

## Kissing Pedro Martinez: (Existential) anankastic conditionals and rationale clauses

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Anankastic conditional (AC) sentences like (1), which express conditions that are necessary (or sufficient) for achieving a goal, have been shown in recent work [13,14,16,17] to resist treatment both under a traditional possible worlds framework and under Kratzer's [15] enrichment of that framework. The meanings of ACs are teleological; they can be paraphrased with *rationale clauses* (2):

- (1) You have to take the A-train if you want to go to Harlem. (Sæbø 2001)  
(2) You have to take the A-train (in order) to go to Harlem.

Various modifications of a Kratzerian analysis have been proposed in the literature cited above to deal with the meanings of ACs. This talk identifies a problem that all of these proposals suffer from, posed by *existential* ACs like (3) and the RCs like (4) that paraphrase them. After showing why these are problematic, I argue that the right treatment for ACs involves a modification of the approach developed by von Stechow and Iatridou (2004).

- (3) You can take the A-train if you want to go to Harlem. **Existential AC**  
(4) You can take the A train (in order) to go to Harlem.

Both von Stechow & Iatridou (vS&I) and Huitink (2004) propose, in essence, that the material expressed by the *if*-clause in (1) or the *to*-clause in (2) serves to designate the goal by determining the most desirable among the possible worlds quantified over by the modal. Both take as a starting point Kratzer's doubly relativized theory of modality according to which modal operators are restricted first by a **modal base**  $f$  which assigns to the evaluation world  $w$  a set of propositions  $f(w)$  that describe the worlds that are (circumstantially or epistemically) accessible from  $w$ , and then by an **ordering source**  $g$  which establishes a partial order on the set given by  $f(w)$ , based on relevant laws, etc. in  $w$  (deontic modality) or on the goals, aims, etc. held in  $w$  (bouletic modality). Both proposals are, essentially, elaborations of Sæbø's (2001) idea that in ACs, material in the *if*-clause restricts the ordering source, not the modal base.

vS&I notice that Sæbø's account runs into a problem whenever the ordering source provides conflicting goals (such as (i) **going to Harlem** and (ii) **going to Hoboken**). They suggest a modification whereby the *to*-clause in (2) identifies the propositions that the ordering source ranks most highly (thus expressing the *designated goal*). Further, they propose that ACs have elliptical *to*-clauses serving as the direct arguments of the modal. (As for the *if*-clause, they suggest [cf. also von Stechow et al (2004)] that it restricts the teleological modal base, although they leave open the possibility that it is actually the restrictor of a covert higher epistemic modal operator.) Thus (1) and (2) have a basic structure like (5):

- (5) [HAVE-TO(you take the A train)][to go to Harlem]

which will be true in a world  $w$  relative to a modal base  $f(w)$  and ordering source  $g(w)$ , iff, in all the  $g(w)$ -best worlds in  $f(w)$  in which *you go to Harlem*, you take the A train.

Huitink points out that this proposal, too, makes a wrong prediction, this time whenever two *non-conflicting* goals both characterize all the  $g(w)$ -best worlds (such as the goals of (i) **going to Harlem** and (ii) **kissing the Dutch soccer star Ruud van Nistelrooy** if he's around.) Huitink proposes that in ACs,  $g(w)$  gives the singleton set  $\{\textit{you go to Harlem}\}$ , eliminating other potential goals from consideration.

Here is the problem posed by *existential* ACs like (3), and their RC paraphrases (4). All the theories predict, one way or another, that these sentences will be true in  $w$  relative to  $f, g$  iff:

- (6) At least one of the  $g(w)$ -best worlds  $w' \in \cap f(w)$  is such that *you take the A train in  $w'$* , and, in the  $g(w)$ -best worlds  $[\textit{in the only } g(w) \textit{ worlds (Huitink)}]$ , *you go to Harlem*.

As far as it goes, this is fine since (3) and (4) will be true if your goal is indeed to go to Harlem.

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However, suppose your goal is to go to Harlem and, moreover, (7) is true. It does not follow that (8) is true as well. But this is exactly what is predicted.

(7) Pedro Martinez is right now on the north-bound A train heading toward Penn Station, where you are, and you wouldn't be shy about kissing him if you got on the train.

