Beyond Frege-Strawson

Toward a Multi-Dimensional Theory of Presupposition

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Punchline

- **Observation:** Two types of presuppositional predicates:

  (1) a. Entailed presupposition
  $[\![\textbf{stopped smoking}]\!]_A \Rightarrow [\![\textbf{stopped smoking}]\!]_P$
  b. Non-entailed presupposition
  $[\![\textbf{criticized herself}]\!]_A \not\Rightarrow [\![\textbf{criticized herself}]\!]_P$

- **Claim:** Predicates with non-entailed presuppositions in certain quantificational sentences require a multi-dimensional theory of presupposition:

  (2) Exactly one student (namely Mary) criticized herself

Roadmap

Introduction: Frege-Strawson Thesis

Entailed and Non-entailed Presuppositions
- Stopped Smoking (Entailed Presupposition)
- Criticized Herself (Non-entailed Presupposition)

Beyond Frege-Strawson
- Problem of Non-entailed Presuppositions
- Toward a Multi-Dimensional Theory

Introduction: Frege-Strawson Thesis

Standard View of Presupposition

Frege-Strawson Thesis

Presuppositions are pre-conditions for sentences/statements to be true or false

Standard View of Presupposition

Frege-Strawson Thesis

Presuppositions are pre-conditions for sentences/statements to be true or false

- Two ways to formalize this idea:
  - Partial Function Theory (Heim 1983, Heim & Kratzer 1998, Beaver 2001)
  - Trivalent Theory (Stanley 1979, Beaver & Krahmer 2001, George 2008, Fox 2008)

Partial Function Theory

- Presuppositions make meanings partial
- Sentence S with presupposition p denotes a function that is only defined for worlds/contexts where p is true

(3) $\|\textbf{Jesse stopped smoking}\|^{\partial} =$
λw: $\underbrace{\text{Jesse was smoking in } w}_{\text{Presupposition}}$. $\underbrace{\text{Jesse is a former smoker in } w}_{\text{Assertive meaning}}$

- Sentence S for a given world/context is either 1, 0 or is undefined

Trivalent Theory

- The trivalent theory makes use of a third truth-value #

(4) $\|\textbf{Jesse stopped smoking}\|^3$

$$= \lambda w. \begin{cases} 1 & \text{if Jesse was smoking but not anymore in } w \\ 0 & \text{if Jesse has been smoking in } w \\ \# & \text{if Jesse never smoked in } w \end{cases}$$

- Sentence S in a given world denotes 1, 0 or #

Claims of the Talk

- Frege-Strawson Trichotomy of Sentence Meaning:
  Sentence A_p can have three types of denotations
  - p is true and A is true (1; TRUE)
  - p is true and A is false (0; FALSE)
  - p is false (Undefined/#; PRESUPP FAILURE)

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- **Claim:** Need 4 kinds of sentential meaning/truth-values:
  - p is true and A is true (1; TRUE)
  - p is true and A is false (0; FALSE)
  - p is false and A is true ($\#^1$)
  - p is false and A is false ($\#^0$)

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  - p is true and A is false (0; FALSE)
  - p is false and A is true ($\#^1$)
  - p is false and A is false ($\#^0$)
- **Evidence:** Truth-conditions of certain quantified sentences with predicates with non-entailed presuppositions

  (5) Exactly one student (namely Mary) **criticized herself**

Presuppositional Predicates in F-S Theories

(6) $\|\textbf{stopped smoking}\|^{\partial}$ (Partial Function Theory)
$= \lambda x.\lambda w:$ x was smoking in w. x is a former smoker in w

(7) $\|\textbf{stopped smoking}\|^{3}$ (Trivalent Theory)

$$= \lambda x.\lambda w. \begin{cases} 1 & \text{if } x \text{ used to smoke and stopped in } w \\ 0 & \text{if } x \text{ used to smoke and still does in } w \\ \# & \text{if } x \text{ never smoked in } w \end{cases}$$

- Notice: whenever the predicate is true of x, x has to satisfy the presupposition

Presuppositional Predicates in F-S Theories (cont.)

