Computational Semantics and Pragmatics

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Outline for Today

- Discussion of the following paper:

Jordan & Walker (2005) Learning Content Selection Rules for Generating Object Descriptions in Dialogue, *Journal of Artificial Intelligence Research*, 24:157–194.

- Discussion of homework #1

Referring in Interactive Settings

- speakers don't get only one chance to produce a description – they can reformulate

- they receive online feedback from their addressees

- addressees themselves contribute to the referring process

- referring expressions do not emerge from solitary choices of the speaker (cf. Gricean maxims), but from an interactive process by speaker and addressee.

- speakers and addressees can agree on a description for a referent during the referring process – what works for a dyad may not work for another one

⇒ Referring is a joint process where speakers and addressees try to minimize collaborative effort.

Clark & Wilkes-Gibbs (1986) Referring as a collaborative process. *Cognition*, 22:1-39.

Brennan & Clark (1996) Conceptual Pacts and Lexical Choice, *Journal of Experimental Psychology*, 22(6):1482–1493.

Establishing Conceptual Pacts

When speakers and addressees arrieve at a successful expression (*ground* a reference), they create a *conceptual pact*, a temporary agreement about a conceptualisation for a particular entity.

A: A docksider.
B: A what?
A: Um.
B: Is that a kind of dog?
A: No, it's a kind of um leather shoe, kinda pennyloafer.
B: Okay, okay, got it.

⇒ Thereafter "the pennyloafer"

Conceptual pacts

- overwrite quantity maxims: they will continue to call it *'the pennyloafer'* even when it does not need to be distinguished from other shoes

- are partner-specific: they will do so only when interacting with the dialogue partner with whom the expression had been grounded.

Brennan & Clark (1996) Conceptual Pacts and Lexical Choice, *Jrnl. of Experimental Psychology*, 22(6):1482–1493.

Establishing Conceptual Pacts

- The *'conceptual pacts'* model emphasises the *anaphoric aspects* (*'historic'*) of the collaborative referring process

  * **Recency**: dialogue participants tend to retain the most recent successful reference to an object.
  * **Frequency of use**: more frequently used conceptualisations are more durable in memory; the more often an expression is used, the more firmly established it becomes.
  * **Partner specificity**: when speakers create conceptual pacts (temporary agreements about a conceptualisation) with particular addressees.

- But these are not the only forces at play. . .

The Dynamics of Referring Expressions

Ways of referring are not static but evolve during dialogue:

- expressions are modified according to interlocutors' feedback,
- they become shorter as grounding is more firmly established.

Utterances by one director referring to the same figure on trials 1 to 6:

1. All right, the next one looks like a person who's ice skating, except they're sticking two arms out in front.
2. Um, the next one's the person ice skating that has two arms?
3. The fourth one is the person ice skating, with two arms.
4. The next one's the ice skater.
5. The fourth one's the ice skater.
6. The ice skater.

Experiments by Krauss & Weinheimer (1966) showed that this happens when talking to responsive partners, but not to a tape recorders.

Krauss & Weinheimer (1996) Concurrent feedback, confirmation, and the encoding of referents in verbal communication, *Journal of Personality and Social Psychology*, 4:343–346.

Recommended Readings

- Brennan, Galati, & Kuhlen (2010) Two minds, one dialog: Coordinating speaking and understanding. In *Psychology of Learning and Motivation*, vol. 53.
- David Schlangen (2005) Modelling dialogue: Challenges and approaches. *Künstliche Intelligenz*, 3:23-28.
- Raquel Fernández (to appear) Dialogue. *Oxford Handbook of Computational Linguistics*, Oxford University Press. [Draft]

- Jonathan Ginzburg (2012) *The Interactive Stance*, Oxford University Press.
- Herb Clark (1996) *Using Language*, Cambridge University Press.