

Collective States of Understanding

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Abstract

This paper uses an analysis of ellipsis in multi-party interaction to investigate the relative accessibility of dialogue context/common ground to direct addressees and side participants. The results show that side-participants frequently make direct use of the common ground established between a speaker and addressee despite the fact that, by definition, they did not directly collaborate with the speaker on constructing it. Different individuals can thus reach the same level of grounding through different levels of feedback. We conclude that multiparty dialogue leads to distinct collective states of understanding that are not reducible to the component dyadic interactions.

1 Introduction

Goffman (1981) introduced a distinction between *ratified participants* and *overhearers* in a conversation. The former category is further decomposed into *direct addressees* (*DA*) and *side participants* (*SP*) of an utterance. The ratified participants are those who hold certain responsibilities towards each other for ensuring mutual-understanding (Clark and Schaefer, 1992):

Principle of Responsibility: In a conversation, the parties to it are each responsible for keeping track of what is said, and for enabling the other parties to keep track of what is said.

In dyadic interactions, mutual-understanding or ‘grounding’ is achieved through direct collaboration between the speaker and addressee. The speaker expects the addressee to provide evidence that he is understanding the speaker’s utterance “to criteria sufficient for current purposes” (Clark and Brennan, 1991). In multi-party conversations the situation is more complex.

For example, if A makes an anaphoric reference to some entity, while addressing B with C present as a side-participant, he intends both B AND C to resolve the reference. However, by definition, the speaker does not collaborate as actively with side-participants. They “have to be satisfied with clearing up misunderstandings in natural breaks in their talk” (Clark and Schaefer, 1992). A *SP* will normally wait until speaker and addressee have carried out their *presentation* and *acceptance* phases, before attempting to rectify any possible misalignment with the speaker. On this account grounding between speaker and direct addressee always takes precedence.

By definition, *SPs* and *DAs* give different evidence of grounding of a speaker’s utterances; *DA*’s respond overtly and directly but *SPs* provide weaker evidence of grounding – primarily continued attention and withholding of repair. Consequently, if we understand level of grounding as being directly dependent on the level of ‘evidence of acceptance’ provided then we expect differences in the relative accessibility of the common ground for the different pairs of participants; roughly, Speaker & *DA* > Speaker and *SP* > *SP* and *DA*.

In a review article Branigan (2006) points out that

there isn't yet any empirical evidence that *DAs* and *SPs* differ in the accumulation of common ground. In this paper we provide evidence that, in at least one case, the common ground is, in fact, equally accessible to *SPs* and *DAs*. We argue that this is evidence of *collective states of understanding* that are not reducible to the component dyadic interactions. It appears that in modelling multilogue we need to account for the possibility that one participant can stand proxy, in terms of grounding, for another (ratified) participant.

1.1 Side Participants in the Tangram Task

The key empirical evidence relating to grounding by *SPs* comes from the tangram experiments carried out by Clark and co-workers. The essence of these tasks is that on each trial one person, the 'Director' (D), describes a series of tangram figures so that another, the 'Matcher' (M) can identify them. If the same figure recurs on a number of trials the Director and Matcher quickly converge on some concise definite or nominal description for the figure. For example, they go from "Okay the next one is ... resembles someone that looks like they're trying to climb stairs. There's two feet, one is way above the other and—" on trial one to "Um, stair climber" on trial 6 (Wilkes-Gibbs and Clark, 1992), p.184).

Wilkes-Gibbs and Clark (1992) carried out a two phase variation on this basic task. The first phase has two conditions. In one an additional 'silent' *SP* sits next to the director. In another an 'omniscient overhearer' (*OO*) follows all of phase 1 on video but is not co-present in the room. In both conditions the D is aware of the additional participants and they are both able to see each figure as the D describes it. In the second phase the *SP* or *OO* take on the role of matcher for another six trials. The D and former *SP* pairs are quicker, use fewer words and produce more definite/nominal description types than the D and former *OO* pairs; despite the fact that the *SP* and *OO* ostensibly have the same prior information.

