Counterfactual Biscuit Conditionals: A Temporal Remoteness Account

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Issue • In the case of indicative conditionals, hypothetical and biscuit conditionals like (10) and (11) resp. are identical in terms of verbal morphology. An elegant line of analysis proposes that the two types share the same syntactic structure and semantic modal template and differ exclusively in the pragmatics, in that an additional inference is run for biscuits conditionals ([DG99, Fra09, Fra15, Lau2015, BG18, Csi18]): Since the antecedent and consequent propositions are independent from each other in (11) –i.e., changing one's belief about one will not change one's belief about the other–, the consequent must hold of the actual world w_0 regardless of the truth or falsity of the antecedent, hence giving rise to the "biscuit feeling" that the consequent is being asserted.

However, in the case of counterfactual conditionals, hypothetical counterfactuals (HypCFs) and biscuit counterfactuals (BiCFs) differ in the verbal morphology of the consequent clause in languages like English and Spanish. On the one hand, to express a BiCF, we (typically) have to use a real/non-fake tense form –e.g., present tense for a present BiCF, as in (12-b)– and cannot use fake tense (giving rise to *would* morphology) as in (12-a) ([RD01], pace [Fra09]). Additionally, in Spanish, the consequent of a BiCF must be in the indicative: (13). On the other hand, to express a HypCF, we must use fake tense, as in (14-a)/(15-a), and cannot use real tense, witness (14-b)/(15-b). This raises a puzzle for the uniform approach above: If the intuited interpretive difference between hypotheticals and biscuits is due the independence-based inference, why must the two conditional types typically be expressed with different morphology when in counterfactual form?

Goal • The goal of this paper is to provide an analysis of the tense and mood morphology in BiCFs that derives the morphological pattern in (12)-(15) while maintaining the general uniform approach to hypotheticals and biscuits. To do so, we will follow the temporal remoteness analysis of counterfactual morphology ([Dud83,84, Ipp03, GS09, Rom17]) and extend mechanisms independently needed for breaking Sequence of Tense in attitude reports ([Ogi99]).

Background: A temporal remoteness account of HypFC • A HypCF involves a back shift in time with a future metaphysical conditional interpreted under that back shift ([Dud83,84, Edg04]). This translates into the LF (1), with the modal $\text{MODAL}^{\text{L}}_{\text{METAPHY}}$ scoping under the back shift introduced by $\exists_1$. One layer of past tense morphology is left uninterpreted in the antecedent and the consequent –represented as [past] in (1)– by virtue of being in a binding chain headed by a past temporal pronoun $\text{pro}_1^{[\text{PAST pro}_0]}$ ([GvS09]). The remaining bits of verbal morphology introduce a pronoun pro_i with the relevant tense and mood features [TENSE/MOOD] and are interpreted as in (2)-(3) ([Hei94, Fin98, Kra98; Sch05], adapted in [Rom17] to indices, i.e., to world-time pairs). This results in the truth conditions (4), somewhat simplified from [Rom17]:

(1) $\lambda 0 \, \exists_1[\text{MODAL}^{\text{L}}_{\text{METAPHY}} \text{ at pro}_1^{[\text{PAST pro}_0]}$ LF for (14-a)/(15-a)
          $\lambda 8 \, \exists_4[\text{you be hungry at pro}_4^{[\text{SUBJ CG}]\,[\text{past}]\,[\text{FUT pro}_8]}]$
          $\lambda 8 \, \exists_4[\text{your stomach be making noises at pro}_4^{\text{past}\,[\text{FUT pro}_8]}]]$

(2)   a. $[\![pro_i^{[\text{PAST pro}_j]}]\!]^g$ is defined only if $g(i) < g(j)$; if defined, $[\![pro_i^{[\text{PAST pro}_j]}]\!] = g(i)$
        b. $[\![pro_i^{[\text{PRES pro}_j]}]\!]^g$ is defined only if $g(i) \circ g(j)$; if defined, $[\![pro_i^{[\text{PRES pro}_j]}]\!] = g(i)$
        c. $[\![pro_i^{[\text{FUT pro}_j]}]\!]^g$ is defined only if $g(j) < g(i)$; if defined, $[\![pro_i^{[\text{FUT pro}_j]}]\!] = g(i)$

