Predicting the Presuppositions of Verbs

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Introduction

- Many (indeed perhaps all) verbs carry some presuppositions:

- E.g. traditional triggers, like *factives*, or *change of state verbs*

(1) If John **knows** that it is raining, then he must be sad

Inference: it is raining

(2) If John **stopped** smoking, then Mary is happy

Inference: John used to smoke

- But also:

(3) If John killed Bill (at time t_1), then Mary is very sad.

Inference: Bill was alive at some time before t_1.

(4) If John loves Mary, then Mary is happy

Inference: John is a sentient being

Why do verbs give rise to the presuppositions they do?

- **Lexicalist approach** (Karttunen and Peters 1979, etc.):

Certain words carry a presupposition as part of their lexical meaning.

(5) *John **knows** that it is raining.*

- *Carries a factive presupposition*

(6) *John **believes** that it is raining.*

- *Does not carry a factive presupposition*

- Thus, presuppositions are a completely arbitrary property of lexical meaning.

Reasons for looking for a predictive mechanism

- **Non-detachability**: words that express a similar meaning stand with a similar presupposition (cf. Simons 2001)

  (7) Has John **stopped** smoking?

  (8) Has John **quit/finished/given up** smoking?

- **Cross-linguistically** stable phenomenon

  (e.g. Levinson and Annamalai 1979. wrt. English and Tamil)

- **Presuppositions everywhere**

  (9) If John killed Bill (at time t_1), then Mary is very sad.

  Inference: Bill was alive at some time t_2 (before t_1).

A Pragmatic Approach

- at least some presuppositions have a conversational source

  - Stalnaker's (1974) suggestion: If an assertion contributes a heterogeneous meaning, one of the components of its entailed meaning gets presupposed

    E.g: John knows that it is raining:

    It is raining + John believes** it is raining

  - **Rationale:** otherwise the hearer would not know *what the main point of the speaker's contribution* to the context is.

  - **But** Stalnaker (1974) makes no prediction as to which component of the meaning should get presupposed

Two Recent Proposals

1. **Simons (2001):**
   - If A raises the question whether q, and q asymmetrically entails p, then A believes p

     E.g: q=*John knows it is raining*

     p= it is raining
   - **Problem**: incorrect predictions

2. **Abusch (2002, 2010):**
   - Some words have alternatives specified to them in the lexicon*:*

     e.g. *stop* | *continue*
   - We pragmatically presuppose that some of these is true:

     John stopped smoking or John continued to smoke

     →What the disjunction still entails is the presupposition
   - **Problem**: We still need a lexical stipulation

Preview of the general idea proposed here

Intuition: Entailments of a sentence S that are independent from the main point of S are presupposed.

- **The main point** of the sentence is given by those entailments that are by nature about the event time of the matrix predicate.

- The additional information that is entailed by a sentence but is not (or does not have to be) about the event time of the matrix predicate is **presupposed**.

Event times

- Following Partee (1973) I will assume that the event times of predicates are their arguments, and behave like a pronoun

(10) $[\![\text{came}]\!] = \lambda t_i.\ \lambda x.\ x \text{ came at } t_i$

(11) John came at t_6.

- **Examples**:

(12) John knows (at time t_1) that it was raining (at time t_2)

Presupposition: it was raining (at time t_2)

(*not about t_1, if t_1 and t_2 don't overlap.)*

(13) John stopped smoking (at time t_1)

Presupposition: John smoked at t_2 (where $t_2 < t_1$)

(*not about t_1*)

Canonical Temporal Representation

- **Canonical temporal representation**: is a sentence in which the argument positions of sentences are filled by choosing any constant of the right type.

(14) John knows (at time τ_1) that it was raining (at time τ_2)

Let's call the original temporal arguments of a sentence TS-arguments and the ones that replace them CTS-arguments.

(15) **The CT(S) equivalent p'** of an entailment p of S *($p=_{CTS} p'$)*
   a. p itself, if p does not contain TS arguments
   b. Otherwise p' is the proposition that p can be turned into by replacing its TS-arguments by the corresponding CTS-arguments.

The triggering mechanism

- An entailment p of S is presupposed if S has a CTS-representation such that the CTS-equivalent of p is not about the event time of the matrix predicate of CTS.

Illustration: Let's choose a τ_1 and τ_2 that do not overlap.