Although this is clear evidence that side-participants reach a higher level of understanding than overhearers it is inconclusive about the *SP* - *DA* contrast. The *SP* - *DA* distinction relates to participant status with respect to utterances in the same conversation (Goffman, 1981). The experimental device of two task phases effectively breaks

the interaction into two successive conversations where a direct comparison of *SP* and *DA* with respect to the same interaction is not made. The closest approximation is the comparison of the last trial of phase one and the first trial of phase 2 but this is equivocal. The Director-*SP* pairs are slower and use more words than the original Director-Matcher pairs but do make the same number of definite/nominal references. The task situation is also unusual in that in phase one the *SP* is positioned beside the Director and opposite the Matcher. The participants mutually know that the *SP* has direct visual access to the actual referents of the referring expressions whereas the Matcher does not. Arguably this gives the *SP* an unusually high degree of access to the common ground.

In this paper we compare the relative accessibility of common ground to different participants in a **single** multi-party conversation. In order to improve the ecological validity of the analysis we focus on (relatively) naturalistic dialogues between three or four participants. To provide a more sensitive index of the kinds of information that are assumed to be in the common ground we focus on the use of different kinds of ellipsis. We argue that, in fact, *SPs* and *DAs* are in all relevant respects equivalent and that this is evidence for distinct collective states of understanding that are not reducible to the component dyadic interactions. Like Branigan(2006) we argue that the ultimate difference between *SP* and *DA* grounding if any, is due to the goals of these participants in the conversation i.e. to what they individually judge to be 'sufficient for current purposes' in the context of the current activity.

2 Method

Before describing the analysis in more detail we first introduce the corpus used.

2.1 The AMI Corpus

The AMI Meeting Corpus (Carletta, 2006) is a multi-modal (video, audio and text) set of 100 hours of meeting recordings. These consist of a set of naturally occurring and a set of scenario-based meetings. In this paper 10 of the naturally occurring meetings-roughly 9 hours of conversation- have been analysed. Only the video, audio and raw transcripts have

been used. For more information on AMI refer to <http://www.idiap.ch/amicorpus>.

2.2 Side Participants to Strips of Dyadic Talk

For reasons which will become clear, in order to make claims about a speaker's assumptions regarding *SP* understanding, we extracted all strips of dyadic talk from each meeting. These are segments during which there is no explicit feedback (except 'continued attention'), from participants other than speaker and addressee. This provides identifiable *SP*'s and *DA*'s for each dyadic segment (see below). Based on the turn taking model in (Sacks et al., 1974), these dyadic segments of talk end in one of two ways:

1. **Self-selected side participant (SP):** a *SP* wins the floor by exploiting a gap in the dyadic talk, or she interrupts the talk mid-utterance.
2. **Nominated by Last Speaker (LS):** Last speaker hands the floor over to a *SP*, by directly addressing her.

It is in general a current speaker's paralinguistic behaviour (gaze and body orientation) and/or the content of her utterance (e.g. use of personal pronouns accompanied by gaze) which together determine whom she is directly addressing. When a *SP* is directly nominated (addressed) at the end of a segment, it's the same information which signals a change in the speaker's set of *DAs*. Note that the *DA* is determined through reference exclusively to the speaker's behaviour. Also we take into account that the speaker might be 'addressing' the other participant in the dyad while making a *SP* the intended recipient as when the *SP* is the 'butt' of a speaker's joke (Levinson, 1988).

3 Analysis of Ellipsis

At the end of a dyadic segment the participants hold certain assumptions about each other's level of understanding. One way these assumptions are made manifest is in the *elliptical* expressions employed by the speaker.

Ellipsis is a mono/dialogical technique in producing expressions, whereby single or multiple sentence constituents are omitted. The 'complete'

meaning of such elliptical expressions can be recovered (resolved) by reference to previous utterances/sentences the contents of which are immediately present in context.

Ellipsis is central to this analysis since it indexes the extent to which the meaning of an utterance depends directly on the context of the preceding dyadic exchange i.e. the extent to which participants assume the common ground established during the dyadic exchange is accessible to each other. More specifically, at the point when the dyadic exchange ends we have the opportunity to compare a) the pattern of use of ellipsis by the last speaker to the *SP* with b) the pattern used by the *SP* to the last speaker (*LS*).

If the *LS* addresses the *SP* elliptically they are demonstrating their assumption that the *SP* grounded the antecedent referents/propositions during the prior dyadic conversation. Conversely when the *SP* self-selects (interrupts), the use of ellipsis demonstrates the extent to which the *SP*'s directly access the other participants' common ground.

