

Japanese Conditionals and Information Structure

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1. Introduction

One of the long-standing issues in Japanese linguistics has been the task of disambiguating the conditionals *-ba*, *-tara*, *nara*, and *to*². This has been difficult because, as Masuoka (1993) observes, these conditionals display “subtle differences in use” (*bimyō na tsukaiwake*) with one another, despite all having the same surface function of marking antecedents (1). In other words, though (1a)~(d) can be used to conditionally relate the same antecedent and consequent, they are not equally felicitous in all contexts.

(1)	(a)	Kōhī	ga	nakere ba	benkyō	ga	dekinai.
		coffee	GA	is.not:if	study	GA	can.do:NEG
	(b)	Kōhī	ga	nakatt ara	benkyō	ga	dekinai.
		coffee	GA	is.not:if	study	GA	can.do:NEG

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I introduce here other abbreviations used in the glosses in this essay. I use the labels FRML for auxiliary verbs, etc. expressing formality, CONJ for conjunctive forms of verbs and adjectives, and EMP for sentence final particles. I have also chosen to gloss the particles *wa* and *ga* as WA and GA, in order to avoid the debate on their grammatical v. information-structural functions (see Heycock 2008). All other abbreviations are taken from the Leipzig Glossing Rules.

² It should be noted here that these are not the only forms in Japanese by which conditional meanings can be expressed. As examples of other conditional forms in Japanese, Martin (1988) gives constructions using the gerund (*-tewa/-temo*), nominalizations (*no dewa/no demo*), and various others (552). However, it has been something of a tradition in the literature on Japanese conditionals to treat these four morphemes as a class together. I have elected to do the same, and accept any bias or inaccuracy resulting from this viewpoint as a limitation of the findings in this paper.

- (c) Kōhī ga nai **nara** benkyō ga dekinai.
 coffee GA is.not if study GA can.do:NEG
- (d) Kōhī ga nai **to** benkyō ga dekinai.
 coffee GA is.not if study GA can.do:NEG
- ‘If there’s no coffee, I can’t study.’

The above conditionals, in the sense that they display differences in felicity despite marking the same grammatical entity (antecedent), might be compared to *wa* and *ga*, two other Japanese morphemes which both can appear with subjects³, and which have also been taken to be in need of disambiguation in the literature. In the examples in (2a)~(d) from Kuno (1973), one of the first to take up this issue, John’s (semantic) subjecthood arguably does not change, but the sentences are not identical in terms of the contexts in which they are usable. ((2b) and (2c) are formally identical to Kuno’s examples but are adapted to have ‘John’ as subject.)

- (2) (a) Jon wa gakusei desu.
 John WA student to.be;FRML
 ‘Speaking of John, he is a student.’
- (b) Jon wa yonde imasu ga...
 John WA read:CONJ to.be.doing:FRML but
 ‘John is reading, but...’
- (c) Jon ga yonde imasu.
 John GA read:CONJ to.be.doing:FRML
 ‘John is reading.’⁴

³ *wa* and *ga* are not necessarily best defined as subject markers. In fact, they can appear with many entities that are not nominative subjects. It is in the cases where they both appear with nominative subjects, however, that the ‘need for disambiguation’ mentioned above is most obvious/apparent.

⁴ This is referred to as the ‘neutral description’ use of *ga* in Kuno (1973)’s terminology (38).

(d) Jon ga gakusei desu.
 John GA student to.be;FRML
 ‘It is John who is a student.’

(Kuno 1973: 38)

For the disambiguation of *wa* and *ga*, it has proved at least somewhat useful (see Heycock 2008) to look at the difference in terms of *information structure*—in other words, in terms of “the form of utterances in relation to assumed mental states of speakers and hearers” in the context of discourse (Lambrecht 1994: 3). This information structure is “not concerned with lexical and propositional content in the abstract *but with the way such content is transmitted*” in the context of communication (italics added) (Lambrecht 1994: 3). Examples of linguistic concepts that are traditionally taken to belong to this area of grammar in the literature include *topic*, *focus* and *contrastive topic*, as well as the *givenness* of items in discourse (see Krifka and Musan 2012).

