

Presuppositions (introductory comments)

1. Bivalent Semantics/Pragmatics and its limitations¹

(1) Bivalent Setting

- a. **Semantics:** Every indicative sentence of the language is assigned bivalent truth conditions.
- b. **Pragmatics:** The goal of an utterance (of an indicative sentence) is to convey new information and have it accepted by participants in the conversation, i.e. to introduce a new proposition to the *common ground* (or eliminate a set of worlds from the *context set*).

- (2) a. **Common Ground (CG):** The set of propositions that are accepted by all participants in the conversation (and believed to be such, and believed to be such,...).
- b. **Context Set (C):** The set of worlds compatible with every proposition in CG.

(3) Update of C by S:

$$\begin{aligned} C+S &= C \cap \{w: \llbracket S \rrbracket^w = 1\} \\ &= C \cap \{w: \llbracket S \rrbracket^w \neq 0\} \end{aligned}$$

- (4) $\llbracket \text{Snow is white} \rrbracket^w = 1$, if it is true in w that snow is white.
0, if it is false in w that snow is white.

- (5) $\llbracket \text{Someone from NY adopted the Labrador} \rrbracket^w =$

1, if it is true in w that someone from NY adopted the Lab.
0, if it is false in w that someone from NY adopted the Lab.

- (6) $\llbracket \text{It is someone from NY who adopted the Labrador} \rrbracket^w =$

1, if it is true in w that someone from NY adopted the Lab.
0, if it is false in w that someone from NY adopted the Lab.

- (7) $\llbracket \text{It}_1 \text{ is a cat and its smiling} \rrbracket^{w,g} =$ 1, if it is w -true that $g(1)$ is a cat and $g(1)$ is smiling.
0, if it is w -false that $g(1)$ is a cat and $g(1)$ is smiling.

- (8) $\llbracket \text{This}_1 \text{ cat is smiling} \rrbracket^{w,g} =$ 1, if it is w -true that $g(1)$ is a cat and $g(1)$ is smiling.
0, if it is w -false that $g(1)$ is a cat and $g(1)$ is smiling.

But there are differences between (Error! Reference source not found.) and (6) (and likewise between (7) and (8)) that are not captured in this bivalent setup:

(9) Difference pertaining to what can be new or old/presupposed information

John is visiting a dog shelter because he is particularly interested in adopting a Labrador.

John: Can I see the Labrador?

Sue: Someone from NY just adopted the Lab.

Sue': #It is someone from NY who just adopted the Lab.

¹ A Stalnakerian setup without presuppositions

Intuition about source of #: Sue' would be appropriate only if it was presupposed that someone adopted the lab, but that is clearly not the case.²

(10) **Difference pertaining to what can be new and old/presupposed information³**

Two people are each sitting in front of a computer and are playing a game. At the beginning of the game, they see the same image. It is a circle. One of them (A) can press a button, which will reveal additional properties of the scene. The other (B) has no such button. A's job is to convey what she sees to B. All of this is common ground.

After A presses the button, the circle reveals itself to be the back side of a cat: the cat turns around and A learns not only that it is a cat but also that it is smiling.

A: It's a cat and it is smiling

A': #This cat is smiling

Intuition about source of #: A' would make sense only if *the original image* (that both A and B can see) revealed that the figure was in fact a cat.

(11) **Difference in Projection (i.e. different effects on the meaning of larger constituents)**

a. Is John married to Sue?

Yes = John is married to Sue.

No = John is not married to Sue.

b. Is it John who is married to Sue?

Yes = John is married to Sue.

No = Someone is married to Sue but it's not John.

2. Trivalent Semantics for Presuppositions

(12) It is John who is married to Sue.

If sentence (12) is going to be uttered truthfully, the following sentences must be true as well:

(13) a. Someone is married to Sue.

b. John is married to Sue.

However, different feelings are associated with the two putative entailments. We've seen some reasons to think that it's sometimes better when (13)a is already presupposed when (12) is uttered, but what property of the mental representation is responsible for this effect?

² As we will see shortly, a situation of this sort (in which a presupposition is not entailed by the common ground prior to assertion) is often tolerated ("presupposition accommodation"). To fully explain (9), we will have to say something about the distribution of presupposition accommodation. (9) is constructed on the basis of a test for presupposition suggested by Irene Heim in this class a few years ago (4.1.1. below).

³ This is an experimental paradigm that I have been working on with Martin Hackl, Jacopo Romoli, and Yasu Sudo.

(14) **Trivalent Setting**

- a. **Semantics:** Every sentence of the language is assigned trivalent truth conditions (with three truth values 0, 1, #).
- b. **Pragmatics:** The goal of an utterance is to update C by eliminating a set of worlds (i.e., providing new information).

