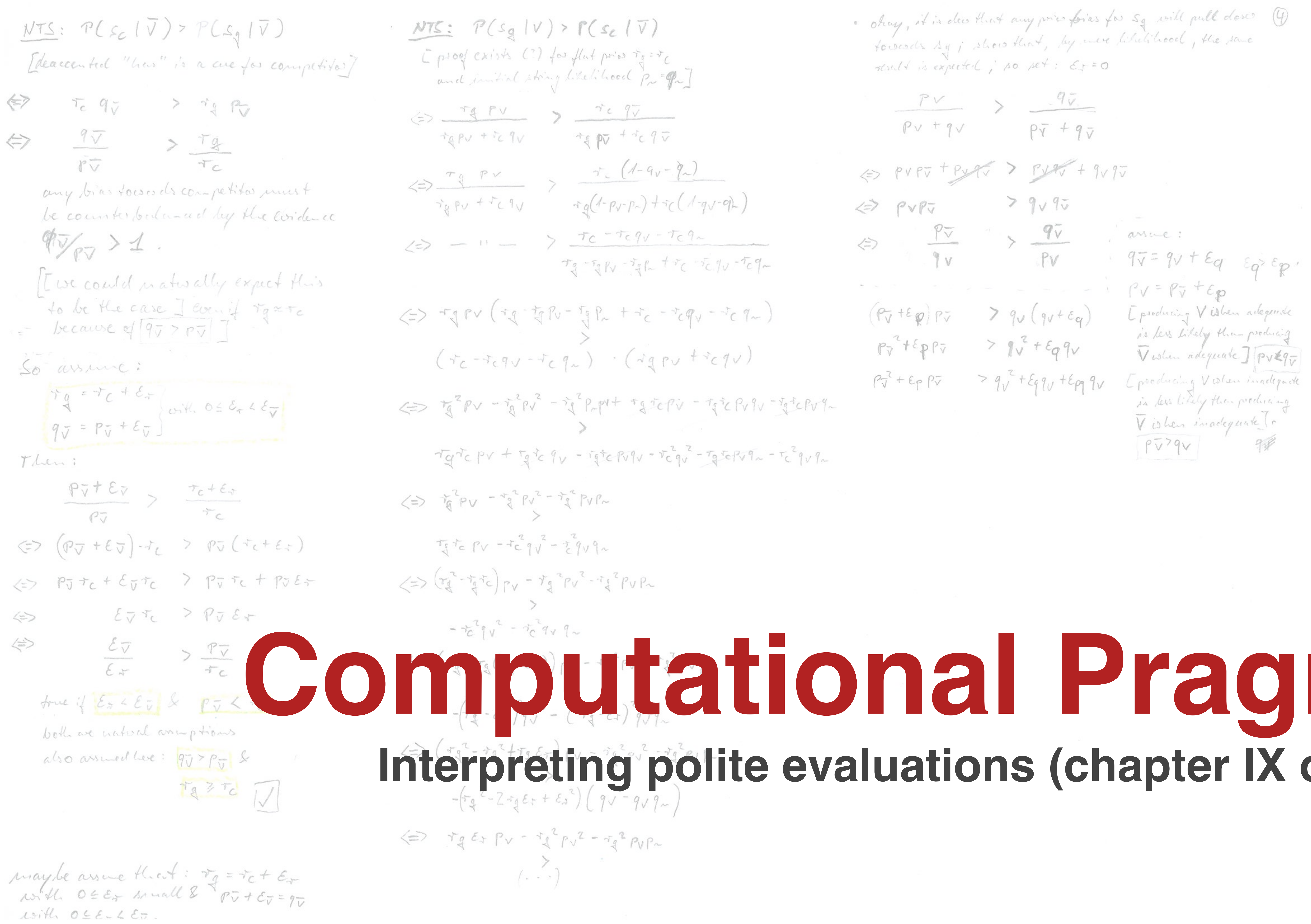
