Another go at Fake Tense

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The Message

Causality matters for linguistics!
The Message

Causality matters for semantics!
The Message

- Causality matters for semantics!
  - For the semantics of conditionals
    - Fake Tense
    - Presupposition Projection
  - For the semantics of generic expression (together with R. Van Rooij)
Causality matters for semantics!

For the semantics of conditionals

Fake Tense

Presupposition Projection

For the semantics of generic expressions (together with R. Van Rooij)
(1) If Peter took his medicine, he would get better.
Fake Tense
Fake Tense

In English subjunctive conditionals the Simple Past, and also the Past Perfect appear not to be interpreted as semantic past tense or past perfect.
In English X-marked conditionals the Simple Past, and also the Past Perfect appear not to be interpreted as semantic past tense or past perfect.
Fake Tense

In English X-marked conditionals the Simple Past, and also the Past Perfect appear not to be interpreted as semantic past tense or past perfect.

(2) If Peter left in time, he will be in Amsterdam this evening. ➡ indicative conditional

(3) If Peter left in time, he would be in Amsterdam this evening. ➡ simple past X-marked

(4) If Peter had left in time, he would have been in Amsterdam this evening. ➡ past perfect X-marked
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(2) If Peter left in time, he will be in Amsterdam this evening.  ➔ indicative conditional

(3) If Peter left in time, he would be in Amsterdam this evening.  ➔ simple past X-marked  SPC

(4) If Peter had left in time, he would have been in Amsterdam this evening.  ➔ past perfect X-marked  PPC
Fake Tense

In English X-marked conditionals the Simple Past, and also the Past Perfect appear not to be interpreted as semantic past tense or past perfect.

- Fake Tense occurs in other contexts as well

(5) I wished I owned a car.
(6) He behaves like he was sick.
(7) Suppose she failed the test.
(8) It’s time we left.
Fake Tense

In English X-marked conditionals the Simple Past, and also the Past Perfect appear not to be interpreted as semantic past tense or past perfect.

- Fake Tense occurs in other contexts as well.
- It occurs in various languages from different language families.

English, French, Latin, Classic Greek, Russian, and Old Irish (Indo-European), Cree (Algonquian), Tonga and Haya (Bantu), Chipewyan (Athabascan), Garo (Tibeto Burman), Nitinaht (Wakashan), and Proto-Uto-Aztecan (in the reconstruction of Steele). [James 1982]
Fake Tense

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- Fake Tense occurs in other contexts as well.
- It occurs in various languages from different language families.
- Fake Tense is something a tense language can develop diachronically.
Fake Tense

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Fake Tense

The literature
Fake Tense

The literature

*past-as-past approaches*

- Tedeschi 1981
- Crouch 1992
- Condoravdi 2002
- Arregui 2007
- Romero 2014
- Khoo 2017
Fake Tense

The literature

**past-as-past approaches**
- Tedeschi 1981
- Crouch 1992
- Condoravdi 2002
- Arregui 2007
- Romero 2014
- Khoo 2017

**past-as-modal approaches**
- Palmer 1986
- Fleischmann 1989
- Dahl 1997
- Iatridou 2000
- Schulz 2014
- Mackay 2018
Fake Tense

Fake Tense according to PaM approaches

In X-marked conditionals the Simple Past expresses modal distance instead of temporal distance.
Fake Tense

Fake Tense according to PaM approaches

In X-marked conditionals the Simple Past expresses modal distance instead of temporal distance.

Iatridou 2000:
Fake Tense marks that the worlds the antecedent talks about exclude what is (for all we know) the actual world.
Fake Tense

Fake Tense according to PaM approaches

In X-marked conditionals the Simple Past expresses modal distance instead of temporal distance.

Schulz 2014

Fake Tense marks that the worlds the antecedent talks about are unexpected by the speaker.
The plan for today
The plan for today

Fake Tense in SPCs marks that you talk about an unexpected scenario. (Schulz 2014)
The plan for today

Fake Tense in SPCs marks that you talk about an unexpected scenario. (Schulz 2014)

1. But that doesn’t work. (Mackay 2015)
2. Fake Tense marks that we ignore knowledge when making modal statements. (Mackay 2018)
The plan for today

Fake Tense in SPCs marks that you talk about an unexpected scenario. (Schulz 2014)

1. But that doesn’t work. (Mackay 2015)
2. Fake Tense marks that we ignore knowledge when making modal statements. (Mackay 2018)

1. But the way you implement this idea doesn’t work either.
2. Fake Tense talks about having to ignore knowledge because of the antecedent. (Schulz ms.)
Kratzer’s restrictor approach

The original approach - in a nutshell
Kratzer’s restrictor approach

The original approach - in a nutshell

- Conditionals contain a modal in the main clause.
- This modal takes a modal base $f$ (the relevant body of information) and an ordering source $g$ (the relevant standard of normalcy) as arguments.
Kratzer’s restrictor approach

The original approach - in a nutshell

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$\semantics{WOLL C}^{f,g} = 1$ iff among the worlds in the modal base $\cap f$ those most normal acc. to $g$ make $C$ true
Kratzer’s restrictor approach

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$\text{[WOLL } C\text{]}_{fg} = 1$ iff among the worlds in the modal base $\cap f$ those most normal acc. to $g$ make $C$ true

(9) Es wird regnen.
Kratzer’s restrictor approach

The original approach - in a nutshell

• Conditionals contain a modal in the main clause.
• This modal takes a modal base \( f \) (the relevant body of information) and an ordering source \( g \) (the relevant standard of normalcy) as arguments.

\[ [\text{WOLL } C]^{f,g} = 1 \iff \text{among the worlds in the modal base } \cap f \text{ those most normal acc. to } g \text{ make } C \text{ true} \]

• The If-clause modifies the modal base of the modal in the main clause.

\[ [\text{If } A, C]^{f,g} = [C]^{f',g}, \text{ where } f' = f \cup \{[A]^{f,g}\} \]
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$$\text{If } A, C^{f,g} = [C]^{f',g}, \text{ where } f' = f \cup \{[A]^{f,g}\}$$

• Counterfactuals have an empty modal base.
Kratzer’s restrictor approach

An example

(10) If Peter took his medicine, he would get better.

\[ [\text{If } A, \text{ C}]^{f,g} = [\text{C}]^{f',g}, \text{ where } f' = f \cup \{[A]^{f,g}\} \]

\[ [\text{WOLL } \text{C}]^{f,g} = 1 \text{ iff among the worlds in the modal base } \cap f \text{ those most normal acc. to } g \text{ make C true} \]
Kratzer’s restrictor approach

An example

(10) If Peter took his medicine, he would get better.

Modal Base:
Peter’s state of health, etc.

Ordering source:
medical knowledge about this illness

\[[\text{WOLL } C]^{f,g} = 1 \text{ iff among the worlds in the modal base } \cap f \text{ those most normal acc. to } g \text{ make } C \text{ true}\]

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\([\text{WOLL } C]^{f,g} = 1 \text{ iff among the worlds in the modal base } \cap f \text{ those most normal acc. to } g \text{ make } C \text{ true}\)

\([\text{If } A, C]^{f,g} = [C]^{f’,g}, \text{ where } f’ = f \cup \{[A]^{f,g}\}\)
Kratzer’s restrictor approach

An example

(10) If Peter took his medicine, he would get better.