(16) S=John knows at time t_1 that it is raining at time t_1

a. CTS: John knows at τ_1 that it is raining at τ_2

b. S|= it is raining at t_1

c. It is raining at t_1 $=_{CTS}$ it is raining at τ_2

d. it is raining at τ_2 is not about τ_1

e. therefore, S presupposes that it is raining at t_1

Being about an argument (FOL):

- Demolombe and Fariñas del Cerro (2000)

♦ to define aboutness, we first need to introduce the notion of **variants** of an interpretation with regard to an object c:

  - **Roughly speaking**, this is the set of interpretations M^c that only differ from *M* by the truth assignment of atomic sentences where *c* appears as an argument.

♦ A formula F is **about** an object c iff there are two models $\{M, M'\} \in M^c$ and $M \models F$ and $M' \not\models F$)

Being about an argument (FOL):

- **An example**

Let L be a language with a unique unary predicate symbol *tired*, and the constant symbols *Fido, John, Mary*.
Let *M* be an interpretation of L defined by:

D = {Fido, Mary, John, Sue};
i_M(*Fido*) =Fido; i_M(*Mary*) = Mary; i_M(*John*) = John
i_M(is tired) = { Fido, John, Sue }

- *S=Fido is tired* is **about** Fido, because there is an M'$\in M^{Fido}$, such that M |= S and M' |≠ S, e.g. where $i_{M'}$(is tired) = {John, Sue }

- *F=John is tired* is not about Fido, because for every M'$\in M^{Fido}$, M' |=F

Being about an argument (FOL):

- *Fido is tired or Fido is not tired* **is not about Fido**, because for every $M' \in M^{Fido}$, $M' \models T$.

- *Every individual is tired* **is about Fido**, because there is an $M' \in M^{Fido}$ such that $M \models F$ and $M' \not\models F$, e.g. where $i_{M'}(is\ tired) = \{John, Sue\}$

Interestingly,
suppose originally in our example we had $i_M(is\ tired) = \{Fido\}$

- *Some individual is tired* **is about** Fido, because there is an $M' \in M^{Fido}$, such that $M \models F$ and $M' \not\models F$, e.g. where $i_{M'}(is\ tired) = 0$

Being about an argument (possible worlds semantics)

- **Variants**: w, w' are c-variants iff they only differ in the interpretation of atomic sentences that contain an expression referring to c as an argument[1]

- **Aboutness:**

  A sentence S is **about** an object c iff there are two worlds w, w' which are c variants and F(w)=1 and F(w')=0

[1] I am assuming that the language does not contain expressions st. A↔P(b), i.e. possible worlds are defined by the combinatorial possibilities of the elements in the language

The proposal

- The mechanism looks at the set of all the entailments of a sentence S, and checks if any of them are predicted to be presupposed.

Example:

S= John knows at t_1 that Mary is tired at t_1

- **Lexical entailments**:

  φ =John knows at t_1 that Mary is tired at t_1

  ψ=John believes at t_1 that Mary is tired at t_1

  χ=Mary is tired at t_1
- **Existential sentences:** (e.g. Someone knows that Mary is tired)
- **Disjunctions:** $S \vee \omega$

The proposal

- An entailment p of S is presupposed if S has a CTS-representation such that the CTS-equivalent of p is not about the event time of the matrix predicate of CTS.

Illustration: Let's choose a τ_1 and τ_2 that do not overlap.

(17) S=John knows at time t_1 that it is raining at time t_1

a. CTS: John knows at τ_1 that it is raining at τ_2

b. S|= it is raining at t_2

c. It is raining at $t_2 =_{CTS}$ it is raining at τ_2

d. it is raining at τ_2 is not about τ_1

e. therefore, S presupposes that it is raining at t_1

The proposal

- An entailment p of S is presupposed if S has a CTS-representation such that the CTS-equivalent of p is not about the event time of the matrix predicate of CTS.

Compare: Let's choose a τ_1 and τ_2 that do not overlap.