The uses of *wa* and *ga* in (2a)~(d) can be differentiated to some extent according to such information-structural concepts. Vermeulen (2012) discusses the uses of *wa* in (2a) and (2b) as “roughly correspond[ing] to ‘sentence topic[...]’...[and] contrastive topic[...]”, respectively (198). Diesing (1988) attempts to describe the uses of *ga* in (2c) and (2d) respectively in terms of wide and narrow focus resulting from *ga*’s function as a focus marker, ascribing the wide focus reading of (2c) to focus projection (qtd. in Heycock 2008: 59-60). However, in the previous literature on the conditionals *-ba*, *-tara*, *nara*, and *to*, no one appears to have attempted an analysis from exactly this viewpoint.

In this paper, I hypothesize that information structure is responsible (at least in part) for the distribution of, and differences in felicity between, the conditionals *-ba*, *-tara*, *nara*, and *to*. Under this broad hypothesis, I propose separate narrow hypotheses for

the distribution of each of the conditionals with respect to the information structure of sentences. I seek to show how such hypotheses, broad and narrow, are supported by various findings in the previous literature on the Japanese conditionals. For reasons of space, I do not test these hypotheses with any analysis of natural language data. I do, however, attempt to show that an analysis of *-ba*, *-tara*, *nara*, and *to* based on information structure is worth pursuing in future research. In connection with this goal, I also review the approach outlined in Riester et al. (2018) for the analysis of information structure in natural language, and discuss its usefulness (specifically its limitations) as a tool for testing the hypotheses outlined above.

This paper is organized as follows. In section 2, I review definitions of information-structural concepts in the previous literature, as well as the approach to deriving the information structure of sentences in natural language data put forth in Riester et al. (2018). In section 3, I review previous literature relating to the grammatical and discourse functions of the Japanese conditionals *-ba*, *-tara*, *nara*, and *to*. In section 4, I present hypotheses on the distribution of the conditionals *-ba*, *-tara*, *nara*, and *to* with respect to the information structure of sentences. These are the ‘narrow hypotheses’ outlined under the ‘broader hypothesis’ mentioned above (that information structure is at least partially responsible the distribution of the conditionals in general). I argue that these broad/narrow hypotheses, if validated, would complement previous findings on the Japanese conditionals reviewed in Section 3. I leave the actual testing of these hypotheses to future research, for reasons of space. In section 5, I briefly discuss some issues with the approach presented in Riester et al. (2018) for the analysis of information structure in natural language, which will have to be answered in the future in order for there to be an

objective test of the hypotheses presented in this paper. Final conclusions are presented in section 6.

2. Information structure

The main concern of this paper, as defined above, is to propose that information structure is at least partially responsible for the distribution of the Japanese conditionals – *ba*, –*tara*, *nara*, and *to*. This proposal will obviously rely very heavily on how ‘information structure’ is defined and quantified; however, doing this is difficult, as many theoretical frameworks exist in the literature for understanding information structure. In addition, the linguistic concepts—including topic and focus, etc.—that have been taken to be the primary objects of the term ‘information structure’ have been defined differently by many different researchers over time. In this section, I review the definitions for these and other information-structural concepts proposed by Krifka and Musan (2012). I also review the approach put forth in Riester et al. (2018) for the derivation of information structure in sentences in language. The objectives of doing this are (1) to provide theoretical background for the reader to understand what kinds of patterns I hypothesize in the distribution of the Japanese conditionals and (2) to provide the definitional basis on which I construct those hypotheses in Section 4.

2.1. Definitions in Krifka and Musan (2012)

Krifka and Musan (2012) are concerned primarily with offering definitions for information structure and various concepts associated with it in the literature, based on historical discussion of how those concepts have understood by earlier researchers (Krifka and Musan 2012). They begin by introducing a model of linguistic communication based on the concepts of *common ground* and *information packaging*

(Krifka and Musan 2012: 1). Working in the context of this model, they construct definitions for information structure and for four categories which they take to fall under it, namely *focus*, *givenness*, *topic* and their own new category of *delimitation* (under which they include contrastive topics and frame setters) (5). Here, I review their definition of information structure in the context of their model of communication, as well as their definitions for the concepts of *focus*, *givenness*, *topic* and *delimitation*.

