A Puzzle: Fake Tense

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1 Conditionals between disciplines

Conditionals

Linguistics
“I will be discussing a kind of conditional ... typically expressed in English by subjunctive conditionals. Here are some examples: ‘if I were to strike this match there would be an explosion’, ... This kind of counterfactual is intimately connected with laws, explanation, causation, choice, knowledge, memory, measurement, chance, the asymmetry of past and future, etc; a veritable Who’s Who of philosophically and scientifically significant concepts. Philosophers may disagree about the order of explanation among these items and counterfactuals but everyone ought to agree that we would make significant progress understanding them all if we had an account of what makes this kind of counterfactual statement true/false.”

— B. Loewer
1 Conditionals between disciplines

Philosophy

Conditionals

Linguistics
"I will be discussing a kind of conditional ... typically expressed in English by subjunctive conditionals. Here are some examples: ‘if I were to strike this match there would be an explosion’, ... This kind of counterfactual is intimately connected with laws, explanation, causation, choice, knowledge, memory, measurement, chance, the asymmetry of past and future, etc; a veritable Who’s Who of philosophically and scientifically significant concepts. Philosophers may disagree about the order of explanation among these items and counterfactuals but everyone ought to agree that we would make significant progress understanding them all if we had an account of what makes this kind of counterfactual statement true/false.”

— B. Loewer
1 Conditionals between disciplines

- Conditionals give **concrete form** to **reasoning**.
- They are basically everywhere.
1 Conditionals between disciplines

Logic
Philosophy
Mathematics
Conditionals
Linguistics
Cognitive Sciences
Computational Sciences
1 Conditionals between disciplines
1 Conditionals between disciplines

- Logic
- Mathematics
- Computational Sciences
- Linguistics
- Cognitive Sciences
- Philosophy
1 Conditionals between disciplines

Goals today

• give you an impression of the fascination conditionals exert on scholars of various disciplines
• doing so by discussing one particular puzzle: Fake Tense in conditional sentences
1 Conditionals between disciplines

Plan today

• tense
• conditionals
• fake tense

— BREAK —

• discuss your solutions
• solutions on the market - and why they are problematic
tense
tense

**Simple Past** (Kamp & Reyle)

(1) I turned off the stove.

presupposition: t < u.

assertion: I turned off the stove at t in w₀.
Present Perfect (Iatridou et al. 2002)

(2) I have visited Cape Cod three times since 1990.

There is a time span $t$
- the right boundary of $t$ is $u$
- the left boundary is (some time in) 1990
- there are three visits to Cape Cod in $t$ at $w_0$
Past Perfect (Iatridou et al. 2002)

(3) When we met, I had visited Cape Cod two times.

presupposition: \( t' < u \).

There is a time span \( t \)
- the right boundary of \( t \) is \( t' \)
- there are two visits to Cape Cod in \( t \) at \( w_0 \)
tense

- **Simple Past**: reference to past events
- **Present Perfect**: locating something in the past relative to the utterance time
- **Past Perfect**: double past shift; locating something in the past of some given past time
conditionals
15a. Note

If two people are arguing if p, will q? Do both understand.

They are about to add p hypothetically to their knowledge and argue on that basis about q in a sense of p, q and q//p are correct. We can say they are fixing their degree of belief of p. True or false here matter degrees can render void. If either party believes certain, the question ceases to mean anything except as a question about what follows certain laws or hypotheses. See below.
conditionals

Ramsey receipt

This is how to evaluate a counterfactual:

• First, add the antecedent hypothetically to your stock of beliefs

• second, make whatever adjustments that are required to maintain consistency (without modifying the hypothetical belief in the antecedent);

• finally, consider whether or not the consequent is then true.
Basic Idea

A sentence

*If it had been the case that A; it would have been the case that C*

is true in the actual world $w_0$ iff C is true in all possible worlds in which

(a) A is true, and which

(b) in other respects are maximally similar to $w_0$. 
Similarity Approach

\[ M, w_0 \models A \preceq C \iff \operatorname{Min}(\leq_{M, w_0}, [A]^M) \subseteq [C]^M \]
Similarity Approach

\[ M, w_0 \models A \not\models C \text{ iff } \operatorname{Min}(\leq^{M, w_0}, [A]^M) \subseteq [C]^M \]
Similarity Approach

\[ M, w_0 \models A \triangleright C \text{ iff } \operatorname{Min}(\leq^{M, w_0}, [A]^M) \subseteq [C]^M \]
M, w₀ ⊨ A ⊃ C iff \( \text{Min}(\leq_{M,w₀}, [A]^M) \subseteq [C]^M \)
Similarity Approach

\[ M, w_0 \models A \supseteq C \text{ iff } \operatorname{Min}(\leq^M, w_0, [A]^M) \subseteq [C]^M \]
$M, w_0 \models A \models C$ iff $\text{Min}(\leq_{M, w_0}, [A]^M) \subseteq [C]^M$
Similarity Approach

\[ M, w_0 \models A \bowtie C \text{ iff } \text{Min}(\leq^{M, w_0}, [A]_M) \subseteq [C]_M \]
Problem:
• How to define the order $\leq_{M,w0}$?