(18) S=John knows at time t_1 that it is raining at time t_1

a. CTS: John knows at τ_1 that it is raining at τ_2

b. S|= John believes at t_1 that it is raining at t_2

c. John believes t_1 raining at $t_2 =_{CTS}$ John believes τ_1 raining at τ_2

d. that John believes τ_1 it is raining at τ_2 is *about* τ_1

e. S does **not** presuppose that John believes at t_1 it is raining at t_1

Know vs. Believe

φ =John **knows** that Mary is tired

K={φ, ψ, χ, Someone knows that Mary is tired, φ ∨ ω, etc. }

- That Mary is tired is presupposed

ψ=John **believes** that Mary is tired

K={ψ, Someone believes that Mary is tired, ψ ∨ ω, etc. }

- Nothing is presupposed

Example: Stop

(19) **S= John** stopped **smoking** at t_1.

ψ=John does not smoke at t_1

φ=John smoked at t_2 (where t_2 refers to some time before t_1)

χ=John stopped smoking at t_1.

- Let's choose a τ_1 that does not overlap with t_1 or t_2

(20) S= **John** stopped **smoking** at t_1.

a. CTS: John stopped smoking at τ_1

b. S|= John smokes at t_2 (where t_2 refers to some time before t_1)

c. John smokes at t_2 $=_{CTS}$ John smokes at t_2

d. John smokes at t_2 is not about τ_1

e. therefore, S presupposes that John smokes at t_2

Example: Discover

(21) Peter discovered at t_1 that Mary is tired at t_1

φ=Mary is tired at t_1 *(≈factives)*

ψ=Peter did not know that Mary is tired at t_2 (where $t_2 < t_1$)

(≈change of state verbs)

→ φ and ψ are presupposed

Compare: Kill

(22) John killed Bill at t_1

- Some lexical entailments:

  φ=John killed Bill at t_1

  ψ=Bill is dead at t_1

  χ=Bill was alive at t_2

Entailments that are predicted to be presupposed: χ

(≈ change of state verbs)

Adding common knowledge: Sortal Presuppositions

- The lexical entailment φ of (17) is not predicted to be presupposed:

  (23) John knows that Mary is tired at t_1

  φ = John is sentient at t_1

- However, φ contextually entails (24):

  (24) John is sentient in general

  Gen t [C(j,t)] [sentient (j,t)]

  - Generics do not express universal quantification over times (they allow exceptions, in fact not even a single verifying instance is needed, etc.)
  - Therefore, the generic entailment of a sentence is not about the event time t_1, hence (24) is predicted to be presupposed.

Predictions

- Verbs that entail the truth of their propositional complement will also presuppose the truth of this complement

- Entailments that do not contain the matrix TS argument and whose tense argument is not quantified over are presupposed

- Atomic sentences that have the same meaning should trigger the same presuppositions

Conclusion

- A predictive mechanism for verbal presuppositions
- Certain entailments are distinguished: The entailments that are not necessarily about the event time.
- This triggering mechanism itself is context independent, but the pool of relevant entailments (candidates for presuppositions) is sensitive to common knowledge.

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Appendix 1: Fillmore's cases: *be right* vs. *be aware*

(25) John **is right** that dinner is ready
asserts: Dinner is ready
presupposes: John believes that dinner is ready

(26) John **is aware** that dinner is ready
asserts: John believes that dinner is ready
presupposes: Dinner is ready

The proposal predicts a factive presupposition for both. However, syntactically the two do not behave alike (cf. Schlenker 2008):

(27) John is right in claiming that dinner is ready

ψ=John claimed that dinner was ready (at a previous time)

φ= John's claim is correct

Now (27) will presuppose both ψ and the factive entailment. The latter can be canceled however, if it contradicts the asserted meaning.

Appendix 2: Context sensitivity? Part-time triggers

Schlenker's (2006, 2010) case of context dependency:

(28) Mary has **announced** that she is pregnant

- **Case 1**: Mary is assumed to be reliable and therefore the context entails the truth of the embedded proposition

  →it is presupposed that Mary is pregnant

- **Case 2**: Mary is assumed to be unreliable (e.g. she is 7-years old) and therefore context does not entail the truth of the embedded proposition

  → it is *not* presupposed that Mary is pregnant

- **Here: At first blush,** it seems that when the embedded proposition is contextually entailed, it is also presupposed.

Context sensitivity? Part-time triggers

But look at the following example (from Schlenker 2006)

(29) George the butler has **announced** that dinner is ready

- **Case 3**: George is assumed to be superreliable (if He says p→p, and if He does not say p→not p)

  → it is *not* presupposed that dinner is ready

- The contextual inferences of part time triggers are not monotonic: It is not enough for the embedded proposition to be contextually entailed, to be presupposed. It also has to be the case that certain further entailments are not present.

