

Lecture 6: Presuppositions and the projection problem

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1 Presupposition triggers

Proper names:

- (1) Kepler died in misery.
→ Kepler existed. ('→' here means "implies" in a broad, intuitive sense)

Definite descriptions:

- (2) The king of France is bald.
→ There is a king of France.

Possessives:

- (3) John's son is bald.
→ John has a son.

Factive verbs:

- (4) John regrets that he beat his wife.
→ John beat his wife.

Aspectual verbs:

- (5) Sue stopped smoking.
→ Before time t , Sue smoked.

Verb of saying:

- (6) John accused Mary of beating her husband.
→ John judged that it was bad for Mary to beat her husband.

Exclusives:

- (7) Only John smokes.
→ John smokes.

Clefts:

- (8) It was John who came.
→ Somebody came.

Counterfactuals:

- (9) If John had come, then it would have been fun.
→ John did not come.

2 Projection

Projection across negation

- (10) a. Kepler died in misery.
→ Kepler existed.
b. Kepler did not die in misery.
→ Kepler existed.
- (11) a. The king of France is bald.
→ There is a king of France.
b. The king of France is not bald.
→ There is a king of France.
- (12) a. John's son is bald.
→ John has a son.
b. John's son is not bald.
→ John has a son.
- (13) a. John regrets that he beat his wife.
→ John beat his wife.
b. John does not regret that he beat his wife.
→ John beat his wife.
- (14) a. Sue stopped smoking.
→ Before time t , Sue smoked.
b. Sue has not stopped smoking.
→ Before time t , Sue smoked.
- (15) a. John accused Mary of beating her husband.
→ John judged that it was bad for Mary to beat her husband.
b. John did not accuse Mary of beating her husband.
→ John judged that it was bad for Mary to beat her husband.
- (16) a. Only John smokes.
→ John smokes.
b. Not only John smokes.
→ John smokes.
- (17) a. It was John who came.
→ Somebody came.
b. It wasn't John who came.
→ Somebody came.
- (18) a. If John had come, then it would have been fun.
→ John did not come.
b. If John had come, then it would not have been fun.
→ John did not come.

Projection across factive verbs like *know* and *regret*

- (19) a. Kepler died in misery.
→ Kepler existed.
b. Bill knows that Kepler died in misery.
→ Kepler existed.
- (20) a. The king of France is bald.
→ There is a king of France.
b. Bill knows that the king of France is bald.
→ There is a king of France.
- (21) a. John's son is bald.
→ John has a son.
b. Bill knows that John's son is bald.
→ John has a son.
- (22) a. John regrets that he beat his wife.
→ John beat his wife.
b. Bill knows that John regrets that he beat his wife.
→ John beat his wife.
- (23) a. Sue stopped smoking.
→ Before time *t*, Sue smoked.
b. Bill knows that Sue stopped smoking.
→ Before time *t*, Sue smoked.
- (24) a. John accused Mary of beating her husband.
→ John judged that it was bad for Mary to beat her husband.
b. Bill knows that John accused Mary of beating her husband.
→ John judged that it was bad for Mary to beat her husband.
- (25) a. Only John smokes.
→ John smokes.
b. Bill knows that only John smokes.
→ John smokes.
- (26) a. It was John who came.
→ Somebody came.
b. Bill knows that it was John who came.
→ Somebody came.
- (27) a. If John had come, then it would have been fun.
→ John did not come.
b. Bill knows that if John had come, then it would not have been fun.
→ John did not come.

Projection from the antecedent of a conditional

- (28) a. Kepler died in misery.
→ Kepler existed.
b. If Kepler died in misery, then the world is unfair.
→ Kepler existed.
- (29) a. The king of France is bald.
→ There is a king of France.
b. If the king of France is bald, then I will paint a picture of him.
→ There is a king of France.
- (30) a. John's son is bald.
→ John has a son.
b. If John's son is bald, then I will paint a picture of him.
→ John has a son.
- (31) a. John regrets that he beat his wife.
→ John beat his wife.
b. If John regrets that he beat his wife, then I will forgive him.
→ John beat his wife.
- (32) a. Sue stopped smoking.
→ Before time *t*, Sue smoked.
b. If Sue stopped smoking, then Fred will get back together with her.
→ Before time *t*, Sue smoked.
- (33) a. John accused Mary of beating her husband.
→ John judged that it was bad for Mary to beat her husband.
b. If John accused Mary of beating her husband, then I am surprised.
→ John judged that it was bad for Mary to beat her husband.
- (34) a. Only John smokes.
→ John smokes.
b. If only John smokes, then we don't need a smoking room.
→ John smokes.
- (35) a. It was John who came.
→ Somebody came.
b. If it was John who came, then the sink must be fixed.
→ Somebody came.
- (36) a. If John had come, then it would have been fun.
→ John did not come.
b. If it is the case that if John had come, then it would not have been fun, then we made the right decision anyway.
→ John did not come.

