What 'may' and 'must' may be in Japanese*

MAGDALENA KAUFMANN
University of Connecticut

1   Introduction

The Japanese system of modality differs in at least two respects from the ones of the Indo-European languages that have served as the basis of standard formal semantic theories of modality. In contrast to markers like *must* and *may*, which can be used to express necessity and possiblity with respect to all sorts of backgrounds (epistemic, deontic, bouletic,…), the modal markers of Modern Japanese are well-known to show such overlap only to a very limited

degree (see Narrog 2009; Moriya and Horie 2009).[1] Moreover, markers taken to be conventionally associated with modal meanings in Japanese seem to be more varied formally, comprising anything from verbal morphology to what seem to be syntactically complex constructions. For the domain of prioritizing modality in particular, that is, modality relating to rules or laws, desires, or goals, Japanese relies to a large degree on (apparently) analytic constructions.[2] Many of these possess the structure of conditional evaluations, henceforth **conditional evaluative construction** (CEC), as illustrated in (1). They are similar to regular hypothetical conditionals, as illustrated in (2).

(1) a. *Tabe-nakere-ba   nara-na-i.*
       eat-NEG-COND become-NEG-NPST
       lit.: 'If you don't eat it doesn't work.'; ≈ 'You have to eat.'
    b. *Tabe-te mo   i-i.*
       eat-GER also good-NPST
       lit.: 'If you eat it's also good.'; ≈ 'You may eat.'
(2) a. *Tabe-nakere-ba onaka   ga   suk-u.*
       eat-NEG-COND stomach NOM be.empty-NPST
       'If you don't eat you'll be hungry.'
    b. *Tabe-te mo onaka   ga   suk-u.*
       eat-GER also stomach NOM be.empty-NPST
       'Even/also if you eat you'll be hungry.'

Schematically, CECs can be rendered as in (3) (Akatsuka 1992). In the following, both the sentence in the *if*-part ('A' in (3b) and 'not A' in (3a)) and the proposition it expresses will be referred to as the **antecedent**; similarly, the evaluative expression and its interpretation are called the **consequent** (both without theoretical commitment to the status of CECs as actual conditional clauses syntactically or semantically). Moreover, I take it to be a defining features of CECs that the evaluation expressed by the consequent targets the course of events described by the antecedent.

(3) a. If not A, BAD. ≈ 'must A'
    b. If A, OK/(also) GOOD. ≈ 'may A'

These (at least apparently) complex constructions serve for similar speech acts as English sentences with modal verbs like *must* (for (3a)) and *may* (for (3b)). Therefore, they are typically translated with such markers, and it is tempting to consider CECs atomic expressions with that same meaning.

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[1] For some exceptions see Okuda (1999), Adachi et al. (2003), and Larm (2006).
[2] A notable exception being *beki* 'should', 'had better'.

Along these lines, *-te mo ii* and *-nakereba naranai* are sometimes glossed as 'may' and 'must' (e.g. Johnson 1994, Larm 2006). It is not clear, however, if they should be treated as fossilized in this way. In this paper, I will argue that a noncompositional treatment misses out on important semantic and syntactic facts, and I will aim to develop an account that relies on principles of semantic composition.

2   Exploring Conditional Evaluative Constructions (CECs)

The most obvious argument against an analysis of strings like *-temoii* and *-nakerebanaranai* as fully lexicalized expressions is the relatively high flexibility of CECs.[3] On the one hand, Japanese possesses at least six markers that behave like verbal inflections or follow the inflected verb and are generally considered conditional markers (*-tara, -reba, to, -te wa, - te (mo), nara*). With the possible exception of *nara*, they all participate in the formation of CECs, displaying the same morphonological behavior as in 'regular conditionals' (for instance, the reduced forms *-tya* and *-rya* can be used for *-tewa* and *-reba*, respectively).[4] On the other hand, for each conditional marker, there is a large and possibly open class of expressions that can serve as 'GOOD' (positive evaluation) or 'BAD' (negative evaluation) in the consequent position. Following Akatsuka (1992), CECs can thus be fitted into the schema in (4):[5]

(4) 'IF A, GOOD/BAD'.
    a. GOOD: *ii,   uresii,   yorosii,   daizyoobu,   kamawanai*,…
                       good, happy,   fine,   all.right,   no.problem
    b. BAD: *ik-e-nai, dame da, iyada, zannen da, komaru, tae-rare-nai*,…
            can't go, is not good, dislike, it's a shame, terrible, can't bear,…

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[3] In the case of CECs, fossilization into atomic morphological markers could be considered lexicalization or grammaticalization, depending on whether modal verbs count as functional expressions. Not much hinges on this for the purposes of this paper, and I will, without theoretical commitment, speak of lexicalization.

[4] In the Japanese literature, extensive discussion of Japanese conditional markers can be found in Takubo (2006) and Arita (2004), for instance; Fujii (1993) and Hasegawa (2015) provide discussions in English.