- According to the Frege-Strawson Thesis, presuppositional predicate R_p applied to x will have three meanings too:
  - $p(x)$ is true and $R(x)$ is true (1; TRUE)
  - $p(x)$ is true and $R(x)$ is false (0; FALSE)
  - $p(x)$ is false (#/Undefined; PRESUPP FAILURE)

$$[\![\textbf{Pred}]\!]_A(x) \Rightarrow [\![\textbf{Pred}]\!]_P(x)$$

Main Observation

- **Observation:** Two types of predicates

  (8) a. Entailed presupposition
  $[\![\textbf{stopped smoking}]\!]_A \Rightarrow [\![\textbf{stopped smoking}]\!]_P$
  b. Non-entailed presupposition
  $[\![\textbf{criticized herself}]\!]_A \not\Rightarrow [\![\textbf{criticized herself}]\!]_P$

  (9) a. $[\![\textbf{criticized herself}]\!]_A = \lambda x.\ \textbf{criticized}(x, x)$
  b. $[\![\textbf{criticized herself}]\!]_P = \lambda x.\ \textbf{female}(x)$

- The difference can be seen with certain quantificational sentences: 'Exactly one student **Pred**'
- **Claim:** In order to deal with the truth-conditions of such quantificational sentences, we need 4 truth-values

Entailed and Non-entailed Presuppositions

Entailed and Non-entailed Presuppositions

Observation

- Some predicates have presuppositions that are entailed by their assertive meanings (entailed presuppositions)

  (10) $[\![\textbf{stopped smoking}]\!]_A \Rightarrow [\![\textbf{stopped smoking}]\!]_P$

- Other predicates have presuppositions that are not entailed by their assertive meanings (non-entailed presuppositions)

  (11) $[\![\textbf{criticized herself}]\!]_A \not\Rightarrow [\![\textbf{criticized herself}]\!]_P$

- Their difference can be see in: 'Exactly one student **Pred**'

‘Stopped Smoking’

'Stopped Smoking'

- We know the presupposition (from projection tests and felicity judgments)

  (12) $[\![\textbf{stopped smoking}]\!]_P(x) \Leftrightarrow x$ used to smoke

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- What's the assertive meaning?

'Stopped Smoking'

- We know the presupposition (from projection tests and felicity judgments)

  (12) $[\![\textbf{stopped smoking}]\!]_P(x) \Leftrightarrow x$ used to smoke

- What's the assertive meaning?

(13) $[\![\textbf{stopped smoking}]\!]_A(x) \Leftrightarrow$
  a. x was smoking but not anymore (x is a former smoker) or **Analysis 1**
  b. x isn't smoking now **Analysis 2**

- According to **Analysis 1**, but not according to **Analysis 2**, 'stopped smoking' has an entailed presupposition
- How do we know which analysis is correct?

Test for Entailed vs. Non-entailed Presupp

- **Test:** the truth-condition of 'Exactly one student **Pred**'

(14) Exactly one student stopped smoking

Test for Entailed vs. Non-entailed Presupp

- **Test:** the truth-condition of 'Exactly one student **Pred**'

  (14) Exactly one student stopped smoking

- It is crucial that the subject here is a non-upward monotonic quantifier that give rise to a non-universal presupposition, e.g. 'exactly one student'
- With other kinds of subjects, the two analyses will predict contextually equivalent truth-conditions whenever the presupposition is true (details omitted)

Presupposition Projection Through Quantifiers

- Some quantifiers give rise to universal presuppositions:

  (15) a. Each of the students stopped smoking
  b. None of the students stopped smoking
  $\rightsquigarrow$ Each of the students was smoking

- Some quantifiers give rise to non-universal presuppositions:

  (16) a. A student stopped smoking
  b. Exactly one student stopped smoking
  $\not\rightsquigarrow$ Each of the students was smoking

- It is important for us that (16b) has a non-universal presupposition
- See Chemla (2009) for experimental data

Test: $[\![\textbf{stopped smoking}]\!]_A \stackrel{?}{\Rightarrow} [\![\textbf{stopped smoking}]\!]_P$

$[\![\textbf{stopped smoking}]\!]_A(x)$

- $\Leftrightarrow$ x was smoking but not anymore **Analysis 1**
- $\Leftrightarrow$ x is not smoking now **Analysis 2**

(17) **Exactly one student** stopped smoking

Test: $[\![\textbf{stopped smoking}]\!]_A \stackrel{?}{\Rightarrow} [\![\textbf{stopped smoking}]\!]_P$

$[\![\textbf{stopped smoking}]\!]_A(x)$

- $\Leftrightarrow$ x was smoking but not anymore **Analysis 1**
- $\Leftrightarrow$ x is not smoking now **Analysis 2**

(17) **Exactly one student** stopped smoking

- $[\![(17)]\!]_A \Leftrightarrow$
  - Exactly one student x was smoking but not anymore **Analysis 1**
  - Exactly one student x is not smoking now **Analysis 2**
- The presupposition is non-universal
- We can construct a context satisfying the presupposition for which the two analyses make different predictions

Test: $[\![\text{stopped smoking}]\!]_A \stackrel{?}{\Rightarrow} [\![\text{stopped smoking}]\!]_P$ (cont.)