Krifka and Musan (2012) posit that linguistic communication can be understood as “continuous change of the *common ground*, i. e., of the information that is mutually known to be shared in communication” (1). As examples of what this idea of common ground quantitatively means for language, they offer the sentences in (3).

(3) (a) I have a cat, and I had to bring my cat to the vet.

(Krifka and Musan 2012: 1) (underlining added)

(b) #I had to bring my cat to the vet, and I have a cat.

(Krifka and Musan 2012: 2)

The authors view the state of the common ground within the context of these sentences as being responsible for their pragmatic acceptability and/or unacceptability. In the authors’ analysis of (3a), the speaker’s use of the anaphor *my cat* in the second clause is acceptable because “its referent can be assumed to be salient in the common ground after the first clause [initially introducing the speaker’s cat] was uttered” (1). On the other hand, (3b) is odd because “the second sentence introduces the information that the speaker has a cat which is already present in the input common ground” (Krifka and Musan 2012: 2). In other words, the state of shared information between speaker and hearer (the common ground) affects the linguistic forms usable by the speaker.

It should be noted that, despite the strangeness of (3b), there is nothing informationally different between the sentences in (3)—they are both conjunctions of the same two clauses. But they are different in terms of their *information packaging*, a term which Krifka and Musan (2012) take from Chafe (1976), and define as “how information is presented, in contrast to the information itself” (1). According to the authors, the nature of linguistic communication is that “the common ground changes continuously, and information has to be packaged in correspondence with the current common ground” (2). In other words, the state of shared information between interlocutors affects how those interlocutors will present new information in the discourse. With this view of communication in the background, they define information structure as consisting of “aspects of natural language that help speakers to take into consideration the addressee’s current information state, and hence to facilitate the flow of communication” (1).

Krifka and Musan (2012) offer some clarifying comments on what the common ground should be understood to consist of theoretically. In addition to propositions, they further outline *discourse referents*—that is, “entities that have already been introduced into the common ground previously”—as also being part of the common ground (3). These may be expressed by a variety of lexical items, such as indefinite/definite noun phrases and pronouns (Krifka and Musan 2012: 3). Furthermore, they make an important terminological distinction between *common ground content*, or “the truth-conditional information of the common ground” (4), and *common ground management*, which they define as “[the] dimension of the common ground...concerned with the way in which the common ground content should develop” (4). Questions, in that they “indicate informational needs on the side of one participant that should be satisfied by a

conversational move of the other”, are considered to be an example of this common ground management (Krifka and Musan 2012: 4). Common ground content and common ground management are both taken to be shared by participants in conversation, although “the responsibility for [the latter] may be asymmetrically distributed among participants” (Krifka and Musan 2012: 4-5).

Another important concept that Krifka and Musan (2012) discuss in their model of communication is the *accommodation* of new information (presuppositions) by interlocutors (2). As an example of this they offer the sentence in (4), presumably in a discourse-initial context.

(4) I had to bring my cat to the vet because it was sick.

(Krifka and Musan 2012: 2)

In a discourse-initial context, this sentence differs from the one in (3a), where the speaker first introduces the fact that they have a cat into the common ground before using the anaphor *my cat* (see Krifka and Musan 2012: 1). However, even though in a discourse-initial use of (4) there is no introduction of the fact that the speaker has a cat into the common ground, (4) is not necessarily considered unusual or rejected by hearers when uttered at the beginning of a discourse. Krifka and Musan (2012) ascribe the acceptability of (4) to the hearer’s ability to *accommodate* the new information that the speaker has a cat; they outline that “if a piece of information cannot be interpreted with respect to the current common ground, then the current common ground can minimally be changed in a way that it fits the requirement of the piece of information”, and refer to this change with the term ‘accommodation’ (2). However, Krifka and Musan (2012) also note that not all new information can be equally subject to accommodation, offering the sentence in (5) as

a case where it would be more difficult to accommodate the speaker's message than in (4) (2).

(5) I had to bring my gorilla to the vet because it was sick.