[5] In some cases, the evaluative predicate can be replaced by an interrogative (consider (i)):
(i) *Moo sukosi   yasun-dara doo des-u   ka?*
    more a.little.bit rest-COND how COP.POL-NPST Q
    'Why don't you rest a little more?'
    lit. 'If you rested a little more, how would that be?'   (Staniak 2012:91, her (93))
The analysis of such cases depends to a large degree on one's assumptions about conditionalized interrogatives (see e.g. Isaacs and Rawlins 2003), and I will set them aside for the time being. The possibility to ommit the consequent altogether (Fujii 2004's **reduced-form conditional construction**) results in additional problems, which I won't be able to address in this paper.

c. Conditional markers (IF): *-tara, -(re)ba, -to, -te (mo/wa)*

The possibility to break up the string by inserting adverbials constitutes a second argument against a treatment as fully lexicalized expressions (Hiro Saito, p.c.; *pace* Hanazono 1999):

(5) *Konna subarasii ningenkankei o taisetu ni suru*
    such wonderful human.relations ACC important DAT make
    honkoo no tokusyoku o nagaku nokosi-tei-nakere-ba
    this.school GEN characteristic ACC long preserve-PROG-nakere-ba
    ***zettai** nara-na-i to omot-tei-mas-u*
    absolutely become-NEG-NPST COMP think-PROG-POL-NPST
    'I think that this school's wonderful characteristic of valuing such human relations must be preserved by all means.'[6]

Yet, CECs cannot be assembled as freely as the schema in (4) might suggest. At least two types of restrictions stand out immediately. Firstly, some conditional markers impose restrictions on whether the evaluation is positive or negative (cf. (6a)). Secondly, certain combinations of conditional markers and evaluative predicates require the main predicate of the antecedent to be negated (cf. (6b)).

(6) a. #*Tabe-tewa i-i.*
       eat-COND good/ok-NPST
       intended: 'You may/should eat.'/'If you eat, it's good.'
    b. #*Tabere-ba nara-na-i/dame da*.
       eat-COND become-NEG-NPST/bad COP.NPST
       intended: 'You must not eat.'/'If you eat, it doesn't work/it's bad.'

The genuinely grammatical nature of the restriction exemplified in (6b) is best brought out with examples of negated and non-negated antecedents that contextually entail each other. If it is taken for granted that you will draw a (natural) number, that you draw an odd number and that you don't draw an even number are true in the exact same situations. The contextual equivalence between the syntactically positive antecedent in (7a) and the negated one in (7b) strikes me as challenging for any attempt to relate the difference in acceptability to general cognitive principles relating to negation.

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[6] http://inzai.ed.jp/kobayashi-jh/index.php?key=jo1o9d2lu-237. Google search, 10/07/2016.

(7) a. *#Kisuu   o   hike-ba   nara-na-i.*
      odd.number ACC draw-COND become-NEG-NPST
      intended: 'If you draw an odd number, it doesn't work.'/
            'You must draw an even number.'
   b. *Guusuu   o   hika-nakere-ba   nara-na-i.*
      even.number ACC draw-NEG-COND become-NEG-NPST
      'If you don't draw an even number it doesn't work.'/'You must draw
      an even number.'

Note that, as Kuno (1973) cautions, there can be apparent instantiations in which the evaluation targets not the course of events described by the antecedent, but a contextually salient one. For instance, (8) is acceptable with the evaluative predicate *ii* 'good' referring to a contextually given course of events (the addressee's returning earlier) rather than the state of affairs expressed by the antecedent (the expression under *nara*, here, the (mother's) illness). Consequently, while at first glance a counterexample to the (potential) restriction against *nara* as the conditional marker in CECs, (8) is actually not a CEC.[7]

(8) *Byooki-nara i-i   yo. Hayaku ie   ni   kaet-te*
     ill-COND   good/ok-NPST SFP. early   house DAT return-GER
    age-nasai
    BENEF-IMP
    'If your mother is ill, that's ok. Go back home earlier for her.'

CECs thus appear to be partly conventionalized complex constructions, which turns them into a challenge for generative theories of grammar and the formal semantic theories that build on them. And indeed, the most detailed discussion of CECs is offered by Fujii (2004), who proposes to capture their idiosyncrasies in the framework of construction grammar. After investigating a couple of general properties of CECs, I will argue that the construction grammar perspective does not provide a fully satisfactory model of CECs. In the last part, I will lay out possibilities for an account in a formal semantic framework and I will show that a more fine-grained analysis can go further towards explaining CECs than what might be expected at first glance.

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[7] But see Section 4.2 below for a more differentiated take on *nara*.

3 Separating out Conventionalization

3.1 Morphosyntactic Status and Compositional Interpretation

In Section 2, I showed that CECs are constructions which formally instantiate the schema in (4), and in which, semantically, the consequent evaluates the type of situation described by the antecedent. In order to determine how any of its instantiations α relates to its functionally most similar modal verb μ of a language like English (or an arbitrary representative μ of a class of functionally most similar modal verbs M), the following three hypotheses should be considered separately:

1. ***Morphosyntactic Atomicity Hypothesis*** α's apparent structure '-COND.MARKER] GOOD/BAD' is lexicalized (or grammaticalized, cf. Fn. 3) into one morpheme.
2. ***Compositionality Hypothesis*** The meaning of α corresponds to the compositional interpretation of what are, or what used to be, α's morphosyntactic parts.
3. ***Identity Hypothesis*** For a given pair of a Japanese CEC α and the functionally most similar modal verb of English μ (or an arbitrary representative μ of a class of functionally most similar modal verbs M), the interpretation of α as an expression of Japanese is equivalent to the interpretation of μ as an expression of English.
    (Resulting in pairs like $[\![\textit{nakereba naranai}]\!]_J = [\![\textit{must}]\!]_{E.}$)

Careful inspection reveals that these three hypotheses are genuinely independent. A CEC α can be lexicalized as a single morpheme which may or may not correspond to the meaning that would be assigned to its apparent parts, and α's meaning may or may not be similar to the meaning of the functionally closest English modal. One connection between Morphosyntactic Atomicity and Compositionality is worth bearing in mind, though: if the Compositionality Hypothesis fails for a given item α (which means that its truth conditional or functional profile is incompatible with what could be derived compositionally from its apparent parts), some sort of conventionalization has to have taken place. If the item can be argued to be morphosyntactically atomic, this can be explained straightforwardly. If not, things are trickier: Nunberg, Sag, and Wasow (1994) stress that conventionalized differences between compositional and actual meaning can also occur with morphosyntactically complex expressions; for such cases, they propose a homomorphic map from literal to idiomatic interpretation which respects certain properties of the interpretations of the idiom's components. Fujii (2004:123) argues that CECs are ***idiomatically combining expressions*** in Nunberg, Sag, and Washow's sense and emphasizes that

