

Because of NPis

1. NPis in (Negated) Because-Sentences¹

➤NPis in *Because*-Sentences

- (1) a. *John ate **any** potatoes because he tried to be fat.
b. *John got fat because he ate **any** potatoes.

➤NPis in Negated *Because*-Sentences

- (2) a. *John did not marry **any** woman because he had money,
but because he was afraid of being alone.

Handwritten notes: because, *ANY, not a, *ANY, negating causal relationship, pl OK, because

Compare to (2a'):

- a'. John did not marry ^{any} woman because he had money, and he does not want to lose any money in the divorce.

- b. John did not marry Sue because she had **any** money, but because he loves her.

Handwritten notes: not, because, not a, ANY, *ANY

Generalization: NPis are only licensed in the subordinate clause in a negated *because*-sentence.

➤Note that a *because*-sentence with negation can be ambiguous.

- (3) a. John did not open the door because the branches fell from the tree.

a'. **negation scopes over because:**

It is not the case that John's opening the door is due to the falling of the branches from the tree.

a''. **because scopes over negation:**

John's not opening the door is due to the falling of the branches from the tree.

Handwritten note: ← interesting

Handwritten notes: why should because cause inferential effect, neg ANY?

¹ For the empirical generalization and the scope interaction of *because* with other logical operators, see Linebarger (1987).

In cases where negation is involved in *because*-sentences, we only talk about readings like (3a'), where negation scopes over *because*.

➤How do we capture the generalization and the pattern in (1) and (2)?

1. NPis and the Licensing Condition

➤Negative Polarity Items (NPis)

- (4) a. John did not eat **any** apples.
b. *John ate **any** apples.
(5) a. John hasn't **ever** been to Paris.
b. *John has **ever** been to Paris.

➤The Licensing Condition of NPis:

- (6) a. The Fauconnier-Ladusaw-von-Fintel proposal on NPis-licensing²:

An NPis is only grammatical if it is in the scope of α such that $\llbracket \alpha \rrbracket$ is SDE.

b. Strawson Downward Entailingness (SDE):

A function f of type $\langle \sigma, \tau \rangle$ is Strawson downward entailing (SDE) iff for all x, y of type σ such that $x \Rightarrow y$ and $f(x)$ is defined: $f(y) \Rightarrow f(x)$

- (7) a. John did not drink **any** white wine.
b. Sauvignon Blanc \subseteq White wine
John did not drink white wine.
 \Rightarrow John did not drink Sauvignon Blanc.

(8) Only John drank **any** white wine.

(9) a. $\llbracket \text{only} \rrbracket(x)(P)$ is defined only if $P(x)=1$

² See Fauconnier (1975), Ladusaw (1979), von Fintel (1999) and others.

If defined, $\llbracket \text{only} \rrbracket (x)(P)=1$ iff $\neg \exists y \neq x: P(y)=1$

- b. Sauvignon Blanc \subseteq white wine
- c. Only John ate drank white wine.

Definedness Condition: John drank white wine.

- d. Only John drank Sauvignon Blanc.
Definedness Condition: John drank Sauvignon Blanc.
- e. (9c)+the definedness condition of (9d) \Rightarrow (9d)

➤ SDE is only a necessary condition for NPI-licensing.

⊛ A licensing environment for NPIS can never be a (Strawson-)Upward-Entailing context³.

- (10) a. *The student who has **any** books on NPIs is selling them.
- b. The students who have **any** books on NPIs are selling them.

- (11) a. The students came late.
 - a'. Definedness Condition:
There is a salient group of students in the context.
 - a''. Truth condition:
For all x such that x is a student, x came late.

- b. The French students came late.
 - b'. Definedness condition:
There is a salient group French students in the context.
 - b''. Truth condition:
For all x such that x is a salient French student, x came late.

(11a) & (11b') \Rightarrow (11b)

On the other hand,
(11b) & (11a') $\neq \Rightarrow$ (11a)

(12) a. The student came late.

- a'. Definedness Condition:
There is exactly one salient student in the context.
- a''. Truth Condition: The unique student came late.

b. The French student came late.

- b'. Definedness Condition:
There is exactly one salient French student in the context.
- b''. Truth Condition: The unique French student came late.