(Krifka and Musan 2012: 2)

Krifka and Musan (2012) extend the concept of accommodation not just to new information (common ground content) but also to common ground management, which in their discussion can be accommodated through certain uses of contrastive topics (30). I will return to the latter case when I review their discussion of contrastive topics.

I now return to the 'aspects of natural language' Krifka and Musan (2012) consider under the term 'information structure', which include the concepts of *focus*, *givenness*, *topic* and *delimitation* (5). The rest of the authors' work is spent constructing definitions for these concepts based on reviews of how earlier researchers have understood them. I briefly review their definitions for these concepts in this order.

Krifka and Musan (2012) begin with their discussion of *focus*, which they understand through the definition in (6) (for which they credit Rooth (1985) and (1992)):

(6) Focus indicates the presence of alternatives that are relevant for the interpretation of linguistic expressions.

(Krifka and Musan 2012: 7)

As an example of this indication of alternatives, the authors suggest the sentence in (7), where "the verb *married* is focused and hence indicates alternatives to marrying someone – like, for instance, carrying someone, beating someone, or meeting someone" (7). The authors note that "alternatives play a role in language all the time...[and that in (7)] there are also alternatives to John as well as alternatives to Sue that are relevant for the

interpretation of the sentence”, but that these alternatives do not have the same role in the interpretation of (7) that the focused verb does (7).

(7) John [MARried]_F Sue.

(adapted from Krifka and Musan 2012: 7)

The authors compare their definition with previous understandings of focus in the linguistic literature as “highlighting the most important or new information in an utterance”, which they take to be inaccurate (17). They note that both ‘highlighting’ and ‘importance’ lack clear theoretical definitions (17). Arguing further against the use of ‘importance’ as a measure of focus, they point out that, in the sentence in (8), “the most important thing [may be argued to be] the fact that someone else stole the cookie”, and not necessarily John, even though John is in focus (17).

(8) It wasn’t JOHN who stole the cookie.

(Krifka and Musan 2012: 17)

They argue further that the newness of information is not an accurate measure of focus, as “[t]here are many cases in which a constituent that refers to something mentioned previously is in focus”, as in the example in (9) (17).

(9) A: Who stole the cookie, John or Mary?

B: JOHN stole the cookie.

(Krifka and Musan 2012: 18)

Krifka and Musan (2012) then take up *givenness* as a concept of information structure. They begin with the general definition of givenness as “the indication that the denotation of an expression is present in the immediate common ground content” (21). As an example of how givenness influences linguistic form they give the sentences in

(10a)~(b). They point out that, in the case of (10a), “the second occurrence of the indefinite noun phrase *a suitcase*... cannot refer to the same entity as the first one, [but] coreference is acceptable in [the case of (10b)] with the definite noun phrase” (22).

(10) (a) *There was [a suitcase]₁ on the street. John carried [a suitcase]₁ inside.

(b) There was [a suitcase]₁ on the street. John carried [the suitcase]₁ inside.

(Krifka and Musan 2012: 22)

The authors note that a linguistic definition of givenness must also account for the activatedness, or lack thereof, of discourse referents in the memory of speakers (22). As another parameter by which the givenness of items in discourse can vary, they note the fact that “if [a] discourse referent has been mentioned in the linguistic context of an utterance, [it] might have happened in the sentence right before, or... several sentences earlier” (22). They conclude that “[a] definition of givenness must be such that it allows for saying that an expression is given *to a particular degree*” (italics added), and attempt to encode this scalar quality of givenness in the definition in (11) (22).

(11) A feature X of an expression α is a givenness feature if X indicates whether the denotation of α is present in the common ground or not, and/or indicates the degree to which it is present (its *saliency*) in the immediate common ground.

(Krifka and Musan 2012: 22)

As examples of linguistic means of expressing givenness, the authors list “specific anaphoric expressions that have givenness features as part of their lexical specification, and other grammatical devices such as deaccentuation, ordering, and deletion” (22).

