Presupposition

24.954: Pragmatics in Linguistic Theory

Patrick D. Elliott

August 30, 2019

Optional (but strongly recommended) readings for this week:

- Beaver & Guerts (2011) Presupposition. In *Stanford Encyclopaedia of Philosophy*. https://plato.stanford.edu/entries/presupposition/
- Chapter 5 of Kadmon (1990) *Formal Pragmatics*.

Let's start by being maximally non-commital: a "presupposition"[1] is a kind of *inference* that sentences in natural languages *may* convey.

(1) a. Paul quit vaping.
presupp: *Paul used to vape*
b. The mayor of Oakland waterskis.
presupp: *Oakland has a mayor*
c. I re-read *The Lord of the Rings*.
presupp: *I've read the Lord of the Rings*
d. Uli forgot to submit the paperwork.
presupp: *there was paperwork that Uli was supposed to submit*
e. None of my students failed her midterm.
presupp: *Each of my students prefer "she/her" pronouns*
f. Sam walks her dog every morning.
presupp: *Sam has a dog*
g. It was at the pub that Rob had a revelation.
presupp: *Rob had a revelation*

Issues to flag up immediately:

- Of all the inferences that a sentence conveys, how do we know which ones are *presupposed*?
- Of all the inferences that a sentence conveys, *why* are just the ones that are presupposed, presupposed?

[1] When we say *presupposition*, we typically mean *semantic presupposition*, unless otherwise noted.

1 Eubulides' *Horns paradox*

Eubulides of Miletus' (±405-330 BC) noted that, if the following argument is sound, then we should conclude that *everyone is a cuckold*. Why doesn't it go through?[2]

(2) a. Major: What you haven't lost you still have.
b. Minor: You have not lost your horns.
c. Ergo: You still have your horns.

To see what's going on more clearly, we can render the argument into predicate logic:

(3) a. $\forall x[\neg \text{ youLost } x \rightarrow \text{youStillHave } x]$ Major
b. $\neg$ youLost YourHorns Minor
c. $\neg$ youLostyourHorns $\rightarrow$ youStillHave yourHorns *Universal Instantiation*
d. youStillHaveyourHorns *Modus Ponens*

What went wrong here?

A non-trivial fact about natural language semantics: sentences don't obey the *law of the excluded middle*, i.e., sentences in natural language can be neither true nor false.

Another non-trivial, and closely related fact about natural language semantics: sentence meanings are *multi-dimensional*. In other words, sentences may convey qualitatively different kinds of meaning at the same time.

We can think of *presupposition* as a dimension of meaning characterised by the following two properties:

- backgroundedness
- projection

[2] We can thank Seuren (2005: p. 89) for pointing out the relevance of Eubulides' paradoxes to contemporary semantic thinking.

2 Backgroundedness

Mention Schlenker's description of presuppositions a "epistemic preconditions"

From an utterance of (4), we can infer (at least) two things: (4a) and (4b).

(4) Peter is talking about *Eubulides* again
   a. ⇝ Peter is talking about Eubulides now — at-issue
   b. ⇝ Peter has talked about Eubulides before — presupposition

There is an intuitive sense in which (4a) is the subject matter of the sentence – in uttering (4), the speaker aims to communicate that (4a).

We can probe the pragmatic status of a given inference using questions – the at-issue component of a sentence meaning can answer a question, whereas the presupposition cannot, as illustrated by the contrast between (5) and (6).

(5) Which Greek philosopher is Peter talking about now?
✓Peter is talking about *Eubulides* again.

(6) Which Greek philosopher has Peter talked about before?
#Peter is talking about *Eubulides* again.

2.1 Pragmatic vs. semantic presupposition

If I say the following to you...

(7) Peter redet wieder von *Eubulides*.

...I pragmatically presuppose (at least) the following:

- you understand German.
- You can hear (or perhaps lip-read).

This information however is (probably!) not encoded in the semantics of the NL expressions.

Semantic presupposition relates to pragmatic presupposition, in the sense that semantic presupposition usually (but not always) gives rise to a pragmatic presupposition.

Later on in the class, we'll make precise exactly how this comes about, within a particular theory of presupposition.

3 Projection

As well as having a different *pragmatic* status (wrt. backgroundedness), the inferences in (8a) and (8b) behave differently in embedded contexts.

(8) Peter is talking about *Eubulides* again
   a. ⇝ Peter is talking about Eubulides now — at-issue
   b. ⇝ Peter has talked about Eubulides before — presupposition

Consider what happens when we turn (8) into a polar question:

(9) Is Peter talking about *Eubulides* again?
   a. ⇝ ? (Peter is talking about Eubulides now)
   b. ⇝ Peter has talked about Eubulides before

The inference in (8a) is *questioned*, whereas the inference in (8b) is unaffected. We see the same pattern in other *non-veridical contexts*:

(10) Peter isn't talking about *Eubulides* again.

