Semantics Research Seminar

Lecture 1

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Presupposition (more precisely, *semantic presupposition*) is a kind of inference that sentences of natural languages may have. Some representative examples:

(1) a. *Guillaume quit smoking*.
         presupposition: Guillaume used to smoke.
     b. *The King of France is bald*.
         presupposition: France has a king.
     c. *Bill never reread War and Peace*.
         presupposition: Bill has read *War and Peace* before.
     d. *Lucy forgot to submit her homework*.
         presupposition: Lucy had homework that she was supposed to submit.
     e. *None of my students brought lunch with her today*
         presupposition: each of my students is female.
     f. *Masaya walks his dog in the morning*.
         presupposition: Masaya has a dog.
     g. *It is in Chandler House that I lost my ID card.*
         presupposition: I've lost my ID card.

Introductory readings: Beaver (2001), Kadmon (2001), Simons (2006), Beaver & Geurts (2013), etc.

Today's agenda:

• Empirical properties of presupposition

• Multi-dimensional semantics and its problems

1   Multi-Dimenstionality of Natural Language Semantics

Eubulides of Miletus' ($\pm$405–330 BC) paradox of horns:

(2) Major: What you haven't lost you still have.
     Minor: You have not lost your horns.
     Ergo: You still have your horns.   (Seuren 2005:89)

Crucially, (2-Minor) *presupposes* that you have horns.

Natural language semantics does not respect the *Principle of Excluded Middle*, i.e. sentences in natural language can be neither true nor false, unlike in classical logic (cf. the famous Russell-Strawson debate about definite descriptions).

Closely related to this is the idea that sentence meanings are *multi-dimensional*. It's con-
sidered to be a universal that a single sentence in a natural language may convey qualitatively different types of meanings at once, e.g. presupposition and *at-issue meaning* (alt: *assertive meaning*).

If a sentence can be true in one respect (e.g. at-issue meaning) but false in another respect (e.g. presupposition), it won't be simply true or false.

Presupposition can be seen as a dimension of meaning that is characterised by two features:

• Backgroundedness

• Projection

These two features can be used to distinguish presuppositions from *at-issue meanings* (alt.: *assertive meanings*).

1.1   Backgroundedness

Example (3) conveys two things, (3a) and (3b).

(3) Mary is reading *War and Peace* again.
     a. Mary is reading *War and Peace*.   (at-issue)
     b. Mary has read *War and Peace* in the past.   (presupposition)

These two pieces of information play different pragmatic roles. Typically,

• (3a) is the main point of the utterance in the sense that (3) is used to inform the hearer of (3a).

• (3b) is *backgrounded* and treated as an established fact.

To see this more clearly: (3) can be used to answer (4a) but not (4b).

(4) a. Which book is Mary reading now?
     b. Which book has Mary read before?

At this point, two notions of presupposition should be distinguished: *semantic presupposition* and *pragmatic presupposition*. Semantic presuppositions are properties of natural language expressions, while pragmatic presuppositions are properties of information expressed by them.

These two notions are related in the sense that semantic presuppositions typically give rise to pragmatic presuppositions (if not always). Pragmatic presuppositions are not necessarily linguistically encoded, e.g. if someone says something to you in Russian, they presuppose in the pragmatic sense that you understand Russian. But this information is probably not encoded in the meaning of the Russian expressions, but pragmatically derived.

1.2 Projection

In addition, (3a) and (3b) behave differently when the sentence is embedded. For instance, when the sentence is turned into a polar question, (5), the truth of (3a) is questioned, while (3b) survives as an inference.

(5) Is Mary reading *War and Peace* again?

Consequently, (5) is not synonymous with the question in (6):

(6) Is it the case that Mary has read *War and Peace* before and is now reading it again?

In cases like these, we say that the presupposition *projects*. It is not caught in the scope of the question operator in (5).

Similarly, other 'non-veridical contexts' can be used to identify presuppositions:

- Negation:
  (7) a. Mary won't read *War and Peace* again.
      b. I doubt that Mary read *War and Peace* again.
- Modals:
  (8) a. Mary might read *War and Peace* again.
      b. It is possible that Mary is reading *War and Peace* again.
      c. Mary should read *War and Peace* again.
      d. It seems that Mary is reading *War and Peace* again.