The authors then direct their attention to the concept of *topic*. They identify that, when viewed “[i]n terms [of] communication, topic is the entity that a speaker identifies, about which information, the comment, is then given” (27). According to them, this view of topic “presupposes that information in human communication and memory is organized in such a way that it can be said to be ‘about’ something” (27). They note that this property of aboutness “does not follow from a general definition of information”, citing “relational databases...[and] sets of possible worlds” as examples of bodies of information whose elements do not have to be in an aboutness relationship (27). The authors then bring up the view of topic in Reinhart (1982), who according to them “integrate[s] this [aboutness-based] notion of topic into a theory of communication that makes use of the notion of common ground” (27). For Reinhart (1982), “new information is not just added to the common ground content in the form of unstructured propositions, but is...associated with entities...[in the same way that] information in a file card system is associated with file cards that bear a particular heading” (Krifka and Musan 2012: 27). As an example of how this ‘entity association’ is realized in language, the authors offer the sentences in (12a)~(b), where (12a) “should be stored as information about Aristotle Onassis, whereas...[(12b)] should be stored as information about Jacqueline Kennedy” (27).

(12) (a) [Aristotle Onassis]_{Topic} [married Jacqueline Kennedy.]_{Comment}

(b) [Jacqueline Kennedy]_{Topic} [married Aristotle Onassis.]_{Comment}

(Krifka and Musan 2012: 27)

Krifka and Musan therefore propose that topic be understood according to the definition in (13), which they adapt from Reinhart (1982)’s ‘file-card’ theory of topic (27):

(13) The topic constituent identifies the entity or set of entities under which the information expressed in the comment constituent should be stored in the common ground content.

(Krifka and Musan 2012: 28)

The authors view the sentences in **(12a)~(b)** as “packag[ing] the same information differently” in the sense of information packaging discussed above, and claim that “topic/comment structure is a[n information] packaging phenomenon” (29). They do note, however, that in their model of communication, “[information] packaging must respond to the temporary (recent) common ground”, and that topic choice is not necessarily constrained by a need to respond to the current common ground (29). For example, the authors bring up the following sentence in **(14)** as an utterance at the beginning of a conversation, from speaker A to speaker B (29):

(14) A: Did you know? John married last week.

(adapted from Krifka and Musan 2012: 29)

The authors claim that “[t]his is an assertion about John...[and] the information will be entered in the file card for John in the common ground content of [speakers] A and B” (29). They note that in cases like this, the choice of topic “does not necessarily relate to the recent state of the common ground content...[and] can also respond to the long-term state”, which in this case may consist of speaker B’s interest or concern with John (29). Under the strict definition of information packaging as relating to the temporary/current state of the common ground, topic and comment “fail to be information structure” in the strictest sense in Krifka and Musan (2012)’s view (30). They do note, however, that “topic choice often does respond to properties of the temporary information state”, noting

that in passages of discourse the topic generally remains constant across utterances (that is, forms *topic chains*) (29-30).

Krifka and Musan (2012) make some other clarifications on how the concept of topic should be understood. They note that, in the terminology of the Prague School, topic “is called ‘theme’ and conflated with...old information” in discourse (28). Krifka and Musan (2012), on the other hand, argue against associating topic with old information (28). They claim that “even if in most cases, topic constituents are ‘old’ in the sense of being inferable from the context...there are certainly cases of new topics” in discourses (28). Second, though the definition of topic given by Krifka and Musan (2012) in (13) specifically refers to a *topic constituent* in a sentence, they do make explicit that “sentences may have no topic constituent at all, under which condition they are called *thetic*, following Marty (1884)” (29). As an example of a *thetic* sentence they offer (15):

(15) [The HOUSE is on fire!]_{Comment}

(adapted from Krifka and Musan 2012: 29)

They note of (15) and sentences like it, however, that “while they lack a topic constituent, they do have a topic denotation, typically a situation that is given in the context” (29).

Finally, the authors describe cases where sentences have multiple topics (29). They describe that “sentences with two or more topics are possible when a relation between two file cards is expressed”, as in the sentence in (16) (29).

(16) As for Jack and Jill, they married last year.

(Krifka and Musan 2012: 29)

As a way of dealing with this sentence within the ‘file-card’ theory of topic, the authors propose “introduc[ing] a new file card that contains information concerning both Jack and Jill” (29).