'conventionality does not entail noncompositionality'. Note, however, that this passes standard definitions of compositionality only if the homomorphic map that yields the idiomatic meaning is represented as a specific way of combining parts syntactically (cf. (9); for a general discussion of compositionality, see Zimmermann 2012). This, however, contradicts Nunberg, Sag, and Wasow's idea that conventionalization in idiomatically combining expressions is genuinely semantic.

(9) ***The Ordinary Principle of Compositionality*** (following Montague 1974): The meaning of a complex expression functionally depends on the meaning of its immediate parts and the way in which they are combined.

Extending Nunberg, Sag, and Wasow's account is also problematic in that it originally addressses complex lexical phrases (like *pull strings*, *spill the beans*). CECs, however, if conventionalized along such lines, are (nonconstituent) parts of bi-clausal sentences that get turned into bleached lexical or maybe functional morphemes (compare Fn. 3). It is not entirely obvious how to define a suitable metaphorical map. Consequently, if both Morphosyntactic Atomicity Hypothesis and Compositionality Hypothesis fail for a given item, this constitutes a potentially serious problem for compositional semantics after all.

3.2 CECs in Construction Grammar

Fujii (2004) argues that knowledge of the Japanese language is best modeled by adding ***constructional schemes*** and ***construction types*** to standard compositional semantic interpretation. She observes that CECs as instantiating the schema in (4) are related to both full bi-clausal conditionals (containing consequents with overt subject-predicate structure) and reduced conditionals (lacking the consequent part altogether), which she represents as three different construction types that cut across given constructional schemes. Constructional schemes pair possible formal instantiations with conversational functions, as exemplified in (10) (instantiated by (1a)), (11), and (12) (instantiated by (1b)):

(10) Constructional scheme: 'obligation'

PRAG/SEM: 'obligation'	
SYN: CLAUSE 1-NEG LINKER SEM: conditional antecedent PRAG: negatively evaluated	SYN: unspecified (full-clause, bare predicate, or null) PRAG/SEM: negative evaluation

Lexial instantiations of the LINKER slot:
to, *(r)eba*, *(r)ya*, *tewa*, *tya*, (**tara*, **nara*, **temo*, etc.)

(11) Constructional scheme: 'prohibition'

PRAG/SEM: 'prohibition'	
SYN: CLAUSE 1-LINKER SEM: conditional antecedent PRAG: negatively evaluated	SYN: unspecified (full-clause, bare predicate, or null) PRAG/SEM: negative evaluation

Lexial instantiations of the LINKER slot: *tara*, *tewa*, *tya*, (#*to*), (**(r)eba*, **(r)ya*, **nara*, **temo*, etc.)

(12) Constructional scheme: 'permission'

PRAG/SEM: 'permission'	
SYN: CLAUSE 1-LINKER SEM: concessive conditional antecedent PRAG: positively evaluated	SYN: unspecified (full-clause, bare predicate, or null) PRAG/SEM: positive evaluation

Constructional schemes along these lines are clearly helpful to categorize felicitous instantiations of the schema in (4).[8] However, integrating them into a full-fledged theory of form, meaning, and use of Japanese CECs faces a series of problems that I will highlight in the next section.

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[8] In this paper, I will not address potential concerns with details of the constructional schemes (for instance whether positive/negative evaluation of the antecedent should be presupposed or (possibly) expressed by an utterance of the CEC, or also whether there is a uniform semantic category of `(concessive) conditional antecedent').

3.3 CECs and Functional Profile

Like much of the descriptively or cognitively oriented literature (e.g. Narrog 2009), Fujii's constructional schemes are organized according to function types (obligation, prohibition, permission, recommendation,…). This relies on a strong correlation between felicitous instantiations of the schema in (4) and conversational use, which strikes me as problematic for the following reasons.

Firstly, many of the constructions under consideration can occur in embedded positions and do not, in those cases, serve for any of the functions indicated. Consider for instance the following examples from Larm (2006) with *-temo ii* embedded under past tense (cf. (13)) and in a relative clause (cf. (14)):

(13) *Kodomo no   toki koohii o   non-de   mo yokat-ta.*
     child   GEN time coffee ACC drink-GER also good-PAST
     'When (I) was a child I was allowed to drink coffee.'

(14) *Taka-ku   hyooka   si-te   mo i-i   hito   da.*
     high-INFIN evaluation do-GER also good.NPST person COP.NPST
     '(S/he) is a person who one may think highly of.'

The restrictions on what are possible instantiations of (4) that the constructional schemes are meant to capture (that is, what combinations of syntactic polarity, conditional marker, and evaluation are possible) carry over to embedded positions, even though there they are not correlated with the conversational functions the schemes are correlated with. In contrast, what does carry over to embedded occurrences (together with the instantiation restrictions) are interpretational properties: for instance, in the case of *-temo ii*, that the marker expresses prioritizing possibility (and marginally also epistemic possibility, Adachi et al. 2003, Larm 2006).

Secondly, even matrix usages of CECs are functionally more heterogeneous than what the functionally based discussions suggest. For instance, *-nakereba naranai* is often discussed as an obligation construction and instantiates Fujii's corresponding constructional scheme (and no other constructional scheme). Yet, a sentence like (15) is not used to express an obligation, but to make an assertion about a metaphysical necessity (Okuda 1999 for similar examples), as evidenced by the interchangability with the inherently circumstantial *zaruoenai* 'unable to'.