Our first level classification distinguishes four categories:

- **CD (context-dependent):** Utterance contains Syntactic Ellipsis, Anaphoric OR Definite reference.
- **CT (continuation of talk):** In terms of semantic content, the utterance could intuitively be thought of as the continuation of the talk in the segment, i.e. utterance does not have a coherent meaning without the background of the dyadic talk.
- **BC (backchannel):** Having been 'silent' throughout the dyadic segment, the *SP* merely starts to backchannel again.
- **NC (new context):** Introduction of a new context/topic.

This scheme yields the following segment types: *LS_{CD}*, *LS_{CT}*, *LS_{BC}*, *LS_{NC}*, *SP_{CD}*, *SP_{CT}*, *SP_{BC}*, *SP_{NC}*.

For a second, more detailed level of analysis that takes the kind of ellipsis into account we further decomposed the *CD* category:

3.1 Ellipsis Taxonomy

1. **Non-Sentential Utterances (NSU):** Fragmentary but intuitively complete utterances, exclusive to dialogue that are not sentential in their outward form. These utterances have been coded according to the typology developed in (Fernandez and Ginzburg, 2002). We have further collapsed these types according to their role/function in conversation, into the following more general categories:

- **Direct Answers (DA):** Fragments used as answers to questions. Includes *Polar Answers* and *Short Answers*.
- **Clarification Requests (CR):** Fragments in question form, used to request clarification or further elaboration of a previous utterance. Includes *Clarification Ellipses* and *Sluices*.
- **Modifiers (MOD):** In their fully resolved form, these are statements somehow modifying a previous utterance in conversation. Includes *Propositional Modifiers*, *Factual Modifiers*, *Fillers* and *Fragments introduced by Connectives*.

2. **Sentential Ellipsis:** These are contained in utterances which are sentential, but semantically ambiguous as a result of either the full omission a syntactic constituent or its replacement by an auxiliary. In the case of stand-alone uses of propositional attitude verbs (know, see, believe ...), the whole of the antecedent utterance gets elided. Often the omitted/replaced syntactic constituent (not necessarily atomic/terminal) can be uniquely identified and recovered from context. Unlike NSU's these are not exclusive to dialogue. Here's an example:

Verb Phrase (VP) Ellipsis:

A: Will you please go to the market tomorrow?

B: I already told you I will. [Resolved Content: "I already told you I will go to the market tomorrow"]

We have developed an ad hoc taxonomy analogous to that for NSU's, based on the role/function of the utterance containing the ellipsis. Bear in mind that the taxonomy is being

used merely to compare what *SPs* and *DAs* can 'do' elliptically.

- **Direct Answers (DA):** Utterance containing the ellipsis is an answer to a question, like the above example.
- **Request for confirmation (RC):** Partly redundant, these are tag questions used to request confirmation or initiate disputation. "A: I got an A in Biology. B: Did you? A: Yes. I got the results today."
- **Statement (ST):** General category containing all statements, excluding Direct Answers.
- **Query:** All elliptical questions excluding Requests for Confirmation.

3. Anaphora (Anaph)

4. Definite/Nominal Reference (DR)

To provide a baseline comparison of ellipsis types in ordinary dialogue we also coded 10 peoples conversations from the British National Corpus (BNC).

4 Results and Discussion

Table 1 shows dyadic segment type counts, for 10 AMI meetings (roughly 9 hours of conversation).

4.1 Segments of type LS_{CD} : Assumptions about *SPs*

All such segments indicate that the last speaker, in producing elliptical utterances addressing a *SP*, is tacitly making the assumption that the *SP* would be able to resolve the ellipses employed, which in turn depends directly on the *SP* having grounded the antecedent utterance(s) of the ellipsis contained within the segment, for which the *SP* did not produce any explicit feedback. Note that 'Continued attention' by the *SP(s)* is very frequently not monitored by any of the participants in the dyad. Eye contact is more or less exclusively maintained between the two and them alone. Nevertheless the *SP* is 'expected' by the last speaker to have grounded the antecedent utterance(s). Furthermore, none of these segments were followed by any form of Repair/Clarification by the *SP*. In all of them the *SP* seems to be coping perfectly well with the elliptical utterance, and the conversation goes on

	<i>CD</i>	<i>CT</i>	<i>NC</i>	<i>BC</i>
<i>LS</i>	20	4	3	4
<i>SP</i>	100	33	1	0

Table 1: Dyadic Segment Type Counts

smoothly.

This evidence seems to support the claim in (Branigan, 2006) that speakers have very similar and at times even higher expectations from *SPs* compared to those from *DAs*, concerning the participant’s ability to resolve these ellipses/references. Nevertheless Branigan also proposes that these expectations from *SPs* should often be weaker.