Lastly, the authors discuss the category of *delimitation*, which they newly introduce and define as “indicat[ing] that the current conversational move does not satisfy the local communicative needs totally” in the context of discourse (5). They offer the following definition for delimitators (linguistic devices expressing delimitation):

- (17) A Delimitator α in an expression [... α ... β_{Focus} ...] always comes with a focus within α that generates alternatives α' . It indicates that the current informational needs of the common ground are not wholly satisfied by [... α ... β_{Focus} ...], but would satisfy it by additional expressions of the general form [... α' ... β'_{Focus} ...].

(Krifka and Musan 2012: 33)

As one example of this kind of device, they offer *contrastive topic* (5). Contrastive topics “consist of an aboutness topic that contains a focus...indicat[ing] alternative aboutness topics”, as in the example in (18) (Krifka and Musan 2012: 30). According to the analysis of the authors, in (18) “focus on *sister* indicates an alternative to the topic *my sister*, namely, *my brother*” (30).

- (18) A: What do your siblings do?
 B: [My [SISter]_{Focus}]_{Topic} [studies MEDicine]_{Focus}, and [my [BROther]_{Focus}]_{Topic} is [working on a FREIGHT ship]_{Focus}.

(Krifka and Musan 2012: 30)

Contrastive topics usually “indicate that the current clause does not deliver all the information that is expected” (Krifka and Musan 2012: 30). The authors note that contrastive topics are “often f[ound]...to indicate a strategy of incremental answering in the common ground management” in discourse (30). They view their example in (18) as an example of this ‘incremental answering’, where a broad issue (represented by the question *What do your siblings do?* in the example) is divided into sub-issues (30). The authors note further that contrastive topics can be used to accommodate common ground management, as in (19) (30). They analyze (19) as having a “contrastive topic [which] accommodates a more general question, *Who was where?*” (30).

(19) A: Where were you (at the time of the murder)?

B: [[I]_{Focus}]_{Topic} [was [at HOME]_{Focus}]_{Comment}

(Krifka and Musan 2012: 30)

The authors make it clear, however, that contrastive topics are also used “in cases in which the idea of a questioning strategy [like the ones in (18) and (19)] is not easily applicable”, giving (20) as an example (30).

(20) A: Does your sister speak Portuguese?

B: [My [BROther]_{Focus}]_{Topic} [[DOES]_{Focus}]_{Comment}

(Krifka and Musan 2012: 31)

The authors state of the answer in (20) that it “does not satisfy the expectations expressed in the question...[and] indicates that the assertion, while the best one to be made, may not satisfy all needs” (30-31). Overall, in cases where contrastive topics are used, “the current common ground management contains the expectation that information about a more

comprehensive, or distinct, entity is given...[and] contrastive topics indicate that the topic of the sentence diverges from this expectation” (Krifka and Musan 2012: 32).

Krifka and Musan (2012) further include *frame setters* under the category of delimiters (5). They give (21) as an example of these.

- (21) A: How is John?
 B: {Healthwise/As for his health}, he is [FINE]_F.

(Krifka and Musan 2012: 31)

It has been noted in the literature that “[f]rame setting...is often not clearly differentiated from aboutness topic” (Jacobs 2001 qtd. in Krifka and Musan 2012: 31). The authors do make a distinction between frame setters and topics, however, in their analysis of (21); they argue that “statements like [(21)]...should not be entered under a file card about the health situation”, referencing the file-card model of topic outlined above (31). The authors note that it is common to analyze “adverbials like *healthwise*...[in (21) as] frame setters that set the frame in which the following expression should be interpreted” (31). They clarify this characterization of the frame-setting function of *healthwise* in (21) by saying that “[(21)] contain[s] an evaluative predicate (*fine*) that is unspecified with respect to the dimension of evaluation (financially, healthwise, spiritually etc.)...[and it can be] assum[ed] that it is the task of the frame-setting adverbial [(*healthwise*)] to specify that dimension” (31). They also note, however, that there are some cases of frame setters (as in (22)) that avoid this characterization (31).

- (22) As for his health situation, he had a bypass operation recently.