(15) *Kaze o   hii-tei-ru   node, watasi wa hana o*
     cold ACC catch-PROG-NPST because, I   TOP nose ACC

{kama-zaruoena-i,   kama-nakere-ba   nara-na-i}.
blow-cannot.help.but-NPST, blow-NEG-COND become-NEG-NPST
'Since I have a cold, I have to blow my nose' ('…can't but blow my nose.')

In (15), a less prototypical use is brought out by specific lexical material. But grammatical operations can also affect the functional profile of an expression (Narrog 2009). For instance, while *-temo ii* 'also if …, good' is easily used for permissions if the subject can be construed as referring to the addressee, a first person subject more likely results in an offer.

(16) *It-te   mo i-i.*
     go-GER also good-NPST
     lit.:'If you go it's also good.', ≈ 'You can go.'

(17) *Watasi ga   it-te   mo i-i   des-u.*
     I   NOM go-GER also good-NPST COP.POL-NPST
     lit.: 'It's ok if I go.', ≈ 'I can go.', 'I don't mind going.'

                                        (example from Larm 2005:217)

Similarly, a change in clause type (again, something I would not know how to relate to constructional schemes) turns what is naturally used for a permission into a request for one or an information seeking question about what is permissible.

(18) *It-te   mo i-i   des-u   ka?*
     go-GER also good-NPST COP.POL-NPST Q
     lit.: 'Is it also good if (I) go?', ≈ 'May I go?'

In (18), the source of the relevant rules is no longer the speaker (as seems to be the default for declarative sentences), but it is shifted to the addressee, displaying **interrogative flip** as familiar from (other) taste predicates (*tasty, fun,…*), speech act adverbials (*frankly,…*), or epistemic modals (Speas and Tenny 2003, Tenny and Speas 2004). Note also that, most likely for pragmatic reasons, when asking about the addressee's rules (or rules the addressee, rather than the speaker, is knowledgeable about), the covert subject is more readily construed as first (or third) person.

The functional potential of any given CEC sentence is thus determined by the lexical material it contains and by grammatical marking, similarly to

what we observe for any other sentence types.[9] Given that effects along these lines are in no way specific to CECs, a uniform analysis would be desirable.

A natural strategy of capturing their functional potential would thus be to analyze CECs as functionally underspecified semantic objects that receive their utterance function in interaction with specific contextual settings. This, however, requires that CECs are assigned a standard semantic interpretation. Fujii, too, argues that CECs have to be interpreted compositionally. If this is the case, however, it is not clear how constructional schemes can filter out instantiations of (4) that native speakers judge as infelicitous or ungrammatical, like the examples in (6) and (7a). The mix of lexical and grammatical information that in combination with the contextual settings accounts for the actual use of a given CECs makes it doubtful that we could just go on adding constructional schemes until we have captured all possible constellations. Moreover, since conditionals can in general serve for assertions, it remains unclear why the output of the compositional interpretation for sentences like (6a,b) and (7a) could not constitute felicitous, regular assertive conditionals (while failing the constructional scheme 'obligation').

In the remainder of this paper I will therefore pursue an alternative along the following lines: both the general functional potential of a given CEC and the restrictions on possible instantiations of (4) are derived from an interplay between the interpretation of conditional markers, the interpretation of the specific evaluative predicates, and the tense marking of the evaluative consequent, in interaction with a formal model of the contextual settings (plausibility of the prejacent, authoritative relation between speaker and addressee, shared knowledge about choosable actions and desires of speaker and addressee, respectively,…). For the sake of concreteness, I will mostly focus on -*nakereba naranai/ikenai/dame da*.

4　Relying on Compositional Semantics

4.1 Analyzing CECs as Nonlogical Conditionals

-*nakereba naranai/ikenai* (lit. 'if …not, it does not become/not go') as well as the more colloquial -*nakereba dame da* (lit. 'if…not, bad') are widely used to convey that something is necessary given a specified or salient set of rules

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[9] Considerations along these lines are potentially obscured by **indirect speech acts** (Searle 1975), for instance the use of the interrogative sentence *Can you pass me the salt* for a request. Kaufmann (2012) emphasizes that indirect speech acts come with particular pragmatic effects (e.g., (im)politeness) and that their dual nature can be made explicit in speech reports ('he requested that I pass the salt by asking me if I could do so'). The functional flexibility of natural language sentences should therefore not be analyzed by assigning one designated speech act per sentential form type and considering any other use as an instance of indirectness riding on the designated direct speech act.

or goals or, for *naranai*, even physiological processes as in (15). To test the Compositionality Hypothesis, we first need to come up with independently motivated and plausible enough assumptions about the single ingredients. For modals, I will rely on Kratzer's framework, which counts as standard in formal semantics. Interpretation of sentences uttered in a context c (noted as $[\![\cdot]\!]^c$) proceeds with respect to a set of possible worlds representing all conceivable states of affairs. Propositions as expressed by a declarative sentence ϕ are the sets of possible worlds at which ϕ is true. Modals, specifically, are sensitive to two **conversational backgrounds**, which assign sets of propositions to possible worlds. One of them, the **modal base**, represents basic factual information about the situation of evaluation (knowledge of a relevant individual or group, or also just facts about the situation); only worlds compatible with the information given by the modal base are relevant to the interpretation of the modal; the other parameter, the **ordering source**, represents potentially inconsistent criteria that can be used to rank worlds; depending on the particular ordering source chosen, this reflects how well a given world accords with someone's desires, someone's rules, or someone's goals. I use the common simplification of Kratzer's theory that is spelled out in (19).[10]