$[\text{WOLL } C]_{f,g} = 1$ iff among the worlds in the modal base $\cap f$ those most normal acc. to $g$ make $C$ true

$[[\text{If } A, C]]_{f,g} = [[C]]_{f',g}$, where $f' = f \cup \{[[A]]_{f,g}\}$
Kratzer’s restrictor approach

Comment 1: two different LFs
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- The If-clause modifies the modal base of the modal in the main clause.

\[[\text{If } A, C]^{f,g} = [C]^{f',g}, \text{ where } f' = f \cup \{[A]^{f,g}\}\]
Kratzer’s restrictor approach

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\[\llbracket \text{If } A, C \rrbracket^{f,g} = \llbracket C \rrbracket^{f',g}, \text{ where } f' = f \cup \{\llbracket A \rrbracket^{f,g}\}\]

\[
\begin{array}{c}
\text{If } A, \\
\text{WOLL}_{f,g} \\
\text{C}
\end{array}
\]
Kratzer’s restrictor approach

Comment 1: two different LFs

- The If-clause modifies the modal base of the modal in the main clause.

\[ \text{If } A, C \{ f, g \} = \text{WOLL}^{f,g} C, \text{ where } f' = f \cup \{ \text{WOLL}^{f,g} A \} \]
Kraterzer’s restrictor approach

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Kratzer’s restrictor approach

Comment 1: two different LFs

(10) If Peter took his medicine, he would get better.

\[
\text{[WOLL C]}_{f,g}
\]

\[
\text{[If A, C]}_{f,g}
\]

- If A, WOLL_{f,g} C
- WOLL_{f,g} A C

Kratzer
Schulz

Ippolito
Mackay
Kratzer’s restrictor approach

Comment 1: two different LFs

(10) If Peter took his medicine, he would get better.

\[ \text{\textit{WOLL} C}^{f,g} \overset{\text{Prediction}}{\rightarrow} \]

\[ \text{\textit{If A, C}}^{f,g} \]

\[
\begin{array}{c}
\text{If A,} \\
\text{WOLL}^{f,g} \\
\text{C}
\end{array}
\]

\[
\begin{array}{c}
\text{WOLL}^{f,g} \\
\text{A} \\
\text{C}
\end{array}
\]

Kratzer Schulz

Ippolito Mackay
Comment 1: two different LF s

\[(10) \text{ If Peter took his medicine, he would get better.} \]

\[[\text{WOLL } C]^{f,g} \quad \text{Prediction} \]

\[[\text{If } A, \text{ C}]^{f,g} \quad \text{Revision} \]

Prediction

Revision

If $A$, $\text{WOLL}^{f,g}$ $\text{C}$

If $A$, $\text{WOLL}^{f,g}$ $\text{A}$ $\text{C}$

Kratzer

Schulz

Ippolito

Mackay
Comment 2: two different interpretation rules for IF

- The If-clause modifies the modal base of the modal in the main clause.
  \[ \text{If } A, \ C^{f,g} = \text{C}^{f',g}, \text{ where } f' = f \cup \{A^{f,g}\} \]
- Counterfactuals have an empty modal base.
Comment 2: two different interpretation rules for IF

- The If-clause modifies the modal base of the modal in the main clause.
  \[ \text{If } A, C \]^{f,g} = \text{If } C^{f',g}, \text{ where } f' = f \cup \{ \text{If } A \}^{f,g} \]
- Counterfactuals have an empty modal base.
  ▶ In this case the approach reduces to the similarity approach.
Kratzer’s restrictor approach

Comment 2: two different interpretation rules for IF

• The If-clause modifies the modal base of the modal in the main clause.

  $\mathcal{I}f, g = \mathcal{I}C, f' = f \cup \{\mathcal{M}A\}f, g$

• Counterfactuals have an empty modal base.

  – In this case the approach reduces to the similarity approach.

  – But you give up on the distinction between the relevant body of information and the relevant standard of normalcy.
Comment 2: two different interpretation rules for IF

- The If-clause modifies the modal base of the modal in the main clause.

\[[\text{If } A, C]^{f,g} = [C]^{f',g}, \text{ where } f' = f \cup \{[A]^{f,g}\}\]

- Counterfactuals have an empty modal base.

➡ In this case the approach reduces to the similarity approach.
➡ But you give up on the distinction between the relevant body of information and the relevant standard of normalcy.
➡ And, again, the distinction between prediction and revision dissolves - now, for counterfactuals.
Kratzer’s restrictor approach

Cognitive evidence for the distinction between prediction and revision

Children observed a puppet named Carol making dirty footprints on a clean floor. They were asked, “What if Carol had taken her dirty shoes off — would the floor be clean or dirty?”

- 75% of the 3-year-old and 87% of 4-year olds answered that the floor would be clean.

- We conclude that children of this age can predict based on a counterfactual assumption.
Marie is walking to the swimming pool in her swimsuit. On her way to the pool she is caught in a rainstorm and gets soaked. Then she gets to the pool and jumps in. Now she is all wet.

(11) If it hadn’t rained, would Marie be wet or dry?

- At age 5, children answered “wet” only about 18% of the time. Even at age 10 only about half of counterfactual questions like (11) are answered correctly.
- It seems that children of this age are unable to revise with counterfactual information.
Kratzer’s restrictor approach

Comment 2: two different interpretation rules for IF

- The If-clause modifies the modal base of the modal in the main clause.

\[
\text{[[If A, C]}^{f,g} = \text{[[C]}^{f',g}, \text{where } f' = f \cup \{[[A]}^{f,g}\}
\]
Comment 2: two different interpretation rules for IF

- The If-clause modifies the modal base of the modal in the main clause.
  \[[\text{If } A, C]^{f,g} = [C]^{f',g}, \text{ where } f' = f \cup \{[A]^{f,g}\}\]

A modified interpretation rule for IF
Comment 2: two different interpretation rules for IF

- The If-clause modifies the modal base of the modal in the main clause.

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\]

A modified interpretation rule for IF

\[
[\text{If } A, C]^{f,g} = [C]^{f',g}, \text{ where } f' = \text{Rev}_A(f)
\]
Comment 2: two different interpretation rules for IF

- The If-clause modifies the modal base of the modal in the main clause.

\[ [\text{If } A, C]^{f,g} = [C]^{f',g}, \text{ where } f' = f \cup \{[A]^{f,g}\} \]

A modified interpretation rule for IF

\[ [\text{If } A, C]^{f,g} = [C]^{f',g}, \text{ where } f' = \text{Rev}_A(f) \]

- Counterfactuals behave just as other conditional sentences.
Comment 2: two different interpretation rules for IF

• The If-clause modifies the modal base of the modal in the main clause.

$$[[\text{If } A, C]]_{f,g} = [[C]]_{f',g}, \text{ where } f' = f \cup \{[[A]]_{f,g}\}$$

A modified interpretation rule for IF

$$[[\text{If } A, C]]_{f,g} = [[C]]_{f',g}, \text{ where } f' = \text{Rev}_A(f)$$

• Counterfactuals behave just as other conditional sentences.