(11) There's no way that Peter is talking about *Eubulides* again.

(12) Peter will never talk about *Eubulides* again.

(13) Peter might be talking about *Eubulides* again.

(14) Peter should talking about *Eubulides* again.

3.1 Weakened projection

(15) Patrick hopes that Peter will talk about *Eubulides* again.

The complement of "hope" ("Peter will talk about Eubulides again"), as we've seen, presupposes: Peter has talked about Eubulides before.

What does (15) presuppose globally?

- ⇝ Peter has talked about Eubulides before.
- ⇝ Patrick believes that Peter has talked about Eubulides before.

It has been observed that presuppositions give rise to *weakened* projection, when embedded under attitude verbs (Heim 1992). We'll talk more about this in session 3!

3.2 Failed projection (or: *Local Accommodation*)

Add some examples of local accommodation

An example from Beaver & Zeevat:

Add proper reference here

(16) Context: *Our heroine has landed herself in a difficult spot. From all sides dangerous criminals are approaching.*
THE HEROINE: I knew they would show no mercy.

to know P typically presupposes *P*, but (16) is felicitous in a context where this is the first time the heroine has informed us of the treatment she expects at the hands of the villains.

In this instance the semantic presupposition fails to translate into a pragmatic presupposition.

4 Projective meaning beyond presupposition

Presupposition can be difficult to distinguish from *conventional implicature*, which also displays both *backgroundedness* and *projectivity*.

Expressives/supplements (as in (17)) and *appositives* two representative kinds of conventional implicature.

cite potts, mccready, gutzmann etc.

(17) This *fucking* class is three hours long!
⇝ ☹ (this class is three hours long)

(18) The class, which lasted for three hours, was tedious.
⇝ the class lasted for three hours

Appositives vs. presuppositions

Despite both being backgrounded, presuppositions typically express *old* information, whereas appositives convey *new* information.

Furthermore, whereas presuppositions can sometimes interact with other operators (cf. our discussion of *weakened projection*, appositives always project all the way out).

(19) Patrick hopes that Peter is talking about Eubulides again.
⇝ Patrick believes that Peter has talked about Eubulides before
weakened projection

(20) Patrick hopes that Peter is talking about Eubulides, who is a Greek philosopher. ⇝
Eubulides is a Greek philosopher No weakened projection

Expressives vs. presuppositions

Expressives are harder to distinguish from presuppositions, and in fact, some authors group the two phenomena together.

Add references for this here

5 Triggering presupposition

In many cases, the presence of a presupposition is traceable to a certain NL expression or construction. See, e.g., the contrast in (21).

(21) a. Paul is vaping **again**. *presupposes that Paul vaped before*
b. Paul is vaping. *presuppositionless*

An *it-cleft*, i.e., *it was x that V−ed* presupposes that *someone V−ed*.

(22) a. It was PAUL that vaped.
b. It wasn't PAUL that vaped.

Factive predicates such as *know* presuppose the truth of their complement.

(23) a. Hubert knows that Paul vapes
b. Hubert doesn't know that Paul vapes.

We call such expressions and constructions **presupposition triggers**.

Expressions with similar at-issue meanings cross-linguistically tend to trigger the same presuppositions. This suggests that we want a unified theory of which inferences associated with NL expressions/constructions end up being presupposed.

This is known as the **triggering problem** of presupposition.

See Schlenker (2019) for an independent argument from pro-speech gestures that a triggering algorithm is independently necessary.

6 A multi-dimensional theory of presupposition

In this section, I'll spell out explicitly a *multi-dimensional* account of presupposition, so that we can see its shortcomings clearly.[3]

Each natural language expression conveys two kinds of meanings: (a) an *at-issue* meaning, and (b) a *presupposition*.

We'll write this using Sauerland's (2008) fraction notation; the presupposition goes on the top, and the at-issue meaning goes on the bottom. We'll assume that presuppositions are propositions.

$$\frac{\textit{presupposition}}{\textit{assertion}}$$

[3] This is essentially a more compositionally explicit version of Karttunen & Peters (1979). It most closely mirrors Giorgolo & Asudeh's (2012) analysis of conventional implicature.

$$[\![\text{Paul quit vaping}]\!] = \frac{\text{Paul used to vape}}{\text{Paul doesn't vape now}}$$

Let's also define helper functions to retrieve the presupposition and assertion:

(24) $\mathbb{A}\ \frac{p}{a} = a$

(25) $\mathbb{P}\ \frac{p}{a} = p$

6.1 Bridging between semantics and pragmatics

Formal definition of a pragmatic presupposition:

(26) Agents $a_1 ... a_n$ pragmatically presuppose p iff the following hold:
   a. Each a_i believes 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
   …