(19) a. The relevant criteria holding at w (the content of the ordering
         source g at w) induce a preorder on W:
         $w' \leq_{g(w)} w''$ iff $\{p \in g(w) \mid w'' \in p\} \subseteq \{p \in g(w) \mid w' \in p\}$

      b. The set of best worlds given facts about w (reflected in modal base
         f) according to the criteria holding in w (reflected in ordering
         source g):
         $O(f, g, w) := \{w' \in \cap f(w) \mid \forall w'' \in \cap f(w)[w'' \leq_{g(w)} w'$
         $\rightarrow w' \leq_{g(w)} w'']\}$

We can now interpret modals as expressing universal quantification (necessity modals, e.g. *must, have to*) or existential quantification (possibility modals, e.g. *can, may*) over $O(f, g, w)$, where f is the contextually salient modal base and g the contextually salient ordering source.

(20) a. $[\![$*must* A$]\!]^c = 1$ iff $O(f_c, g_c, w) \subseteq$ A
      b. $[\![$*may* A$]\!]^c = 1$ iff $O(f_c, g_c, w) \cap$ A $\neq \emptyset$

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[10] This version yields correct predictions as long as, intuitively, a single set of best worlds can be determined from each world of evaluation, i.e., we encounter no chains of better and even better worlds (**Limit Assumption**, Lewis 1973, Kaufmann and Kaufmann 2015).

Following Lewis 1975, Kratzer extends this treatment to conditionals by assuming that *if*-clauses can restrict quantificational operators like, for instance, modals in the consequent.[11]

(21) $[\![If A, \mathit{must}\ B]\!]^c = [\![\mathit{must}\ B]\!]^{c'}$, where $\boldsymbol{f_{c'}} = \lambda w.f_c(w) \cup \{[\![A]\!]^c\}$ and $\boldsymbol{c}$ is like $\boldsymbol{c'}$ in all other respects.

In the absence of an overt modal, the *if*-restriction applies to a covert modal of epistemic necessity, predicting (near) equivalence between (22a) and (22b): both are predicted to be true iff the most plausible ones among the epistemically accessible worlds in which John is in his office are such that the lights are on.[12,13]

(22)   a. *If the lights are on, John is in his office.*
      b. *If the lights are on, John must be in his office.*

As evaluative predicates like *naranai, dame da*, and *ikenai* can hardly be conceived of as quantificational modal operators themselves, CECs do not involve an overt modal operator in the consequent. The standard theory laid out here would thus treat them as biclausal constructions that involve a covert epistemic necessity operator that can be restricted by the antecedent:

(23) $[[\mathit{must}^{\mathrm{epistemic}}\ [\mathit{not}\ A]]\ \mathrm{BAD}]$

For this, the consequent 'BAD' (= *naranai/dame/ikenai*) has to be construed as a propositional expression. In view of the ease with which Japanese drops pronominal arguments, this is not worrisome syntactically. Finding a semantically satisfactory solution, however, proves intricate. Whatever

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[11] Technically, I represent the modification of the modal base as a contextual shift. This is a common convenience which can be avoided if desired; for similar issues with variable binding and a solution without shifting contexts, see del Prete & Zucchi (2017).

[12] As an anonymous reviewer points out, (22a) and (22b) differ in the degree of speaker certainty or commitment conveyed. Still, in line with Kratzer's proposal, this need not correspond to an additional layer of modal quantification. More naturally, the difference can be captured as a difference between the covert and the overt epistemic operator – either in semantic strength (resulting in mere near equivalence) or in use conditions (maintaining truth conditional equivalence).

[13] Gillies (2010) defends an alternative on which *if* directly expresses quantification over epistemically accessible antecedent worlds. While surprisingly irrelevant in many contexts (see Kaufmann and Kaufmann 2015), it might impact the space of possible solutions to issues with the Japanese data that are discussed in Section 4.2.

proposition is expressed by the consequent, the standard truth conditions for conditionals require that it be true at each of the most plausible (for simplicity: to the speaker) ones among those worlds that (i) make A false and (ii) are compatible with what is known in the utterance context (for simplicity again: to the speaker). Clearly, the consequent proposition cannot be that the proposition 'that not A' itself is bad. Consider again (1) (repeated for convenience):

(1)   *Tabe-nake-reba   nara-nai.*
        eat-NEG-COND become-NEG
        lit.: 'If you don't eat it doesn't work.'; ≈ 'You have to eat.'

For many perceivedly true utterances of (1), not eating is problematic only in view of contextually given goals, circumstances, or desires; but in view of those, not eating counts as bad independently of whether or not (you) eat. A more plausible assumption would thus be that *naranai* (and similarly *dame da*, *ikenai*, etc.) can be a 0-place predicate that assigns truth or falsity to its situation (for simplicity, 'world') of evaluation. By this, (1) is predicted to be true iff all of the most plausible (for simplicity: to the speaker) ones among those worlds at which (i) (you) don't eat, and which (ii) are compatible with what is known in the utterance context (for simplicity: to the speaker), are bad (according to the contextually relevant parameters of evaluation as evaluated at this antecedent world). To capture the functional and perceived interpretational closeness with *must*, we can interpret the relevant 0-place predicates as in (24):

(24) $[\![dame/naranai/ikenai]\!]^c = \lambda w.w \notin O(f_c, g_c, w)$, where $\boldsymbol{f}_c(\boldsymbol{w})$ is the contextually relevant set of facts holding at $\boldsymbol{w}$, and $\boldsymbol{g}_c(\boldsymbol{w})$ represents the contextually salient goals or rules (or is empty, i.e. the constant function to the empty set, for *naranai*).

