

You can't get there from now: Tense and counterfactuals

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0. Introduction

Sources:

- Kratzer (1976, 1977, 1981, 1991) on modals
- Cowper (1999a,b) and Cowper and Hall (1999) on the features of INFL

Goals:

- bring together these two lines of inquiry to show how modality interacts with propositionality and tense
- account for the presence of morphological past tense in counterfactuals such as those in (1):

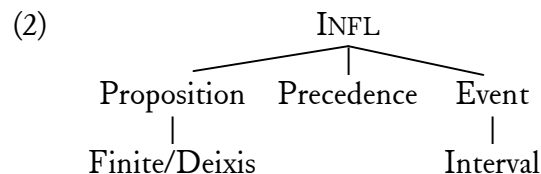
- (1) a. Susana would speak Georgian fluently if she had grown up in Tbilisi.
b. In a Ptolemaic universe, the sun would revolve around the Earth.
c. Had I won the lottery yesterday, I might fly to Paris tomorrow.

Path:

1. Features of INFL
2. Modals
3. Getting to counterfactuals
4. Conclusions

1. Features of INFL

Cowper (1999: 81) proposes the following feature geometry for English INFL:



Of particular relevance here are the features Proposition, Finite/Deixis, and Precedence.

1.1 Proposition

Proposition distinguishes a cognitive manifestation of a state or event (i.e., a proposition) from the corresponding bare state or bare event; the difference is illustrated in (3):

- (3) a. The children were heard [playing in the street].
b. The children were heard [to be playing in the street].

In (3a), *playing in the street* is a bare event, and the sentence as a whole asserts that this event was directly auditorially perceived by someone. *To be playing in the street*, in (3b), is a proposition about an event. (3b) can truthfully describe a situation in which the children's playing was reported but not directly perceived; (3a) cannot.

What does it mean to be a 'cognitive manifestation' of a state or event? According to Cowper and Hall (1999), a proposition is (potentially) linked to a **consciousness**, which is a representation of the belief set of an individual at a particular moment. Formally, a consciousness is a set of propositions identifiable by a tempo-personal index.

1.2 Finite/Deixis

If the feature **Deixis** is present, then the consciousness to which the proposition is linked is the one at the **deictic centre** of the utterance, which represents the (implied) speaker at the moment of speech. In English, Deixis is bundled together with the purely syntactic feature **Finite**, meaning that all finite clauses are deictic and vice versa. Thus (4) asserts that the speaker believes that there is an event of the children playing in the street taking place at the moment of speech:

(4) The children are playing in the street.

1.3 Precedence and the realis timeline

Precedence alters the temporal relation between a state/event/proposition and its temporal anchor (in the case of a proposition, this is the temporal aspect of the consciousness to which it is indexed).

In the default case, a state/event/proposition is interpreted as being coincident with its temporal anchor; Precedence, encoded morphologically by the simple past or past participle, indicates that the state/event/proposition precedes its temporal anchor.

Propositions within a consciousness can be partially ordered based on the total ordering of the moments they occupy:

(5) Given propositions p and q , $p \leq q$ iff there exists a moment m of p and a moment n of q such that $m \leq n$.

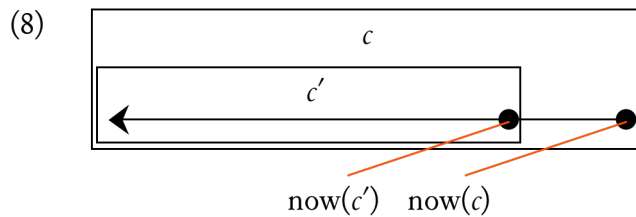
The default coincident indexing of a proposition p to a consciousness c can thus be represented, as in (6), as indicating that p belongs to the 'now' of c , which is the latest subset of c :

(6) $p_c = p \in \text{now}(c)$, where $\text{now}(c) = \{q: q \in c \ \& \ \forall r \in c, r \leq q\}$

The marked relation introduced by Precedence places p at the 'now' of some non-final subset of c :

(7) $p_{<c} = \exists c' \subset c [\forall q \in c' [\forall r \in c-c' [q \leq r]] \ \& \ p \in \text{now}(c')$

The diagram in (8) shows the relation between c and c' . If c is the consciousness at the deictic centre, then (8) corresponds to the realis timeline, which extends indefinitely far back into the past from the moment of speech, $\text{now}(c)$.