(18) Exactly one student stopped smoking

- $[\![(18)]\!]_A \Leftrightarrow$
  - Exactly one student was smoking but not anymore **Analysis 1**
  - Exactly one student is not smoking now **Analysis 2**

Test: $[\![\text{stopped smoking}]\!]_A \stackrel{?}{\Rightarrow} [\![\text{stopped smoking}]\!]_P$ (cont.)

(18) Exactly one student stopped smoking

- $[\![(18)]\!]_A \Leftrightarrow$
  - Exactly one student was smoking but not anymore **Analysis 1**
  - Exactly one student is not smoking now **Analysis 2**

- Situation:
  - John used to smoke and stopped
  - Bill never smoked
  - Other students have always been smoking

Test: $[\![\text{stopped smoking}]\!]_A \stackrel{?}{\Rightarrow} [\![\text{stopped smoking}]\!]_P$ (cont.)

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- $[\![(18)]\!]_A \Leftrightarrow$
  - Exactly one student was smoking but not anymore **Analysis 1**
  - Exactly one student is not smoking now **Analysis 2**

- Situation:
  - John used to smoke and stopped satisfies presupposition!
  - Bill never smoked
  - Other students have always been smoking

Test: $[\![\text{stopped smoking}]\!]_A \stackrel{?}{\Rightarrow} [\![\text{stopped smoking}]\!]_P$ (cont.)

(18) Exactly one student stopped smoking

- $[\![(18)]\!]_A \Leftrightarrow$
  - Exactly one student was smoking but not anymore **Analysis 1**
  - Exactly one student is not smoking now **Analysis 2**

- Situation:
  - John used to smoke and stopped — satisfies presupposition!
  - Bill never smoked — makes Analysis 2 FALSE!
  - Other students have always been smoking

Test: $[\![\text{stopped smoking}]\!]_A \stackrel{?}{\Rightarrow} [\![\text{stopped smoking}]\!]_P$ (cont.)

(18) Exactly one student stopped smoking

- $[\![(18)]\!]_A \Leftrightarrow$
  - Exactly one student was smoking but not anymore **Analysis 1**
  - Exactly one student is not smoking now **Analysis 2**

- Situation:
  - John used to smoke and stopped — satisfies presupposition!
  - Bill never smoked — makes Analysis 2 FALSE!
  - Other students have always been smoking
- The sentence is TRUE in this context
- This is predicted by **Analysis 1** but not by **Analysis 2**

Conclusion: $[\![\textbf{stopped smoking}]\!]_A \Rightarrow [\![\textbf{stopped smoking}]\!]_P$

- $[\![\textbf{stopped smoking}]\!]_A(x) \Leftrightarrow x$ used to smoke and stopped
- $[\![\textbf{stopped smoking}]\!]_P(x) \Leftrightarrow x$ used to smoke

$\therefore [\![\textbf{stopped smoking}]\!]_A \Rightarrow [\![\textbf{stopped smoking}]\!]_P$

‘Criticized Herself’

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- We know the presupposition

(19) $[\![\textbf{criticized herself}]\!]_P(x) \Leftrightarrow x$ is female

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- What about the assertive meaning?

(20) $[\![\textbf{criticized herself}]\!]_A(x) \Leftrightarrow$

a. x criticized x **Analysis 1**

b. x is female and criticized x **Analysis 2**

'Criticized Herself'

- Let's do the same thing with 'criticized herself'
- We know the presupposition

  (19) $[\![\textbf{criticized herself}]\!]_P(x) \Leftrightarrow x$ is female

- What about the assertive meaning?