(12a) & (12b') \Rightarrow (12b)

At the same time,
(12b) & (12a') \Rightarrow (12a)

3. The Semantics of *Because*: Some Attempts

➤ The research on NPIs does not only concern the lexical semantics of NPIs but also concerns the accurate semantic characterization of the licensing environments.

3.1 Lewis's (1973) Idea

➤ Lewis (1973):

q because p is true iff *q* is true and *p* is true and *if $\neg p$ then $\neg q$* is true.

Based on Lewis's idea,

➤ **Attempt 1: totally follow Lewis**

(14) *q because p* is true iff *p* is true and *q* is true and *if $\neg p$ then $\neg q$* is true.

³ See Lahiri (1998), Guerzoni and Sharvit (2007), and others.

Problems of Attempt 1:

a. (14) renders a *because*-sentence non-monotonic.

⊗ **Prediction:** NPIs are not licensed in the subordinate clause (p) of a negated *because*-sentence.

Contrary to what we have seen in (2b).

b. That the main clause of a negated *because*-sentence (q in $\neg[q \text{ because } p]$) is false is sufficient to make a negated *because*-sentence ($\neg[q \text{ because } p]$) true.

⊗ This is contrary to speakers' intuition and leads to the wrong prediction in (15).

(15) #It is not the case that Peter went to the hospital because Mary was sick, but it is the case that John went to the hospital because Mary was sick. And everyone was surprised Peter did not go to the hospital.

(15) shows that the truth of the main clause (q) should be something beyond the truth condition.

➤ **Attempt 2 (with definedness conditions and ordering source)**

(16) $\llbracket \text{because} \rrbracket^{w, A, R}(p)(q)$ is defined only if $w \in p$ and $w \in q$ ⁴;
 if defined, $\llbracket \text{because} \rrbracket^{w, A, R}(p)(q) = 1$ iff
 $\forall w' \in \max((A(w)) \cap \neg p)(R(w)) : w' \in \neg q$

(where $A(w)$ is the set of accessible worlds (the modal base) from w and $\max((A(w)) \cap \neg p)(R(w))$ is the set of the best worlds among the worlds in $A(w)$ in which $\neg p$ is true with respect to the ordering source $R(w)$)

⁴ For treating the truth of p and q as the definedness condition, see Kadman and Landman (1993).

Handwritten: $q \text{ b/c } p = 1 \text{ iff } p = q = 1$
 $\& \neg p \rightarrow \neg q = 1$

Problem of Attempt 2:

(16) renders the main clause (q) of a *because*-sentence a purely SDE context.

⊗ **Prediction:** NPIs are licensed in main clause of a *because*-sentence.

Contrary to what we have seen in (1a).

➤ A general problem for Lewis's idea on *because*-sentences:

(17) a. A typhoon caused a flood.

b. There was a flood because there was a typhoon.

(18) a. It is not the case that **any** typhoon caused **any** flood.

b. *It is not the case that there was **any** flood because there was **any** typhoon.

Handwritten: (Peter didn't go to the hospital) "q b/c p" should be false true
 sorry is odd?

4. Proposal: a New Semantics of Because

➤ A new semantics of *because*:

(19) $\llbracket \text{because} \rrbracket^{w, A, R}(p)(q)$ is defined only if

i) $w \in \max(A(w))(R(w))$, and

ii) $\max(A(w))(R(w)) \subseteq q$;

if defined, $\llbracket \text{because} \rrbracket^{w, A, R}(p)(q) = 1$ iff

$\forall w' \in \max(A(w))(R(w)) : w' \in p$

Handwritten: A: w to set of worlds
 R: w to set of propositions

➤ The entailment property of *because*-sentences:

According to (20),

(20) a. q because p

	DE	UE	SDE	SUE
p	--	✓	--	✓
q	--	✓	✓	✓

b. *not* [*q* because *p*]

	DE	UE	SDE	SUE
<i>p</i>	✓	--	✓	--
<i>q</i>	--	✓	✓	✓

- The main clause (*q*) is UE, SUE, and SDE. It retains its entailment property in the scope of negation.
- The subordinate clause (*p*) is UE. In the scope of negation, it is DE.