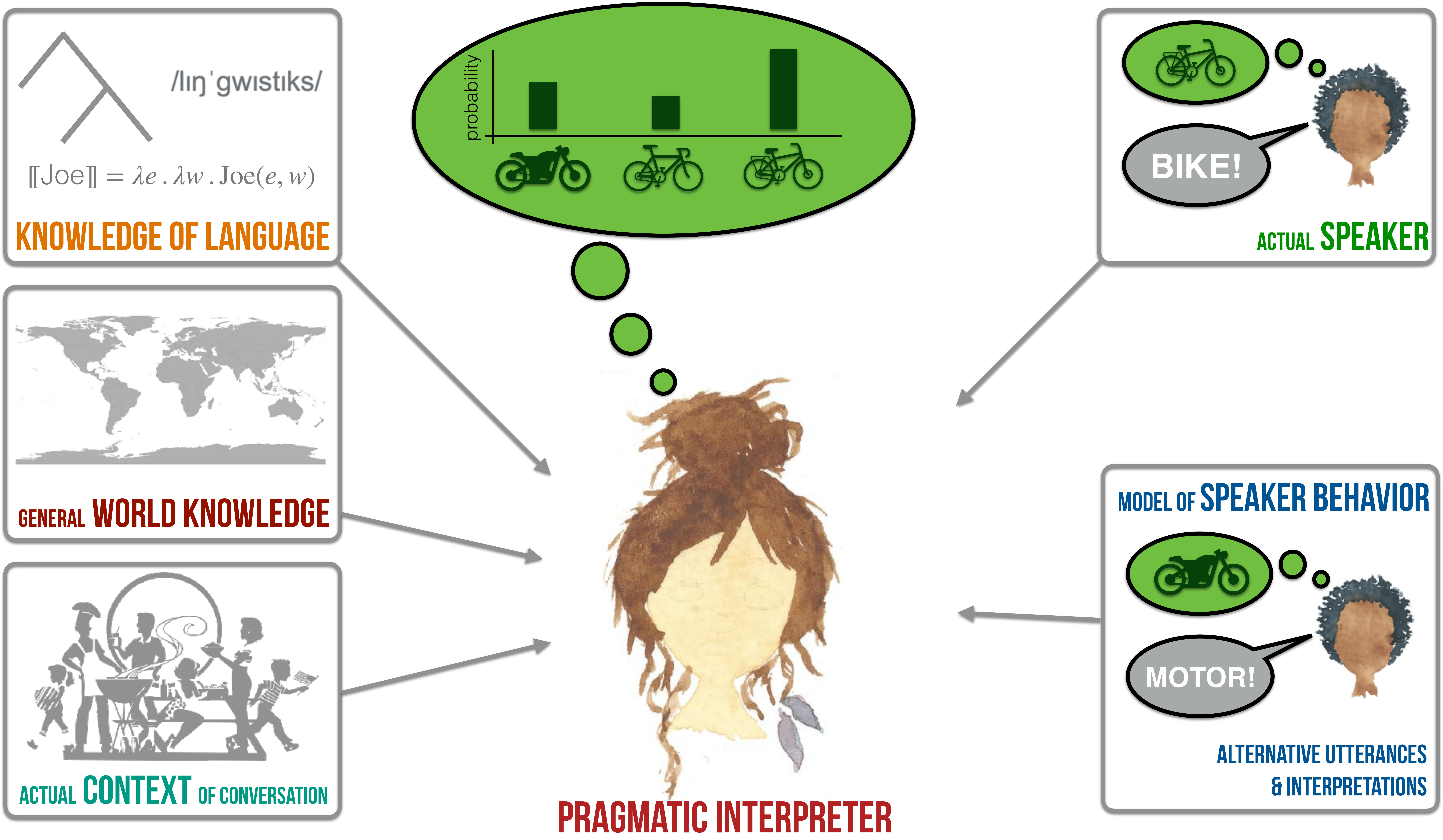