(Krifka and Musan 2012: 32)

Considering cases like (22) together with the others discussed above, Krifka and Musan (2012) suggest that frame setters “systematically restrict the language (the notions that can be expressed) in certain ways...[that is, n]otions like *he won a lot of money* cannot be interpreted in the scope of *healthwise*, and notions like *he is doing fine* [when expressed with frame setters] have to be restricted to the indicated dimension” (32). They define frame setters as “choos[ing] one out of a set of frames and stat[ing] that the proposition holds within this frame” (32). The authors identify that “*alternative* frames play a role” in the example in (21), and therefore conclude that “explicit frame setters are always focused in the sense of [their definition of focus reviewed above]” (32). The authors claim that, in cases where alternatives are irrelevant, there is no need to have an explicit frame setter; in other words, “explicit frame setters always indicate alternatives” (32). The authors identify that frame setters “relate to common ground management, as they imply that there are other aspects for which other predications might hold” (32). Based on this, they view frame setters as “similar to contrastive topics...as they too split up a complex issue into sub-issues” (32). The authors finally conclude with respect to frame setters that, when they are used, “the current common ground management contains the expectation that information of a different, e.g., more comprehensive, type is given, and the frame setter indicates that the information actually provided is restricted to the particular dimension specified” (32).

The authors note of the definition for delimitation in (17) that “no reference is made to (aboutness) topic or frame setting...[which enables it to apply in] cases like [(23)] that do not plausibly belong to either category” (33).

(23) [An [inGENious] mathematician]_{Delimitator} he is [NOT]_{Focus}.

(Krifka and Musan 2012: 33)

In the analysis of the authors, the sentence in (23) “suggests that alternative statements like *He is a mediocre mathematician* hold” (33). The authors observe that, in uses of both contrastive topics and frame setters, there is always a focused element outside of the delimitator (33). It is important to note here that the definition in (17) (for delimitators in general, not only contrastive topics and frame setters) also demands that there be some focused element (β_{Focus}) outside of the delimitator (α) (see Krifka and Musan 2012: 33).

2.2. Questions Under Discussion (QUD) approach: Riester et al. (2018)

Riester et al. (2018) are concerned with establishing a method for deriving the information structure of sentences in natural language (403). They posit that “for any assertion contained in a text...there is an implicit Question Under Discussion (QUD)” which determines the information structure of that assertion, including which elements are focused and not focused, etc. (403). They outline rules for the derivation of QUDs based on the discourse context surrounding each assertion, and make explicit how the information structure of assertions can be reconstructed from their QUDs (403). Their approach results in the reorganization of discourses into ‘QUD trees’, where assertions form the terminal nodes and are dominated by the implicit QUDs and/or explicit questions they answer (404-405). They analyze examples from natural language data in French, German, and English with their method to illustrate how it works (403)⁵. I review the steps of their method for deriving the information structure of assertions, as well as

⁵ For all non-English examples in Riester et al. (2018), I borrow the glosses of the authors.

the formalism with which they annotate their information structure and arrange them into QUD trees.

The approach in Riester et al. (2018) begins with the identification of individual assertions in discourse (408). Complex sentences displaying coordination (using *and*, *or*, *but* etc.), both at clause level and NP-/VP-level, are split into separate assertions (each coordinate becomes an assertion) (Riester et al. 2018: 408-409). Idiomatic instances of coordination (as in *nuts and bolts*) and cases of coordinate elements not in focus are exceptions to this process—they are not considered to constitute independent assertions (Riester et al. 2018: 410). The authors explicitly “assume that [in cases of conjunction] each conjunct has an illocutionary force on its own”; the reasoning behind ignoring idioms and non-focal cases of coordination appears to be to single out only those coordinates which have illocutionary force as assertions (409). Subordinate clauses are not treated as separate assertions at this point in the annotation process (410).

The next step in Riester et al. (2018)’s approach is to derive implicit QUDs for each assertion not answering an explicit question (411). I begin with their treatment of discourse-initial assertions, which are treated differently than other assertions with regards to QUD formulation and which occupy a unique place in the QUD tree structure. The root node of the QUD tree, or alternately “the initial question of a text [which the first assertion answers] should always be the so called ‘Big Question’ *What is the way things are?* (alternatively: *What is going on?* or *What happened?*)” according to the authors (415). There are some cases in which a more specific question can be assumed for discourse-initial assertions (415-416). An example is in (24), in which the authors view the assertion as containing a presupposition trigger that licenses the implicit QUD in

Q_{0.1} (416). However, this more specific QUD is dominated by the “Big Question” (*What happened?*), which always constitutes the root node in the authors’ framework (see Riester et al. 2018: 416). The authors also mention that analysts may use the morphosyntactic patterns of discourse-initial assertions to establish narrow QUDs when the pragmatic effects of those patterns are already well known (415).