(20) $[\![\textbf{criticized herself}]\!]_A(x) \Leftrightarrow$
  a. x criticized x **Analysis 1**
  b. x is female and criticized x **Analysis 2**

- According to **Analysis 1**,
  $$[\![\textbf{criticized herself}]\!]_A \nRightarrow [\![\textbf{criticized herself}]\!]_P$$
- According to **Analysis 2**,
  $$[\![\textbf{criticized herself}]\!]_A \Rightarrow [\![\textbf{criticized herself}]\!]_P$$

Test: $[\![\textbf{criticized herself}]\!]_A \stackrel{?}{\Rightarrow} [\![\textbf{criticized herself}]\!]_P$

(21) Exactly one student (namely Mary) criticized herself

- Exactly one student x criticized x **Analysis 1**
- Exactly one student x is female and criticized x **Analysis 2**

Test: $[\![\textbf{criticized herself}]\!]_A \stackrel{?}{\Rightarrow} [\![\textbf{criticized herself}]\!]_P$

(21) Exactly one student (namely Mary) criticized herself

- Exactly one student x criticized x **Analysis 1**
- Exactly one student x is female and criticized x **Analysis 2**

- The sentence is FALSE in the following situation
  - Mary criticized herself
  - John criticized himself
  - No other students criticized themselves

Test: $[\![\textbf{criticized herself}]\!]_A \stackrel{?}{\Rightarrow} [\![\textbf{criticized herself}]\!]_P$

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- Exactly one student x criticized x **Analysis 1**
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- The sentence is FALSE in the following situation
  - Mary criticized herself satisfies the presupposition!
  - John criticized himself
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(21) Exactly one student (namely Mary) criticized herself

- Exactly one student x criticized x **Analysis 1**
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- The sentence is FALSE in the following situation
  - Mary criticized herself — satisfies the presupposition!
  - John criticized himself — makes Analysis 1 FALSE!
  - No other students criticized themselves
- This is predicted by **Analysis 1** but not by **Analysis 2**

Conclusion: $[\![\textbf{criticized herself}]\!]_A \nRightarrow [\![\textbf{criticized herself}]\!]_P$

- $[\![\textbf{criticized herself}]\!]_A(x) \Leftrightarrow x$ criticized x
- $[\![\textbf{criticized herself}]\!]_P(x) \Leftrightarrow x$ is female

$\therefore [\![\textbf{criticized herself}]\!]_A \nRightarrow [\![\textbf{criticized herself}]\!]_P$

Summary

- Entailed Presupposition:
  $[\![\textbf{stopped smoking}]\!]_A \Rightarrow [\![\textbf{stopped smoking}]\!]_P$
  - $[\![\textbf{stopped smoking}]\!]_A(x) \Leftrightarrow x$ used to smoke and stopped
  - $[\![\textbf{stopped smoking}]\!]_P(x) \Leftrightarrow x$ used to smoke
- Non-entailed Presupposition:
  $[\![\textbf{criticized herself}]\!]_A \not\Rightarrow [\![\textbf{criticized herself}]\!]_P$
  - $[\![\textbf{criticized herself}]\!]_A(x) \Leftrightarrow x$ criticized x
  - $[\![\textbf{criticized herself}]\!]_P(x) \Leftrightarrow x$ is female

Beyond Frege-Strawson

Theoretical Consequences

- Predicates with non-entailed presuppositions
  - $[\![\textbf{criticized herself}]\!]_A(x) \Leftrightarrow x$ criticized x
  - $[\![\textbf{criticized herself}]\!]_P(x) \Leftrightarrow x$ is female
- **Claim:** In order to deal with the truth-conditions of (22), we need to abandon the Frege-Strawson Thesis

(22) Exactly one student (namely Mary) criticized herself

F-S Analyses of 'Criticized Herself'

- Frege-Strawson Analyses:

  (23) $\|\textbf{criticize herself}\|^{\partial} = \lambda x\colon\ x$ is female. x criticized x

  (24) $\|\textbf{criticized herself}\|^{3}$

$$= \lambda x. \begin{cases} 1 & \text{if } x \text{ is female and } x \text{ criticized } x \\ 0 & \text{if } x \text{ is female and } x \text{ didn't criticize } x \\ \# & \text{if } x \text{ is not female} \end{cases}$$

- According to these analyses,
  $[\![\textbf{criticized herself}]\!]_A \Rightarrow [\![\textbf{criticized herself}]\!]_P$
- More generally, $[\![\textbf{Pred}]\!]_A \Rightarrow [\![\textbf{Pred}]\!]_P$