The following are excerpts from AML, showing the different kinds of ellipsis employed by the last speakers:

Anaphoric chains: distant antecedent recognised by SP

- B: Yeah. But that still won’t tell you. well howmany **tangrams** are there that they’re using? Fifteen or something.
- C: Uh no, not even that. They’ve of this relevant type
- B: Uh-huh. So that’s not gonna so that’s not gonna tell you anything about **their** relative complexity. . . You still need some kinda scale for **these things**. Ca uh if you look at **em**, do you just know?
- C: Mm no. [laugh] Well I don’t. I’m not .
- B: No. I wouldn’t either. What about him? I if Mister Geometry. I mean, you know. Can you tell just by looking at **these** how hard people find them?
- A: No, I’m afraid not. I wouldn’t know.

In the above excerpt, also note how similar C’s (the *DA*) last utterance is to A’s (the *SP*) : VP ellipsis in C’s versus whole sentence ellipsis in A’s utterance.

The whole segment as antecedent

- B: [. . . 6 utterances so far exchanged between B and C] Data I think we should keep in.
- C: OK. [laugh]

- B: Because it’s would be the same as feature.
- B: Or spec spectrum. I think data’s the same as spectrum . . .
- C: I do I still don’t think that goes in. But .
- C: yeah, I still don’t like it. But
- B: Final view, Bob?
- A: I don’t have passionate feelings.

Here, B’s last utterance explicitly addressing A, is highly elliptical with no particular utterance as antecedent, i.e. the resolved content of the utterance depends on the whole segment between B and C. B expects A (Bob) to have grasped the issue under discussion. One would expect A here to initiate clarification if he really didn’t know what B was asking.

We think that the speaker’s assumptions about *SPs* are among other things, strongly mediated by the speaker’s prior beliefs (before the conversation) about the *SP* and his relevant knowledge. In the meeting from which the above was extracted, A is a supervisor with whom the rest of the participants check their results as they go along. So, firstly if cooperative, he should be ‘paying attention’ to the dyadic interactions in which he is not directly involved (most of the meeting). Secondly, the rest of the participants believe to begin with, that he would understand such technical issues under discussion. So perhaps, it is some notion of the well known ‘lab coat effect’ that could justify such high expectations (e.g. see (Healey and Mills, 2006), page 5).

4.2 Segments of type *SP_{CD}*: Side participant access to ‘communal’ common ground

In this section we will argue that *SPs* have the same kind of access through the same techniques, to the ‘communal’ common ground, as the participants directly involved in collaboratively securing it (speaker and addressee). These segments which comprise the largest class in this analysis, end when a *SP* interjects producing an elliptical and hence context-dependent utterance. Again here, the antecedents of the ellipses, lie within the dyadic segments.

Table 2 below shows the ellipses identified in these *SP* utterances. They have been classified according to the taxonomy described in section 3.1. In order to assess whether there is a difference between the use of ellipsis types by *SPs* and the baseline

- typical frequency of use independent of both the number of participants in the conversation and the status of the participant upon employing the ellipsis
 - used in ordinary dialogue, we compared the frequency of ellipses of each type with that found in the BNC. Taking into consideration all categories in Table 2 (merging Sentential and non-Sentential DAs and ignoring DR since it wasn't coded for the BNC) there is a reliable difference ($Chi^2_6 = 14.6, p = 0.02$). However, as Table 2 indicates the main difference is in the relative frequency of direct answers which account for 26% of instances in the BNC but only 12% of instances in AMI. If this category is ignored we find no reliable difference between *SP*'s and the baseline ($Chi^2_5 = 4.33, p = 0.50$).

The difference in frequency of use of direct answers is essentially an artefact of our coding scheme. As noted above the *SP* ellipses are those where they have nominated themselves as next speaker by interjecting. Consequently, direct answers by *SP*'s to questions –which are by definition not directed at *SP*'s– are much rarer. Subject to this caveat, we can conclude that the pattern of use of different ellipsis types by *SP*'s is not in fact distinguishable from the pattern of use typical of participants in ordinary dialogue.

What now follows is a discussion over a set of examples from AMI comparing the kinds of access to context through various elliptical phenomena, possible by *SP*'s to those by *DAs*.

