24.910 Topics in Linguistic Theory: Propositional Attitudes
Spring 2009

Conversation and Common Ground

Some references:

- Stalnaker (1970, 1973, 1974). [Cited in Stalnaker 2002.]
- Stalnaker, Robert (2002). Common Ground. *Linguistics and Philosophy* 25.

1. Conversation

1.1. Conversations as a linguistic unit

- Intuitive notion: 2+ people talk with each other for some amount of time

More general notion (somewhat idealized): a 'conversation' involves:

- A group of people (interlocutors) who are all aware that they are participating in a conversation together
- Interlocutors make assertions, questions, answers, changes in topic, …
- (in some sense) a coherent event separable from other conversations

  Though note: conversations can take place in discontinuous regions of space or time. Consider:

  - Telephone calls [interlocutors at different locations]
  - Written correspondence, online forums, … [discontinuous times]
  - [Even without technology/writing, people can shout, or talk with interruptions]
- Forms of conversation can be conventionalized within a language community / culture:

  - Accepted conversation starters
    What's going on with you lately? / *We need to talk.* / *Can I bug you for a second? / Excuse me… / Do you have a minute for the environment?*
  - Formalized types of conversation:
    Court testimony, lectures, news broadcasts, talk shows, blog comment threads, novels, …

1.2. A totally mundane conversation:

1. Sue: Is it raining out? [time t_1]

Bill: Yeah. [time t_2]
Do you want to borrow my umbrella? [time t_3]

Sue: Sure. [time t_4]

By the end of this conversation, Sue and Bill can agree on a great number of things:

- that it's raining

  or at least… that they're both acting as if they're agreeing that it's raining

But also:

- That a conversation took place between them:
  - At t_1, Sue said to Bill "Is it raining out?"
  - At t_2, Bill said to Sue, "Yeah"
  - … [and so on]
- That at t_1, Sue:
  - didn't know whether it was raining *
  - was inviting Bill to tell her whether it was raining
  - had reason to believe that Bill could tell her whether it was raining*

  [* or at least is acting as if this is the case]
- At t_2, Bill:
  - believed that it was raining
  - wanted Sue to know that it was raining
  - expected Sue to come to believe that it was raining by hearing his answer

  BUT – suppose Bill is lying. Then we need to say:
- [revised] At t_2, Bill wanted Sue to believe:
  - that it was raining
  - that he (Bill) believed that it was raining
  - that he (Bill) wanted Sue to also know that it was raining
  - that he (Bill) expected Sue to come to believe that it was raining by hearing his answer
- BUT – now suppose that Bill doesn't really think Sue will believe him. Then we need to say something like this:
- [revised] At t_2, Bill wanted to show that his intention was to make Sue believe:
  - that it was raining
  - that he (Bill) believed that it was raining
  - that he (Bill) wanted Sue to also know that it was raining
  - that he (Bill) expected Sue to come to believe that it was raining by hearing his answer

[using this more general form…]

- At t_3, Bill behaved (by saying, "do you want to borrow my umbrella?") in a way that he knew would be understood as intending to make Sue believe:
  - that he was inviting Sue to tell him whether she wanted to borrow his umbrella
  - that he would give her permission to borrow his umbrella if she answered with "yes"
- At t_2 and later, both Bill and Sue are behaving in a way that they know will be understood to each other as intending to show that they believe it's raining

1.3. Common Belief

A useful notion (not to be confused with folkloric belief):

- Bill and Sue's <u>common beliefs</u> are the propositions p such that the following holds:
  - Bill believes p
  - Sue believes p
  - Bill believes that they both believe that p
  - Sue believes that they both believe that p
  - Bill believes that they both believe that they both believe that p
  - Sue believes that they both believe that they both believe that p
  - … and so on *ad infinitum*

> Note: This term is used in contrast to 'shared beliefs.'
>
> Bill and Sue's <u>shared beliefs</u> are the propositions p such that
>
> - Bill believes p AND
> - Sue believes p

