Anankastic Conditionals are Modal Subordination

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The problem with anankastic conditionals

(1) *Anankastic conditionals (Sæbø2001)*
If $\underbrace{\textit{you want to go to Harlem}}_{\text{hypothetical desire}}$, *you have to* $\underbrace{\textit{take the A train}}_{\text{means of achievement}}$

(2) *Ordinary want-conditionals*
If you want to scratch your eyes, you have to get tested for monkey pox.

Want in (1) seems vacuous:

(1) → to go to Harlem, you have to take the A train.

(2) ↛ to scratch your eyes, you have to get tested for monkey pox.

Standard analysis of modals and conditionals derive the wrong truth conditions for (1).

(3) a. In all worlds compatible with your desires and where you want to go to Harlem, you take the A train.

Contrary to intuition, (3) is predicted false when the addressee actually wants to go to Hoboken, and the only way to get to Hoboken is via the PATH train.

Previous approaches

I. Covert-purpose clause construction (von Fintel & Iatridou (2015), von Stechow, Krasikova & Penka (2006)).

- (1) is argued to be semantically equivalent to:

(4) a. If you want to go to Harlem, you have to take the A train *to go to Harlem*.

II. Special semantics for *want* (Condoravdi & Laurer (2016))

- C & L: *want* is ambiguous. Unlike regular *want* which expresses pure desire, the *want* involved in anankastic conditionals involves practical preferences, and guarantees that the desire expressed outranks all others.

The proposal: anankastic conditionals are modal subordination

(5) *Modal subordination*
A^i wolf might^v come in. It$_i$ would$_v$ eat you first. (Roberts (1989))
...in those worlds w' where a wolf comes in, that wolf eats you first in w'.

The *would* claim quantifies over worlds introduced by *might* where there is already a wolf.

(6) *Anankastic conditional*
If you **want**^{i} to go to Harlem, you **have to**$_i$ take the A train.
...in all of those worlds w" compatible with your desires in w' in which you go to Harlem in w", you take the A train in w".

- **Two sets of worlds available for anaphora**:
  -*If*-worlds: worlds where **you want to** go to Harlem.
  -*want*-worlds: worlds compatible with your desires in w' and where **you go to** Harlem.
- ***Have to* can select its domain of quantification anaphorically**:
  -Anankastic reading: *have to* selects *want*-worlds.
  -Non-anankastic reading: *have to* selects *if*-worlds.

Beyond anankastics

A novel observation: The problem seen in anankastic conditional is more general, and can be replicated with other modal flavors.

More than *want*

(7) a. If you *hope/intend/plan/would like to* to go to Harlem, you have to take the A train.

More than desire

- Epistemic modality

(8) a. If we think the crime was committed at 6pm, John must be the culprit.
b. One reading: if the crime was committed at 6pm, then John must$_{epis}$ be the culprit.
c. Standard modal and conditional account: in all w' compatible with our beliefs and where we believe in w' that the crime was committed at 6pm, John is the culprit. (False if we don't actually think the crime was committed at 6pm)

- Deontic modality

(9) a. If the law states that street cleaning is on Thursdays, she has to move her car.
b. One reading: if street cleaning is on Thursdays, then she has to$_{deontic}$ move her car.
c. Standard modal and conditional account: In all w' compatible with the laws, and where the laws in w' state that street cleaning is on Thursdays, she has to move a car. (False if actual laws don't state that street cleaning is on Thursdays.)

The implementation

Framework: Brasoveanu (2010)'s dynamic system.

Update steps:

(i) Store in *p* the set of all worlds in the context set where *you want to go to Harlem*.

(ii) Store in *p'* all the *p*-worlds (where *you want to go to Harlem*) all worlds where *you go to Harlem*; test whether the p' worlds include all the desirable p worlds.

(iii) Store in *p"* all the p' worlds (*you go to Harlem*) where *you take the A train*; test whether the p" worlds include all of the teleologically ideal worlds among those desirable p' worlds where you go to Harlem.

Lexical entries:

- $if^{p} \rightsquigarrow \lambda P_{st.}\ \textbf{max}^{p}\ (_{p}\ (P(p)))$
- $must^{p'\subseteq p} \rightsquigarrow \lambda P_{st.} \lambda q_{s}.\textbf{max}^{p'\subseteq p}(_{p}\text{'}\ (P(p'))); [NEC_{q\cdot,\beta,\omega}\{p,p'\}]$
- $want^{p'\subseteq p} \rightsquigarrow \lambda P_{st.} \lambda q_{s}.\textbf{max}^{p'\subseteq p}(_{p}\text{'}\ (P(p'))); [WANT_{q\cdot}\{p,p'\}]$

(10) a. If^{p} you want $^{p'\subseteq p}$ to go to Harlem, you have to $^{p''\subseteq p'}$ take the A train.
b. $ind_{p}*$ ([[If^{p} (want $^{p'\subseteq p}$ (you go to Harlem)] [have to $^{p''\subseteq p'}$ (you take the A train)]])
c. sing (p*); max^{p}; max$^{p'\subseteq p}$ ($_{p}$' [you go to Harlem]); [WANT {p, p'}]; max$^{p''\subseteq p'}$ ($_{p}$" (you take the A train); $NEC_{p}*$, β, ω {p', p"}

Further issues

Some argue that not all modals can be subordinated (Klecha (2011)). If anankastic conditionals are modal subordination, why can't we use *have to* in other canonical cases of modal subordination as in (11a)?

(11) a. A wolf might come in. It would eat you first
b. A wolf might come in. ? It has to eat you first

Tentative answer: All modals including *must* and *have to* can be subordinated (Roberts 2020). However, subordination needs to be marked via either mood marking (with subjunctive-marked *would*, *could*, *should*), or in a conditional.

References

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