➤Back to NPIs:

NPIs are only grammatical in pure SDE contexts.

Recall:

- (1) a. *John ate **any** potatoes because he tried to be fat.
 b. *John got fat because he ate **any** potatoes.
- The main clause is UE, SDE, and SUE.
 - The subordinate is UE.
 - *NPIs in (S)UE contexts
- (2) a. *John did not marry **any** woman because he had money,
 but because he was afraid of being alone.
 b. John did not marry Sue because she had **any** money,
 but because he loves her.

In the scope of negation,

- The main clause is (S)UE, SDE.
- *NPIs in (S)UE contexts
- The subordinate is purely (S)DE.

➤The Truth of the Main Clause (*q*):

The truth of *q* in *w* is entailed by the definedness condition in (19). Hence, the truth of *q* in *w* is part of the definedness condition as well.

According to (19),
 $w \in \max(A(w))(R(w))$;
 $\max(A(w))(R(w)) \subseteq q$
 $\Rightarrow w \in q$

➤The Truth of the Subordinate Clause (*p*):

The truth of *p* in *w* is entailed by the definedness condition and the truth condition in (19).

According to (19),
 $w \in \max(A(w))(R(w))$;
 $\max(A(w))(R(w)) \subseteq q$;
 $\forall w' \in \max(A(w))(R(w)): w' \in p$
 $\Rightarrow w \in p$

In a negated *because*-sentence, the subordinate clause can be true or false. This captures the rise of the negative implicature⁵.

- (21) John does not know French wine because he has been to Bordeaux. He gained his knowledge on French wine when he was a bartender in the wine bar.
 Negative Implicature: John has never been to Paris.

➤Some Exceptional Cases on NPIs in the Main Clause:

- (22) a. John did not marry [**any** woman]_i because she_i had money. He married for love.
 b. I did not cut **any** courses because I hate the lecturer. I cut the courses because of the budget limit.

- In (22a-b), there is a bound variable in the subordinate clause.
- to bind the bound variable in the subordinate clause, The NPI existential quantifier *any NP* moves out of the *because*-

⁵ For the discussion on the negative implicature, see Linebarger (1987).

sentence and to the position in the immediate scope of negation at LF.

(23) LF: [not [[any NP]_i [[because....x_i],t_i ...]]]

counterfactuals → because-sentences

➤How does the inference go? (Something even more speculative)

5. Counterfactual Conditional Inference

(24) a. *q because p*

The United States did not win the war because it did not use nuclear arms.

b. *If ¬p, then ¬q*

If the United States had used nuclear arms in Vietnam, it would have won the war.

(27) A: John only got the silver medal in the marathon game yesterday.

B: Well, if he had not twisted his ankle two weeks ago, he would have won the gold medal.

A: Wait a minute! I did not know that John did not win the gold medal because he had his ankle twisted two weeks ago.

➤**Speculation:**

(25) $\llbracket \text{if } \neg p, \text{ then } \neg q \rrbracket^{w, A, R} = 1$ iff

$\forall w' \in \max((A(w)) \cap \neg p)(R(w)) : w' \in \neg q$

(28) A: John only got the silver medal in the marathon game yesterday.

B: Well, he did not win the gold medal because he had his ankle twisted yesterday.

A: #Wait a minute! I did not know that he would have won the gold medal if he had not twisted his ankle two weeks ago.

In counterfactuals,

- $A(w)$ equals W (von Fintel (1999), and others); the ideal of $R(w)$ is w .

- $\max(A(w))(R(w)) = \{w\}$

-Counterfactual conditionals carry the implicature that the antecedent is false in w .

(26) $\llbracket \text{because} \rrbracket^{w, A, R}(p)(q)$ is defined only if

i) $w \in \max(A(w))(R(w))$, and

ii) $\max(A(w))(R(w)) \subseteq q$;

if defined, $\llbracket \text{because} \rrbracket^{w, A, R}(p)(q) = 1$ iff

$\forall w' \in \max(A(w))(R(w)) : w' \in p$

⇒In contexts where the implicature holds, (25) implicates the truth condition in (26) (a *because*-sentence with suspended presuppositions).