2. Modals

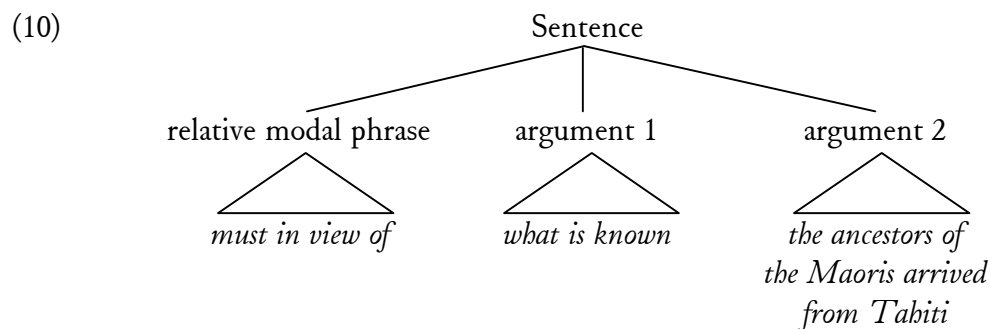
2.1 Kratzer's view of modals

In order to refer to states and events that are not part of the realis timeline, we need to introduce the possibility of a relation other than inclusion holding between a set c and a proposition p .

Two such relations are suggested by Kratzer's (1976, 1977, 1981, 1991) work on modals: logical consequence and logical compatibility.

Kratzer (1976, 1977) points out that modals express necessity or possibility not in the absolute, but in view of a particular set of facts, assumptions, and/or desiderata. For example, Kratzer (1977) represents the semantic structure of (9) as in (10):

(9) (In view of what is known,) the ancestors of the Maoris must have arrived from Tahiti.



Argument 1 is a set of propositions; argument 2 is a proposition; and the relative modal phrase *must in view of* is a predicate that produces the assertion that argument 2 **follows from every** largest consistent subset of argument 1.¹

If *must* is replaced by *may*, then the sentence asserts that argument 2 **is compatible with some** largest consistent subset of argument 1.

1. Kratzer (1991), drawing on work by Lewis (1981), offers a somewhat more nuanced picture of modality involving two sets of propositions (a **modal base** and an **ordering source**) in place of the argument 1 shown in (10). The differences between these models are not crucial to the present discussion.

2.2 Modals and consciousnesses

Hall (2001) adapts Kratzer's approach to modality to Cowper and Hall's (1999) treatment of propositions as cognitive manifestations of states or events.

Under this view, modals, like Precedence, alter the relation between a proposition and the consciousness to which it is indexed.

Rather than being included in the latest subset of c or c' , a proposition containing a modal is asserted either to follow from or to be compatible with (a relevant subset) of c or c' . The modals *must*, *shall/should*, and *will/would* encode consequence; *may/might* and *can/could* encode compatibility. The lexical semantics of each individual modal partially determines what constitutes a relevant subset—for example, *may*, in its deontic reading, would pick out propositions dealing with obligations and permissions.

