Formalising backchannel relevance spaces

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1 Introduction

Dialogue is co-constructed by multiple interlocutors with the traditional split between *speaker* and *hearer* inadequate to describe how this proceeds. Even in more monological contexts (e.g. lectures, narratives), listeners provide feedback to demonstrate whether or not they have *grounded* the conversation thus far Clark (1996), using positive (backchannels) or negative (repair) feedback (cf. Bavelas et al., 2012). Furthermore, this feedback affects how the conversation unfolds even when it does not contribute any semantic content Bavelas et al. (2000).

Evidence suggests that there are specific places where it is salient for these to occur. These *backchannel relevance spaces* (BRSs Heldner et al., 2013), are analogous to transition relevance places which are places where the turn may shift between speakers (TRPs Sacks et al., 1974), but more common. As with TRPs, feedback is optional at these points, and there may be many reasons why any given BRS does not contain a backchannel or other feedback (e.g. individual variation). There may also be subtle nonverbal feedback, which complicates efforts to automatically predict where backchannels occur in dialogue (a.o. Cathcart et al., 2003).

Interestingly, despite how common BRSs are, feedback is not salient just anywhere within turns in a dialogue. Psychological evidence using avatars suggests that randomly placed backchannels disrupt the flow of dialogue, and decrease rapport (Poppe et al., 2011).

We show how Dynamic Syntax (DS: Kempson et al., 2001; Cann et al., 2005) can provide a formal model of where feedback should be salient: backchannels are taken to either signal (when produced), or trigger (when parsed) the execution of the DS computational action of Completion. This allows us to explain feedback that comes after a semantic unit of information, thus indicating that it has been grounded. Further, it predicts that parse paths leading to further qualification of e.g. noun phrases become less likely when followed by a backchannel (e.g. in "A: My friend. B: mmm", A is less likely to further qualify/extend 'My friend'). We will also show how this model can explain examples where feedback seemingly precedes the completion of a semantic unit, where that completion is highly predictable (as hypothesised by Duncan and Niederehe, 1974): "... an early back channel may not be merely misplaced, but rather it may carry significant information for the interaction ... [and] may indicate, not only that the auditor is following the speaker's message, but also that the auditor is actually ahead of it." Finally we will show how this model can account for some otherwise puzzling experimental data reported in Howes et al. (2012).

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