As the conversational backgrounds that these BAD predicates are sensitive to are constrained lexically, we immediately capture the fact that *nakereba naranai/ikenai/dame* do not (seem to) have epistemic readings[14] and only *nakereba naranai* has circumstantial readings in addition.

A pontential worry about this analysis is that we do not consider criteria for goodness/badness at the actual world of evaluation (as the content of the ordering source there), but at the relevant epistemically accessible

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[14] Potential counter-examples for *nakereba naranai* are listed in Narrog (2009); Kaufmann and Tamura (under rev.) suggest that these might be circumstantial readings instead.

antecedent worlds. This move is innocent only if (i) the content of the ordering source referenced by the evaluative consequent does not depend on the truth value of the antecedent proposition and if (ii) the speaker is not insecure about its content. CECs with positive evaluations are another reason to remain skeptical of this analysis: extending it to recommendations, permissions, or concessions with *A-reba ii* 'if …good/ok' faces the problem that their felicitous and truthful use would require that the epistemically most plausible ones among the A-worlds are all good/acceptable in the relevant sense. It is implausible, however, that giving a specific piece of advice or permitting a particular course of events presupposes that one counts on the addressee behaving in line with rules/goals on all other accounts. The lack of such a presupposition can be made explicit by overt restrictions against particular ways of carrying out A or against additional actions that might accompany A:

(25) *Tabe-reba i-i   yo. Demo osake o   mada   noma-na-*
     eat-COND good/ok-NPST SFP but   sake   ACC not.yet drink-NEG-
     -i-de kudasai.
     NPST-GER please
     'It's ok if you eat. But don't drink the sake, yet.'

Independently of such problems with positively evaluated antecedents, English constructions that bear a suspicious resemblence to Japanese CECs have been argued on both syntactic (Pullum 1987, Pesetsky 1991, Rocchi 2010) and semantic grounds (Grosz 2012) not to be hypothetical conditionals. Williams (1974:95) observes that (26) can be understood both as a standard hypothetical conditional (as in (26a)) and as describing my evalution of the hypothetical state of affairs of Bill being here ((26b), the ***nonlogical reading***). A similar distinction can be drawn for (27).[15]

(26) *I would be happy if Bill were here.*
     a. hypothetical conditional: 'If Bill were here I would be happy [*for some reason or other*]'
     b. nonlogical reading: 'If Bill were here I would be happy [*that Bill was here*]'
(27) *It would be good if Bill were here.*

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[15] Grosz (2012) argues that the paraphrases are not perfect for reasons similar to what I pointed out above for the hypothetical conditional construal of CECs: intuitively, the nonlogical reading rests on the actual criteria for goodness or happiness. The analysis developed in the following avoids the issue, and the paraphrases are close enough for current purposes.

    a. hypothetical conditional: 'If Bill were here *it*[↦ *the relevant situation*] would be good.'
    b. nonlogical reading: 'If Bill were here [*that Bill is here*] would be good.'

On the nonlogical reading, the *if*-clauses have been shown to behave more like argument clauses:[16] they seem to constitute the nonfactive version of *that*-complement clauses, cf. (28); they can appear in lexical argument positions, cf. (29); and they pattern with arguments rather than adjuncts for purposes of *wh*-extraction, cf. (30).[17]

(28) a. *It would be good [if John came to the party].*
    b. *It's good* [*that John will come to the party*.]

(29) *I would like if each email account showed in its own notification.*

<div align="right">Rocchi (2010:38)</div>

(30) a. *?*Which commitment$_i$ will Joe die [if we keep **t$_i$**]?*
    b. *Which commitment$_i$ would it be useful [if we kept t$_i$]?*

The logical structure that is claimed to underly nonlogical conditionals is therefore of the predicational form sketched in (31b).[18]

(31) a. *If* A, B.
    b. $[\![B]\!]^c([\![A]\!]^c)$

Despite the convincing syntactic arguments in favor of a structure like (31b), its compositional interpretation still remains to be worked out. Pullum (1987), Rocchi (2010), and Grosz (2012) consider their findings evidence for the existence of a 'third *if*' in English (in addition to conditional *if* and

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[16] Note that this discussion is complicated by recent theories that dispute the argument status of *that*-'complement' clauses, specifically Moulton (2009). While rejecting the assumption that *that*-clauses under attitude predicates are argument clauses, his analysis does not collapse them with conditional antecedents; his findings are therefore orthogonal to the split between hypothetical conditional and nonlogical conditionals.

[17] The literature on nonlogical conditionals also emphasizes failures of NPI licensing in nonlogical *if*-clauses. However, these arguments need to be re-evaluated in view of instances in which hypothetical conditionals fail to license NPIs, or where NPIs are licensed in the absence of downward monotonicity (see Heim 1984, Crnič 2014). For the purposes of this paper I will set aside NPIs.

[18] Independently of the literature on nonlogical conditionals, Fujii (2004) suggests the same structure for the compositional interpretation for the construction type of integrated clausal conditionals, i.e. what I refer to CECs. She does, however, not elaborate on any details of syntactic structure or compositional interpretation.

interrogative *if*). For Japanese, this would mean considerable doubling of the conditional connectives. Assuming ambiguity or polysemy of *if* is, however, not the only way to go. Alternatively to the standard quantificational analysis of *if*-clauses, Stalnaker (1968) proposes a referential treatment. This is defended for indicative conditionals specifically by Schein (2003) and Schlenker (2004). On such an account, conditional antecedents are assimilated to definite descriptions:

(32) If no such pluarlity/set is contextually salient, the expression is undefined, else:
  a. *the F* refers to the (salient) plurality/set of *F*-individuals.
  b. *if A* refers to the (salient) plurality/set of *A*-worlds.