  ➞ Can be still translated into a similarity approach.
Kratzer’s restrictor approach

Summary: two dimensions of variation

The original approach
\[[\text{If } A, C]^{f,g} = [C]^{f',g}, \text{ where } f' = f \cup \{[A]^{f,g}\}\]

A modified approach
\[[\text{If } A, C]^{f,g} = [C]^{f',g}, \text{ where } f' = \text{Rev}_A(f)\]
The discussion

Schulz’ 2014 proposal
The discussion

Schulz’ 2014 proposal

If A, PAST WOLL C
The discussion

Schulz’ 2014 proposal

\[ [[\text{If } A, \Phi]]^{f,g} = [[\Phi]]^{f’,g}, \text{ where } f’ = \text{Rev}_A(f) \]
Schulz’ 2014 proposal

\[
\begin{align*}
&[[\text{If } A, \Phi]]^f,g = [[\Phi]]^{f',g}, \text{ where } f' = \text{Rev}_A(f) \\
&PAST_t C]^a = [C]^a, \text{ if } a(t) < t_0 \\
&PAST_f C]^f,g = [C]^f,g, \text{ if } \forall f < E
\end{align*}
\]
The discussion

Schulz’ 2014 proposal

\[[\text{If } A, \Phi]^{f,g} = [\Phi]^{f',g}, \text{ where } f' = \text{Rev}_A(f)\]

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\[[\text{PAST}_f C]^{f,g} = [C]^{f,g}, \text{ if } \forall f < E\]

Set of worlds

epistemic deictic centre;
expected worlds

If A, PAST WOLL C
The discussion

Schulz’ 2014 proposal

\[
[\text{If } A, \Phi]^{f,g} = [\Phi]^{f',g}, \text{ where } f' = \text{Rev}_A(f)
\]

\[
[PAST_t C]^a = [C]^a, \text{ if } a(t) < t_0
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\[
[PAST_f C]^{f,g} = [C]^{f,g}, \text{ if } \nabla f < E
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The discussion

Schulz’ 2014 proposal

\[ [\text{If } A, \Phi]_{f,g} = [\Phi]_{f',g}, \text{ where } f' = \text{Rev}_A(f) \]

\[ [\text{PAST}_t C]_a = [C]_a, \text{ if } a(t) < t_0 \]

\[ [\text{PAST}_f C]_{f,g} = [C]_{f,g}, \text{ if } \cap f < E \]

Set of worlds

antecedent worlds

epistemic deictic centre;

expected worlds
The discussion

Schulz’ 2014 proposal

\[
\begin{align*}
\langle \text{If } A, \Phi \rangle^{f,g} &= \langle \Phi \rangle^{f',g}, \text{ where } f' = \text{Rev}_A(f) \\
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(1) If Peter took his medicine, he would get better.

\[\text{Set of worlds} \]

\[\text{antecedent worlds} \]

\[\text{epistemic deictic centre; expected worlds} \]

\[\text{PAST} \]
The discussion

Mackay’s 2015 challenge

(12) If Jones had taken arsenic, he would show exactly the symptoms he is showing.
(13) If Jones had taken arsenic, things wouldn’t be quite as they actually are.
(14) If Jones had taken arsenic, everything would be exactly as it actually is.

Set of worlds

antecedent worlds

expected worlds

nf

PAST

E w₀
The discussion

The problem is even more general

(15) A: If Heather had left before 9am, she would have made it to the meeting.
(16) B: Well, you’re wrong. She did leave before 9am and still didn’t make it.
(17) B’: #Well, you’re wrong. She did leave before 9am, but there was an earthquake and she didn’t make it.
The discussion

Mackay’s 2018 proposal
The discussion

Mackay’s 2018 proposal

PAST

WOLL (A, C)
Mackay’s 2018 proposal

\[ [WOLL(A, C)]^{f,g} = 1 \text{ iff all } g\text{-minimal worlds in } (\cap f \cap [A]) \text{ make } C \text{ true} \]
The discussion

Mackay’s 2018 proposal

\[ \text{[WOLL}(A, C)\text{]}^f_g = 1 \text{ iff all g-minimal worlds in } (\cap f \cap [A]) \text{ make } C \text{ true} \]

\[ \text{[PAST}_f \Phi \text{]}^f_g = [\Phi]^f_g, \text{ if } f \subset CG \]
Mackay’s 2018 proposal

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\[ \langle \text{WOLL}(A, C) \rangle_{f,g} = 1 \text{ iff all } g\text{-minimal worlds in } (\cap f \cap [A]) \text{ make } C \text{ true} \]

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The discussion

Mackay’s 2018 proposal

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\[[\text{WOLL}(A, C)]^{f,g} = 1 \text{ iff all } g\text{-minimal worlds in } (\cap f \cap [A]) \text{ make } C \text{ true}\]

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The discussion

Mackay’s 2018 proposal

\[ \lbrack \text{WOLL}(A, C) \rbrack_{f,g} = 1 \text{ iff all } g\text{-minimal worlds in } (\cap f \cap \lbrack A \rbrack) \text{ make } C \text{ true} \]

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(13) If Jones had taken arsenic, things wouldn’t be quite as they actually are.

(14) If Jones had taken arsenic, everything would be exactly as it actually is.
The discussion

Mackay’s 2018 proposal

\[ \text{\textsc{WOLL}(A, C)}_{f,g} = 1 \text{ iff all } g\text{-minimal worlds in } (\cap f \cap \llbracket A \rrbracket) \text{ make } C \text{ true} \]

\[ \text{\textsc{PAST}}_{f} \text{ } \Phi_{f,g} = \llbracket \Phi \rrbracket_{f,g}, \text{ if } f \subset CG \]
The discussion

Mackay’s 2018 proposal

\[ \text{[WOLL}(A, C)\text{]}_{f,g} = 1 \text{ iff all } g\text{-minimal worlds in } (\cap f \cap \text{[}A\text{]}) \text{ make C true} \]

\[ \text{[PAST}_f \Phi\text{]}_{f,g} = \text{[}\Phi\text{]}_{f,g}, \text{ if } f \subset CG \]

“Subjunctive” conditionals

Set of worlds

antecedent worlds

\cap common ground

\cap f, modal base

PAST
The discussion

Mackay’s 2018 proposal

\[ \text{[WOLL}(A, C)\text{]}_{f,g} = 1 \text{ iff all } g\text{-minimal } \]
\[ \text{worlds in } (\cap f \cap \text{[A]} \text{)} \text{ make C true} \]

\[ \text{[PAST}_f \Phi \text{]}_{f,g} = \text{[}\Phi\text{]}_{f,g}, \text{ if } f \subset CG \]

\[ \text{“Subjunctive” conditionals} \]

\[ \text{[PRES}_f \Phi \text{]}_{f,g} = \text{[}\Phi\text{]}_{f,g}, \text{ if } f = CG \]

\[ \text{“Indicative” conditionals} \]
The discussion

Mackay’s 2018 proposal

\[ [WOLL(A, C)]_{f,g} = 1 \text{ iff all g-minimal worlds in } (\cap f \cap \llbracket A \rrbracket) \text{ make } C \text{ true} \]

\[ [\text{PAST}_f \Phi]_{f,g} = [\Phi]_{f,g}, \text{ if } f \subset CG \]

\[ [\text{PRES}_f \Phi]_{f,g} = [\Phi]_{f,g}, \text{ if } f = CG \]