Problem of Non-entailed Presupposition

- According to these theories,

  (25) Exactly one student criticized herself

  This is true iff both of the following are true:

  - There is one student x s.t. $\|\textbf{criticized herself}\|^{\partial/3}(x) = 1$
  - All other students y are s.t. $\|\textbf{criticized herself}\|^{\partial/3}(y) = 0$

Problem of Non-entailed Presupposition

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  (25) Exactly one student criticized herself

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  - There is one student x s.t. $\|\textbf{criticized herself}\|^{\partial/3}(x) = 1$
  - All other students y are s.t. $\|\textbf{criticized herself}\|^{\partial/3}(y) = 0$
- The sentence is intuitively FALSE when:
  - Mary criticized herself
  - John criticized himself
  - No other students criticized themselves

  But the analysis doesn't predict this!

Problem of Non-entailed Presupposition

- According to these theories,

  (25) Exactly one student criticized herself

  This is true iff both of the following are true:

  - There is one student x s.t. $\|\textbf{criticized herself}\|^{\partial/3}(x) = 1$
  - All other students y are s.t. $\|\textbf{criticized herself}\|^{\partial/3}(y) = 0$
- The sentence is intuitively FALSE when:
  - Mary criticized herself
  - John criticized himself
  - No other students criticized themselves

  But the analysis doesn't predict this!
- In order for (25) to be FALSE, there must be two or more x s.t. $\|\textbf{criticized herself}\|^{\partial/3}(x) = 1$
- But $\|\textbf{criticized herself}\|^{\partial/3}(\text{John})$ won't be 1!

Beyond the Frege-Strawson Thesis

- The problem stems from the decision to not distinguish two cases of presupposition failure
- For sentence A_p:
  - p is true and A is true (1)
  - p is true and A is false (0)
  - p is false and A is true ($\#^1$)
  - p is false and A is false ($\#^0$)
- With these four truth-values, we can analyze the sentence in question:

(26) $\|\textbf{criticized herself}\|^4$

$$= \lambda x. \begin{cases} 1 & \text{if } x \text{ is female and criticized } x \\ 0 & \text{if } x \text{ is female and didn't criticize } x \\ \#^1 & \text{if } x \text{ is male and criticized } x \\ \#^0 & \text{if } x \text{ is male and didn't criticize } x \end{cases}$$

- NB: $\#^1$ never arises with entailed presuppositions

Beyond the Frege-Strawson Thesis (cont.)

(26) $\|\textbf{criticized herself}\|^4$

$$= \lambda x. \begin{cases} 1 & \text{if } x \text{ is female and criticized } x \\ 0 & \text{if } x \text{ is female and didn't criticize } x \\ \#^1 & \text{if } x \text{ is male and criticized } x \\ \#^0 & \text{if } x \text{ is male and didn't criticize } x \end{cases}$$

(27) Exactly one student criticized herself

a. There is one student x s.t. $\|\textbf{criticized herself}\|^4(x) = 1$

b. For all other students y $\|\textbf{criticized herself}\|^4(y) = 0$ or $\#^0$

- This will be FALSE in the following situation, as desired
  - Mary criticized herself
  - John criticized himself
  - No other students criticized themselves
- $\|\textbf{criticized herself}\|^4(\text{John}) = \#^1$, so the sentence is FALSE

Toward a Multi-Dimensional Theory

- **Conclusion:** In order to analyze predicates with non-entailed presuppositions, we need 4 truth-values
- In other words, need a theory where the assertive meaning and presupposition can be independently true or false

Toward a Multi-Dimensional Theory

- **Conclusion:** In order to analyze predicates with non-entailed presuppositions, we need 4 truth-values
- In other words, need a theory where the assertive meaning and presupposition can be independently true or false
- Multi-dimensional theory has an appropriate expressive power
- Karttunen & Peters' (1979) multi-dimensional theory of presupposition

(28) Jesse criticized herself

a. $[\![(28)]\!]_A = \lambda w$. Jesse criticized Jesse in w

b. $[\![(28)]\!]_P = \lambda w$. Jesse is female in w

Binding Problem

- But K&P's theory faces the '**Binding Problem**' with certain quantificational sentences with non-entailed presuppositions

  (29) A student criticized herself
  - a. $[\![(29)]\!]_A$: There's a student x criticized x
  - b. $[\![(29)]\!]_P$: There's a female student x

- This sentence is predicted to be felicitous and true when:
  - Mary is a student, didn't criticize herself Presupposition TRUE!
  - John is a student, criticized himself Assertive meaning TRUE!
- NB: The Binding Problem doesn't arise with entailed presuppositions
- The Binding Problem has been considered to be fatal, but recent studies offer solutions (Dekker 2008, van Rooij 2005, Sudo 2012, ms.)

