

Bayesian update: from semantics/pragmatics to variation theory

The goal of this study is to model the discourse dynamicity associated with *addressee-honorific constructions*, e.g., Japanese *-mas*. We hypothesize that, by uttering an addressee-honorific construction, the addresser performatively affects the information on how s/he sees the addressee, and this update occurs cyclically as the conversation proceeds. Our task is to relate the addressee-honorific morpheme and this dynamicity.

McCready (2014), following Potts and Kawahara (2004) and Potts (2007), proposes a model in which (i) sociological/psychological factors create a *politeness degree* in the discourse (modeled as a subinterval of $[0, 1]$), (ii) the AH construction is appropriate *iff* the utterance denotes a range compatible with this context interval, and (iii) the contextual interval is affected only when an unacceptable sentence is produced. This paper develops McCready's approach by incorporating insights from Bayesian statistics into dynamic pragmatics (Savage 1954/1972; Gelman and et al. 2014). This study agrees with McCready's main ideas, but modifies his point (i) by providing a system where a politeness value is linked to sociological/pragmatic factors via a statistic model. Discovering and updating the parameter value for the weight of each sociological/grammatical factor is considered the main job of pragmatics. His claim (ii) is modified: the idea of appropriate-inappropriate dichotomy is replaced with a probabilistic scale. His claim (iii) is rejected; every time an utterance is uttered a parameter in the model is updated, not just when it is unacceptable under the current assumptions.

Lastly, it will be shown that the classic model proposed as the foundation of Variation Theory by Cedergren and Sankoff (1974), Paolillo (2002), and Tagliamonte (2006), is a special case of the system developed here. Traditionally understood under frequentist statistics, Variation Theory can also be viewed in Bayesian terms which emphasize the importance the dynamic change of variables in interaction with the data.

Cedergren, H. and Sankoff, D. (1974). Variable rules: performance as a statistical reflection of competence. *Language* **50**, 333-355.

Gelman, A., Carlin, J. B., Stern, H. S., Dunson, D. B., Vehtari, A., and Rubin, D. B. (2014). Bayesian data analysis (Vol. 2). Boca Raton, FL: CRC press.

McCready, E. (2014). A semantics for honorification with reference to Thai. In *28th pacific asia conference on language, information and computation*, 503–512

Paolillo, J. C. (2002). *Analyzing linguistic variation: statistical models and methods*. Stanford, CA: CSLI.

Potts, C. (2007). The expressive dimension. *Theoretical Linguistics* 33:165–197.

Potts, C., and Kawahara, S. (2004). Japanese honorifics as emotive definite descriptions. In

Proceedings of semantics and linguistic theory (Vol. 14, pp. 235-254).

Savage, L. J. (1954/1972) *The Foundation of Statistics*. John-Wiley.

Tagliamonte, Sali A. (2006). *Analyzing sociolinguistic variation*. Cambridge: CUP.