“Subjunctive” conditionals

“Indicative” conditionals

Set of worlds
The discussion

Schulz’ (ms) reply

\[[\text{WOLL}(A, C)]^{f, g} = 1 \text{ iff all g-minimal worlds in } (\cap f \cap [A]) \text{ make } C \text{ true}\]

\[[\text{PAST}_f \Phi]^{f, g} = [\Phi]^{f, g}, \text{ if } f \subset CG \quad \text{“Subjunctive” conditionals}\]

\[[\text{PRES}_f \Phi]^{f, g} = [\Phi]^{f, g}, \text{ if } f = CG \quad \text{“Indicative” conditionals}\]
The discussion

Schulz’ (ms) reply

\[ [\text{WOLL}(A, C)]^{f,g} = 1 \text{ iff all g-minimal worlds in } (\cap f \cap [A]) \text{ make } C \text{ true} \]

\[ [\text{PAST}_f \Phi]^{f,g} = [\Phi]^{f,g}, \text{ if } f \subset CG \]

\[ [\text{PRES}_f \Phi]^{f,g} = [\Phi]^{f,g}, \text{ if } f = CG \]

“Subjunctive” conditionals

“Indicative” conditionals

• It trivialises Kratzer’s approach to modals for not X-marked modals.
The discussion

Schulz’ (ms) reply

\[ \mathbb{WOLL}(A, C)^{f,g} = 1 \text{ iff all g-minimal worlds in } (\cap f \cap \mathbb{A}) \text{ make } C \text{ true} \]

\[ \mathbb{PAST}_f \Phi^{f,g} = [\Phi]^{f,g}, \text{ if } f \subset CG \]

\[ \mathbb{PRES}_f \Phi^{f,g} = [\Phi]^{f,g}, \text{ if } f = CG \]

“Subjunctive” conditionals

“Indicative” conditionals

- It trivialises Kratzer’s approach to modals for not X-marked modals.
- Too many X-marked conditionals (and not enough indicatives)
The discussion

Schulz’ (ms) reply

\[[\text{WOLL}(A, C)]^f_g = 1 \text{ iff all } g\text{-minimal worlds in } (\cap f \cap [A]) \text{ make } C \text{ true}\]

\[[\text{PAST}_f \Phi]^f_g = [\Phi]^f_g, \text{ if } f \subset CG \quad \text{“Subjunctive” conditionals}\]

\[[\text{PRES}_f \Phi]^f_g = [\Phi]^f_g, \text{ if } f = CG \quad \text{“Indicative” conditionals}\]

• It trivialises Kratzer’s approach to modals for not X-marked modals.

• Too many X-marked conditionals (and not enough indicatives)

(18) If you’re hungry and wet, you’re certainly wet.
The discussion

Schulz’ (ms) reply

\[[\text{WOLL}(A, C)]\]^{f,g} = 1 \text{ iff all } g\text{-minimal worlds in } (\cap f \cap [A]) \text{ make } C \text{ true}

\[[\text{PAST}_f \Phi]^{f,g} = [\Phi]^{f,g}, \text{ if } f \subset CG \quad \text{“Subjunctive” conditionals}

\[[\text{PRES}_f \Phi]^{f,g} = [\Phi]^{f,g}, \text{ if } f = CG \quad \text{“Indicative” conditionals}

• It trivialises Kratzer’s approach to modals for not X-marked modals.
• Too many X-marked conditionals (and not enough indicatives)
• Mackay cannot explain what makes the arsenic cases special.
The discussion

Schulz’ (ms) reply

\[ [\text{WOLL}(A, C)]^f,g = 1 \text{ iff all g-minimal worlds in } (\cap f \cap [A]) \text{ make } C \text{ true} \]

\[ [\text{PAST}_f \Phi]^f,g = [\Phi]^f,g, \text{ if } f \subset CG \]

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“Subjunctive” conditionals

“Indicative” conditionals

- It trivialises Kratzer’s approach to modals for not X-marked modals.
- Too many X-marked conditionals (and not enough indicatives)
- Mackay cannot explain what makes the arsenic cases special.
- Mackay cannot explain why for the arsenic cases the indicative mood is not acceptable.
The discussion

Schulz’ (ms) reply

\[ \text{[WOLL}(A, C)\text{]}^f,g = 1 \text{ iff all } g\text{-minimal worlds in } (\cap f \cap \text{[A]}\text{]} \text{ make C true} \]

\[ \text{[PAST}_f \Phi\text{]}^f,g = \text{[}\Phi\text{]}^f,g, \text{ if } f \subseteq CG \quad \text{“Subjunctive” conditionals} \]

\[ \text{[PRES}_f \Phi\text{]}^f,g = \text{[}\Phi\text{]}^f,g, \text{ if } f = CG \quad \text{“Indicative” conditionals} \]

(12) If Jones had taken arsenic, he would show exactly the symptoms he is showing.

(13) If Jones had taken arsenic, things wouldn’t be quite as they actually are.

(14) If Jones had taken arsenic, everything would be exactly as it actually is.

• Mackay cannot explain why for the arsenic cases the indicative mood is not acceptable.
The discussion

Counterproposal
The discussion

Counterproposal

If A, PAST WOLL C
The discussion

Counterproposal

\[ [\text{If } A, \Phi]^{f,g} = [\Phi]^{f',g}, \text{ where } f' = \text{Rev}_A(f) \]
The discussion

Counterproposal

\[[\text{If } A, \Phi]^{f,g} = [\Phi]^{f',g}, \text{ where } f' = \text{Rev}_A(f)\]

\[[\text{PAST}_f \Phi]^{f,g} = [\Phi]^{f,g}, \text{ if } f < f_0,\]

where \(s_1 < s_2\) iff \(s_1 \cap f_0 \subset s_2 \cap f_0\)
The discussion

Counterproposal

\[[\text{If } A, \Phi]^{f,g} = [\Phi]^{f',g}, \text{ where } f' = \text{Rev}_A(f)\]

\[[\text{PAST}_f \Phi]^{f,g} = [\Phi]^{f,g}, \text{ if } f < f_0,\]

where \( s_1 < s_2 \iff s_1 \cap f_0 \subset s_2 \cap f_0 \)

⇒ Past marks that you had to give up relevant information to make room for the antecedent.
The discussion

Counterproposal

\[ [\text{If } A, \Phi]^{f,g} = [\Phi]^{f',g}, \text{ where } f' = \text{Rev}_A(f) \]

\[ [\text{PAST}_f \Phi]^{f,g} = [\Phi]^{f,g}, \text{ if } f < f_0, \]

where \( s_1 < s_2 \) iff \( s_1 \cap f_0 \subseteq s_2 \cap f_0 \)

⇒ Past marks that you had to give up relevant information to make room for the antecedent.

Set of worlds

\( \cap f_0 \subseteq \text{epistemic centre of discourse} \)
The discussion

Counterproposal

\[[\text{If } A, \Phi]^{f,g} = [\Phi]^{f',g}, \text{ where } f' = \text{Rev}_A(f)\]

\[[\text{PAST}_f \Phi]^{f,g} = [\Phi]^{f,g}, \text{ if } f < f_0,\]

where \( s_1 < s_2 \) iff \( s_1 \cap f_0 \subset s_2 \cap f_0 \)

\( \rightarrow \) Past marks that you had to give up relevant information to make room for the antecedent.