Summary

- Entailed vs. non-entailed presuppositions
  - $[\![\textbf{stopped smoking}]\!]_A \Rightarrow [\![\textbf{stopped smoking}]\!]_P$
  - $[\![\textbf{criticized herself}]\!]_A \not\Rightarrow [\![\textbf{criticized herself}]\!]_P$
- In order to deal with (30), need to abandon the Frege-Strawson Thesis

  (30) Exactly one student (namely Mary) criticized herself
- So presuppositions are *not* pre-conditions for sentences to be true or false
- Need the expressive power of a multi-dimensional theory of presupposition like K&P

Other Predicates with Non-entailed Presuppositions

- 'Didn't stop smoking'
- Honorific predicates in Japanese/Korean

  (31) 'irassharu' (come.HON)
- Uniqueness presuppositions of singular definites

  (32) 'submitted the paper he wrote'
- Predicates containing *even*, *also*, etc.

  (33) 'also visited PARIS'
- Implicative verbs

  (34) 'forgot to bring a pen'
- The 'base' presupposition of *come* (+ perspective shifting)

  (35) 'thinks that John is coming to Tokyo'

Other Quantifiers

- We used 'exactly one NP', but other non-upward monotonic quantifiers with non-universal presuppositions will do too
  - *fewer than 5 students*
  - *only one/some of the students*
  - *between 3 and 5 people*
  - *one of the 10 students* ('exact'-reading)
  - *an even number of people*

(36) kono gakkoo-kara-wa, 3-kara-5-nin-no hito-ga irasshatta
this school-from-TOP, 3-from-5-CL-GEN person-NOM came.HON
'From this school, between 3 and 5 people came.HON'

⇝ the speaker is socially inferior to everybody in the school
⇒ 3, 4 or 5 people from the school came (and the speaker is socially inferior to them)

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'Didn't Stop Singing'

- We concluded:
  - $[\![\textbf{stopped singing}]\!]_A(x) \Leftrightarrow x$ was singing and stopped
  - $[\![\textbf{stopped singing}]\!]_P(x) \Leftrightarrow x$ was singing
- Given that negation only negates the assertive meaning:
  - $[\![\textbf{didn't stop singing}]\!]_A(x) \Leftrightarrow \neg(x$ was singing and stopped$)$
  - $[\![\textbf{didn't stop singing}]\!]_P(x) \Leftrightarrow x$ was singing

$[\![\textbf{didn't stop singing}]\!]_A \nRightarrow [\![\textbf{didn't stop singing}]\!]_P$

(37) Exactly one student didn't stop singing
  a. One student was singing and still is
  b. All the other students were singing and stopped
  $\Rightarrow$ all the students were singing

'Didn't Stop Singing' vs. 'Continued Singing'

- 'Didn't stop singing'
  - $[\![\textbf{didn't stop singing}]\!]_A(x) \Leftrightarrow \neg(x$ was singing and stopped$)$
  - $[\![\textbf{didn't stop singing}]\!]_P(x) \Leftrightarrow x$ was singing

  (38) Exactly one student didn't stop singing
  $\Rightarrow$ all the students were singing

- 'Continued singing' has an entailed presupposition
  - $[\![\textbf{continued singing}]\!]_A(x) \Leftrightarrow x$ was singing and still is
  - $[\![\textbf{continued singing}]\!]_P(x) \Leftrightarrow x$ was singing

  (39) Exactly one student continued singing
  a. One student was singing and still is
  b. For all the other students x, $\neg(x$ was singing and still is$)$
  $\not\Rightarrow$ all the students were singing