- The present mechanism cannot predict such a non-monotonic pattern.
- Presumably, such inferences are due a different mechanism.

Appendix 3: *Regret*

(30) John regrets that it is raining

What does (30) presuppose?

- Kiparsky and Kiparsky (1970), Gazdar (1979): *it is raining*
- Klein (1975), Egré (2005): *John believes that it is raining*

  - This proposal can only predict that regret triggers a true factive presupposition and assume that there is a mechanism that can weaken it in some cases, e.g. using the weakening mechanism proposed in Geurts (1999)

Appendix 4: disjunctions

Assuming that S is a sentence about c, when is a disjunction S ∨ Q not about an object c? Disjunctions S ∨ Q will only not be about c in a subset of the cases where Q contains a lexical entailment of S that is not about c or S ∨ Q is a tautology. Elements of W are assumed to be derived via the combinatorial possibilities of the elements in the language. E.g. if the language contains one individual, three 1-place predicates, and no other predicate, there will be exactly eight possible worlds in W.

1. If the disjunct expresses a tautology, then the whole disjunction is not about c.

2. Suppose the disjunction is not a tautology:

2.1 If no disjunct in Q is entailed by S, then the disjunction is about c.
[*proof* : A disjunction is true in a world w if at least one of its disjuncts is true in w, and false if no disjuncts are true in w. Therefore the disjunction S ∨ Q will be about c if it is possible to find two c-variants st. one of

them makes all the disjuncts S ∨ Q false, while the other makes at least one disjunct true. Since Q does not contain a disjunct that is entailed by S, and S is about c, it is possible to find two c-variants w,w', st. $[[Q]]^{w}=[[Q]]^{w'}=0$ and $[[S]]^{w}=1$ and [[S]]w'=0. Thus S ∨ Q will be true in w and false in w', and therefore S ∨ Q is about c.]

2.2. Let ψ be an element of a disjunction in Q. If ψ is entailed by S and is about c, then the disjunction S ∨ Q is about c.
proof : Suppose S ∨ Q was not about c. Then for all c-variants w,w', $[[S \vee Q]]^{w}=[[S \vee Q]]^{w'}$. Since ψ is about c, it is possible to find two worlds w, w' which are c-variants st. $[[\psi]]^{w}= 1$ and $[[\psi]]^{w''}=0$. Now to show that S ∨ Q is about c, we only need to show that every disjunct in S ∨ Q other than ψ can be false in w'. Since ψ is entailed by S, $[[S]]^{w'}=0$. Since any other disjunct φ in Q is by assumption independent from S, it is possible to finnd a w' st. for all φ in Q, $[[\varphi]]^{w''}=0$.

2.3. If Q contains a disjunct ψ that is entailed by S and ψ is not about c then the whole disjunct is not about c, unless Q also contains a disjunct that is about c and does not entail ψ.

proof: Suppose there are two worlds w, w' which are c-variants and $[[S \vee Q]]^{w}=1$ $[[S \vee Q]]^{w'}=0$, and thus $S \vee Q$ is about c. This means that every disjunct is false in w', and there is at least one disjunct that is true in w. Since ψ is not about c, it will have to be either true in both w and w', or false in w and w'. Suppose first $[[\psi]]^{w}=[[\psi]]^{w'}=0$.
Since ψ is entailed by S, $[[S]]^{w}=[[S]]^{w'}=0$. Therefore $[[S \vee Q]]^{w}=[[S \vee Q]]^{w'}=0$ and we have a contradiction. If Q also contains a disjunct φ that is about c and does not entail ψ then it is possible that $[[S \vee Q]]^{w}=[[S \vee Q]]^{w'}=1$. Suppose now $[[\psi]]^{w}=[[\psi]]^{w'}=1$. Then automatically, $[[S \vee Q]]^{w}=[[S \vee Q]]^{w'}=1$, and so we have a contradiction.

Appendix 5: *accompany*, etc.

(31) John took Mary to the airport

vs.

(32) John accompanied Mary to the airport

- **Abusch (2009):** (32) presupposes that Mary went to the airport.

- **Here:** what we observe is in fact a type of existential presupposition arising from *John accompanied Mary, who was going to the airport* (?)