- Put differently: p is commonly believed by Bill and Sue iff:
  - Bill believes that p
  - Sue believes that p

  - Bill believes that Bill believes that p
  - Bill believes that Sue believes that p
  - Sue believes that Bill believes that p
  - Sue believes that Sue believes that p

  - Bill believes that Bill believes that Bill believes that p
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  - Sue believes that Sue believes that Bill believes that p
  - Sue believes that Sue believes that Sue believes that p

  - … [and so on ad infinitum]

Somewhat more formally:

2. p is among Bill and Sue's common beliefs iff every sentence in set A is true, where A is defined recursively as follows:

- $p \in A$
- For any ϕ: if $\phi \in A$, then "Bill believes that ϕ" $\in A$
- For any ϕ: if $\phi \in A$, then "Sue believes that ϕ" $\in A$

Exercise (see assignment for next week): Extend the definition of common belief given in **2** (or another version that is similarly formal) to any group of **n** individuals $\mathbf{x_1 \ldots x_n}$.

1.4. Related Attitudes

Of course, other group attitudes can be defined similarly:

- **Common Knowledge:** defined as for common belief
  [Left as an Exercise]

  [Again, not to be confused with 'common knowledge' in the sense of things that everyone should know – though the technical use is closely related to the informal use]
- **Shared Knowledge:** defined as for shared belief (p is part of a group G's shared knowledge iff it is known by each member of G)
- **Acceptance:** Attitude of treating a proposition as true / taking for granted (for example, for the purpose of conversation, argument, etc.) regardless of whether one believes it.

2. Common Ground and Context Set

Intuitively: the facts/propositions that are taken for granted by a group of interlocutors in a conversation.

Some propositions that are in the common ground in our current conversation (i.e., our class session being held by an instructor and students):

- We're in a class at MIT
- It's April 2009
- The students in this class had papers due today
- …

Some notes and history:

- terms 'common ground' and 'context set' associated most closely with Stalnaker
- Stalnaker attributes 'common ground' as used in philosophy of language to Grice (who seemed to be using it in a way closely related to its everyday use)
- The two terms get mixed up a lot, but I'll try to keep them straight.
  Common ground = set of propositions
  Context set = set of worlds (those compatible with the common ground)

2.1. Definitions of 'Common Ground'

Simple definition of common ground:

3. **Common Ground (v1):** The common ground for a conversation (at time t) is the set of propositions commonly believed by the interlocutors in the conversation at t.

Various more complex versions: here's the one from Stalnaker 2002:

4. **Common Ground (v2):** The common ground for a conversation (at time t) is the set of propositions p such that the interlocutors of the conversation commonly believe that the group accepts p.

   For example, p is in Bill and Sue's common ground iff:

   - Bill accepts p [for the purposes of the conversation]
   - Sue accepts p [for the purposes of the conversation]

   - Bill believes that Bill accepts p
   - Bill believes that Sue accepts p
   - Sue believes that Bill accepts p
   - Sue believes that Sue accepts p

   - Bill believes that Bill believes that Bill accepts p
   - Bill believes that Bill believes that Sue accepts p
   - Bill believes that Sue believes that Bill accepts p
   - Bill believes that Sue believes that Sue accepts p
   - Sue believes that Bill believes that Bill accepts p
   - Sue believes that Bill believes that Sue accepts p
   - Sue believes that Sue believes that Bill accepts p
   - Sue believes that Sue believes that Sue accepts p
   - …

Note:

Q. Why not just 'common acceptance'?
A. (Stalnaker 2002): Everyone in the group must actually realize that they are accepting the propositions, not just pretend that they are.

