

Class 5

Presuppositions

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Plan

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- II Presupposition projection
- III Weak Kleene connectives
- IV Filtering and Strong Kleene connectives

I – Assertions vs. presuppositions

Entailments

- (1) a. Tina is tall and thin \Rightarrow Tina is thin
b. Tina ran to the station \Rightarrow Tina ran
c. Tina danced \Rightarrow Tina moved

Entailment: (i) *Indefeasible*; (ii) *speakers intuitively accept S_2 whenever they accept S_1 .*

The following relations are also entailments:

- (2) a. The king of France is bald \Rightarrow France has a (unique) king
b. Tina has stopped smoking \Rightarrow Tina used to smoke
c. It was Tina who shot Malcolm X \Rightarrow Someone shot Malcolm X
d. Tina regretted visiting LA \Rightarrow Tina visited LA

Is there a reason to distinguish the entailments in (1) and (2)?

The Russell-Strawson debate

(1) The king of France is bald



Bertrand Russell (1872-1970):

(1) is quantificational. It is logically equivalent to:

“exactly one entity has the property *King of France*, and that entity is bald”

- ▶ Thus, if there is no unique King of France, (1) is *false*.

P. F. Strawson (1919-2006):



Any use of (1) raises the following **presupposition**:

“exactly one entity, call it *x*, has the property *King of France*”

Under this presupposition, (1) means:

“*x* is bald”

- ▶ Thus, if there is no unique King of France, (1) is neither *true* nor *false*.

Russell vs. Strawson

(1) a. The king of France is bald.

Russell: $\exists x.KOF^* = \{x\} \wedge \mathbf{bald}(x)$

Strawson: $\exists x.KOF^* = \{x\} : \exists x.KOF^* = \{x\} \wedge \mathbf{bald}(x)$

b. Tina has stopped smoking.

Russell: $US(\mathbf{tina}) \wedge \neg S(\mathbf{tina})$

Strawson: $US(\mathbf{tina}) : \neg S(\mathbf{tina})$

US =used to smoke; S =smokes now

c. It was Tina who shot Malcolm X.

Russell: $\mathbf{shoot}(\mathbf{malcolmx})(\mathbf{tina})$

Strawson: $\exists x.\mathbf{shoot}(\mathbf{malcolmx})(x) : \mathbf{shoot}(\mathbf{malcolmx})(\mathbf{tina})$

Trivalent Strawsonian semantics (1)

$$\text{assertible: } \begin{cases} \text{true: } 1 \\ \text{false: } 0 \end{cases} \quad \text{non-assertible: } *$$

Tina has stopped smoking

$$(US(\mathbf{tina}) : \neg S(\mathbf{tina})) = \begin{cases} 1 & US(\mathbf{tina}) \wedge \neg S(\mathbf{tina}) \\ 0 & US(\mathbf{tina}) \wedge S(\mathbf{tina}) \\ * & \neg US(\mathbf{tina}) \end{cases}$$

Tina used to smoke

$$(\top : US(\mathbf{tina})) = \begin{cases} 1 & US(\mathbf{tina}) \\ 0 & \neg US(\mathbf{tina}) \end{cases}$$

Notation: $\llbracket \top \rrbracket = 1$ in every model $\llbracket \perp \rrbracket = 0$ in every model

Trivalent Strawsonian semantics (2)

$$[[S]]^M = (\varphi : \psi)$$

φ indicates whether S is *assertible* in M

ψ indicates whether S is *true* in M

Definition – the colon operator ('transplication'):

$$(\varphi : \psi) = \begin{cases} \psi & \varphi = 1 \\ * & \varphi = 0 \end{cases}$$

where φ and ψ are bivalent truth-values.

Russell or Strawson?

- (1) a. *The king of France is bald* \Rightarrow b. *France has a (unique) king*
(2) a. *Tina has stopped smoking* \Rightarrow b. *Tina used to smoke*
(3) a. *It was Tina who shot Malcolm X* \Rightarrow b. *Someone shot Malcolm X*

Russell:

No semantic presuppositions – (1)-(3) are ordinary entailments.

When sentence (1b/2b/3b) is false, sentence (1a/2a/3a) is also false.

Strawson:

When sentence (1b/2b/3b) is false, the truth-value of sentence (1a/2a/3a) is undefined (or “undefined”).

Who is right?

Exercise - Russell's/Montague's determiner

- ▶ Define the logical determiner function THE^R , of type $(et)((et)t)$, that implements Russell's semantics of the English definite article.
- ▶ The following expression is the Russellian-Montagovian treatment of the sentence *the king of France is bald*:

$\text{THE}^R(KOF)(\text{IS}(\mathbf{bald}))$

Use your definition of THE^R to simplify this expression.