Semantic presuppositions as felicity conditions on utterances:

(27) An utterance of sentence S by agents $a_1 ... a_n$ is infelicitous unless $a_1 ... a_n$ pragmatically presuppose $\mathbb{P}\ [\![S]\!]$ (i.e., the semantic presupposition of S)

6.2 Compositionality

We'll assume that any uni-dimensional (i.e., non-presuppositional) meaning can be lifted into a multidimensional meaning with a trivial presupposition, via an operator π.

$$[\![\text{Paul doesn't vape}]\!]^{\pi} = \frac{\top}{\text{Paul doesn't vape}}$$

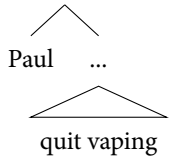
Composition proceeds by (a) doing *function application* (FA) in the assertive dimension, and (b) *conjunction* in the presuppositional dimension. We can define an operation of *multi-dimensional function application* (MA) in order to formalise this.

$$\text{MA}\ \frac{p}{x}\ \frac{q}{y} := \frac{p \wedge q}{\text{FA}\ x\ y}$$

We can treat *presupposition triggers* as functions from uni-dimensional individuals to multi-dimensional meanings. This gives us sub-sentential compositionality.

(28) $[\![\text{quit vaping}]\!] = \lambda x\ .\ \frac{x \text{ used to vape}}{x \text{ doesn't vape now}}$

(29)
$$\frac{\text{Paul used to vape}}{\text{Paul doesn't vape now}}\ \text{FA}$$



6.3 Projection

6.3.1 Negation

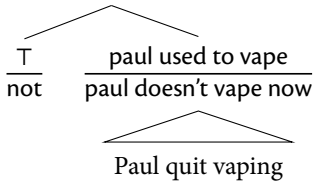
NL negation negates the assertive component of a sentence meaning, yet leaves the presupposition unaffected (to use Karttunen & Peters's terminology, it is a "hole").

(30) a. Paul quit vaping. *presupposes that Paul vaped before*
   b. Paul didn't quit vaping. *Presupposes that Paul vaped before*

We can capture this behaviour simply by assigning it a trivially multi-dimensional meaning:

(31) $[\![\text{not}]\!] = \frac{\top}{\text{not}}$

(32)
$$\frac{\text{paul used to vape}}{\text{paul vapes now}}\ \text{MA}$$



6.3.2 Conjunction

How do presuppositions project in conjunctive sentences?

(33) Sam visited Rome again and Ka visited Venice.
presupp.: Sam has visited Rome before

(34) Sam visited Rome and Ka visited Venice again.
presupp.: Ka has visited Venice before

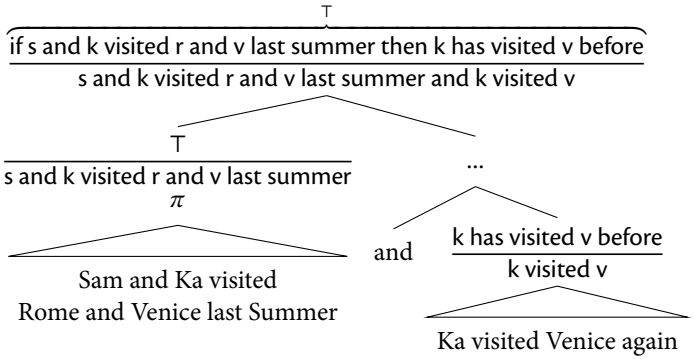
(35) Sam and Ka visited Rome and Venice last Summer, and Ka visited Venice again.
presuppositionless

(36) Ka visited Venice again, and Sam and Ka visited Rome and Venice last Summer.
presupp.: Ka has visited Venice before

As famously observed by Karttunen & Peters, presuppositions embedded in a conjunctive sentence do not always project all the way out.

We'll adopt the following entry for sentential conjunction (assuming a left-branching structure for conjunctive sentences).

(37) $[\![\text{and}]\!] \coloneqq \lambda \frac{q'}{q} \,.\, \lambda \frac{p'}{p} \,.\, \frac{p' \wedge (p \Rightarrow q')}{p \wedge q}$

(38)


A preview of the proviso problem

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

(40) $\mathbb{P}$ ([[her brother is happy]]) = Mary has a brother

Our entry for "and" predicts the following:

(41) if Mary is pregnant then Mary has a brother / Mary is pregnant and Mary's brother is happy

This seems too weak! (39) is only felicitous in a context where the common ground entails that Mary has a brother.

Other theories of presupposition projection inherit the problem of assigning certain sentences weak, conditional presuppositions; this is known as the *proviso problem*. We'll come back to this in week three, after introducing the satisfaction theory of presupposition projection (i.e., dynamic semantics).