\( \cap f = \cap \text{Rev}_A(f_0), \)

modal base after revision with \( A, \)

antecedent worlds

\( \cap f_0 \subseteq \text{epistemic centre of discourse} \)

Set of worlds
The discussion

Counterproposal

\[ [\text{If } A, \Phi]^{f,g} = [\Phi]^{f',g}, \text{ where } f' = \text{Rev}_A(f) \]

\[ [\text{PAST}_f \Phi]^{f,g} = [\Phi]^{f,g}, \text{ if } f < f_0, \]

where \( s_1 < s_2 \) iff \( s_1 \cap f_0 \subset s_2 \cap f_0 \)

⇒ Past marks that you had to give up relevant information to make room for the antecedent.

Set of worlds

\( \cap f = \cap \text{Rev}_A(f_0), \)

modal base after revision with A, antecedent worlds

\( \cap f_0 \subseteq \text{epistemic centre of discourse} \)

\( \cap(\text{Rev}_A(f_0) \cap f_0) \)
The discussion

Counterproposal

\[[\text{If } A, \Phi]_{f,g}^{f',g} = [\Phi]_{f',g}^{f',g}, \text{ where } f' = \text{Rev}_A(f)\]

\[[\text{PAST}_f \Phi]_{f,g}^{f,g} = [\Phi]_{f,g}^{f,g}, \text{ if } f < f_0,\]

where \(s_1 < s_2\) iff \(s_1 \cap f_0 \subset s_2 \cap f_0\)

→ Past marks that you had to give up relevant information to make room for the antecedent.

\(\cap f = \cap \text{Rev}_A(f_0),\)
/modal base after revision with A, antecedent worlds

\(\cap f_0 \subseteq \text{epistemic centre of discourse}\)

\(\cap (\text{Rev}_A(f_0) \cap f_0)\)

Set of worlds
The discussion

Counterproposal - revision

\[[\text{If } A, \Phi]^{f,g} = [\Phi]^{f',g}, \text{ where } f' = \text{Rev}_A(f)\]
Counterproposal - revision

\[ \text{If } A, \Phi \]^{f,g} = \text{[} \Phi \text{]}^{f',g}, \text{ where } f' = \text{Rev}_A(f) \]

Rev$_A$(f) is the set of sets containing A combined with a maximal subset of f that is (logically) consistent with A.
The discussion

Counterproposal - revision

\[ \mathbb{I f} A, \Phi \]^{f,g} = [\Phi]^{f',g}, \text{ where } f' = \text{Rev}_A(f) \]

\text{Rev}_A(f) \text{ is the set of sets containing } A \text{ combined with a maximal subset of } f \text{ that is (logically) consistent with } A \text{ and does not contain any facts causally dependent on } A \text{ or facts that had to be removed to obtain consistency with } A.\]
Counterproposal - revision

\[[\text{If } A, \Phi]^{f,g} = [\Phi]^{f',g}, \text{ where } f' = \text{Rev}_A(f)\]

Rev$_A$(f) is the set of sets containing A combined with a maximal subset of f that is (logically) consistent with A and does not contain any facts causally dependent on A or facts that had to be removed to obtain consistency with A.

⇒ For formalisations using Structural Equations (Pearl 2000) see Schulz 2011, Pearl 2013, Santorio ms., Ciardelli 2018.
The discussion

Counterproposal - an example

Suppose there is a circuit such that the light is on (L) exactly when both switches are in the same position (up or down). At the moment switch one is down (¬S1), switch two is up (S2) and the light is off (¬L).

(19) If switch one were up, the light would be on.

[[IF S1, PAST WOLL L]^{f_0}, g.]
The discussion

Counterproposal - an example

Suppose there is a circuit such that the light is on (L) exactly when both switches are in the same position (up or down). At the moment switch one is down (¬S1), switch two is up (S2) and the light is off (¬L).

(19) If switch one were up, the light would be on.

\[ \text{[IF S1, PAST WOLL L]}^{f_0, g}. \]

Modal base \( f_0 = \{\neg S1, S2, \neg L\} \)
Ordering source \( g = \{L \leftrightarrow (S1 \leftrightarrow S2)\} \)
Counterproposal - an example

Suppose there is a circuit such that the light is on (L) exactly when both switches are in the same position (up or down). At the moment switch one is down (¬S1), switch two is up (S2) and the light is off (¬L).

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\[[\text{IF } S1, \text{ PAST WOLL } L]^{f_0}, g.\]

Modal base $f_0 = \{\neg S1, S2, \neg L\}$
Ordering source $g = \{L \leftrightarrow (S1 \leftrightarrow S2)\}$

Revision
The discussion

Counterproposal - an example

Suppose there is a circuit such that the light is on (L) exactly when both switches are in the same position (up or down). At the moment switch one is down (¬S1), switch two is up (S2) and the light is off (¬L).

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\[ \text{IF } S1, \text{ PAST } \text{WOLL } L \]_{f_0}^g.

Modal base \( f_0 = \{ \neg S1, S2, \neg L \} \)
Ordering source \( g = \{ L \leftrightarrow (S1 \leftrightarrow S2) \} \)

Revision

\( \text{Revs}_{S1}(\{ \neg S1, S2, \neg L \}) \)
Counterproposal - an example

Suppose there is a circuit such that the light is on (L) exactly when both switches are in the same position (up or down). At the moment switch one is down (¬S1), switch two is up (S2) and the light is off (¬L).

(19) If switch one were up, the light would be on.

\[
[[\text{IF } S_1, \text{ PAST WOLL L}]]^{f_0, g}.
\]

Modal base \( f_0 = \{¬S_1, S_2, ¬L\} \)
Ordering source \( g = \{L \leftrightarrow (S_1 \leftrightarrow S_2)\} \)

Revision

\( \text{Rev}_{S_1}(\{¬S_1, S_2, ¬L\}) = \{\{S_1, S_2, ¬L\}\} \)
Counterproposal - an example

Suppose there is a circuit such that the light is on (L) exactly when both switches are in the same position (up or down). At the moment switch one is down (¬S1), switch two is up (S2) and the light is off (¬L).

(19) If switch one were up, the light would be on.

\[ \text{[[IF } S_1, \text{ PAST WOLL L}}]^{f_0, g}. \]

Modal base \( f_0 = \{¬S_1, S_2, ¬L\} \)
Ordering source \( g = \{L \leftrightarrow (S_1 \leftrightarrow S_2)\} \)

Revision

\( \text{Rev}_{S_1}(\{¬S_1, S_2, ¬L\}) = \{\{S_1, S_2\}\} \)
The discussion

Counterproposal - an example

Suppose there is a circuit such that the light is on (L) exactly when both switches are in the same position (up or down). At the moment switch one is down (¬S1), switch two is up (S2) and the light is off (¬L).

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\[[\text{IF } S1, \text{ PAST WOLL } L]^{f_0, g} \]

Modal base \( f_0 = \{¬S1, S2, ¬L\} \)

Ordering source \( g = \{L \leftrightarrow (S1 \leftrightarrow S2)\} \)

Revision

\( \text{Rev}_{S1}(\{¬S1, S2, ¬L\}) = \{S1, S2\} \)

Checking PAST
The discussion

Counterproposal - an example

Suppose there is a circuit such that the light is on (L) exactly when both switches are in the same position (up or down). At the moment switch one is down (¬S1), switch two is up (S2) and the light is off (¬L).