(15) **Update of C by S (Stalnaker's Bridge Principle):**

$C+S$ is defined only if $\forall w \in C(\llbracket S \rrbracket^w = 1 \text{ or } \llbracket S \rrbracket^w = 0)$.
When defined, $C+S = C \cap \{w: \llbracket S \rrbracket^w = 1\}$

Eguivalently:

$C+S$ is defined only if $C \cap \{w: \llbracket S \rrbracket^w = 1\} = C \cap \{w: \llbracket S \rrbracket^w \neq 0\}$.
When defined, $C+S = C \cap \{w: \llbracket S \rrbracket^w = 1\}$

Possible rational: # should be thought of as an indeterminate truth-value (either 1 or 0, we don't know which or it doesn't make sense to ask which). So if $\exists w \in C(\llbracket S \rrbracket^w = \#)$, the update would be indeterminate and that's no good.

- (16) $\llbracket \text{It is John who is married to Sue} \rrbracket^w = \#$ if no one is married to Sue.
 $= 1$, if it is true in w that John is married to Sue.
 $= 0$, if someone is married to Sue in w and it is false in w that John is married to Sue.

Notation:

- (17) $\llbracket \text{It is John who is married to Sue} \rrbracket_\# = \lambda w. \llbracket \text{It is John who is married to Sue} \rrbracket^w$
 $= \lambda w$: someone is married to Sue in w . John is married to Sue in w

- (18)a. $\llbracket \text{The king of France is bald} \rrbracket_\# = \lambda w$: France has a unique king in w .
the unique king of France is bald
b. $\llbracket \text{John is in Cambridge again} \rrbracket_\# = \lambda w \lambda t$: John was in Cambridge in w before t .
John is in Cambridge at t in w
b. $\llbracket \text{John stopped smoking} \rrbracket_\# = \lambda w \lambda t$: John smoked in w before t .
John does not smoke in w at t

(19) **Terminology**

- a. We say that a sentence, S , *semantically presupposes* (the proposition) p , iff $\forall w[\llbracket S \rrbracket^w \neq \# \rightarrow p(w)=1]$
- b. We say that p is *the semantic presupposition of* S ($\text{Presupposition}(S)=p$), iff $\forall w[\llbracket S \rrbracket^w \neq \# \rightarrow p(w)=1]$ and $\forall w[\llbracket S \rrbracket^w = \# \rightarrow p(w)=0]$

2. Presupposition Accommodation

Methodological problem: presupposition accommodation.

- (20) I am asked by someone who I have just met, "Are you going to lunch?" I reply, "No, I've got to pick up my sister." Here I seem to *presuppose* that I have a

sister, even though I do not assume that the addressee knows this. (Stalnaker 1974, for very useful discussion, see von Stechow 2000, 2008)

(21) $[[I've \text{ got to pick up } \mathbf{my} \text{ sister}]]_{\neq} = [[I've \text{ got to pick up } \mathbf{the} \text{ sister of mine}]]_{\neq}$

λw : the speaker in w has a unique sister in w .

the speaker in w is required in w to pick up the unique sister ...

(21) has a semantic presupposition that is not entailed by C , yet the update is successful due to “presupposition accommodation”.

Basic Idea: If Stalnaker’s Bridge is right, a speaker should not assert S if the semantic presupposition of S is not entailed by C . But this, of course, is an idealization which abstracts away from the nature of actual conversation...

Imagine that you are driving up the highway with a friend. You pay attention to various things in the changing scenery and of course don’t know for sure which of them your friend is focusing on. So there is very little you *know* is common ground, and consequently, as von Stechow pointed out, very little is common ground. Still when we communicate, we *behave as if* various pieces of information are common ground and hope that they will *consequently turn out to be common ground*.

Here are two things you might say after you passed a camel and guess that your addressee noticed it (but, of course, are not quite sure).

- (22) a. That camel was quite unusual.
 b. Did you see that camel? It was quite unusual.

The two sentences differ in what they take for granted, though what is common ground, strictly speaking, is the same in both cases. So we need to distinguish between what is actually common ground, which is very little, from the intended common ground, from what the speaker intends to be the epistemic background against which her utterance is to be evaluated.

In actual conversation, figuring out the intended common ground is a difficult *coordination problem*. [The goal of the hearer, h , is to guess s ’s intentions, re C . And s , in turn, should speak in a way that would allow h to meet her goal.]

In solving this coordination problem, h can use the semantic presupposition of a sentence as evidence pertaining to the type of C that s wants to take for granted and decide to play along.

s , in turn, might rely on this ability of h and use a sentence with an unsatisfied presupposition.