6.4 Disjunction

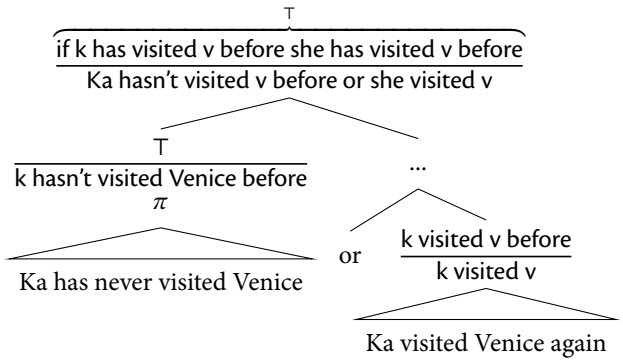
(42) Either Sam visited London again, or Ka visited Venice.
presupp.: Sam has visited London before

(43) Either Sam visited London, or Ka visited Venice again.
presupp.: Ka has visited Venice before

(44) Either Ka has never visited Venice, or she visited Venice again.
presuppositionless

(45) Either Ka visited Venice again, or she has never visited Venice.
???

(46) $[\![\text{or}]\!] \coloneqq \lambda \frac{q'}{q} \,.\, \lambda \frac{p'}{p} \,.\, \frac{p' \wedge \neg p \Rightarrow q'}{p \vee q}$

(47)


7 Problems for a multi-dimensional semantics

7.1 The binding problem

As noted by Karttunen & Peters (1979), the multi-dimensional theory has a (potentially fatal) flaw.

We can illustrate the problem simply by trying to give a multi-dimensional semantics for (48).

(48) Someone quit vaping.

(49) $\exists x[x \text{ used to vape}]$ / $\exists x[x \text{ doesn't vape now}]$

Does this satisfactorily capture the meaning of the utterance in (48)? If not, why not?[4]

[4] In Elliott (2019) I give a multi-dimensional semantics for conventional implicature which doesn't face the binding problem, essentially by adopting a version of alternative semantics where alternatives are themselves multi-dimensional.
It would be natural to extend this system to presupposition. This could be a cool squib topic!

7.2 Explanatory adequacy

We observed a linear asymmetry in the projection pattern observed with conjunction.

Note that different predictions for presupposition projection are simply a matter of reversing the lambdas:

(50) $[\![\text{and}]\!] = \lambda \frac{p'}{p} . \lambda \frac{q'}{q} . \frac{p' \wedge (p \Rightarrow q')}{p \wedge q}$

Now we (erroneously?) predict the following sentence to be presuppositionless:

(51) Paul quit vaping and Paul used to vape.

Are we doing anything more than simply building the projection behaviour we observe into the lexical semantics of individual operators? This doesn't seem very satisfying. See Schlenker (2009, 2010) for related criticisms.

Note that the problem of explanatory adequacy extends to the *satisfaction* theory, which we'll be covering next week.

8 Next time

The remainder of the presupposition block will be devoted to an exposition of two of the major accounts of *projection*:

- The satisfaction theory (i.e., dynamic semantics)

  part i overview of dynamic semantics: Heim 1983, Rothschild 2017

  Add more references here

  part ii projection from the complement of attitude verbs, the proviso problem, etc.: Heim 1992

  Add, e.g., a reference to Mandelkern here

- The trivalent theory

  Add references for trivalent theory

References

Elliott, Patrick D. 2019. *Fuck* compositionality. Slides from an invited talk at the DGfS workshop *Encoding emotive attitudes in non-truth-conditional meaning*.

Giorgolo, Gianluca & Ash Asudeh. 2012. Monads for conventional implicatures. In Ana Aguilar Guevara, Anna Chernilovskaya & Rick Nouwen (eds.), *Proceedings of sinn und bedeutung 22*. Cambridge, MA: MITWPL.

Heim, Irene. 1983. On the projection problem for presuppositions. In *Proceedings of WCCFL 2*, 114–125. Stanford University.

Heim, Irene. 1992. Presupposition projection and the semantics of attitude verbs. *Journal of Semantics* 9(3). 183–221.

Karttunen, Lauri & Stanley Peters. 1979. Conventional implicature. In *Syntax and semantics*, vol. 2.

Rothschild, Daniel. 2017. A trivalent approach to anaphora and presupposition. unpublished manuscript.

Sauerland, Uli. 2008. Implicated presuppositions. In *The discourse potential of underspecified structures*, 581–600. Berlin: Mouton de Gruyter.

Schlenker, Philippe. 2009. Local contexts. *Semantics and Pragmatics* 2.

Schlenker, Philippe. 2010. Local contexts and local meanings. *Philosophical Studies: An International Journal for Philosophy in the Analytic Tradition* 151(1). 115–142.

Schlenker, Philippe. 2019. Triggering presuppositions. lingbuzz/004696.