Mathematical Expression:
$M,w_0 \models A \supseteq C$ iff $\text{Min}(\leq_{M,w0}, [A]^M) \subseteq [C]^M$
Premise Semantics (Veltman, Kratzer)

similarity is defined in terms of a selected set of facts of the evaluation world

⇒ the premise function $P$

Similarity relation:

$$w_1 \leq^w w_2 \text{ iff } \{\phi \in P(w_0): M, w_1 \models \phi\} \supseteq \{\phi \in P(w_0): M, w_2 \models \phi\}$$

⇒ special case of the similarity approach
back to cognition

- 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.
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.

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

(5) (if) antecedent, □ consequent

truth conditions for □ (antecedent, consequent):

$$\forall w \in MB: w \in \text{Min}(\leq^{M,w\emptyset}, [[A]^M]) \rightarrow w \in [[C]^M]$$
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.

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

(7) If Peter left in time, he would be in Amsterdam this evening.  ➡ simple past subjunctive

(8) If Peter had left in time, he would have been in Amsterdam this evening.  ➡ double past subjunctive
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.

Fake Tense occurs in other contexts as well

(9) I wished I owned a car.
(10) He behaves like he was sick.
(11) Suppose she failed the test.
(12) It’s time we left.
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
In English subjunctive 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.
- Fake Tense is something a tense language can develop diachronically.
related observations
Simple past subjunctives about the present CAN be counterfactual, but they don’t need to.

(13) If I were you, I wouldn’t do that.

Double past subjunctives about the present or the future MUST be counterfactual.

(14) I might have to cancel my trip to Paris, which is a pity, because *if I had been in Paris next week, we could have met.
related observations
Double past subjunctives CAN have counterfactual presuppositions.

(15) Last year, John died. If he had run the Boston marathon next spring, he would have won.

Simple past subjunctives CAN’T.

(16) Last year, John died. *If he ran the Boston marathon next spring, he would win.
— BREAK —

please hand in your ideas!
approaching fake tense
approaching fake tense
approaching fake tense

Fake Tense

past-as-past approaches
- it is the expected meaning: past tense
- but it is an unexpected composition (not in situ)

past-as-mood approaches
- it is a related, but unexpected meaning: remotenessness
- but it is the expected composition (in situ)
approaching fake tense

Fake Tense

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

past-as-modal approaches
- Palmer 1986
- Fleischmann 1989
- Dahl 1997
- Iatridou 2000
- Schulz 2014
past-as-past

- antecedent
- consequent
past-as-past

PAST

☐

antecedent

PAST

consequent
past-as-past

PAST

☐ antecedent consequent
\[ \forall w \in MB(w_0, t): w \in \text{Min}(\leq^M, w_0, [[A]^M]) \rightarrow w \in [[C]^M] \]

historical accessibility relation \( MB(w_0, t) \)
The Past Tense shifts the modal base back to a time when the antecedent still was possible.
The approach cannot deal with generic counterfactuals or counterpossibles; in these cases no past branches are available where the antecedent is true.

(17) If kangaroos had no tails, they would topple over.

(18) If water was an element, it would not consist of oxygen and hydrogen.

(19) If I were you, I wouldn’t eat that.
The approach has a hard time with accounting for the Morgenbesser examples.
A coin is going to be flipped and you bet on tails. Unfortunately, heads comes up and you lose. Now you can say:

(21) *If I had bet on heads, I would have won.*
The approach has a hard time with accounting for the Morgenbesser examples.

If bet heads, then win.
\textbf{past-as-past}

\textbf{PAST} (MUST ( antecedent, consequent ) )

\[
\forall w \in \text{MB}(w_0, t): w \in \text{Min}(\leq^{M,w_0}, [[A]^M]) \rightarrow w \in [[C]^M)
\]

\textit{modal base} \quad \rightarrow \quad \textit{ordering source}
past-as-mood

- The past tense morpheme always expresses the same semantic function.
  \[
  \text{PAST } x = x \text{ is remote from } x^*
  \]

- But this meaning can be applied to different domains (the meaning is underspecified):
  - applied to the temporal domain it expresses remoteness from the temporal deictic center,
  - applied to a modal domain it expresses remoteness from the epistemic deictic center.
The past tense morpheme always expresses the same semantic function.