Projection from the consequent of a conditional

- (37) a. Kepler died in misery.
→ Kepler existed.
b. If the scientific revolution was a failure, then Kepler died in misery.
→ Kepler existed.
- (38) a. The king of France is bald.
→ There is a king of France.
b. If baldness is hereditary, then the king of France is bald.
→ There is a king of France.
- (39) a. John's son is bald.
→ John has a son.
b. If baldness is hereditary, then John's son is bald.
→ John has a son.
- (40) a. John regrets that he beat his wife.
→ John beat his wife.
b. If this is an apology letter, then John regrets that he beat his wife.
→ John beat his wife.
- (41) a. Sue stopped smoking.
→ Before time t , Sue smoked.
b. If Mary stopped smoking, then Sue stopped smoking.
→ Before time t , Sue smoked.
- (42) a. John accused Mary of beating her husband.
→ John judged that it was bad for Mary to beat her husband.
b. If John said that, then he accused Mary of beating her husband.
→ John judged that it was bad for Mary to beat her husband.
- (43) a. Only John smokes.
→ John smokes.
b. If Mary doesn't smoke, then only John smokes.
→ John smokes.
- (44) a. It was John who came.
→ Somebody came.
b. If this is John's lunchbox, then it was John who came.
→ Somebody came.
- (45) a. If John had come, then it would have been fun.
→ John did not come.
b. If Sue and John just broke up, then if John had come, then it would not have been fun.
→ John did not come.

Projection across several embeddings. Projection can survive multiple embeddings of this kind:

- (46) a. All of Jack's children are bald.
→ Jack has children.
b. Bill knows that [all of Jack's children are bald].
→ Jack has children.
c. Bill doesn't [know that [all of Jack's children are bald]].
→ Jack has children.
d. Mary regrets that [Bill doesn't [know that [all of Jack's children are bald]]].
→ Jack has children.
- (47) a. Fred resents Zelda's infidelity.
→ Zelda was unfaithful.
b. Fred no longer [resents Zelda's infidelity].
→ Zelda was unfaithful.
c. If [Fred has stopped beating Zelda], then [Fred no longer [resents Zelda's infidelity]].
→ Zelda was unfaithful (and Fred has been beating Zelda).
d. Mary knows that [if Fred has stopped beating Zelda, then [Fred no longer [resents Zelda's infidelity]]].
→ Zelda was unfaithful (and Fred has been beating Zelda).

3 The projection problem

Projection problem: How can we predict the presuppositions of a complex sentence from the presuppositions of its parts?

Cumulative hypothesis (as Karttunen describes it): "The presuppositions of a complex sentence are the logical sum of the presuppositions of its constituent sentences plus those that are associated with the main clause itself." [**logical sum:** conjunction, or union]

Cumulative hypothesis (another way to describe it): The presuppositions of a complex sentence include the presuppositions of its constituent sentences along with those that are associated with the main clause itself.

Prediction of the cumulative hypothesis: Because a conditional is a complex sentence, and the consequent is one of its constituent sentences (along with the antecedent), a presupposition of the consequent should always be a presupposition of the conditional as a whole.

But this prediction is not always met.

Failure of projection from the consequent of a conditional

- (48) a. Kepler died in misery.
→ Kepler existed.
b. If Kepler existed, then Kepler died in misery.
↯ Kepler existed.
- (49) a. The king of France is bald.
→ There is a king of France.
b. If there is a king of France, then the king of France is bald.
↯ There is a king of France.
- (50) a. John's son is bald.
→ John has a son.
b. If John has a son, then John's son is bald.
↯ John has a son.
- (51) a. John regrets that he beat his wife.
→ John beat his wife.
b. If John beat his wife, then John regrets that he beat his wife.
↯ John beat his wife.
- (52) a. Sue stopped smoking.
→ Before time *t*, Sue smoked.
b. If Sue smoked in the past, then she stopped smoking.
↯ Before time *t*, Sue smoked.
- (53) a. John accused Mary of beating her husband.
→ John judged that it was bad for Mary to beat her husband.
b. ?If John thinks that it was bad for Mary to beat her husband, then he accused Mary of beating her husband.
↯ John judged that it was bad for Mary to beat her husband.
- (54) a. Only John smokes.
→ John smokes.
b. If John smokes, then only John smokes.
↯ John smokes.
- (55) a. It was John who came.
→ Somebody came.
b. If somebody came, then it was John who came.
↯ Somebody came.
- (56) a. If John had come, then it would have been fun.
→ John did not come.
b. ?If John didn't come, then if John had come, then it would not have been fun.
↯ John did not come.