Non-veridical contexts are those embedding contexts that do not entail the truth of the embedded sentence.

> **Q**: Why cannot veridical contexts be used to identify presuppositions?

We will see more cases of presupposition projection later.

1.3 Failed Projection (alt.: Local Accommodation)

In some contexts, presuppositions fail to project. Here's a famous example:

(9) The kind of France isn't bald — there is no king of France!!

If the presupposition that France has a king projected through the negation, it would contradict the second sentence.

Some more examples:

(10) A: I don't have a dog.
     B: So at least you don't have to walk your dog. (Kadmon 2001:145)

(11) If it's the knave that stole the tarts, then I'm a Dutchman: there is no knave here. (Beaver & Geurts 2013)

(12) Did you quit smoking recently?

(13) If your children are under 10, you will receive a discount.

In those cases, the presuppositional content behave as if it is part of the at-issue meaning. More on this later.

1.4 Other Dimensions of Meaning

Backgroundedness and projection are defining features of presuppositions that distinguish them from at-issue and other aspects of meaning. At-issue meanings and conversational implicatures are typically fore-grounded, and do not project.

Conventional implicatures are sometimes hard to distinguish from presuppositions, as they are usually backgrounded and project as well.

In my opinion, the class of conventional implicatures is not homogeneous. In the literature (starting from Potts 2005), *expressives/supplements* and *appositives* are often taken to be two representative kinds of conventional implicatures (see McCready 2010, Gutzmann 2015 a.o. for other types).

(14) a. Masa, *who grew up in Hokkaido*, is an Ainu.　(appositive/supplement)
     b. Bill Ladusaw sent me down this *damn* road.　(expressive; Potts 2007:165)

There are two differences between appositives and presuppositions:

- Appositives typically convey new information, while presuppositions tend to be old information.
- Appositives tend to always project out, while presuppositions sometimes interact with various operators.[1] E.g.
  (15) a. None of these people read *War and Peace* again.
          presupposition: All of these people have read *War and Peace*.
       b. Mary hopes that John read *War and Peace* again.
          presupposition: Mary believes that John has read *War and Peace*

Expressives also tend to project out in all sorts of embedded contexts (Potts 2005, 2007, Harris & Potts 2009). Nonetheless, some authors disagree with Potts and contend that they are a particular type of presuppositions (Lasersohn 2007, Schlenker 2007, Sauerland 2007).

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[1]But there are some complications, e.g. Potts (2005), Amaral, Roberts & Smith (2007), Harris & Potts (2009), Schlenker (2007), Nouwen (2011), etc.

2   Presupposition Triggers

It's noticeable that many presuppositions are attributable to the use of certain expressions and constructions. E.g.:

- The presupposition of (16) is traceable to the meaning of *again*.

    (16)   Mary is reading *War and Peace* again.

    If *again* is omitted, the presupposition that Mary has ready *War and Peace* will disappear, while the at-issue meaning will stay the same.

- *Quit/stop V-ing* gives rise to a presupposition that the subject was V-ing.

    (17)   Mary quit smoking last month.
    Start V-ing has the opposite presupposition.

    (18)   Mary started smoking last month.

- Factive predicates like *aware/unaware/remember that S* presuppose that *S* is true.

    (19)   Mary is aware that she will not get a grant this year.

- *Pretend that S* presupposes that *S* is false.

    (20)   Mary pretended that she could speak Georgian.

- *Remember/forget to V* presupposes that the subject was supposed/required to V.

    (21)   Mary remembered to call her mother.

- Sortal restrictions, e.g. *to drink* and *to spill* presuppose that the object is a liquid; *to sire* presupposes that the subject is male; *iru* 'to exist' in Japanese presupposes that the subject is animate.

We call such expressions and constructions *presupposition triggers*.

Generally, lexical items that mean similar things within and across languages trigger the same presupposition. This suggests that some general principle somehow derives the presupposition from the at-issue meaning.

