The structure of 'might'-counterfactuals: a view from Japanese

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Counterfactuals (CFs) have been intensively investigated in the philosophical and linguistic literature. Meanwhile, while the issues of CFs have been addressed primarily in terms of 'would'-CFs (1-a), little attention has been paid to the so-called 'might'-CFs (1-b).

(1) a. If his condition had been good, John *would* have won the game.
  b. If his condition had been good, John *might* have won the game.

While philosophers have typically treated 'might'-CFs as the dual of 'would'-CFs (e.g. Lewis 1973), it has been pointed out that 'might'-CFs can significantly differ from 'would'-CFs in their underlying logical forms (e.g. Stalnaker 1980). This study investigates the logical and linguistic structure of 'might'-CFs with special focus on Japanese, a language that shows a transparent modal-temporal interaction.

'(if p,) might have q'   English 'might have' constructions as in (2) are ambiguous between two readings: in the epistemic reading, the speaker makes a guess about in which way the game turned out, on the basis of what is known or believed now; in the CF reading, the sentence conveys that it was possible at some point in the past for him to win, in light of the state of affairs at that time. Condoravdi (2002) explains this ambiguity of 'might have' as coming from the differing scopal relations between the modal and the perfect morphology, as in (2-a) and (2-b). The latter LF (i.e. the perfect scoping over the modal) is often called the **temporal backshifting** of the accessibility relation, which is also arguably involved in 'would have' constructions and is regarded as the source of counterfactuality (Mondadori 1978; Ippolito 2003, 2006, 2013; a.o).

(2) He might have won the game.

  a. Pres[might[PERF[he win the game]]] $\leadsto$ Epistemic reading
  b. Pres[PERF[might[he win the game]]] $\leadsto$ CF reading

Condoravdi's analysis leaves open what the LFs will look like if *if*-clauses are added to them. This is especially non-trivial for the CF reading because this question directly connects to the issue of the proper logical forms of 'might'-CFs, which is still unresolved in the philosophical and formal-semantic literature. Ignoring the temporal factor, there are three possible logical forms proposed so far for 'might'-CFs: (a) might[*if p*][*q*], (b) might[would[*if p*][*q*]], (c) would[*if p*][might *q*]. (a) is the duality analysis (e.g. Lewis 1973). (b) is the one in which 'might' is an epistemic modal scoping over a 'would'-CF (e.g. Stalnaker 1980). (c) is the one in which 'might' scopes under the consequent of a 'would'-CF (e.g. Lewis 1979). Now factoring in the temporal factor: assuming that the backshifting is involved here and due to this at least one modal is always backshifted, we end up with five potential LF structures from (α) to (ϵ), as shown in (3) ('BS' stands for a backshifter like 'PERF' above).

(3) a. might[*if p*][*q*] $\leadsto$ (α) BS[might[*if p*][*q*]]
  b. might[would[*if p*][*q*]] $\leadsto$ (β) might[BS[would[*if p*][*q*]]] or (γ) BS[might[would[*if p*][*q*]]]
  c. would[*if p*][might *q*] $\leadsto$ (δ) would[*if p*][BS[might *q*]] or (ϵ) BS[would[*if p*][might *q*]]

Of course nothing guarantees that (α)-(ϵ) in (3) are all admissible, but the difficulty with English 'might have' constructions is that they show the scope interactions between the modal and the perfect *only covertly* (as shown above), and thus it is not visible from the surface form which LF structure the sentence actually represents. In order to properly identify the possible LFs of 'might'-CFs, we need to explore the 'might'-CFs in languages which show an overt scope alignment of modals and temporal ingredients.

View from Japanese   Japanese is a language that overtly encodes the scope relations between modals and tenses. Here as a test case I focus on '*kamosirena-*', one of the possibility modals in Japanese. As shown in (4), '*kamosirena-*' can not only take a tensed clause as its prejacent but also be tensed itself. I call the tense on the prejacent the **lower tense (Tense1)**, and the tense on the modal the **higher tense (Tense2)**. Since the Japanese tense system encodes either Present or Past, there are logically four possible combinations: (i) Pres1-Modal-Pres2, (ii) Past1-Modal-Pres2, (iii) Pres1-Modal-Past2 and (iv) Past1-Modal-Past2. As can be known from the translations, the higher tense controls the accessibility time for the modal, whereas the

lower tense determines the event time of the prejacent relative to the accessibility time. In particular, (ii) and (iii) correspond to 'might>PERF' and 'PERF>might' in English 'might have' sentences (but note that (iii) does not always have a CF reading; it can also have a 'past epistemic' reading). The translations also show that '*kamosirena*-+Past2' cannot be analyzed as 'might' in the sense of 'may + Past', in line with 'would' as 'woll + Past'. The Japanese past tenses here are much closer in function to the perfect 'have' in English.