For ordinary hypothetical conditionals, the predictions of the standard analysis are matched very closely: *if A* picks out the epistemically most plausible of the *A*-worlds and the consequent is predicated over this plurality by a distributive operator as schematized in (33):

(33) A hypothetical conditional *If A, (then) B*
  a. …has the logical form: '[[DIST *if A*] B]'.
  b. …is true iff $\forall w[w$ is an atom/element of $[\![if A]\!]^c \rightarrow w \in [\![B]\!]^c]$

For nonlogical conditionals, we can assume that the evaluative 'consequent' is a predicate over world-pluralities/sets and can apply directly to the referent of the *if*-clause (for future oriented uses, we can simply adopt Lassiter's (2017) proposal for *good A* as comparing expected utilities of *A* and ¬*A*).

   If the Japanese connectives and *if* are uniformly interpreted as referential, the distinction between hypothetical and nonlogical readings (or ordinary conditionals and CECs) comes out as parallel to the one between collective and distributive predications over definite descriptions, illustrated in (34).

(34) a. *The students are tired.*   distributive
   b. *The student gathered in the hall.*   collective

The theory sketched so far extends naturally to another relevant observation. The Japanese conditional markers discussed so far can co-occur with clause-initial *mosi*, which is then typically (also) glossed as *if* (cf. (35a) from Hasegawa 2015:229). However, *mosi* seems to be blocked in CECs, cf. (35b).

(35) a. *(Mosi) kono moosyo ga   asita   mo tuzuku nara,*
       if   this heat.wave NOM tomorrow also continue if

> *eakon   wa   kowareru daroo.*
> air.conditioner TOP break   COP.CNJ
> `If this heat wave continues tomorrow, the air condition will break down.'

   b. (**Mosi) *tabenakereba   naranai/dame da*.
      (if)   eat-NEG-REBA become-NEG-NPST/bad COP.NPST
      lit.: 'If you don't eat it doesn't work.'; ≈ 'You have to eat.'

On the assumptions sketched so far, we can explain the contrast as follows: *mosi* is like Kratzer's covert epistemic *must* or Gillies's quantificational *if* in that it expresses universal quantification. It combines with the referential antecedent and yields a predicate true of propositions if they are true at each point in the antecedent referent. [19] This, however, blocks collective predication as underlying CECs.

   In this section, I hope to have shown how treating logical conditionals and nonlogical conditionals (including Japanese CECs) as distributive and collective predications, respectively, derives plausible enough truth conditions. Moreover, it avoids a proliferation of ambiguous connectives and it receives independent motivation from contrasts with *mosi*.

4.2 Restricting CECs

As it stands, the theory sketched in Section 4.1 remains silent about what instantiations are impossible (---and more obviously so than the construction grammar analysis, which I criticized on these grounds in Section 3.2). Yet, I think that it holds much promise towards explaining possible restrictions. We have already seen a way of explaining the ban on *mosi* in CECs. In this section, I will argue that the theory is powerful enough to capture further types of restrictions as well.

   Firstly, consider *nara*, which is often taken to be generally infelicitous in CECs (e.g., Fujii 2004, Staniak 2012). Kaiser, Ichikawa, Kobayashi, and Yamamoto (2001), however, offer the example in (36) (without the material in parentheses), which looks like a reduced CEC that can be completed as indicated.

(36) *Kimi ga   koko ni   i-te   kure-ta   nara   (yo-kat-ta no ni)*.
     you NOM here DAT be-GER give-PAST NARA (good-PAST NO NI)
     'If you'd only stayed here.'

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[19] More needs to be said on the difference between hypothetical conditionals with and without *mosi*. For simplicity, we can assume that *mosi* replaces whatever encodes distributivity in them otherwise.

Crucially, (36) evaluates a (counterfactual) past state of affairs. Whether or not you stayed is settled at utterance time (in the sense of Thomason 1984, Condoravdi 2002), setting (36) apart from the CECs we have been considering so far. Hasegawa claims that 'the use of *nara* is appropriate only when P' [the antecedent] is verifiable but the speaker lacks such information.' This requirement could ban *nara* from any deontically or metaphysically flavored CECs which typically target states of affairs that are not yet settled (Zvolenszky 2002), but can be met in bouletic CECs like (36).[20]

Secondly, similarly to the role of *mosi* as triggering distributive predication, we could argue that some conditional connectives in themselves force an interpretation as hypothetical conditional. One possibility to implement this would be to give up on the uniformly referential analysis of conditional antecedents. We could maintain that some of the connectives are inherently quantificational (amounting to the same interpretation as a referential connective in combination with *mosi*). A solution along these lines would make the theoretically interesting prediction that referential and quantificational conditional antecedents coexist, something that, to the best of my knowledge, has not been advocated in the literature so far. Such a theory may, however, face challenges from combinations of *mosi* with markers that are claimed to be inherently quantificational themselves.[21] Alternatively, we could maintain a uniformly referential analysis of conditional antecedents (without *mosi*) and assume that some linkers need to restrict a quantificational operator (for instance, a covert or overt modal, or *mosi*). Working out either of the two strategies in detail lies beyond the scope of this paper, and I will in the following use 'quantificational' as a place holder for either of them (subsuming thus the possibilities that a marker is quantificational itself or that it has to introduce a restriction on a quantificational operator). With this, the paradigm of possible logical and nonlogical *reba*-conditionals can be predicted on the basis of the following three markers:

(37) -*(r)eba*-based conditional markers:

Marker	Conditional construal	Restriction on evaluation
-*reba$_1$*	quantificational	---

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[20] Example (36) leaves us with another puzzle, though. It can be combined felicitously (and without obvious change in meaning) with *mosi*, which might be considered evidence that it is not a CEC after all. For the moment, I will assume that the variant with and without *mosi* can constitute hypothetical and nonlogical conditionals, respectively, which in this case happen to be (almost) identical in interpretation. But this merits further exploration.