When a modal combines with Precedence, the compatibility or consequence relation is between p and c' rather than between p and c . Here, I assume that *must*, *should*, *would*, *might*, and *could* are the past tense forms of *must*, *shall*, *will*, *may*, and *can*; although there are idiosyncrasies in the ways in which the different forms are used, data such as those in (11), from Massam (1980), illustrate the consistent patterns of time reference in which they participate:

- (11) a. Claude could be a jerk in those days.
 b. *Claude can be a jerk in those days.
 cf. Claude can be a jerk these days.
 c. We knew it would only be the mailman.
 d. *We knew it will only be the mailman.
 cf. We know it will only be the mailman.
 e. She thought that I might get over him quickly, and I did.
 f. *She thought that I may get over him quickly, and I did.
 cf. She thinks that I may get over him quickly.

The table in (12) summarizes the interaction between modals and Precedence:

(12)	no modal	necessity modal	possibility modal
no Precedence	(<i>does</i>) $p \in \text{now}(c)$	(<i>must, shall, will</i>) $c \vdash p$	(<i>may, can</i>) $c \nVdash \neg p$
Precedence	(<i>did</i>) $p \in \text{now}(c')$	(<i>must, should, would</i>) $c' \vdash p$	(<i>might, could</i>) $c' \nVdash \neg p$

Why describe modal meanings in terms of consciousnesses?

- A sentence such as (13) asserts nothing about anything other than the speaker's state of mind:

(13) It may be raining in Beijing.

There is no set of meteorological conditions that will serve to make (13) true or false; what (13) means is only that the speaker is not sure that it is not raining in Beijing. In Cowper and Hall's treatment of propositions, this is entirely expected—all deictic propositional clauses make assertions about the speaker's belief set.

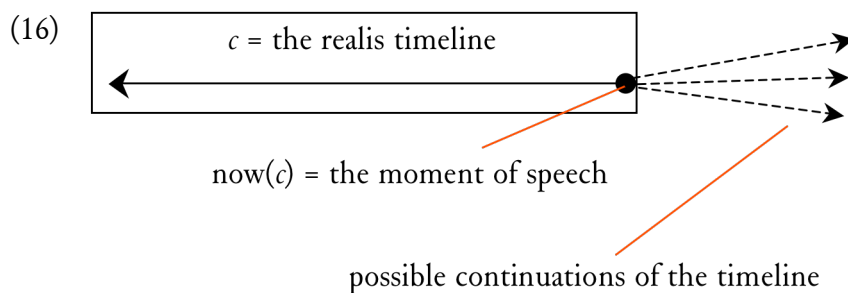
• Futurate and epistemic readings of modals are essentially the same:

- (14) a. The climbers will reach the summit two hours from now.
 b. The climbers will have reached the summit two hours ago.

- (15) a. It may rain here tomorrow.
 b. It may be raining in Beijing right now.

A proposition whose truth is not yet known to the speaker has the same status as a proposition about an event that has not yet happened: it is not present in the consciousness at the deictic centre, but can be described as being compatible or incompatible with, or as following or not following from, what the speaker does know.

Futurate uses of modals are simply a subtype of epistemic uses, all of which describe ways in which more propositions may be added to the set that currently constitutes the consciousness at the deictic centre:



3. Getting to counterfactuals

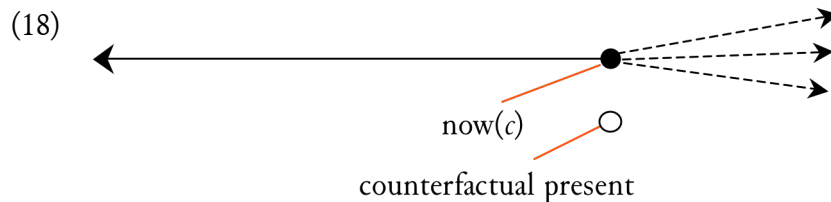
3.1 You can't get there from now

Counterfactuals such as the ones in (1), repeated below in (17), have no direct relation to the consciousness at the deictic centre:

- (17) a. Susana would speak Georgian fluently if she had grown up in Tbilisi.
 b. In a Ptolemaic universe, the sun would revolve around the Earth.
 c. Had I won the lottery yesterday, I might fly to Paris tomorrow.