(8) # You can kiss Pedro Martinez (in order) to go to Harlem.

According to all the proposals on the table, as long as (7) is true -- that is, if we add those propositions to the modal base  $f(w)$  -- then (8) should also be true in  $w$  if there is at least one  $w'$  circumstantially accessible from  $w$  (that is, at least one  $w' \in \cap f(w)$ ) in which you achieve your designated goal of going to Harlem, and in which you kiss Pedro Martinez. But (8) is false.

A solution to this problem is suggested by the fact that rationale clauses can appear in the environment of non-modal main clauses, where they have a similar teleological interpretation. That is, (9) implies that (a) *Billy's goal (in taking the A train) was to go to Harlem*, and that (b) *Billy believed that (1) or (3) is true*.

(9) Billy took the A train (in order) to go to Harlem.

The lesson from sentences like (9) is that, contrary to what has been accepted in the cited literature, teleological modals are *not* a necessary component of the relevant reading for ACs. Ordinary agentive verb phrases (vPs) are understood teleologically -- they describe goal-directed actions. Rationale clauses serve to express the goals that direct the action.

Here is a proposal for implementing this idea, in which the RC and the vP both express predicates of events, and would compose by Predicate Modification:

(10)  $\|_{vP}$  Billy took the A train  $\| = \lambda e.[\text{event}(e) \ \& \ \text{taking-the-A-train}(e) \ \& \ \text{Agent}(e)(\text{Billy})]$

(11)  $\|$  in order to go to Harlem  $\| = \lambda e.\forall w[w \in \cap f(e) \ \& \ w \in \{g(e)\text{-best}\}][\text{PRO goes to Harlem at } w]$

(Closure over) the conjunction of these would express that Billy is the agent of a train-taking event  $e$ , and of the worlds that are circumstantially accessible from  $e$ , he goes to Harlem in all those that accord maximally with the goal(s) of  $e$ . (That is, the goal of  $e$  is to go to Harlem).

If ordinary agentive vPs are teleological, then the teleological component of an AC's meaning needn't be specified by an argument of the modal. The truth conditions of ACs would be correctly predicted on (an appropriately modified version of) vF&I's theory. Adopting their claim that a (sometimes elliptical) *to*-clause is always present in ACs, the basic structure of (1)/(2) is not (5) but rather

(12) [HAVE-TO (If you want to go to Harlem)][you take the A train <to go there>]

which will be true in  $w$  iff, in all the  $g(w)$ -best worlds  $w' \in \cap f(w)$ , you are the agent of a train-taking event  $e$  whose goal is to go to Harlem. This method for describing the meanings of universal ACs provides a way to eliminate the problem for existential ACs (the Pedro Martinez problem). An AC like (8) will be false unless the goal of the prospective Martinez-kissing event is to get to Harlem, implying that an agent would be justified in the absurd belief that kissing Martinez together with other propositions in  $f(w)$  would be sufficient for attaining the goal.

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**References:** [13] K von Fintel & S Iatridou, 2004. What to do if you want to go to Harlem: Notes on anankastic conditionals and related matters. Draft: <http://web.mit.edu/fintel/www/harlem.pdf>. [14] J Huitink, 2004. Analyzing anankastic conditionals. Talk given at *Sinn und Bedeutung* 9. Draft at <http://www.phil.kun.nl/tfl/janneke/abstract-sub9-huitink.pdf>. [15] A Kratzer, 1991. Modality. In *Semantik: Ein internationales Handbuch der zeitgenössischen Forschung*, ed. A von Stechow & D Wunderlich, 639–650. Walter de Gruyter Berlin. [16] KJ Sæbø, 2001. Necessary conditions in a natural language. In *Audiatur Vox Sapientiae: a Festschrift für A von Stechow*, ed. C Féry, W Sternefeld, 427–449. Berlin: AkademieVerlag. [17] A von Stechow, S Krasikowa, & D Penka, 2004. The meaning of German *um zu*: Necessary condition and enough/too. Handout of a presentation at the Workshop 'Modal Verbs and Modality', U of Tübingen: <http://vivaldi.sfs.nphil.uni-tuebingen.de/arnim10/Handouts/HandoutArnim6.pdf>.