Problems for DRT: Entailed Presuppositions

- In DRT, entailed presuppositions are going to be always trivial

(40) Each student stopped smoking

$$\left[\begin{array}{l} : \ \left[: \ \textbf{student}(x)\right] \langle \forall x \rangle \left[\begin{array}{ll} : & \textbf{smoking.past}(x) \\ & \textbf{not.smoking.now}(x) \\ & \underline{\textbf{smoking.past}}(x) \end{array}\right] \end{array}\right]$$

- The presupposition is completely trivial. Cf. 'Each student is a former smoker'

Problems for DRT: Non-entailed Presuppositions

- Sentences with non-entailed presuppositions and non-upward monotonic quantifiers will have wrong meanings

  (41) None of the students criticized herself

$$\left[: \; [: \; \textbf{student}(x)] \langle \textbf{No } x \rangle \left[: \; \begin{array}{l} \textbf{criticize}(x,x) \\ \underline{\textbf{female}}(x) \end{array} \right] \right]$$

- Due to trapping, only the following two are possible:

$$\left[: \; [: \; \textbf{student}(x)] \langle \textbf{No } x \rangle \left[: \; \begin{array}{l} \textbf{criticize}(x,x) \\ \textbf{female}(x) \end{array} \right] \right]$$

$$\left[: \; \left[: \; \begin{array}{l} \textbf{student}(x) \\ \textbf{female}(x) \end{array} \right] \langle \textbf{No } x \rangle [: \; \textbf{criticize}(x,x)] \right]$$

  These are too weak

Details: Satisfaction Theory

- Satisfaction Theory uses partial functions (Heim 1983, Beaver 1994,2001)
- Sentences denote Context Change Potentials (CCPs)
  i.e. CCPs = functions from contexts to contexts
- Presuppositions make CCPs partial:
  $\|S_p\|^{\partial}(c)$ is defined only if c entails p ($c \subseteq p$)
- Assuming a context c is a set of possible worlds,

(42) $\|$**It stopped raining**$\|^{\partial}(c)$ is defined
only if for each world $w \in c$, it was raining in w

Details: Quantification in Sat Theory

- The NP and VP arguments of D denote CCPs
- Assume that c is a set of pairs $\langle f, w \rangle$

(43) $\|x$ **criticized herself**$\|^{\partial}(c)$ is only defined if for all $\langle f, w \rangle \in c$, $f(x)$ is female in w

  - Assume $\|x$ **criticized herself**$\|^{\partial}(c) = c'$
  - Given that $\|x$ **criticized herself**$\|^{\partial}(c)$ is defined, for all $\langle f, w \rangle \in c$, $f(x)$ is female in w
  - Because CCPs are 'eliminative' (i.e. $c' \subseteq c$), for all $\langle f', w' \rangle \in c'$, $f'(x)$ is female in w'

$\therefore$ The presupposition is entailed at the predicate level!!

$\|x$ **criticized herself**$\|^{\partial}(c) = \|x$ **is female and criticized herself**$\|^{\partial}(c)$ (whenever defined)

Details: Quantification in Sat Theory (cont.)

$\|x$ **criticized herself**$\|^{\partial}(c) = \|x$ **is female and criticized herself**$\|^{\partial}(c)$
(whenever defined)

- Whatever you do with the meaning of the quantifier, whenever (44b) is TRUE, (44a) is also TRUE (if the presupposition is true)

  (44) a. Exactly one student criticized herself
  b. Exactly one student is female and criticized herself

- But (44a) is FALSE, (44b) is TRUE when:
  - Mary criticized herself
  - John criticized himself
  - No other students criticized themselves

Details: Trivalent Theory

- Third truth-value # for presupposition failure
- $\|$**criticized herself**$\|^3$

$$= \lambda x. \begin{cases} 1 & \text{if } x \text{ is female and criticized } x \\ 0 & \text{if } x \text{ is female and didn't criticize } x \\ \# & \text{otherwise (i.e. } x \text{ is male)} \end{cases}$$

- The 'presupposition' is entailed at the predicate level!!

$\|$**criticized herself**$\|^3(x) = 1$
iff $\|$**is female and criticized herself**$\|^3(x) = 1$

- Again, whenever (45b) is TRUE, (45a) is also TRUE (if the presupposition is true)

(45) a. Exactly one student criticized herself
b. Exactly one student is female and criticized herself

Other Theories

- Analogous problems arise with Transparency Theories (Schlenker 2008, 2009, 2010a,b)
- Chemla's (2009) Similarity Theory suffers from the Binding Problem