Generalization: If B presupposes P, then a sentence of the form 'If A then B' does not presuppose P when A=P.

In fact, it is more general.

- (57) a. All of Jack's children are bald.
→ Jack has children.
b. If Jack has children, then all of John's children are bald.
↯ Jack has children.
c. If it is true that Jack has children, then all of John's children are bald.
↯ Jack has children.
- (58) a. Fred will kiss Cecilia again.
→ Fred has kissed Cecilia before.
b. If Fred has kissed Cecilia before, then Fred will kill Cecilia again.
↯ Fred has kissed Cecilia before.
c. If Fred has managed to kiss Cecilia, then Fred will kill Cecilia again.
↯ Fred has kissed Cecilia before.
- (59) a. Harry's wife is no longer living with him.
→ Harry has a wife.
b. If Harry has a wife, then his wife is no longer living with him.
↯ Harry has a wife.
c. If Harry is married, then his wife is no longer living with him.
↯ Harry has a wife.

In all of these cases, the antecedent *semantically entails* the consequent.

Semantic entailment: A semantically entails B if and only if: whenever A is true, B is true.

Karttunen's filtering condition for *if... then* sentences

Let S stand for any sentence of the form "If A then B".

- (a) If A presupposes C, then S presupposes C.
(b) If B presupposes C, then S presupposes C, unless A semantically entails C.

In other words, a presupposition of the consequent clause of a conditional is "filtered out" whenever the antecedent semantically entails the consequent.

In this sense, *if... then* is a **filter**.

Karttunen's theory: Karttunen (1973) identifies three classes of expressions with different projection behavior:

- **Plugs:** A plug is a predicate that blocks off all the presuppositions of the complement sentence.*
- **Holes:** A hole is a predicate which lets all the presuppositions of the complement sentence become presuppositions of the matrix sentence.**
- **Filters:** A filter is a predicate which, under certain conditions, cancels some of the presuppositions of the complement.

**complement sentence:* sentence embedded within a larger sentence

***matrix sentence:* larger sentence in which a complement sentence is embedded

Examples of plugs: *order, ask.*

- (60) a. Fred stopped beating Zelda.
→ Fred has been beating Zelda.
- b. Bill ordered Fred to stop beating Zelda.
↯ Fred has been beating Zelda.
- c. Bill asked Fred to stop beating Zelda.
↯ Fred has been beating Zelda.
- (61) a. John pretended to have bad breath.
→ John did not have bad breath.
- b. Mary ordered John to pretend to have bad breath.
↯ John did not have bad breath.
- c. Mary asked John to pretend to have bad breath.
↯ John did not have bad breath.

Examples of holes: *force, prevent.*

- (62) a. Fred stopped beating Zelda. (=60a)
→ Fred has been beating Zelda.
- b. Bill forced Fred to stop beating Zelda.
→ Fred has been beating Zelda.
- c. Bill prevented Fred from stopping/ceasing to beat Zelda.
→ Fred has been beating Zelda.
- (63) a. John pretended to have bad breath. (=61a)
→ John did not have bad breath.
- b. Mary forced John to pretend to have bad breath.
→ John did not have bad breath.

- c. Mary prevented John from pretending to have bad breath.
→ John did not have bad breath.

Example	Presupposition?	Cumulative hypothesis	Karttunen
(60a) (<i>stop</i>)	yes	yes	yes
(60b) (<i>order...stop</i>)	no	yes	no
(60c) (<i>ask... stop</i>)			
(61a) (<i>pretend</i>)			
(61b) (<i>order...pretend</i>)			
(61c) (<i>ask... pretend</i>)			
(62b) (<i>force... stop</i>)			
(62c) (<i>prevent... stop</i>)			
(63b) (<i>force... pretend</i>)			
(63c) (<i>prevent... pretend</i>)			

The cumulative hypothesis fails to distinguish between (60b) and (62b), but Karttunen's theory correctly distinguishes them.

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