4.2.1 Anaphora with distant whole utterance as antecedent

- B: Um so this person didn't ha um the obviously didn't know about capitalisation. So just about every utterance needs to be capitalised and needs the end punctuation. (1)
- D: Mm-hmm. (2)
- D: You know, when you get like um someone's talking and there's they sort of pause in the middle of a sentence that's long enough for it to put a break in, (3)
- B: Yeah (4)
- D: but they're actually sort of carrying on the sentence, do you have to capitalise each time you transcribe a bit of it's mid (5)

- B: Um, no no no. (6)
- D: No no no no. Yeah. (7)
- B: Whatever um makes sense to you. (8)
- D: Okay. (9)
- B: Um [cough] but no, it it can continue into the next segment and that's perfectly fine. (10)
- D: Yeah. Just okay. So it's put the hyphen and then. (11)
- C: Yeah. (12)
- C: I think that's actually the only case where you don't (13)
- C: or where you're not supposed to capitalise, right? (15)

Utterances 1 to 12 above form a segment of type *SP_{CD}* which is terminated by *C*. The anaphora "that" in 13 can only be resolved with 3 as an antecedent. An issue is here raised initially by *B* to which *D* responds by asking a question (utterance 3). All the way down to utterance 12 the question is under discussion exclusively between *B* and *D*. *C* then produces utterance 13 which can intuitively be thought of as an answer to *D*'s initial question. In other words it could have been produced by *B* (the *DA*) adjacently to the initial question. Note here that *C* has had to re-raise the context in order to make her contribution. I.e. a simple "No" (a Negative Polar Answer) like *B*'s initial response, or even the less elliptical "I think that's actually the only case where you don't.", would most probably be infelicitous (the other party would be very likely to initiate clarification). But this seems to be the effect of antecedent distance alone, since all of the NSU classes in (Fernandez and Ginzburg, 2002) are possible by *SP*'s at the end of the segments in question, but clearly not at such high antecedent distances. This will be a little further elaborated in section 4.4.

4.2.2 Non-Sentential Utterances (NSU)

Factual Modifier

- C: When I did my masters um I took uh SP1 and SP2 with Simon King.
- A: You survived SP1 and SP2.[laugh]
- C: Yes. And actually I've done quite well in SP1, I've done it a bit worse in SP2 because it was a l a lot more challenging.

	Non-Sentential			Sentential				Other		Tot
	DA(NSU)	CR	MOD	ST	DA	Query	RC	DR	Anaph	
AMI	14	9	12	10	0	4	6	11	58	124
Baseline(BNC)	154	73	46	46	21	12	20	not coded	303	675

Table 2: Ellipses employed by *SPs* terminating *SP_{CD}* segments compared to the baseline (BNC)

- A: We have two new teachers for SP2.
 B: **Too many.** [laugh]

The excerpt above shows an instance of a *SP* Factual Modifier (boldfaced in the excerpt) produced by *B* adjacently to its antecedent. The same utterance “Too many.” by the *DA* (*B* here) would have been perfectly felicitous (implies in this case, equivalence of *SP* and *DA* access to context).

Among the NSU classes in (Fernandez and Ginzburg, 2002), Clarification Ellipsis (CE) is of a special status, since it is known to be a common technique used in dyadic dialogue to ground utterances which weren’t sufficiently understood by the recipient. There were very few CEs identified in this analysis. However, we do know that *SPs* can and do in fact initiate elliptical clarification, by exploiting gaps in dyadic talk:

Clarification Ellipsis (CE)

- C: What does cutest spelling mean? (1)
 B: oh, she spelled cutest um with an L, (2)
 C: oh, okay. (3)
 B: so that that’s just something I pointed out. (4)
 D: oh yeah. (5)
 A: Cutest? [Gazing at D. Direct Addressee is D here.](6)
 D: E.S.T. (7)
 A: Thank you.[laugh] (8)

D and A above are both *SPs* to the dyadic segment between B and C. The CE produced by A is very interestingly addressed at D who is also a *SP* to what’s being clarified, which shows that in multi-party dialogue all the ratified participants have obligations/responsibilities towards one another.

This example also indicates clearly that there can be varying levels of understanding among the *SPs* themselves. However, note that we are not claiming by any means that in multi-party situations, the

participants always reach a collective state of understanding. The claim is rather that such collective states do exist, and that they’re often assumed by the parties involved.

Furthermore, it’s interesting to see that had it been B (the *DA* of the antecedent utterance) who didn’t understand, she would have produced the CE locally (as opposed to a distance of 5 here) which is what’s generally expected in dyadic dialogue. This issue is further discussed in section 4.4 for future work on distance.