[21] Assumptions about stackings of epistemic modal operators like *believes that… must* may carry over.

-reba$_2$	referential	Positive
-nakereba	referential	Negative

This lexical set-up explains the pattern in (38). [22] (The full-fledged conditionals in (38a-c) should be read as descriptions of regularities in the mechanics of a computer screen, that is, the appearance of a blue dot is taken to be neither good nor bad.)

(38) a. (*Mosi*) *botan o   os-eba   ao-i   ten ga   sukuriin ni*
       if   button ACC press-(R)EBA blue-NPST dot NOM screen DAT
       araware-mas-u.
       appear-POL-NPST
       'If you press the button a blue dot will appear on the screen.' (*reba$_1$*)
   b. (*Mosi*) *botan o   osa-nake-reba   ao-i   ten-ga*
       if   button ACC press-NEG-(R)EBA blue-NPST dot-NOM
       sukuriin ni   araware-mas-u.
       screen   DAT appear-POL-NPST
       'If you don't press the button a blue dot will appear on the screen.'
                                                              (*reba$_1$*)
   c. *Botan o   osa-nak-ereba   nara-na-i.*
       button ACC press-NEG-(R)EBA become-NEG-NPST
       'If you don't press the button it won't become.'; 'You must press the button.'   (*nakereba*)
   d. **Botan o   os-eba   nara-na-i.*
       button ACC press-(R)EBA become-NEG-NPST
       int.: 'If you press the button it won't become.', 'You may not press the button.'
   e. *Botan-o   os-eba   i-i.*
       button-ACC press-(R)EBA good-NPST
       'Pressing the button is good/recommendable.'   (*reba$_2$*)

Connectives that do not correlate a restriction on the type of evaluation (negative: BAD, or positive: GOOD) with obligatorily quantificational construal can be captured with a single referential entry. Consider *-tewa*, which requires a negative evaluation in both hypothetical conditionals and CECs, and *temo* which is neutral in both hypothetical conditionals and

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[22] Full-fledged conditionals are predicted to involve structural ambiguities without truth-conditional effects: sentences with negation in the antecedent (like (38b)) could be parsed both as involving (i) negation in the antecedent and quantificational *–reba$_1$*, or else (ii) referential *-nakereba* and distributive predication over its referent; similarly, full-fledged conditionals with non-negated antecedents and positively valued consequents could involve *–reba$_1$* or *–reba$_2$*.

CECs.[23] *nara* differs from the other markers discussed in introducing the restriction that the antecedent be settled. This renders it incompatible with all CECs that do not express (potentially counterfactual) wishes (the possibility of negative evaluations remains to be tested).

(39) More conditional markers:

Marker	Conditional construal	Restriction on evaluation	Other restrictions
-te wa	Referential	negative	--
-te mo	Referential	--	--
nara	referential or quantificational	--	antecedent settled

Clearly, much work remains to be done to offer a full-fledged picture of what instantiations of (4) are acceptable and how CECs relate to hypothetical conditionals. Still, I hope to have given an idea of how to make a compositional account cover at least some of the restrictions observed.

5 Conclusions

In this paper, I have argued that the conversational functions of Japanese conditional evaluative constructions (CECs) are best derived from a functionally underspecified modal meaning. For the constructions that I have investigated in detail (*nakereba naranai/dame da*), a compositional interpretation following the apparent conditional make-up seems promising. Drawing on a referential analysis of conditionals and assimilating CECs to nonlogical conditionals yields plausible enough truth conditions in accordance with the make-up of the complex expressions. This type of account can capture the functional flexibility depending on both contextual setting and grammatical marking. Moreover, specific assumptions about the lexical entries of different conditional markers together with a limited amount of polysemy could be used to effectively derive restrictions on what are possible CECs.

Future research will have to show to what degree the compositional program can be made fruitful for the entire class of CECs. Specifically, it

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[23] While *temo* often co-occurs with *ii* to express possibility, it can occur with negative evaluations, provided that the additivity presuppostion introduced by *mo* is satisfied. Consider the following example, which Larm (2006) adopts from Niwa (2004):

(ii) *Hon o   mi-te   wa   ik-e-mas-en.   Otagai   soodan si-te   mo*
   book ACC look-GER TOP go-POT-POL.NEG each.other consult do-GER also
   ik-e-mas-en.
   Go-POT-POL.NEG
   '(You) must not look at the book. Also, (you) must not talk to each other.'

remains to be seen how reduced CECs (constructions lacking the evaluative consequent) can be included. Finally, it is worth pointing out that there is one aspect of conventionalization that I take to be firmly outside of the reach of the compositional program outlined: certain evaluative predicates feel 'more idiomatic' or 'more natural' than others and occur with significantly higher frequency (Fujii 2004, Narrog 2009). However, the distinction drawn by the compositional approach (and also by the construction grammar approach discussed in Section 3.2) is simply between constructions that are possible in principle, and others that are not. In view of the overall task of providing a model of the grammar of Japanese, I take it to be a sensible division of labor to separate the question of what is acceptable in principle from the question of what is to be found more frequently. This is not meant to negate, of course, that frequency effects are constantly reshaping what are perceived to be acceptable constructions and whether or not a compositional interpretation remains accurate for a given construction.

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