Grounding lexical choice in Bayesian inference

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Abstract: This paper proposes a rational analysis of referential inference. Referential inference is involved whenever a speaker has to provide an utterance that will effect some action on the part of their listener—a situation that occurs constantly in everyday language use. Our rational analysis of referring makes certain assumptions about the goal, environment, and computational constraints involved in referring. A simple Bayesian model is defined based on this rational analysis and is then fit to data from two experiments of Brennan & Clark's (1996) referential communication study. This model is one of the first attempts at using a Bayesian framework to model data from a referential communication task. While the model is able to make interesting predictions about the qualitative trends in the data, a more sophisticated model is needed to make more accurate quantitative predictions. This work represents the first steps in an effort to discover such a model.