4.2.3 Sentential Ellipsis

These are the ellipses not covered by the NSU typology in (Fernandez and Ginzburg, 2002). The taxonomy described in section 3.1 has been used to classify these.

local VP ellipsis by SP

- B: [5 utterances exchanged between B and C so far in the segment] but I I I do know the type of scenario you’re describing. I just it’s just hard to answer that without hearing something. Mm.
 C: Mm-hmm. **The um** should be capitalised.
 B: yeah, **they** should all. I stopped marking **them**, ’cause there are just too many.
 C: yeah.
 A: Should **it**? ’Cause the loose uh is continuing from one sentence isn’t it?

Note also the chain of anaphora referring to the ‘um’, and how it carries on across to the *SP*’s (A’s) utterance. This phenomenon is very frequent in *SP* utterances terminating *SP_{CD}* segments.

4.3 Segments of type *SP_{NC}*: Implications for our claims

The analysis indicates that the introduction of new contexts/topics by *SPs* interrupting a dyadic segment, is extremely unlikely. Consequently if a *SP* is

to interrupt, she has to ‘stick to the topic’ already under discussion in the segment. This further supports our claims, in that even if a *SP* is not using ellipsis as direct access to the ‘communal’ common ground, she makes use of the information in there, to produce a relevant utterance. An utterance thus produced, semantically depends on and is incoherent without the background of the ‘shared knowledge’ established between the speaker and addressee in the dyad.

4.4 Future Work: *Antecedent Distance of SP ellipses and Context Re-raising*

The technique of re-raising context- avoiding highly elliptical expressions or in the case of anaphora, giving further descriptions of the discourse entities referred to- is frequently adopted by a *SP* in his attempt to produce a distant second pair part to an utterance far back within a dyadic exchange. This technique need not be exclusive to *SPs*, as *DAs* also in dyadic dialogue might do this to produce an utterance which isn’t locally ‘relevant’, but counts as a second pair part to what’s been discussed further back. However it is expected to be employed a lot more frequently by *SPs* in face-to-face multi-party dialogue.

This issue raises the following questions: What is the correct notion of antecedent distance here? What exactly is the threshold in terms of this notion for each ellipsis type, after which interjecting *SPs* need to avoid the ellipsis in order to prevent ambiguity/miscommunication? Or more formally with respect to interaction protocols, how does antecedent distance fit into ellipsis felicity conditions in multi-*logue*?

5 Conclusion

The evidence from this analysis shows that with respect to common ground side participants in the AMI corpus do not appear to be different in any substantive respect from direct addressees. Speakers assume that *SPs* reach the same level of understanding as the addressees. Additionally, *SPs* were shown to use elliptical techniques to access the shared-context, in generally the same way as *DAs* do. All things being equal, this is strong evidence for collective states of understanding that could not be predicted from considering the component dyads

alone since, *prima facie*, the *SPs* don’t ground to the same level, don’t go through the same grounding cycle as *DAs* with the speaker. Moreover it indicates that *DAs* can act as proxy for *SPs* in providing understanding evidence and, presumably, that they have obligations to each other. Finally, this all seems to make it simply a matter of winning the floor for *SPs*. Other than that there’s no difference between the ratified participants in multi-party conversation.

References

- H. Branigan. 2006. Perspectives on multi-party dialogue. *Special issue of Research on Language and Computation*.
- J. Carletta. 2006. Announcing the ami meeting corpus. *The ELRA Newsletter*.
- H.H. Clark and S.A. Brennan. 1991. Grounding in communication. *Perspectives on socially shared cognition*.
- H.H. Clark and E.F. Schaefer. 1992. Dealing with overhearers.
- R. Fernandez and J. Ginzburg. 2002. Non-sentential utterances: A corpus study. *Traitement automatique des langues*.
- Erving Goffman. 1981. *Forms of Talk*.
- P.G.T. Healey and G.J. Mills. 2006. Participation, precedence and co-ordination in dialogue. *Cognitive Science*.
- S. Levinson. 1988. Putting linguistics on a proper footing: Explorations in goffman’s concepts of participation.
- H. Sacks, E. Schegloff, and G. Jefferson. 1974. A simplest systematics for the organization of turn-taking for conversation. *Language*.
- D. Wilkes-Gibbs and H.H. Clark. 1992. Coordinating beliefs in conversation. *Memory and Language*.