely to re-mention the subject/Source with a pronoun than a name, whereas they were much more likely to re-mention the non-subject/Goal with a name (see also Arnold 2001). In addition to positing the existence of thematic role biases in pronoun interpretation (here, favoring Goals over Sources), Stevenson et al. argue that the full-stop condition reveals an overlaid subject assignment bias. These two biases compete in stimuli like (1a) to result in the roughly 50/50 distribution of pronoun assignments.

- (1) a. John passed the comic to Bill. He _____
b. John passed the comic to Bill. _____

Rohde et al. (2006, 2007) followed-up Stevenson et al.'s study by showing that there is nothing 50/50 about the distribution of pronoun interpretations in passages like (1a) when the completions are broken down by coherence relations (Kehler, 2002). For instance, whereas the OCCASION relation was shown to exhibit a strong Goal bias, relations such as EXPLANATION and ELABORATION exhibited a strong Source bias, leading them to argue that coherence-driven biases underlie the effects that Stevenson et al. attributed to thematic roles. However, because Rohde et al.'s passages all contained pronoun prompts, their results cast no light on the asymmetry between the interpretation biases found in Stevenson et al.'s pronoun-prompt condition and the (apparently subject-driven) production biases found in their full-stop condition.

Whereas Rohde et al. demonstrate that coherence-driven expectations influence pronoun interpretation, a subject-oriented production bias predicts that a speaker's choice to use a pronoun rather than a name – even if its reference is completely ambiguous, as in (1a) – will shift the comprehender's expectations toward more Source-biased coherence relations in passages like (1a). To test this prediction, participants completed passages in a full-stop condition (1a) and in a pronoun-prompt condition (1b). Judges categorized the resulting passages by coherence relation and annotated the intended referents of all referring expressions. As predicted, the distribution of coherence relations between the two conditions differed: There were significantly more instances of Source-biased coherence relations in the pronoun-prompt condition. On the other hand, also as predicted, there was *no* significant difference in the distribution of coherence relations between the two conditions when the analysis was restricted to *those full-stop passages that participants began with a freely-generated pronoun*.

We argue that these results support a Bayesian probabilistic model of pronoun interpretation ($p(\textit{referent}|\textit{pronoun})$) that distinguishes the primary factors (e.g., coherence relations) that generate expectations about who will be mentioned next ($p(\textit{referent})$) from those factors (e.g., subjecthood) that primarily determine whether a speaker will choose to use a pronoun instead of a name ($p(\textit{pronoun}|\textit{referent})$). This model finds no need to include a separate subject assignment *interpretation* strategy as posited by Stevenson et al.