For example, in the first clause of (17a), the proposition $\llbracket \text{ speak } \rrbracket (\llbracket \text{ Georgian } \rrbracket) (\llbracket \text{ Susana } \rrbracket)$ is known by the speaker to be false: the proposition is not in the consciousness at the deictic centre, nor is it even compatible with the other propositions therein.

How can a relation be established between the speaker's beliefs about the real world and the counterfactual proposition? The only way to depart from the realis timeline is by looking 'forward' into a possible continuation; a counterfactual present (or past) state or event is not accessible from $\text{now}(c)$:



3.2 But you could get there from then

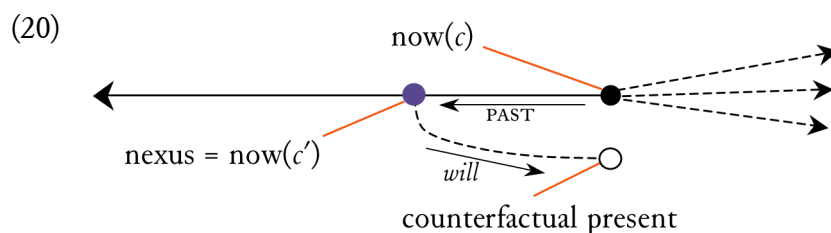
A counterfactual present is, however, accessible from the past, through what Cowper (1996) refers to as a **temporal nexus**. Cowper (1996) uses the notion of a nexus to explain the presence of past tense in clauses describing non-past events, such as the bolded clause in (19):

(19) John decided a week ago that in ten days at breakfast he would tell his mother **that they were having their last meal together.**

The bolded clause describes an event that is planned to occur three days after the moment of speech, and yet it is in the past tense. Cowper accounts for this by saying that the contemplated future event is anchored to the realis timeline at the past moment introduced by *decided*; the morphological past tense on *were* reflects the position of the anchor rather than the time of the event itself.

Cowper and Hall's (1999) treatment of tense and propositionality, combined with the semantics of modals outlined in §2.2, make it possible to show more precisely what a temporal nexus is and how it makes present counterfactuals accessible. For example, in (17a), *Susana would speak Georgian fluently* contains a past tense form of a consequence modal (*would*). The clause therefore describes a possible continuation of a subset c' of the set of propositions c that characterizes the speaker's current knowledge.

In this particular example, c' must be selected so that it does not contain the proposition that Susana did not grow up in Tbilisi. The *if*-clause adds the hypothetical proposition that she did, and the main clause asserts that the proposition $\llbracket \text{ speak } \rrbracket (\llbracket \text{ Georgian } \rrbracket) (\llbracket \text{ Susana } \rrbracket)$ follows from the modified c' :



The counterfactual is thus characterizable as the future of a past that never happened.

4. Conclusions

Complications:

- The correspondence between the present and past forms of the English modals is inexact, and becoming more so.

- Some of the idiosyncrasies make sense within the framework proposed here—e.g., *might* as a weaker form of *may*:

- (21) a. It may rain tomorrow.
b. It might rain tomorrow.

Under the view of modals and Precedence proposed here, (21b) does indeed make a weaker statement than (21a): it states that an event of raining tomorrow is compatible with some subset c' of what the speaker knows, but not necessarily with the full set c .

- Others seem to reflect a growing independence of the present and past tense forms—e.g., *should* has a deontic sense that is now only marginal in *shall*; *must* as a past tense is waning; *may* is becoming interchangeable with *might*.

Implications:

- Contra McCawley (1981) and Comrie (1985), futurate *will* is a modal; future time reference is simply another kind of epistemic modality.

- Under the consciousness model, all propositions are statements about the speaker's belief set, and not directly about the real world. It thus makes sense to talk about sentence meanings in terms of **sincerity conditions** rather than truth conditions.

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*but were afraid to ask.