PAST x = x is remote from x*

The modal meaning emerged out of the temporal meaning in a process of re-categorization.
past-as-mood

\[ \text{PAST } P = P(a) \text{ for some } a <_S c_S \]

...for any structure \( S = \langle U, <, c \rangle \)

**Temporal domain**

\[ S = \langle T, <, s \rangle = T \]

**Modal domain**

\[ S = \langle W, <_S, S_1 \rangle = E \]

- all possible worlds
- epist. possible worlds
- expected worlds
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.

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(7) If Peter left in time, he would be in Amsterdam this evening.
(8) If Peter had left in time, he would have been in Amsterdam this evening.

- indicative conditional
- simple past subjunctive
- double past subjunctive
past-as-mood

PERF P = \exists b : b \prec_S a \land Pb \text{ for some } a

... for any structure S=<U,<,c>
PAST PERF \( P = \exists b : b <_S a \land Pb \) for some \( a <_S c_S \)

... for any structure \( S = <U, <, c> \)

\[ T \to S \]

**Temporal domain**

\( S = <T, <, s> = T \)

**Modal domain**

\( S = <W, <_{S}, S_1> = E \)

all possible worlds

epist. possible worlds

expected worlds
The presuppositions of a double past subjunctive are stronger than those of a simple past subjunctive.

The principle *Maximize Presupposition!* should apply.

The speaker needs good reasons to use a simple past subjunctive in case he/she utters a counterfactual conditional.
10 papers on counterpossible conditionals

manually selecting all counterfactual conditionals

annotated for counterpossible, form, temporal reference

one paper of non-native speakers; dismissed in analysis
past-as-mood

Table 2: total count if at least one author is native speaker

<table>
<thead>
<tr>
<th></th>
<th>total</th>
<th>sp</th>
<th>pp</th>
<th>ind</th>
<th>mixed cases</th>
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<tr>
<td><strong>counterfactuals</strong></td>
<td>230</td>
<td>162</td>
<td>52</td>
<td>5</td>
<td>11</td>
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<td>70%</td>
<td>23%</td>
<td>2%</td>
<td>5%</td>
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<td><strong>counterpossibles</strong></td>
<td>172</td>
<td>133</td>
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<tr>
<td><strong>percentage</strong></td>
<td>75%</td>
<td>77%</td>
<td>16%</td>
<td>3%</td>
<td>4%</td>
</tr>
</tbody>
</table>

past-as-mood
## past-as-mood

<table>
<thead>
<tr>
<th></th>
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<th>sp</th>
<th>pp</th>
<th>ind</th>
<th>mixed cases</th>
</tr>
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<tbody>
<tr>
<td><strong>counterfactuals</strong></td>
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<td>4</td>
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<td>147</td>
<td>133</td>
<td>5</td>
<td>5</td>
<td>4</td>
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<tr>
<td><strong>percentage</strong></td>
<td>84%</td>
<td>90%</td>
<td>3%</td>
<td>3%</td>
<td>3%</td>
</tr>
</tbody>
</table>

Table 3: total count native speakers, without clear past reference

![Pie chart showing percentage distribution of counterfactuals and counterpossibles]
**past-as-mood**

**Study 2**
- counterfactual generic conditionals (counterpossibles)
- testing “naturalness” of SP form compared to PP form
- 52 participants (another 51 in an almost identical study), pre-screened for native speakers and high-school degree
- fillers distracting from conditional and from generic (8 goal examples, 24 fillers), not from tense markings
- randomised order of questions and the representation of the answers
Which of the following two sentences sounds more natural to you as a general statement about water?

- If water had been an element, it would not have been composed of hydrogen and oxygen.
- If water were an element, it would not be composed of hydrogen and oxygen.
- Both of the above sound equally natural.
- None of the two sentences sound natural to me.
past-as-mood

Study 2

- SP: 66%
- PP: 19%
- both: 7%
- none: 9%

Bar graph and pie chart showing the distribution of responses.
A new proposal

A combined approach:

PaM for Simple Past and PaP for Perfect.

- based on causal networks
- using an interventionist approach to counterfactuals

... to be continued ...
Conclusions

Goals today

• give you an impression of the fascination conditionals exert on scholars of various disciplines
• doing so by discussing one particular puzzle: Fake Tense in conditional sentences