Class 5

Presuppositions

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Plan

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I – Assertions vs. presuppositions

Entailments

(1) a. Tina is tall and thin ⇒ Tina is thin

b. Tina ran to the station ⇒ Tina ran

c. Tina danced ⇒ 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 ⇒ France has a (unique) king

b. Tina has stopped smoking ⇒ Tina used to smoke

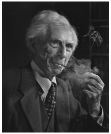
c. It was Tina who shot Malcolm X ⇒ Someone shot Malcolm X

d. Tina regretted visiting LA ⇒ 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

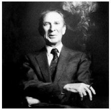


Bertrand Russell (1872-1970):

(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 <u>use</u> 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: $\exists x.KOF^* = \{x\} \wedge \textbf{bald}(x)$

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

b. Tina has stopped smoking.

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

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

US=used to smoke; S=smokes now

c. It was Tina who shot Malcolm X.

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

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

Trivalent Strawsonian semantics (1)

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

Tina has stopped smoking

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

Tina used to smoke

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

Notation: $[\![\top]\!] = 1$ in every model $[\![\bot]\!] = 0$ in every model

Trivalent Strawsonian semantics (2)

$[\![\mathrm{S}]\!]^M = (\varphi : \psi)$

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 $\textsc{the}^R$, 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*:

  $\textsc{the}^R(KOF)(\textsc{is}(\mathbf{bald}))$

  Use your definition of $\textsc{the}^R$ 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 claim (2):

Existence entailments of definites are not projected as clearly as existence entailments of clefts.

However, there's a clear contrast from existence entailments of definites:

If Sue met **a** *Libyan astronaut, she's excited now* $\not\Rightarrow$ *Libya has an astronaut*

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):

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

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

Similar advantages for Strawsonian semantics, with <u>all</u> 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
	$*$	y	y	y
$[[S_1]]$	0	y	y	y
	1	n	n	y

Example 1: Tina has stopped smoking $\Rightarrow$ Tina used to smoke

$\mathbf{A} = (US(\mathbf{tina}) : \neg S(\mathbf{tina}))$ $\quad$ $\mathbf{B} = (\top : US(\mathbf{tina}))$

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

Example 2: Tina has stopped smoking $\Rightarrow$ Tina doesn't smoke

$\mathbf{A} = (US(\mathbf{tina}) : \neg S(\mathbf{tina}))$ $\quad$ $\mathbf{C} = (\top : \neg S(\mathbf{tina}))$

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

Example 3: Tina doesn't smoke $\not\Rightarrow$ Tina has stopped smoking

$\mathbf{C} = (\top : \neg S(\mathbf{tina}))$ $\quad$ $\mathbf{A} = (US(\mathbf{tina}) : \neg S(\mathbf{tina}))$

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

Equivalence – example

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

$\Leftrightarrow$

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

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.

Notes:

1. We have seen a case where **A** = $(\varphi_1 : \psi_1) \Leftrightarrow$ **B** = $(\varphi_2 : \psi_2)$, although there are models where $[\![\textbf{A}]\!] \neq [\![\textbf{B}]\!]$.
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**!

III – Weak Kleene connectives

Weak Kleene connectives (1)

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.

Claim: $(\varphi_1 : \psi_1)$ AND $(\varphi_2 : \psi_2) \quad = \quad (\varphi_1 \wedge \varphi_2 : \psi_1 \wedge \psi_2)$

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

Weak Kleene connectives (2)

Claim:

$$(\varphi_1 : \psi_1) \text{ AND } (\varphi_2 : \psi_2)$$
$$= (\varphi_1 \wedge \varphi_2 : \psi_1 \wedge \psi_2)$$

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

Proof:

If $((\varphi_1 : \psi_1) \text{ AND } (\varphi_2 : \psi_2)) = *$:

- either φ_1 or φ_2 is 0
- $\varphi_1 \wedge \varphi_2$ is 0
- $(\varphi_1 \wedge \varphi_2 : \psi_1 \wedge \psi_2) = (0 : \psi_1 \wedge \psi_2) = *$

If $((\varphi_1 : \psi_1) \text{ AND } (\varphi_2 : \psi_2)) = 0$:

- φ_1 and φ_2 is 1
- either ψ_1 or ψ_2 is 0
- $(\varphi_1 \wedge \varphi_2 : \psi_1 \wedge \psi_2) = (1 : 0) = 0$

If $((\varphi_1 : \psi_1) \text{ AND } (\varphi_2 : \psi_2)) = 1$:

- φ_1 and φ_2 is 1
- both ψ_1 and ψ_2 are 1
- $(\varphi_1 \wedge \varphi_2 : \psi_1 \wedge \psi_2) = (1 : 1) = 1$

Weak Kleene connectives (3)

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

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

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

Problem for Weak Kleene

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

  If $[\![S]\!] = *$, 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)⇒(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)⇒(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)$\not\Rightarrow$(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 $\varphi\ op\ \psi$.

$\land$ **0** in either argument determines the result to be 0

$\lor$ **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 $S_1\, op\ S_2$, process S_1
- if S_1 fails – **failure**
- if $[[S_1]]$ determines op's value: **evaluate** $[[S_1 \quad op\ S_2]]$, **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 $\rightarrow$ trigger ignored $\rightarrow$ result: 0

if *Tina jogs* is 1 $\rightarrow$ 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 Fintel 2008)
- The status of conditional presuppositions (Beaver 2001, Mandelkern 2016)
- Frameworks (Beaver 1997, Schlenker 2008, Winter 2019)
- More experimental work (Schwarz 2015)

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