II – Presupposition projection

Non-projection of ordinary entailments

- (1) a. Tina is tall and thin \Rightarrow Tina is thin
- b. Tina ran to the station \Rightarrow Tina ran
- c. Tina danced \Rightarrow Tina moved

Disappear under non-MON \uparrow operators:

Negation:

- (2) a. It is not the case that Tina is tall and thin $\not\Rightarrow$ Tina is thin
- b. It is not the case that Tina ran to the station $\not\Rightarrow$ Tina ran
- c. Tina didn't dance $\not\Rightarrow$ Tina moved

Questions:

- (3) Is Tina tall and thin? $\not\Rightarrow$ Tina is thin **caveat on questions**

Conditionals:

- (4) If Tina is tall and thin, she'll join the basketball team $\not\Rightarrow$ Tina is thin

Possibility modals:

- (5) Possibly, Tina is tall and thin. $\not\Rightarrow$ Tina is thin

Presuppositional entailments

- (1) It was Tina who shot Malcolm X \Rightarrow Someone shot Malcolm X
- (2) The king of France is bald \Rightarrow France has a (unique) king
- (3) Tina has stopped smoking \Rightarrow Tina used to smoke
- (4) Tina regretted visiting LA \Rightarrow Tina visited LA

Do these entailments project like other entailments?

Presupposition projection 1 – Hard

Clefts:

(1) It was Tina who shot Malcolm X \Rightarrow Someone shot Malcolm X

Projection of (1):

Negation: It wasn't Tina who shot MaX \Rightarrow Someone shot MaX

Question: Was it Tina who shot MaX? \Rightarrow Someone shot MaX

Conditional: If it was Tina who shot MaX, we'll catch her \Rightarrow Someone shot MaX

Possibility: Possibly, it was Tina who shot MaX \Rightarrow Someone shot MaX

Empirical claim (1):

The existential presupposition of clefts projects freely out of non-MON \uparrow environments.

Presupposition projection 2 – Soft

Definites:

(2) Sue met the Libyan astronaut \Rightarrow Libya has an astronaut

Projection of (2):

Negation: It is not the case that Sue met the Ly. ast. $\overset{?}{\Rightarrow}$ Ly. has an ast.

Question: Did Sue meet the Ly. ast.? $\overset{?}{\Rightarrow}$ Ly. has an ast.

Conditional: If Sue met the Ly. ast., she's excited now $\overset{?}{\Rightarrow}$ Ly. has an ast.

Possibility: Possibly, Sue met the Ly. ast. $\overset{?}{\Rightarrow}$ Ly. has an ast.

Empirical claims (2):

- ▶ Existence presuppositions of definites are **easily projected**.
- ▶ A clear contrast from existence entailments of indefinites:
If Sue met a Libyan astronaut, she's excited now
 \nrightarrow *Libya has an astronaut*
- ▶ Existence entailments of definites are not projected as clearly as existence entailments of clefts.

Presupposition projection 3 – Soft

Aspectual verbs:

(3) Sue stopped smoking \Rightarrow Sue used to smoke

Projection of (3):

Negation: It is not the case that Sue stopped smoking $\overset{?}{\Rightarrow}$ Sue used to smoke

Question: Did Sue stop smoking? $\overset{?}{\Rightarrow}$ Sue used to smoke

Conditional: If Sue stopped smoking, Dan is happy $\overset{?}{\Rightarrow}$ Sue used to smoke

Possibility: Possibly, Sue stopped smoking $\overset{?}{\Rightarrow}$ Sue used to smoke

Empirical claim (3):

Similarly to definites, there's evidence that presuppositions of aspectual verbs project as a default.

Presupposition projection 4 – Soft

Factives:

(4) Tina regretted visiting LA \Rightarrow Tina visited LA

Projection of (3):

Negation: Tina didn't regret visiting LA $\overset{?}{\Rightarrow}$ Tina visited LA

Question: Did Tina regret visiting LA? $\overset{?}{\Rightarrow}$ Tina visited LA

Conditional: If Tina regretted visiting LA, she wrote Dan $\overset{?}{\Rightarrow}$ Tina visited LA

Possibility: Possibly, Tina regretted visiting LA $\overset{?}{\Rightarrow}$ Tina visited LA

Empirical claim (4):

Similarly to definites and aspectual verbs, there's evidence that presuppositions of factives project as a default.

Challenge for Russell

- (1) If Tina has stopped smoking, Harry is happy
 $\overset{?}{\Rightarrow}$ Tina used to smoke
- (2) If Tina used to smoke and doesn't smoke now, Harry is happy
 $\not\Rightarrow$ Tina used to smoke

Russell's strategy expects no contrast between (1) and (2):

$$[(US(\mathbf{tina}) \wedge \neg S(\mathbf{tina})) \rightarrow H] \not\equiv US(\mathbf{tina})$$

US = used to smoke S = smokes now H = Harry happy

Similar advantages for Strawsonian semantics, with all presuppositions

Entailment and presupposition in trivalent semantics

Projection distinguishes presuppositions from other entailments. To model this distinction, we define informally:

Entailment $S_1 \Rightarrow S_2$:

if S_1 is assertible and true, then S_2 is assertible and true as well.