(19) If switch one were up, the light would be on.

\[ [\text{IF } S1, \text{ PAST WOLL } L]^{f_0, g} \]

Modal base \( f_0 = \{\neg S1, S2, \neg L\} \)
Ordering source \( g = \{L \leftrightarrow (S1 \leftrightarrow S2)\} \)

Revision

\( \text{Rev}_{S1}(\{\neg S1, S2, \neg L\}) = \{S1, S2\} \)

Checking PAST

\( \text{Rev}_{S1}(f_0) < f_0 \)
Counterproposal - an example

Suppose there is a circuit such that the light is on (L) exactly when both switches are in the same position (up or down). At the moment switch one is down (¬S1), switch two is up (S2) and the light is off (¬L).

(19) If switch one were up, the light would be on.

\[ \text{IF S1, PAST WOLL L} \]

Modal base \( f_0 = \{\neg S1, S2, \neg L\} \)
Ordering source \( g = \{L \leftrightarrow (S1 \leftrightarrow S2)\} \)

Revision

\( \text{Rev}_{S1}(\{\neg S1, S2, \neg L\}) = \{S1, S2\} \)

Checking PAST

\( \text{Rev}_{S1}(f_0) < f_0 \quad \checkmark \)
The discussion

Counterproposal - an example

Suppose there is a circuit such that the light is on (L) exactly when both switches are in the same position (up or down). At the moment switch one is down (¬S1), switch two is up (S2) and the light is off (¬L).

If switch one were up, the light would be on.

\[[\text{IF S1, PAST WOLL L}]^{f_0, g}\]

Modal base \(f_0 = \{¬S1, S2, ¬L\}\)
Ordering source \(g = \{L \leftrightarrow (S1 \leftrightarrow S2)\}\)

**Revision**

\(\text{Rev}_{S1}(\{¬S1, S2, ¬L\}) = \{S1, S2\}\)

**Prediction**

Checking PAST

\(\text{Rev}_{S1}(f_0) < f_0\) ✔
The discussion

Counterproposal - an example

Suppose there is a circuit such that the light is on (L) exactly when both switches are in the same position (up or down). At the moment switch one is down (¬S1), switch two is up (S2) and the light is off (¬L).

(19) If switch one were up, the light would be on.

\[[\text{IF S1, PAST WOLL L}]^{f_0, g}\]

Modal base \(f_0 = \{¬S1, S2, ¬L\}\)

Ordering source \(g = \{L ↔ (S1↔S2)\}\)

**Revision**

\(\text{Rev}_{S1}(\{¬S1, S2, ¬L\}) = \{\{S1, S2\}\}\)

**Prediction**

\(\text{Rev}_{S1}(f_0) < f_0\) ✔

**Checking PAST**

\(\text{Rev}_{S1}(f_0) < f_0\) ✔
Counterproposal - an example

Suppose there is a circuit such that the light is on (L) exactly when both switches are in the same position (up or down). At the moment switch one is down (¬S1), switch two is up (S2) and the light is off (¬L).

(19) If switch one were up, the light would be on.

\[ [\text{IF } S1, \text{ PAST WOLL L}]^{f_0, g}. \]

Modal base \( f_0 = \{¬S1, S2, ¬L\} \)

Ordering source \( g = \{L \leftrightarrow (S1 \leftrightarrow S2)\} \)

**Revision**

\[ \text{Rev}_{S1} (\{¬S1, S2, ¬L\}) = \{\{S1, S2\}\} \]

**Prediction**

\[ [\text{WOLL L}]^{f, g} = 1 \]

**Checking PAST**

\[ \text{Rev}_{S1} (f_0) < f_0 \]
Applications
Applications

The arsenic cases
Applications

The arsenic cases

➡ Past marks that you had to give up relevant information to make room for the antecedent.
Applications

The arsenic cases

➡ Past marks that you had to give up relevant information to make room for the antecedent.

(12) If Jones had taken arsenic, he would show exactly the symptoms he is showing

[[IF A, PAST WOLL S]]^{f_{0},g}.
Applications

The arsenic cases

⇒ Past marks that you had to give up relevant information to make room for the antecedent.

(12) If Jones had taken arsenic, he would show exactly the symptoms he is showing

\[ \text{[IF A, PAST WOLL S]}^{f_0}, g. \]

Modal base \( f_0 = \{ \text{observed symptoms, etc.} \} \)
Ordering source \( g = \{ \text{how arsenic normally affects your body, etc.} \} \)
Applications

The arsenic cases

➡ Past marks that you had to give up relevant information to make room for the antecedent.

(12) If Jones had taken arsenic, he would show exactly the symptoms he is showing

$$[[\text{IF A, PAST WOLL S}]]^{f_0}, g.$$ 

Modal base $$f_0 = \{\text{observed symptoms, etc.}\}$$
Ordering source $$g = \{\text{how arsenic normally affects your body, etc.}\}$$

Revision

$$\text{Rev}_A(f_0)$$
Applications

The arsenic cases

→ Past marks that you had to give up relevant information to make room for the antecedent.

(12) If Jones had taken arsenic, he would show exactly the symptoms he is showing

\[[\text{IF A, PAST WOLL S}]^{f_0}, g.\]

Modal base \( f_0 = \{\text{observed symptoms, etc.}\} \)
Ordering source \( g = \{\text{how arsenic normally affects your body, etc.}\} \)

Revision

\( \text{Rev}_A(f_0) \) will not contain the symptoms anymore
The arsenic cases

⇒ Past marks that you had to give up relevant information to make room for the antecedent.

(12) If Jones had taken arsenic, he would show exactly the symptoms he is showing

\[[\text{IF A, PAST WOLL S}]^{f_0}, g.\]

Modal base $f_0 = \{\text{observed symptoms, etc.}\}$
Ordering source $g = \{\text{how arsenic normally affects your body, etc.}\}$

Revision

$\text{Rev}_A(f_0)$ will not contain the symptoms anymore

Checking PAST

$\text{Rev}_A(f_0) < f_0$
Applications

The arsenic cases

➡ Past marks that you had to give up relevant information to make room for the antecedent.

(12) If Jones had taken arsenic, he would show exactly the symptoms he is showing

\[ \text{IF A, PAST WOLL S}]^{f_0, g}.

Modal base $f_0 = \{\text{observed symptoms, etc.}\}$
Ordering source $g = \{\text{how arsenic normally affects your body, etc.}\}$

Revision

$\text{Rev}_A(f_0)$ will not contain the symptoms anymore

Checking PAST

$\text{Rev}_A(f_0) < f_0$ ✔
Applications

The arsenic cases

➡ Past marks that you had to give up relevant information to make room for the antecedent.

(12) If Jones had taken arsenic, he would show exactly the symptoms he is showing

[[IF A, PAST WOLL S]]^{f_0}, g.

Modal base $f_0 = \{\text{observed symptoms, etc.}\}$
Ordering source $g = \{\text{how arsenic normally affects your body, etc.}\}$

Revision

Rev A($f_0$) will not contain the symptoms anymore

Checking PAST

Rev A($f_0$) < $f_0$ ✔

Prediction

[[WOLL S]]^f, g = 1
Applications

The arsenic cases

⇒ Past marks that you had to give up relevant information to make room for the antecedent.