2.2. Context Set

Context set = the set of worlds compatible with the common ground

i.e. the intersection of all the propositions in the common ground

- So note: The following three things are effectively the same:
  - Adding p to the common ground
  - Intersecting p with the context set
  - Removing from the context set all worlds in which p is not true

2.3. Some simplifications

Strictly speaking, if the proposition 'it's raining' is in the common ground, then the following propositions will also enter the common ground:

- the interlocutors all accept that it's raining
- the interlocutors believe that they all accept that it's raining
- …
- [roughly, it's common ground that it's common ground that it's raining]

[Note: for many purposes, we can ignore the higher order belief statements here, and just say that 'it's raining' is in the common ground]

3. Assertion

"Assertion" ≈ what we do with typical declarative utterances:

- An assertion that p is a proposal to add p to the common ground.
  For example: Saying "it's raining" = making a proposal to add to the common ground that it's raining [equivalently, to remove from the context set all worlds in which it's not raining at the utterance time]
- Addressees have the option to accept or reject this proposal by saying or doing various things
  - Saying nothing (often taken to be tacit acceptance)
  - *"No"* / *"Nuh-uh!"* / *"No it isn't!"* / *" That's not true!"* / *"Bullshit!"* / *"How do you know?!"* / *"Come on!"* (rejection)
  - *Yeah, whatever*… (perhaps: indicates acceptance purely to avoid further discussion)
  - Exasperated sigh (rejection?)
- If an assertion that p is rejected, a number of things still become common ground:
  - that the assertion took place
  - that the speaker believes (or accepts?) that p
  - (presumably) that the assertion was rejected
- Norm of assertion: For a speaker to (acceptably, cooperatively, …) assert that p, they must believe that p.

  Alternatively:

  - The speaker must have sufficient evidence for p
  - The speaker must be willing to defend the truth of p
  - … [various versions adopted]
- Lies: violate this norm, but couldn't be effective unless it was common ground that this norm is place.
- Note: The speaker does NOT necessarily need to believe or expect that the proposal will be accepted:
  - *"I know you're not going to believe me, but …"*
    [sets up expectation that assertion will be rejected]
  - *"OMG, I look so fat in these pants!"*
    [hoping for assertion to be rejected]
  - *"You're an idiot!"*
    [presumably the addressee won't agree]

  Stalnaker's analogy: "Congress may make a law knowing it will be vetoed, a labor negotiator may make a proposal knowing it will be met by a counterproposal, or a poker player may place a bet knowing it will cause all the other players to fold" (Stalnaker, 1978, p. 153)

4. Presupposition

[Note: Presupposition is really what drove the development of formal pragmatics, but in fact this is probably where there are still the most unanswered questions]

- Additional norm of assertion: If a sentence S presupposes a proposition q, then to assert S, q must be in the common ground

Example:

5. The king of France is bald.

- Presupposes: France has a king (and only one)
- Asserts: He's bald

In terms of common ground, we can say that for a speaker to appropriately assert 5, the following must hold:

- 'France has exactly one king' is in the common ground
- The speaker believes that the one king of France is bald

- Complication: Accommodation

6. I need to pick up my brother at the airport.

[may not already be common ground that I have a brother]

- The standard story: Under certain circumstances, hearers can be expected to "accommodate" presuppositions, in particular if they have no reason to doubt that the speaker knows the presupposition is true
- Note: We don't want to say that **6** asserts that the speaker has a brother, because hearers who want to reject that proposition have to do something different than they do if they want to reject the proposition that the speaker has to pick him up at the airport:

7. [In response to **6**]

a) Hey, wait a minute! You never told me you had a brother!

b) No you don't! He can take the train.

Another way to put this view of presupposition [I'm not sure if anyone has actually proposed this]:

8. If S presupposes p and entails q, then an assertion of S simply adds p to the common ground (slips it in, as it were). Then it further proposes to add q to the common ground, giving hearers a fair chance to reject it.