Presupposition $S_1 \rightsquigarrow S_2$:

if S_1 is assertible (i.e. true or false), then S_2 is true.

- ▶ Sub-species of entailment

When S_1 entails S_2 but does not presuppose S_2 , we say that S_2 is part of the **assertion** in S_1 .

Tina is tall and thin asserts Tina is thin.

Tina likes smoking asserts Tina likes something

The king of France is bald presupposes there is a king of France

Tina has stopped smoking presupposes Tina used to smoke

The king of France is bald asserts someone is bald

Tina has stopped smoking asserts Tina does not smoke

Tarskian Truth-Conditionality Criterion

Empirically, S_1 entails S_2 if whenever S_1 is assertible and true, S_2 is assertible and true.

TCC: $S_1 \Rightarrow S_2$ iff $\forall M$. if $[[S_1]]^M = 1$ then $[[S_2]]^M = 1$.

Note: Tarskian TCC generalizes our bivalent TCC.

\Rightarrow	$[[S_2]]$			
	*	0	1	
$[[S_1]]$	*	y	y	y
	0	y	y	y
	1	n	n	y

Example 1: Tina has stopped smoking \Rightarrow Tina used to smoke
A = ($US(\mathbf{tina}) : \neg S(\mathbf{tina})$) **B** = ($\top : US(\mathbf{tina})$)

Whenever **A** is assertible and true, **B** is also assertible and true

Example 2: Tina has stopped smoking \Rightarrow Tina doesn't smoke
A = ($US(\mathbf{tina}) : \neg S(\mathbf{tina})$) **C** = ($\top : \neg S(\mathbf{tina})$)

Whenever **A** is assertible and true, **C** is also assertible and true

Example 3: Tina doesn't smoke $\not\Rightarrow$ Tina has stopped smoking
C = ($\top : \neg S(\mathbf{tina})$) **A** = ($US(\mathbf{tina}) : \neg S(\mathbf{tina})$)

C can be assertible and true while **A** is not assertible

Equivalence – example

A Tina has stopped smoking $(US(\mathbf{tina}) : \neg S(\mathbf{tina}))$

\Leftrightarrow

B Tina used to smoke and doesn't smoke now $(\top : US(\mathbf{tina}) \wedge \neg S(\mathbf{tina}))$

A is assertible and true iff **B** is assertible and true

If **A** is assertible and false then **B** is assertible and false

If **A** is not assertible then **B** is assertible and false

Conclusion: The trivalent propositions **A** and **B** are equivalent, although their presuppositions and assertions are different.

1. We have seen a case where $\mathbf{A} = (\varphi_1 : \psi_1) \Leftrightarrow \mathbf{B} = (\varphi_2 : \psi_2)$, although there are models where $[[\mathbf{A}]] \neq [[\mathbf{B}]]$.
2. This happens because the 0 and * values are treated as identical as far as the TCC concerns. But...
3. They may project differently from **complex propositions!**
4. When $[[\varphi]] = [[\psi]]$ in every model, we denote $\varphi \equiv \psi$.

III – Weak Kleene connectives

Weak Kleene connectives

AND	*	0	1
*	*	*	*
0	*	0	0
1	*	0	1

Idea: We see * as a “contaminating” value, which does not allow us to deduce anything if there is a presupposition failure somewhere.

Notation: $\wedge, \vee, \rightarrow, \neg$ bivalent connectives
AND, OR, IF, NOT trivalent connectives

OR	*	0	1
*	*	*	*
0	*	0	1
1	*	1	1

IF	*	0	1
*	*	*	*
0	*	1	1
1	*	0	1

NOT	*	0	1
*	*	1	0

Weak Kleene – Example

Tina jogs regularly and has stopped smoking

$$\varphi = (\top : J(\mathbf{tina})) \text{ AND } (US(\mathbf{tina}) : \neg S(\mathbf{tina}))$$

- ▶ In any model where $\llbracket US(\mathbf{tina}) \rrbracket = 0$, we have:

$$\llbracket \varphi \rrbracket = *.$$

- In any model where $\llbracket US(\mathbf{tina}) \rrbracket = 1$, we have:

$$\llbracket \varphi \rrbracket = \llbracket J(\mathbf{tina}) \wedge \neg S(\mathbf{tina}) \rrbracket.$$

- ▶ Thus: $\varphi \equiv (US(\mathbf{tina}) : J(\mathbf{tina}) \wedge \neg S(\mathbf{tina}))$
- ▶ Falsity of $US(\mathbf{tina})$ leads to a failure of **any proposition** made of it.