But in some cases, presuppositions are not predictable from at-issue meanings. E.g.:

- Triggers like *also, even* and *again* don't really have at-issue meanings.
- *Come* and *go* differ minimally in the presupposition

This problem of accounting for which items are presupposition triggers and what kind of presuppositions they trigger is called the *triggering problem* of presupposition. We don't have a good theory of presupposition triggering (but see Abusch 2010, Abrusán 2011 for some attempts; see also Kadmon 2001 for discussion). We will come back to this later in this course.

For the moment, we will focus on how to represent presuppositions in semantic theories

so as to account for their projection behaviour. This problem is the problem of compositionality in the presuppositional domain:

(22)   *The Projection Problem of Presupposition*: How do we account for the (semantic) presuppositions of syntactically complex phrases from the syntax and the meanings of their parts?

3   A Multi-Dimensional Theory for Presupposition

3.1   Uni-Dimensional Semantics

If we only have one dimension of meaning and if every sentence is either true or false, then we won't be able to distinguish presuppositions from at-issue meanings and will fail to capture the projective behaviour of presuppositions.

E.g. we could analyze the (23) as (24). We assume the pronominal theory of tense here (nothing crucial hinges on this).

(23)   Mary visited London again.

(24) $[\![\text{Mary PAST}_5 \text{ London again}]\!]^{w,c,g} = 1$ iff $g(5)$ is before the time of c and Mary visited London at $g(5)$ in w and Mary visited London at some time before $g(5)$ in w.

This semantics fails to account for the basic properties of presuppositions:

1. How to account for the pragmatic properties of presuppositions as backgrounded information? If all the information is collapsed to one proposition, we can't extract presuppositions from it (unless propositions have some structure; but that won't be a one-dimensional theory).

2. one-dimensional semantics cannot account for projection facts. For example, consider the behavior under negation.

    (25) $[\![\text{it is not the case that } S]\!]^{w,c,g} = 1$ iff $[\![S]\!]^{w,t} = 0$

    (26) $[\![\text{It is not the case that Mary PAST}_5 \text{ visit London again}]\!]^{w,c,g} = 1$ iff either $g(5)$ is not before the time of c or Mary did not visit London at $g(5)$ in w or Mary did not visit London before $g(5)$ in w.

Exercise: Construct an analogous problem based on the semantics of *might* in (27):

(27) $[\![\text{might } S]\!]^{w,c,g} = 1$ iff there's a possible world w' compatible with what the speaker of c knows such that $[\![S]\!]^{w',c,g} = 1$

3.2 Multi-Dimensional Semantics

Karttunen & Peters (1979) propose to encode presuppositions in a separate dimension from at-issue meanings.[2] Here's one way to implement this idea.

Each natural language expression α has two types of meanings, at-issue meaning $[\![\alpha]\!]^{w,c,g}$ and presupposition $((\alpha))^{w,c,g}$.[3]

(28) a. $[\![\text{Mary PAST}_8 \text{ visit London again}]\!]^{w,c,g} = 1$ iff Mary visits London at $g(8)$ in w
b. $((\text{Mary PAST}_8 \text{ visit London again}))^{w,c,g} = 1$ iff $g(8)$ is before the time of utterance c_t and Mary visits London at some time before $g(8)$ in w

Similarly:

(29) a. $[\![\text{Mary PAST}_1 \text{ forgot to submit her homework}]\!]^{w,c,g} = 1$ iff Mary does not submit her homework at $g(1)$ in w
b. $((\text{Mary PAST}_1 \text{ forgot to submit her homework}))^{w,c,g} = 1$ iff $g(1)$ precedes c_t and Mary has homework such that in all (best) possible worlds w' that are compatible with the relevant rules in w Mary submits her homework at $g(1)$ in w'

3.3 Semantics-Pragmatics Interface in Multi-Dimensional Semantics

In this theory, we can require at-issue meanings and presuppositions to play different pragmatic roles as follows. Following Stalnaker (1973, 1974, 1978), we take *pragmatic presuppositions* to be the following:

(30) Agents $a_1, \ldots, a_n$ pragmatically presuppose that p iff all of the following are true:
a. Each a_i believes that p;
b. Each a_i believes that each a_j believes that p;
c. Each a_i believes that each a_j believes that each a_k believes that p;
...