We could put this in terms of a revised norm of assertion:

- To assert a sentence S that presupposes p and entails q, the following must hold:
  - The speaker believes that p
  - The speaker believes that q
  - The hearers can be expected not to object to adding p to the common ground [This will, of course, be the case if p already is in the common ground]

5. Further Applications

5.1. Semantics / pragmatics of questions

9. [examples of normal information-seeking questions]

a) Is it raining?

b) How are you?

c) Who's the governor of Iowa?

One standard view of the semantics of questions:

- The denotation of a question = the set of possible answers to the question (i.e., a set of propositions)
  - (a) {it's raining, it isn't raining}
  - (b) {The addressee is doing well, the addressee is doing okay, the addressee is doing terribly, …}
  - (c) {Mitt Romney is the governor of Iowa, Barack Obama is the governor of Iowa, Chet Culver is the governor of Iowa, …}
- Observations about questions:
  - The speaker believes that some member of the set is true [this seems to act like a presupposition]
  - The speaker believes that the addressee (might) know which one is true, and be willing to tell the speaker
- Formally, given a question Q which denotes set A
  Asking Q does the following:
  - Adds to the common ground that (at least) one member of A is true [presupposition]
  - Invites the hearer to assert one of the members of Q
- Norm: For a speaker to appropriately ask question Q, where Q has the set of possible answers A, the following must hold:
  - the speaker can be expected to accept whichever assertion the hearer makes in response to the question
  - the hearers can be expected not to object to adding to the common ground the proposition that A has some member that's true
- Note: We don't have to add that the hearer should answer correctly, since this falls under the norm of assertion

5.2. (Indicative) Conditionals

10. If it's raining, I'll take an umbrella.

One way to think of this: the speaker temporarily adds the proposition that it's raining to the common ground, and proposes (in that new context) to add the proposition that the speaker will take an umbrella.

[After the assertion is over, the proposition that it's raining is taken back out of the common ground.]

Toy example:

- 6 worlds in context set:
  - w_1: **Rain**; Speaker takes umbrella; Umbrella is blown inside-out
  - w_2: **Rain**; Speaker takes umbrella; Umbrella is not blown inside-out
  - w_3: **Rain**; Speaker does not take umbrella; Umbrella is not blown inside-out
  - w_4: No rain; Speaker takes umbrella; Umbrella is blown inside-out
  - w_5: No rain; Speaker takes umbrella; Umbrella is not blown inside-out
  - w_6: No rain; Speaker does not take umbrella; Umbrella is not blown inside-out
- Step 1: Remove non-rain worlds (w_4, w_5, w_6) temporarily from the context set, giving the following temporary context set:
  - w_1: **Rain**; Speaker takes umbrella; Umbrella is blown inside-out
  - w_2: **Rain**; Speaker takes umbrella; Umbrella is not blown inside-out
  - w_3: **Rain**; Speaker does not take umbrella; Umbrella is not blown inside-out
- Step 2: Proposes to remove from this derived context set all of the worlds where the speaker does not take an umbrella (namely, w_3).
- If the assertion is accepted, we get a new derived context set:
  - w_1: **Rain**; Speaker takes umbrella; Umbrella is blown inside-out
  - w_2: **Rain**; Speaker takes umbrella; Umbrella is not blown inside-out
- Add the non-rain worlds back in, giving the new context set:
  - w_1: **Rain**; Speaker takes umbrella; Umbrella is blown inside-out
  - w_2: **Rain**; Speaker takes umbrella; Umbrella is not blown inside-out
  - w_4: No rain; Speaker takes umbrella; Umbrella is blown inside-out
  - w_5: No rain; Speaker takes umbrella; Umbrella is not blown inside-out
  - w_6: No rain; Speaker does not take umbrella; Umbrella is not blown inside-out
- Result [if conditional is accepted]: we've removed from the context set worlds where it's raining and the speaker doesn't take an umbrella

Note: This view of conditionals is highly influential but controversial, and many (perhaps most) linguistic semanticists take a different view.