(3)   a. $[\![pro_i^{[\text{IND CG}]}]\!]^g$ is defined only if $g(i) \in \text{CG}$; if defined, $[\![pro_i^{[\text{IND CG}]}]\!] = g(pro_i)$
        b. $[\![pro_i^{[\text{SUBJ CG}]}]\!]^g = g(pro_i)$.   [CG = Common Ground]

(4) $\lambda i_0.\exists i_1[i_1 < i_0 \wedge \forall i_8 \in \text{MODAL}^{\text{L}}_{\text{METAPHY}}(i_1): \exists i_4[\underline{i_8 \in CG \wedge} \, i_8 < i_4 \wedge \text{you be hungry at } i_4] \rightarrow$
                    $\exists i_4[i_8 < i_4 \wedge \text{stomach be making noises at } i_4]]$

Background: Breaking Sequence of Tense (SOT) • When SOT is broken in attitude reports by using an absolute tense, e.g. present tense in (16), we obtain the so-called "double-access" reading: The time of the embedded proposition must align both with the utterance time t_0 and with the attitude holder's subjective "now" t_1. However, the corresponding LF (5) only gives us temporal alignment with t_0, as in (6-a). To obtain the desired alignment with t_1, [Ogi99] proposes an analysis (simplified here) where the temporal property is duplicated and linked to t_1, as underlined in (6-b). Note that the same result would obtain if the temporal property plus the entire embedded proposition were duplicated, as in (6-c). We will use the latter kind of duplication in our proposal.

(5)   LF: $\lambda 0.\ \exists_1[\text{John say at } \text{pro}_1{}^{\text{PAST pro}_0} \ \lambda 3\ \exists_4[\text{Mary be pregnant at } \text{pro}_4{}^{\text{PRES pro}_0}]]$

(6)   a. $\lambda t_0.\exists i_1\ [i_1{<}i_0 \land \forall t_2 \in \text{SAY}_{john}(t_1)\colon \exists t_4[t_4 \circ t_0 \land \text{Mary be pregnant at } t_4]]$
       b. $\lambda t_0.\ \exists i_1\ [i_1{<}i_0 \land \forall t_2 \in \text{SAY}_{john}(t_1)\colon \exists t_4[t_4 \circ t_0 \land \text{Mary be pregnant at } t_4 \land \underline{t_4 \circ t_2}]]$
       c. $\lambda t_0.\ \exists i_1\ [i_1{<}i_0 \land \forall t_2 \in \text{SAY}_{john}(t_1)\colon \exists t_4[t_4 \circ t_0 \land \text{M. pr. at } t_4 \land \underline{t_4 \circ t_2 \land \text{M. pr. at } t_4}]]$

Proposal • We propose to treat the **grammatical BiCFs (12-b)/(13-b)** as a case of broken Sequence of Tense and, additionally for Spanish, broken "Sequence of Mood". The present and indicative morphology leads to the LF (7). This gives us the temporal alignment of index i_4 with the utterance index i_0 in the last subformula in (8), but no temporal alignment and no modal alignment –given that $i_4{\in}\text{CG}$– with the counterfactual index i_8 quantified over. To supply the desired alignment, we extend [Ogi99]'s strategy and propose to duplicate the consequent proposition and the temporal and modal relations as $i_8 \circ i_4$ and $i_4 \in \text{METAPHY}^L(i_0)$ to allow local binding, resulting in (9):

(7) $\lambda 0\ \exists_1[\text{MODAL}^L_{\text{METAPHY}} \text{ at } \text{pro}_1{}^{\text{PAST pro}_0}$ $\hfill$ LF for (12-b)/(13-b)
       $\lambda 8\ \exists i_4[\text{you be hungry at } \text{pro}_4{}^{[\text{SUBJ CG}]\ \sout{\text{past}}\ [\text{FUT pro}_8]}]\ \lambda 8\ \exists i_4[\text{be pizza at } \text{pro}_4{}^{[\text{IND CG}]\ [\text{PRES pro}_0]}]]$