Then, we can see semantic presuppositions as felicity conditions on utterances:

(31) An utterance of sentence S in context c with agents $a_1, \ldots, a_n$ is infelicitous unless $a_1, \ldots, a_n$ pragmatically presuppose that the semantic presupposition of S (i.e. $\lambda w.((S))^{w,c,g_c}$) is true (where g_c is the assignment function assumed in c) at the time of the utterance.

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[2] They furthermore claim that presuppositions are a kind of conventional implicatures. We don't discuss this aspect of their claim (cf. the discussion above on conventional implicatures).
[3] Here it's crucial to use the pronominal theory of tense, or we'll run into the Binding Problem (see below).

3.4 Presupposition Projection in Multi-Dimensional Semantics

Negation only negates at-issue meanings and inherits all the presuppositions of what is embedded. This is captured as follows:

(32) a. $[\![\text{it is not the case } S]\!]^{w,c,g} = 1$ iff $[\![S]\!]^{w,c,g} = 0$
b. $((\text{it is not the case } S))^{w,c,g} = 1$ iff $((S))^{w,c,g} = 1$

(33) a. $[\![\text{it is not the case that Mary PAST}_8 \text{ London again}]\!]^{w,c,g} = 1$ iff Mary did not visit London at $g(8)$ in w
b. $((\text{it is not the case that Mary PAST}_8 \text{ London again}))^{w,c,g} = 1$ iff $g(8)$ is before c_t and Mary visits London at some time before $g(8)$ in w

> **Exercise**: Analyse *might*.

Let us also analyse sentential conjunction of the form *A and B*. The at-issue meaning is simple.

(34) $[\![S_1 \text{ and } S_2]\!]^{w,c,g} = 1$ iff $[\![S_1]\!]^{w,c,g} = [\![S_2]\!]^{w,c,g} = 1$

How about the presupposition? A conjunction inherits the presuppositions of the first conjunct. E.g., (35) presupposes that Mary had visited London before.

(35) Mary visited London again, and Bill visited Moscow.

What about the second conjunct?

(36) Mary visited London, and Bill visited Moscow again.

This example presupposes that Bill had visited Moscow once, so one might think that the entire conjunction inherits the presuppositions of the second conjunct as well. However, if we change the first conjunct as in (37), it won't have this presupposition any more.

(37) Mary and Bill visited Moscow and St. Petersburg three years ago, and Bill visited Moscow again.

What is crucial is that the first conjunct entails the presupposition of the second conjunct. The whole conjunct only inherits those bits of the presupposition of the second conjunct that are not entailed by the at-issue meaning of the first conjunct.

The following captures this.

(38) $((S_1 \text{ and } S_2))^{w,c,g} = 1$ iff $((S_1))^{w,c,g} = 1$ and if $[\![S_1]\!]^{w,c,g} = 1$ then $((S_2))^{w,c,g} = 1$

For (37), the predicted presupposition is: if Mary and Bill visited Moscow and St. Petersburg three years ago, then Bill has visited Moscow before. This is tautologous (so can be

pragmatically presupposed in any context).

A potential problem arises with sentences like (39).

(39) Mary is pregnant and her brother is happy.

The second conjunct *her brother is happy* has a presupposition that Mary has a brother. The predicted presupposition for (39), then, would be: If Mary is pregnant, she has a brother. This sounds too weak. Rather, (39) seems to presuppose simply that Mary has a brother.

There are other theories that predict such *conditional presuppositions* for conjunctions and other types of sentences that are arguably counter-intuitive. This problem is called the *proviso problem*. Matt Mandelkern will discuss this on 2 February 2018.

Generally, in analysing a meaning of an expression α, three things need to be specified:

- What is the at-issue meaning of α?
- What is the presupposition α triggers?
- What happens to the presupposition of the argument of α?

The latter two aspects constitute $((\alpha))$ (connectives generally don't trigger presuppositions).

> **Exercise**: Analyse other sentential connectives like *or*, *unless*, etc.

4 Binding Problem

There is one issue with this multi-dimensional semantics, as Karttunen & Peters (1979) themselves point out. Consider (40):

(40) Someone is reading *War and Peace* again.