Problem for Weak Kleene

- ▶ In Weak Kleene, any local presupposition failure leads to a global failure.

If $\llbracket S \rrbracket = *$, then any sentence that contains S denotes $*$.

- ▶ In natural language, local presupposition failures may sometimes be “filtered” out.

Example: (1) Tina used to smoke and has stopped smoking.
(2) Tina used to smoke.

The (1) \Rightarrow (2) puzzle:

- ▶ One conjunct of (1) asserts (2), the other conjunct presupposes (2).
- ▶ **Empirical claim:** (1) asserts (2) and doesn't presuppose (2).

IV – Filtering and Strong Kleene connectives

Presuppositions filtered out

(1) Tina used to smoke and has stopped smoking.

(2) Tina used to smoke.

Empirical claim: (1) asserts (2) and doesn't presuppose (2).

Recall (3b) \Rightarrow (3c):

(3) a. Tina has stopped smoking.

b. If *Tina has stopped smoking* then Harry is happy.

c. Tina used to smoke.

This qualifies (3c) as a presupposition of (3a).

We test presuppositions of (1) in the same way as in (3):

(4) a. Tina used to smoke and has stopped smoking (= (1))

b. If *Tina used to smoke and has stopped smoking* then Harry is happy.

c. Tina used to smoke. (= (2))

(4b) \nrightarrow (4c).

Support for claim: (1) asserts (2), and doesn't presuppose (2).

Problem for Weak Kleene!

Strong Kleene connectives (1)

AND	*	0	1
*	*	0	*
0	0	0	0
1	*	0	1

OR	*	0	1
*	*	*	1
0	*	0	1
1	1	1	1

IF	*	0	1
*	*	*	1
0	1	1	1
1	*	0	1

NOT	*	0	1
*	*	1	0

Idea: We see $*$ in one argument as “ignorance” – it still allows us to deduce the result from the value of the other argument.

A value $\nu_{op}(\varphi)/\nu_{op}(\psi)$ **determines** the result of a **bivalent** operator op if whenever that value is assigned to φ/ψ , there's one result for $\varphi op \psi$.

\wedge **0** in either argument determines the result to be 0

\vee **1** in either argument determines the result to be 1

\rightarrow **0** in **left** argument determines the result to be 1

Strong Kleene and projection

Incremental view on (the asymmetric version of) Strong Kleene:

- in $S_1 \text{ op } S_2$, process S_1
- if S_1 fails – **failure**
- if $\llbracket S_1 \rrbracket$ determines op 's value: **evaluate** $\llbracket S_1 \text{ op } S_2 \rrbracket$, **ignoring** S_2
- otherwise: **process** S_2

Examples for filtering:

(1) John used to smoke **and** stopped smoking.

if *John used to smoke* is 0 → trigger ignored → result: 0

if *John used to smoke* is 1 → presupposition satisfied

(2) John never smoked **or** stopped smoking.

if *John never smoked* is 1 → trigger ignored → result: 1

if *John never smoked* is 0 → presupposition satisfied

(3) **If** John used to smoke **then** he stopped smoking.

if *John used to smoke* is 0 → trigger ignored → result: 1

if *John used to smoke* is 1 → presupposition satisfied

Weak Kleene vs. Strong Kleene



Stephen Cole Kleene (1909-1994)



- ▶ simple
- ▶ inadequate



- ▶ more complex
- ▶ adequate?

The “Proviso” problem

(1) Tina jogs and has stopped smoking.

if *Tina jogs* is 0 → trigger ignored → result: 0

if *Tina jogs* is 1 → the presupposition *Tina used to smoke* is projected

Open question: Is this an adequate analysis?

The “Proviso” problem (cont.)

According to Weak Kleene:

Tina jogs and has stopped smoking \rightsquigarrow Tina used to smoke

According to Strong Kleene:

Tina jogs and has stopped smoking \Rightarrow Tina used to smoke

Tina jogs and has stopped smoking \rightsquigarrow Tina doesn't jog, or used to smoke
= if Tina jogs, she used to smoke

- ▶ the examined presupposition (*Tina used to smoke*) appears conditionalized with a “proviso” (*if Tina jogs*)

Two approaches to this “proviso” problem:

- ▶ Try to explain why presuppositions are often without provisos.
- ▶ Deny that conditionalized presuppositions are needed at all.

Other problems

- ▶ Hard vs. soft triggers (Abusch 2010)
- ▶ (A-)symmetric filtering (Mandelkern et al. 2017)
- ▶ Accommodation (von Stechow 2008)
- ▶ The status of conditional presuppositions (Beaver 2001, Mandelkern 2016)
- ▶ Frameworks (Beaver 1997, Schlenker 2008, Winter 2021)
- ▶ More experimental work (Schwarz 2015)

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