(8) $\lambda i_0.\ \exists i_1\ [i_1{<}i_0 \land \forall i_8{\in}\text{MODAL}^L_{\text{METAPHY}}(i_1)\colon \exists i_4[\sout{i_8{\in}\text{CG}} \land i_8{<}i_4 \land \text{you be hungry at } i_4] \rightarrow$
       $\hfill \exists i_4[i_4{\in}\text{CG} \land i_0 \circ i_4 \land \text{there be pizza at } i_4]]$

(9) $\lambda i_0.\ \exists i_1\ [i_1{<}i_0 \land \forall i_8{\in}\text{MODAL}^L_{\text{METAPHY}}(i_1)\colon \exists i_4[\sout{i_8{\in}\text{CG}} \land i_8{<}i_4 \land \text{you be hungry at } i_4] \rightarrow$
       $\exists i_4[i_4{\in}\text{CG} \land i_0 \circ i_4 \land \text{be pizza at } i_4] \land \underline{\exists i_4[i_4{\in}\text{MODAL}^L_{\text{METAPHY}}(i_0) \land i_8 \circ i_4 \land \text{be pizza at } i_4]}]$

As for the **ungrammatical BiCFs (12-a)/(13-a)**, [Fra09] predicts them and (12-b)/(13-b) to equally receive a biscuit interpretation irrespective of tense or mood, since p and q are conditionally independent. This means that (12-a)/(13-a) and (12-b)/(13-b) compete for signalling the same message. But the present tense morphology in (12-b) and additionally the indicative morphology in (13-b) break SOT/Sequence of Mood, *explicitly* signalling overlap of i_4 with i_0 and membership of i_4 to CG, while (12-a)/(13-a) do not. Thus, (12-b)/(13-b) are stronger when the speaker wants to communicate her commitment to q in i_0 and should be chosen then. Similar effects arise for cessation implicatures with competition between tenses ([Cab16]) and for attitude verbs with competition between moods due to *Maximize presupposition!* ([Hei92, Sch05]). Note that [Fra09]'s inference deriving the "biscuit feeling" is still run when the grammar does not allow speakers a choice, e.g. in modal subordination cases such as (17) due to [Swa13]; here the speaker is only committed to there being biscuits in her desire indices (conditionally independently of p), but crucially not at i_0.

Finally, for the **ungrammatical HypCFs (14-b)/(15-b)**, [DG99] note that there are two reasons why a speaker may utter a conditional *if p, q*: she is either uncertain about q's truth (if p and q are conditionally dependent) or about its relevance (if conditionally independent) when uttered on its own. If she is convinced of both q's truth and its relevance, she should utter plain q. This explains the oddity of (14-b)/(15-b), a conditional whose p and q are conditionally dependent. Signalling that q is true (qua present indicative) means that the speaker should have simply uttered q.

(10) [On a whatsapp message:] (I know you well...) If you are hungry right now, your stomach is making noises.   HYP IND

(11) If you are hungry right now, there is pizza in the fridge.   BISCUIT IND

(12) a. #If you were hungry right now, there would be pizza in the fridge.
      b.   If you were hungry right now, there **is** pizza in the fridge.   BICF

(13) a. #Si (tú) tuvieses hambre, habría   pizza en el   frigorífico.
          If (you) had.Subj hunger, would.have pizza in the fridge.
      b.   Si (tú) tuvieses hambre, hay   pizza en el   frigorífico.   BICF
          If (you) had.Subj hunger, **have.Ind** pizza in the fridge.

(14) a.   If you were hungry right now, your stomach would be making noises.   HYPCF
      b. #If you were hungry right now, your stomach is making noises.

(15) a.   Si (tú) tuvieses hambre, tu   estómago estaría   haciendo ruidos.   HYPCF
          If (you) had.Subj hunger, your stomach   would.be making   noises.
      b. #Si (tú) tuvieses hambre, tu   estómago está   haciendo ruidos.
          If (you) had.Subj hunger, your stomach   is.Ind making   noises.

(16) John said Mary is pregnant.
      a.   John said at a past time t_1 that Mary is pregnant at t_0.
      b.   John said at a past time t_1 that Mary is pregnant at t_1.

(17) I want to vacation at a posh hotel in London. We would have tea every afternoon, *and there **would be** biscuits on the sideboard if one were so inclined.*   [Swa13] ex. (1)

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