(12) If Jones had taken arsenic, he would show exactly the symptoms he is showing

\[[\text{IF A, PAST WOLL S}]^{f_0, g}\]

Modal base \(f_0 = \{\text{observed symptoms, etc.}\}\)
Ordering source \(g = \{\text{how arsenic normally affects your body, etc.}\}\)

Revision

\(\text{Rev}_A(f_0)\) will not contain the symptoms anymore

Checking PAST

\(\text{Rev}_A(f_0) < f_0\) ✔

Prediction

\([\text{WOLL S}]^{f, g} = 1\) ✔
Applications

The distinction between indicative and X-marked conditionals
Applications

The distinction between indicative and X-marked conditionals

(2) If Peter left in time, he will be in Amsterdam this evening.  ➡️ indicative conditional

(3) If Peter left in time, he would be in Amsterdam this evening.  ➡️ simple past X-marked

(4) If Peter had left in time, he would have been in Amsterdam this evening.  ➡️ past perfect X-marked
Applications

The distinction between indicative and X-marked conditionals

(2) If Peter left in time, he will be in Amsterdam this evening.
   ➞ indicative conditional

(3) If Peter left in time, he would be in Amsterdam this evening.
   ➞ simple past X-marked

(4) If Peter had left in time, he would have been in Amsterdam this evening.
   ➞ past perfect X-marked
Applications

The distinction between indicative and X-marked conditionals

(2) If Peter left in time, he will be in Amsterdam this evening. ➔ indicative conditional

(3) If Peter left in time, he would be in Amsterdam this evening. ➔ simple past X-marked

(4) If Peter had left in time, he would have been in Amsterdam this evening. ➔ past perfect X-marked

\([\text{PAST}_f \Phi]_{f,g} = [\Phi]_{f,g}, \text{ if } f < f_0\)
Applications

The distinction between indicative and X-marked conditionals

(2) If Peter left in time, he will be in Amsterdam this evening. \(\text{⇒ indicative conditional}\)

(3) If Peter left in time, he would be in Amsterdam this evening. \(\text{⇒ simple past X-marked}\)

(4) If Peter had left in time, he would have been in Amsterdam this evening. \(\text{⇒ past perfect X-marked}\)

\[ \text{[PAST}_f \Phi \text{]}_{f,g} = \text{[\Phi]}_{f,g}, \text{ if } f < f_0 \] \(\text{⇒ “Subjunctive” conditionals}\)
Applications

The distinction between indicative and X-marked conditionals

(2) If Peter left in time, he will be in Amsterdam this evening. ➡ indicative conditional

(3) If Peter left in time, he would be in Amsterdam this evening. ➡ simple past X-marked

(4) If Peter had left in time, he would have been in Amsterdam this evening. ➡ past perfect X-marked

\[[\text{PAST}_f \Phi]^{f,g} = \Phi^{f,g}, \text{ if } f < f_0\] ➡ “Subjunctive” conditionals

\[[\text{PRES}_f \Phi]^{f,g} = \Phi^{f,g}, \text{ if } f = f_0\] ➡ “Indicative” conditionals
Applications

The distinction between indicative and X-marked conditionals

(2) If Peter left in time, he will be in Amsterdam this evening.  ➡ indicative conditional

(3) If Peter left in time, he would be in Amsterdam this evening.  ➡ simple past X-marked

(4) If Peter had left in time, he would have been in Amsterdam this evening.  ➡ past perfect X-marked

\[[\text{PAST}_f \Phi]^{f,g} = [\Phi]^{f,g}, \text{ if } f < f_0\] ➡ “Subjunctive” conditionals

\[[\text{PRES}_f \Phi]^{f,g} = [\Phi]^{f,g}, \text{ if } f = f_0\] ➡ “Indicative” conditionals

➡ In indicative conditionals no relevant information had to give up to make room for the antecedent.
Applications

The distinction between indicative and X-marked conditionals

(20) If Oswald hadn’t shot Kennedy (¬O), someone else would have (E).
(21) If Oswald didn’t shoot Kennedy (¬O), someone else did (E).
Applications

The distinction between indicative and X-marked conditionals

(20) If Oswald hadn’t shot Kennedy (¬O), someone else would have (E).
(21) If Oswald didn’t shoot Kennedy (¬O), someone else did (E).

- The only difference is whether you do or do not believe that Oswald did it, i.e. whether the antecedent forces you to revise your belief state.
Applications

The distinction between indicative and X-marked conditionals

(20) If Oswald hadn’t shot Kennedy (¬O), someone else would have (E).
(21) If Oswald didn’t shoot Kennedy (¬O), someone else did (E).

- The only difference is whether you do or do not believe that Oswald did it, i.e., whether the antecedent forces you to revise your belief state.

Modal base $f_0 = \{O, K\}$, where $K = \text{Kennedy was shot}$
Ordering source $g = ?$
Applications

The distinction between indicative and X-marked conditionals

(20) If Oswald hadn’t shot Kennedy (¬O), someone else would have (E).
(21) If Oswald didn’t shoot Kennedy (¬O), someone else did (E).

The only difference is whether you do or do not believe that Oswald did it, i.e. whether the antecedent forces you to revise your belief state.

Modal base \( f_0 = \{O, K\} \), where \( K = \text{Kennedy was shot} \)
Ordering source \( g = ? \)

Revision

\( \text{Rev}_{¬O}(f_0) = \{¬O\} \)
Applications

The distinction between indicative and X-marked conditionals

(20) If Oswald hadn’t shot Kennedy (¬O), someone else would have (E).
(21) If Oswald didn’t shoot Kennedy (¬O), someone else did (E).

- The only difference is whether you do or do not believe that Oswald did it, i.e. whether the antecedent forces you to revise your belief state.

Modal base $f_0 = \{O, K\}$, where $K = \text{Kennedy was shot}
Ordering source $g = ?$

Revision

$\text{Rev}_{\neg O}(f_0) = \{\neg O\} \quad \text{K goes!}$
Applications

The distinction between indicative and X-marked conditionals

(20) If Oswald hadn’t shot Kennedy (¬O), someone else would have (E).
(21) If Oswald didn’t shoot Kennedy (¬O), someone else did (E).

- The only difference is whether you do or do not believe that Oswald did it, i.e. whether the antecedent forces you to revise your belief state.

Modal base \( f_0 = \{O, K\} \), where K = Kennedy was shot
Ordering source g = ?

Revision
\( \text{Rev}_{\neg O}(f_0) = \{\neg O\} \quad \text{K goes!} \)

Checking PAST
\( \text{Rev}_{\neg O}(f_0) < f_0 \)
Applications

The distinction between indicative and X-marked conditionals

(20) If Oswald hadn’t shot Kennedy (¬O), someone else would have (E).
(21) If Oswald didn’t shoot Kennedy (¬O), someone else did (E).

- The only difference is whether you do or do not believe that Oswald did it, i.e. whether the antecedent forces you to revise your belief state.

Modal base $f_0 = \{O, K\}$, where $K = $ Kennedy was shot
Ordering source $g = ?$

Revision

$\text{Rev}_{\neg O}(f_0) = \{\neg O\} \quad K \text{ goes!}$

Checking PAST

$\text{Rev}_{\neg O}(f_0) < f_0 \quad X\text{-markings!}$
Applications

The distinction between indicative and X-marked conditionals

(20) If Oswald hadn’t shot Kennedy (¬O), someone else would have (E).
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› The only difference is whether you do or do not believe that Oswald did it, i.e. whether the antecedent forces you to revise your belief state.