What is the presupposition of (40)? It should be quantificational, but if we used existential quantification, we'd get something like (41):

(41) a. $[\![$Someone is reading *War and Peace* again$]\!]^{w,c,g} = 1$ iff
someone is reading *War and Peace* at c_t in w
b. $((\text{Someone is reading *War and Peace* again}))^{w,c,g} = 1$ iff
someone reads *War and Peace* at some time prior to c_t in w

> **Q**: This semantics does not capture the intuitive meaning of the sentence. Why?

We don't want to have universal quantification in the presupposition, which would be too strong.

(42) a. $[\![$Someone is reading *War and Peace* again$]\!]^{w,c,g} = 1$ iff
someone is reading *War and Peace* at c_t in w
b. $((\text{Someone is reading *War and Peace* again}))^{w,c,g} = 1$ iff
everyone reads *War and Peace* at some time prior to c_t in w

This problem is called the *Binding Problem*.

> **Exercise**: In some cases, the Binding Problem does not arise, namely, when the presupposition is entailed by the at-issue meaning. E.g. suppose that the meaning of *quit smoking* is something like (43):
>
> (43) a. $[\![$John PAST_1 quit smoking$]\!]^{w,c,g} = 1$ iff John smokes before $g(1)$ in w and John does not smoke after $g(1)$ in w
> b. $((\text{John }\text{PAST}_1\text{ quit smoking}))^{w,c,g} = 1$ iff John smokes before $g(1)$ in w and $g(1)$ is before c_t
>
> Then we have:
>
> (44) a. $[\![$Someone PAST_1 quit smoking$]\!]^{w,c,g} = 1$ iff someone smokes before $g(1)$ in w and does not smoke after $g(1)$ in w
> b. $((\text{Someone }\text{PAST}_1\text{ quit smoking}))^{w,c,g} = 1$ iff someone smokes before $g(1)$ in w and $g(1)$ is before c_t
>
> Explain why this does not run into the Binding Problem.

5 'Explaining' Presupposition Projection

Gazdar's (1979) critique of Karttunen & Peters (1979) (see also Soames 1982, Heim 1983): Karttunen & Peter's semantics is merely *describing* the projection facts, not *explaining* them. For example, why don't we have negation like the following?

(45) a. $[\![$it is not the case $S]\!]^{w,c,g} = 1$ iff $[\![S]\!]^{w,c,g} = 0$
b. $((\text{it is not the case }S))^{w,c,g} = 1$ iff $1 = 1$

(46) a. $[\![$it is not the case $S]\!]^{w,c,g} = 1$ iff $[\![S]\!]^{w,c,g} = 0$
b. $((\text{it is not the case }S))^{w,c,g} = 1$ iff $((S))^{w,c,g} = 0$

(47) a. $[\![$it is not the case $S]\!]^{w,c,g} = 1$ iff $[\![S]\!]^{w,c,g} = 0$
b. $((\text{it is not the case }S))^{w,c,g} = 1$ iff there is a possible world w' that is compatible with what we know $((S))^{w',c,g} = 0$

Similarly, why don't we have conjunction that is symmetric with respect to presupposition projection, e.g.

(48) a. $[\![S_1 \text{ and } S_2]\!]^{w,c,g} = 1$ iff $[\![S_1]\!]^{w,c,g} = [\![S_2]\!]^{w,c,g} = 1$

b. $((S_1 \text{ and } S_2))^{w,c,g} = 1$ iff $((S_1))^{w,c,g} = 1$ and $((S_2))^{w,c,g} = 1$

This would predict (49) to presuppose that Bill has been to Moscow at least once.

(49) Mary and Bill visited Moscow and St. Petersburg three years ago, and Bill visited Moscow again (this summer).

This problem of explanatory power is by no means fatal to Multi-Dimensional Theory but is a deep one that crops up in all theories of presupposition projection. See Schlenker (2008, 2009), Rothschild (2011) among others for recent discussion on this.

6 Other Theories of Presupposition Projection

The Binding Problem is a significant problem that motivated alternative theories of presuppositions. We will discuss at least the following two theories for the next two weeks:

1. Satisfaction Theory (Heim 1983, Beaver 2001, Rothschild 2011)

2. Trivalent Theory (Peters 1979, Kramer 1995, Beaver & Krahmer 2001, George 2008a,b, Fox 2008)

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