(23) **Presupposition Accommodation:**

- If the presupposition of S is mistakenly believed by the speaker to be common ground, the hearer might nevertheless agree (for the purpose of the conversation, or for real) to accept the semantic presupposition of S and to add it to the common ground prior to the evaluation of S. (This is, naturally, less-likely to happen the more controversial the presupposition is – the more h feels that s should have asserted what is presupposed rather than taken it for granted.)
- The speaker might be in a position to anticipate the hearer's cooperative stance and to use S when she knows its presupposition is not common ground.

In either case, the end result is that the context-set will be updated by the presupposition of S before it is updated by S.

$$\text{Accommodation}(C, S) = C \cap \text{Presupposition}(S)^4$$

Methodological Problem: how do we identify presuppositions (given the noise that comes from accommodation)?

Two fortunate facts:

- a. There are some tests that might allow us to identify presuppositions (with no reliance on our “theoretical” intuitions about the idealized state of affairs), tests that were crucial for the understanding of (9) and (10).
- b. Presuppositions enter into compositional semantics differently from assertive content, i.e., they have characteristic projection properties. Once we identify the properties, we can use them to identify presuppositions.

4. Possible Tests

4.1. Other Constraints on update or constraints on accommodation

Stalnaker's Bridge (SB) states that the presupposition of every assertion must be satisfied prior to update. This requirement is masked, we claimed, by the availability of accommodation (by the fact that the C which putatively serves as input for update can be different from what characterizes the common ground). This means that in order to see SB in action we need to have other ways to identify the C that serves as input for update (other than SB). To achieve this, we will look for constraints on accommodation or for other constraints on the update.

4.1.1. Answers to Questions

Heim (2015, class notes): Questions cannot be answered by an accommodated presupposition.

Questions can sometimes be answered with more information than is required:

⁴ To be revisited and revised once we talk about the “Proviso Problem”

- (24) A: Do you have children? B: I do.
B': I have a daughter.
B'': I have a 5-year old daughter.
B''': I have a daughter who is waiting for me as we speak.

But the part of the answer which directly addresses the question cannot come from the presupposition.

- (25) A: Do you have children?
B: #I have to pick up my daughter now.

This allows us to understand the example with which we started:

(9) **Difference pertaining to what can be new and old/presupposed information**

John is visiting a dog shelter because he is particularly interested in adopting a Labrador.

John: Can I see the Labrador?

Sue: Someone from NY just adopted the Lab.

Sue': #It is someone from NY who just adopted the Lab.

Intuition about source of #: Sue' would be appropriate only if it was presupposed that someone adopted the lab, but that is clearly not the case.

Explanation: Sue' violated Heim's constraint. John asked a question which would be answered negatively by the accommodated presupposition, but we cannot answer a question via the presupposition of the answer.

And why can't questions be answered by acc presupposition?

Proposal #1: Because if they were, the answer would be uninformative relative to *the C that serves as input to the update*.

In more detail:

(26) **Questions and Partitions**

A question, Q, is a set of propositions. Given a context-set C and a question Q, we will say that Q partitions C in the following way:

Partition(Q,C) = The set of maximal subsets of C that agree with each other on the truth value of every member of Q.⁵

Partitions allow us to define the following useful notions (from Lewis/Groenendijk and Stokhof):

⁵ I.e., Partition(Q,C) is the set of equivalence classes of C for the relation that holds between w and w' iff $\forall p \in Q(p(w)=p(w'))$.

- a. A proposition p is relevant for Q given C if p doesn't distinguish between cell-members (if it is the union of a subset of $\text{Partition}(Q, C)$).
- b. A proposition p is informative relative to Q and C if p eliminates at least one cell in $\text{Partition}(Q, C)$.

(27) **Update of C by S given Q :**

S is a good response to a question Q given a context set C only if

- (a) **Presuppositions are satisfied:** $C+S$ is defined
- (b) **S expresses a proposition that is *informative* relative to Q and C .**
I.e., S eliminates a cell: there is a cell, $I \in \text{Partition}(Q, C)$,
such that $I \cap [C+S] = \emptyset$

Suppose in (9) John were to accommodate the semantic presupposition in order to interpret Sue'. In other words, suppose he would update C by the presupposition that someone adopted the Lab. But then $\text{Partition}(Q, \text{Accommodation}(C, S))$ would be a singleton set, and (27)b could not be satisfied. Likewise for (24).

Homework #1: Explain why (27) does not derive the oddness of A' in (10). Suggest an alternative (or an additional) principle that would.