Modal base \( f_0 = \{O, K\} \), where \( K = \) Kennedy was shot
Ordering source \( g = ? \)

Revision

\( \text{Rev}_{\neg O}(f_0) = \{\neg O\} \)  \( K \) goes!

Checking PAST

\( \text{Rev}_{\neg O}(f_0) < f_0 \)  \( X \)-markings!

Prediction

\([\text{WOLL } E]^f \cdot g = 1\)
The distinction between indicative and X-marked conditionals

(20) If Oswald hadn’t shot Kennedy (¬O), someone else would have (E).
(21) If Oswald didn’t shoot Kennedy (¬O), someone else did (E).

› The only difference is whether you do or do not believe that Oswald did it, i.e. whether the antecedent forces you to revise your belief state.

Modal base \( f_0 = \{ O, K \} \), where K = Kennedy was shot
Ordering source \( g = ? \)

Revision

\[ \text{Rev}_{\neg O}(f_0) = \{ \neg O \} \quad \text{K goes!} \]

Checking PAST

\[ \text{Rev}_{\neg O}(f_0) < f_0 \quad \text{X-markings!} \]

Prediction

\[ [\text{WOLL E}]^{f,g} = 1 \quad \text{depends!} \]
Applications

The distinction between indicative and X-marked conditionals

(20) If Oswald hadn’t shot Kennedy (~O), someone else would have (E).
(21) If Oswald didn’t shoot Kennedy (~O), someone else did (E).

- The only difference is whether you do or do not believe that Oswald did it, i.e. whether the antecedent forces you to revise your belief state.
Applications

The distinction between indicative and X-marked conditionals

(20) If Oswald hadn’t shot Kennedy (¬O), someone else would have (E).
(21) If Oswald didn’t shoot Kennedy (¬O), someone else did (E).

• The only difference is whether you do or do not believe that Oswald did it, i.e. whether the antecedent forces you to revise your belief state.

Modal base $f_0 = \{K\}$, where $K =$ Kennedy was shot
Ordering source $g = ?$
Applications

The distinction between indicative and X-marked conditionals

(20) If Oswald hadn’t shot Kennedy (¬O), someone else would have (E).
(21) If Oswald didn’t shoot Kennedy (¬O), someone else did (E).

- The only difference is whether you do or do not believe that Oswald did it, i.e. whether the antecedent forces you to revise your belief state.

Modal base \( P = \{K\} \), where K = Kennedy was shot
Ordering source \( g = ? \)

Revision
\[ \text{Rev}_{¬O}(P) = \{¬O, K\} \]
Applications

The distinction between indicative and X-marked conditionals

(20) If Oswald hadn’t shot Kennedy (¬O), someone else would have (E).
(21) If Oswald didn’t shoot Kennedy (¬O), someone else did (E).

- The only difference is whether you do or do not believe that Oswald did it, i.e. whether the antecedent forces you to revise your belief state.

Modal base \( f_0 = \{K\} \), where K = Kennedy was shot
Ordering source \( g = ? \)

**Revision**

\( \text{Rev}_{\neg O}(f_0) = \{\neg O, K\} \) K stays!
Applications

The distinction between indicative and X-marked conditionals

(20) If Oswald hadn’t shot Kennedy (¬O), someone else would have (E).
(21) If Oswald didn’t shoot Kennedy (¬O), someone else did (E).

- The only difference is whether you do or do not believe that Oswald did it, i.e. whether the antecedent forces you to revise your belief state.

Modal base $f_0 = \{K\}$, where $K =$ Kennedy was shot
Ordering source $g = ?$

Revision

$\text{Rev}_{\neg O}(f_0) = \{\neg O, K\}$  K stays!

Checking PAST

$\text{Rev}_{\neg O}(f_0) = f_0$
Applications

The distinction between indicative and X-marked conditionals

(20) If Oswald hadn’t shot Kennedy (¬O), someone else would have (E).
(21) If Oswald didn’t shoot Kennedy (¬O), someone else did (E).

- The only difference is whether you do or do not believe that Oswald did it, i.e. whether the antecedent forces you to revise your belief state.

Modal base \( f_0 = \{K\} \), where \( K = \) Kennedy was shot
Ordering source \( g = ? \)

Revision

\( \text{Rev}_{¬O}(f_0) = \{¬O, K\} \) K stays!

Checking PAST

\( \text{Rev}_{¬O}(f_0) = f_0 \) Indicative!
Applications

The distinction between indicative and X-marked conditionals

(20) If Oswald hadn’t shot Kennedy (¬O), someone else would have (E).
(21) If Oswald didn’t shoot Kennedy (¬O), someone else did (E).

- The only difference is whether you do or do not believe that Oswald did it, i.e. whether the antecedent forces you to revise your belief state.

Modal base \( f_0 = \{K\} \), where \( K = \) Kennedy was shot
Ordering source \( g = ? \)

**Revision**

\[
\text{Rev}_{\neg O}(f_0) = \{\neg O, K\} \quad K \text{ stays!}
\]

**Checking PAST**

\[
\text{Rev}_{\neg O}(f_0) = f_0 \quad \text{Indicative!}
\]

**Prediction**

\[
[WOLL E]^{f, g} = 1
\]
Applications

The distinction between indicative and X-marked conditionals

(20) If Oswald hadn’t shot Kennedy (¬O), someone else would have (E).
(21) If Oswald didn’t shoot Kennedy (¬O), someone else did (E).

- The only difference is whether you do or do not believe that Oswald did it, i.e. whether the antecedent forces you to revise your belief state.

Modal base \( f_0 = \{K\} \), where \( K = \) Kennedy was shot
Ordering source \( g = ? \)

Revision

\( \text{Rev}_{\neg O}(f_0) = \{\neg O, K\} \)  \( K \) stays!

Checking PAST

\( \text{Rev}_{\neg O}(f_0) = f_0 \)  Indicative!

Prediction

\( [\text{WOLL E}]^{f, g} = 1 \)  Follows logically!
Conclusions

Results
Conclusions

Results

• an explanation of fake tense (well, the first layer) in X-marked conditionals.
  ‣ Past marks that you had to give up relevant information to make room for the antecedent.
  ‣ Past Tense can be attached to different variables of a verb, as long as they provide the right semantic structure for the Past Tense to work on.
Conclusions

Results

• an explanation of fake tense (well, the first layer) in X-marked conditionals.
  ‣ Past marks that you had to give up relevant information to make room for the antecedent.
  ‣ Past Tense can be attached to different variables of a verb, as long as they provide the right semantic structure for the Past Tense to work on.

• an account of the distinction between “indicative” and “subjunctive” conditionals
  ‣ They only differ w.r.t. their presuppositions, not in their logic.
Causality matters for semantics!

- For the semantics of conditionals
  - Fake Tense
  - Presupposition Projection
- For the semantics of generic expression
  (together with R. Van Rooij)
Conclusions

Future work
Conclusions

Future work
- second layer of fake tense in PPCs (but see Schulz ms.)
Conclusions

Future work

- second layer of fake tense in PPCs (but see Schulz ms.)
- temporal location in X-marked conditionals
Conclusions

Future work
- second layer of fake tense in PPCs (but see Schulz ms.)
- temporal location in X-marked conditionals
- fake aspect
Another go at Fake Tense

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