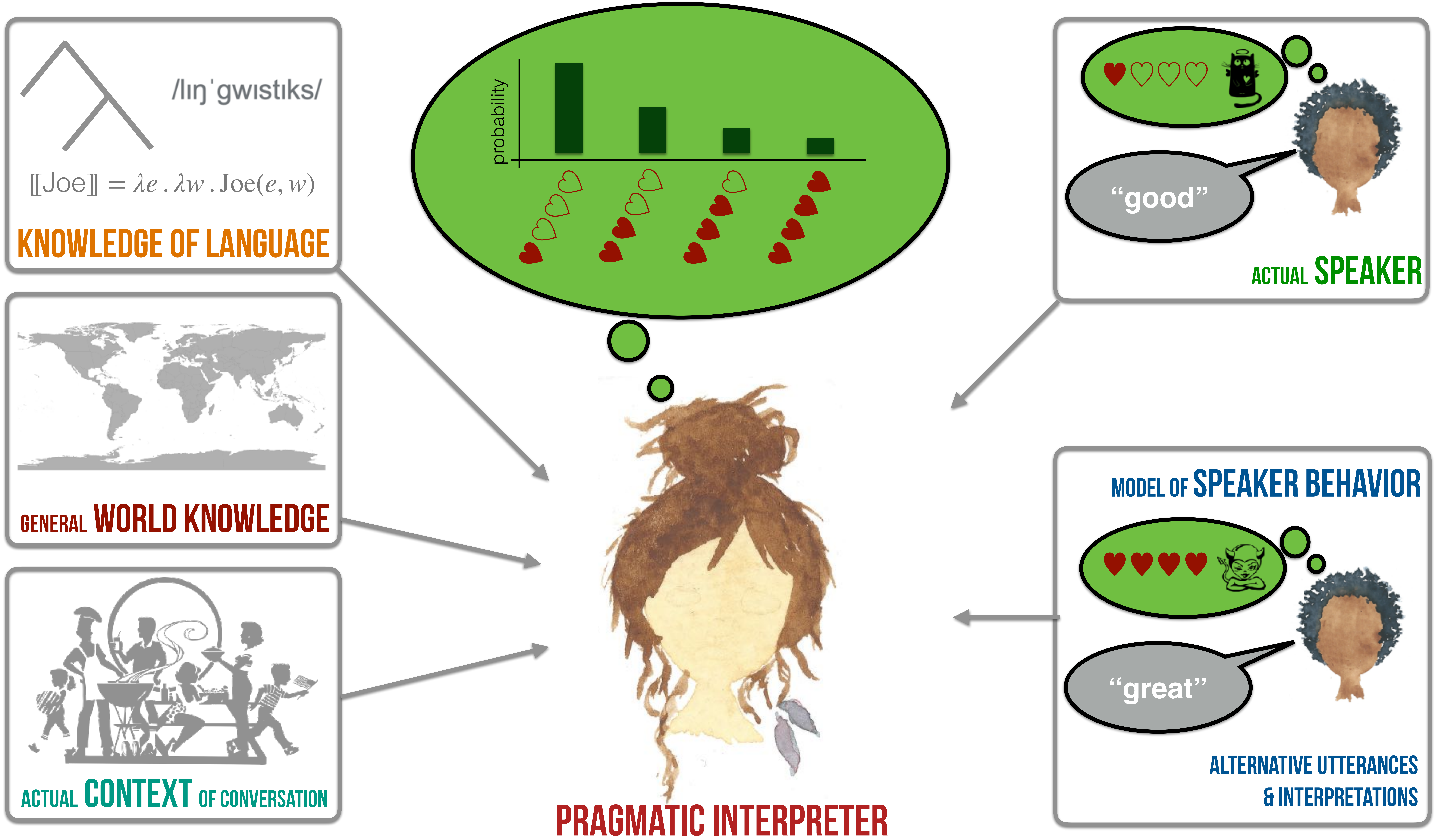
Computational Pragmatics

Interpreting polite evaluations (chapter IX of problang.org)

Session 9



/lɪŋˈgwɪstɪks/
$[\![\text{Joe}]\!] = \lambda e\,.\,\lambda w\,.\,\text{Joe}(e, w)$
KNOWLEDGE OF LANGUAGE
GENERAL WORLD KNOWLEDGE
ACTUAL CONTEXT OF CONVERSATION
probability
BIKE!
ACTUAL SPEAKER
MODEL OF SPEAKER BEHAVIOR
MOTOR!
ALTERNATIVE UTTERANCES
& INTERPRETATIONS
PRAGMATIC INTERPRETER



/lɪŋˈgwɪstɪks/
⟦Joe⟧ = λe . λw . Joe(e, w)
KNOWLEDGE OF LANGUAGE
GENERAL WORLD KNOWLEDGE
ACTUAL CONTEXT OF CONVERSATION
probability
PRAGMATIC INTERPRETER
"good"
ACTUAL SPEAKER
MODEL OF SPEAKER BEHAVIOR
"great"
ALTERNATIVE UTTERANCES
& INTERPRETATIONS


epistemic utility
informativity
KL-divergence
probability
probability
linear combination
polite
honest
social utility
"good"
PRAGMATIC SPEAKER
LITERAL INTERPRETER


probability
polite
honest
"good"
PRAGMATIC SPEAKER
probability
probability
polite
honest
PRAGMATIC INTERPRETER

modeling polite language use

Vanilla RSA

$$P_{L_0}(s \mid u) = P(s \mid [\![u]\!])$$

$$P_{S_1}(u \mid s) \propto \exp\left(\alpha\left(\log P_{L_0}(s \mid u) - \mathrm{C}(u)\right)\right)$$

$$P_{L_1}(s \mid u) \propto P(s)\ P_{S_1}(u \mid s)$$

polite language model

$$P_{L_0}(s \mid u) = P(s \mid [\![u]\!])$$

$$P_{S_1}(u \mid s, \varphi) \propto \exp\left(\alpha \; U(s, u, \varphi)\right)$$

$$U(s, u, \varphi) = \varphi \; \underbrace{\log P_{L_0}(s \mid u)}_{\text{epistemic util}} + (1-\varphi) \underbrace{\sum_{s'} P_{L_0}(s' \mid u) \; V(s')}_{\text{social util}}$$

$$P_{L_1}(s, \varphi \mid u) \propto P(s) \; P(\varphi) \; P_{S_1}(u \mid s, \varphi)$$

$$P_{S_2}(u \mid s, \varphi) \propto \exp\left(\alpha' \left(\log P_{L_1}(s, \varphi \mid u)\right)\right)$$

“self-representational speaker”