4.1.2. Assertions (sometimes) must provide new information

(unpublished lecture notes by Orin Percus)

- (28) Mary is under surveillance. Moreover, she's aware that she is.
- (29) Mary believes that she's under surveillance. #Moreover, she is aware that she is.
- (30) John was sick last week. Moreover, he continues to be sick. Moreover, he is still sick. Moreover, he is sick again.
- (31) John is sick today. Moreover he was sick yesterday.
#Moreover, he continues to be sick.
#Moreover, he is still sick.
#Moreover, he is sick again.

Explanation: The presupposition of every assertion must be satisfied prior to update. But there is this process of presupposition accommodation, which introduces noise: before we evaluate the sentence we might accommodate the presupposition without noticing anything unusual. What goes wrong with the bad *moreover* sentences is that after accommodation, the sentence provides no new information. And a *moreover* sentences must provide new information.

It has been suggested (by Stalnaker) that new information (non-vacuity of update) is a general condition on felicitous assertion. We've assumed above that it is a condition on answers to a question. There might, however, be special circumstances in which it is okay to repeat oneself. For this test we only need to assume here that this is not compatible with saying "moreover".

Application to examples: ...

4.1.3. Special Populations

Are there individuals that do not like to accommodate presuppositions – individuals that might allow us to reduce the noise? See Aravind 2018 for arguments that children at a particular stage of development can do just that.

4.2. Specific Protest

Hey, wait a minute, I didn't know...! (von Fintel, crediting Shanon for the inspiration)

- (32) The person who broke the typewriter was Sam.
a. Hey wait a minute, I didn't know that someone broke the typewriter.
b. #Hey wait a minute, I didn't know that Sam broke anything.
- (33) At 5 PM, John messed up again.
a. Hey wait a minute, I didn't know that he messed up before.
b. #Hey wait a minute, I didn't know that he messed up at 5 PM.

If *p* is a presupposition of *S*, *HWM, I didn't know that p* is a good response to an utterance of *S*.

If *p* is an entailment of *S* which is not a presupposition, *HWM, I didn't know that p* is a bad response to an utterance of *S*.

Possible Explanation: Although presupposition accommodation is possible. It is something that we can do because we want to be cooperative. (The speaker intended for some information to be part of the common ground and we decide to go along.) But sometimes we might want to object, perhaps to say that the information is noteworthy enough and should have been asserted rather than presupposed. And natural language has a construction specialized for this purpose.

Problem: As pointed out in Chemla (2009), we can object to aspects of the assertion other than the presupposition with *HWM*:

- (34) All of the students were at the party
Hey wait a minute, I didn't (even) know that SOME of the students were at the party.

So, if there is a test for presuppositions here, it is probably more subtle. Perhaps we can object in this manner only to logically weaker propositions than those expressed by the assertion. But then to explain the badness of, e.g., (33)b, we need to explain the sense in which *John messed up at 5PM* is not logically weaker than the assertion, and this requires a distinction between assertion and presupposition.

Exercise: provide a definition of *weaker-than* that would capture we've seen under the constraint in (35).

- (35) A sentence of the form *Hey wait a minute, I didn't know that S* is acceptable as a response to a sentence S' only if S' is weaker than S.

5. An Empirical Claim and a Theoretical Challenge

- (36) We say that a sentence S presupposes p, if
- p must be taken for granted in every utterance of S (as diagnosed by various tests...)
 - p has special projection properties (to be specified).

Empirical Claim: p satisfied (a) iff p satisfied (b)
(Our two tests for presuppositions coincide.)

Challenge: To understand why the empirical claim might be right.

In other words, to understand:

- What type of grammatical representation for S (together with principles of language use) leads to the pragmatic fact that p is taken for granted.
- To understand how the grammatical representation of S (together with principles of language use) leads to the particular projection properties we will identify.

Notes:

- The context-set, C, represents information that speakers in the conversation *agree to take for granted for the purpose of conversation*. This could be different from their shared beliefs.⁶
- As we mentioned, there are difficult idealizations in the Stalnakerian picture that are worth remembering (perhaps related to (a)):
 - Stalnaker claims that the common ground can be described as a set of possible worlds. In reality there are very few things that are truly part of the common ground. Suppose I think it is 90% likely that the speaker intends for me to take p for granted. Should our common ground encode notions of this sort? See Lassiter 2012.
 - The technical notion of update we have for C is monotonic (C+S is always a subset of C). We can ask whether we can respond to an assertion non-monotonically (meaning that we were wrong about C, or a speaker can use S to indicate their desire to revise what is taken to be a shared belief). An account of that will involve a richer notion of accommodation.

⁶ For the purpose of conversation, we might pretend that p is shared belief even when it isn't (as in the highway scenario introduced above). Or, conversely, in certain cases we might be able to pretend that p is not shared belief when, in fact, it is.