(4) John-ga   kat-{**u/ta**}   kamoshirena-{**i/katta**}.
     John-NOM win-{PRES/PAST} MODAL-{PRES/PAST}
     (i) 'It is conceivable that John will win.' (ii) 'It is conceivable that John won.' (iii) 'It was conceivable that John would win.' (iv) 'It was conceivable that John had won.'

Like in English, the addition of *if*-clauses complicates the interpretations of the sentences in (4), but due to the lack of the overt indicative/subjunctive distinction, a contextual support is needed in order for them to be unambiguously CF. Assume that a CF context is provided in (5), such as 'John's condition is/was terrible'. As the translations show, the meanings of (ii), (iii) and (iv) here are superficially indistinguishable.

(5) Chousi-ga   yoke-reba, John-ga   kat-{**u/ta**}   kamoshirena-{**i/katta**}.
     condition-NOM good-COND John-NOM win-{PRES/PAST} might-{PRES/PAST}
     (i) 'If his condition were good, John might win.'
     (ii)-(iv) 'If his condition had been good, John might have won.'

Nevertheless, (ii)-(iv) can come apart once an appropriate context is given, and it will then give us a clue to identifying the possible LF structures of 'might'-CFs. Here I focus on (ii) and (iii). (6) involves the so-called **intervention** context: the airplane crash intervenes and nullifies any possibility of John making it to the conference. Therefore, it is assumed under the current knowledge that John would never have arrived in Boston in any case. In such context, (ii) (=(6-c)) is infelicitous, while (iii) (=(6-d)) can be felicitously used (if an explicit frame adverbial referring to the past time before t_{excl}, i.e. the time before the exclusion point of John's catching the Haruka, is provided. Here I leave open why its absence makes the utterance infelicitous). This difference comes from the differing accessibility times of '*kamosirena*-' designated by each higher tense, Present in the former and Past in the latter. In other words, (ii) makes the speaker inevitably bound to what is currently known at the utterance time t_u (here to the knowledge of the crash), whereas (iii) can allow her to mention the past possibility ignoring the current knowledge. This also leads to the prediction that in (ii) the backshifter is Past1 and shifts back the (bare form of) 'would'-CF (i.e. (β) in (3)), while in (iii) the backshifter is Past2 and the structure will correspond to either (α), (γ) or (ϵ).

(6) a. John was supposed to attend a conference in Boston and needed to catch a flight, but somehow he missed the Haruka train, the express train to the Kansai airport, and couldn't make it to the flight. However, the news came in that the very airplane he had missed crashed in the Pacific Ocean...

     b. ──────── t_{excl} ─ ─ ─ ─ t_{crash} ·············· t_u ······⟶
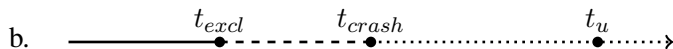
     c. #Haruka-ni nor-eba,   gakkai-ni   maniat-**ta**   kamosirena-**i**.
         Haruka-on ride-COND, conference-to make.it-PAST might-PRES
         Intended: 'It might be that if I had caught the Haruka, I would have made it to the conference.'

     d. #(Before t_{excl}) Haruka-ni nor-eba,   gakkai-ni   mania-**u**   kamosirena-**katta**.
                        Haruka-on ride-COND, conference-to make.it-PRES might-PAST
         'It was possible (before t_{excl}) for me to make it to the conference if I caught the Haruka.'

Goal of the study   The overt scopal relations in Japanese thus help us detect which structure is compatible with which interpretation, and ultimately narrow down the possible LFs of 'might'-CFs. I will further investigate the full distributions of the structure-interpretation correspondences in Japanese 'might'-CFs.

Selected Refs   ● Condoravdi 2002. Temporal interpretation of modals ● Ippolito 2013. *Subjunctive conditionals* ● Lewis 1973. *Counterfactuals* ● Lewis 1979. Counterfactual dependence and time's arrow ● Stalnaker 1980. A defense of conditional excluded middle