I describe here some notational conventions in Riester et al. (2018), which I will go into more depth about later in this section. Implicit QUDs are represented in curly brackets ({}) (Riester et al. 2018: 412), and indentation with the ‘>’ symbol indicates domination in the tree structure (412-413). Assertions and the questions they answer are given matching indices (412).

- (24) Q₀: {What happened?}
 > Q_{0.1}: {When did everything begin?}
 >> A_{0.1}: C’est le 5 janvier que tout a
 it.is the 5 January that all has
 commencé.
 begun
 (Riester et al. 2018: 416)

For all assertions in general, the authors posit that QUDs should be derived according to the three principles in (25)~(27) (411-413):

- (25) **Q-A Congruence:**
 QUDs must be answerable by the assertion(s) that they immediately dominate. (Riester et al. 2018: 411)
- (26) **Maximize-Q-Anaphoricity:**

Implicit QUDs should contain as much given material as possible. (Riester et al. 2018: 412)

(27) Q-Givenness:

Implicit QUDs can only consist of given (or, at least, highly salient) material. (Riester et al. 2018: 413)

To show how these principles work in singling out the appropriate QUD for an assertion, the authors refer to the example in **(28)**, where *What about you?* is determined to be the appropriate QUD for the second assertion (414). In the authors' discussion of **(28)**, Maximize-Q-Anaphoricity rules out the overly general QUD *What happened?*, which “does not include any given material” from the preceding assertion (412), and Q-Givenness rules out the QUD *Who were you working for last summer?* which introduces new material, leaving only *What about you?* as the appropriate QUD (414).

- (28)** A: Edward Snowden is, in the meantime, a household name for the whistleblower in the age of the internet.
- Q: *What happened?* (fails Maximize-Q-Anaphoricity)
- Q: *What about you?*
- Q: ~~*Who were you working for until last summer?*~~ (fails Q-Givenness)
- A: You [=Snowden] were working until last summer for the NSA.
- (adapted from Riester et al. 2018: 412)

In the authors' framework, questions “mak[ing] use of material given in the immediately preceding assertion...will attach as...sister node[s]” to that assertion in the QUD tree (413). When there is no given content available to integrate an upcoming assertion into the discourse, the authors consider that “the writer or speaker is randomly switching to a

completely different topic...[and this should be represented in the analysis by] the return to the root node of the tree” (413). Finally, in the authors’ approach, anaphoric expressions that refer to the same discourse items are interchangeable within QUDs; this is presumably because what is of concern for the authors is the informational function of those items in conversation (whether they are in focus or not, etc.) and not the anaphors by which speakers identify them in conversation (see Riester et al. 2018: 414).

The authors make clarifications on what “highly salient” should be interpreted to mean in the definition of Q-Givenness. Riester et al. (2018) define salience as “[the] active presence [of a word] in the addressee’s mind right before its actual occurrence in the text” (414). In their discussion, knowledge of situational context can determine when certain items are salient for speakers in a discourse (414-415). The authors, however, note that it is difficult to accurately measure when something is salient, and caution against liberal use of the concept of salience in QUD analyses (415), although they do posit that “all function words and very general concepts like, *status*, *name*, *event*, or *property*, may always be used in the formulation of a QUD” as they are abstract enough to always be salient (414). Finally, with regards to the ability of their framework to accurately formulate QUDs, Riester et al. (2018) note that that “[their] approach is conservative and will in some cases assume a question that is too wide [but] never one that is too narrow” (416).

Parallel structures, where “a QUD is answered by a series of structurally analogous assertions”, are considered an exception to Q-Givenness, and are treated differently with respect to QUD formulation (Riester et al. 2018: 418). Assertions are considered to be in parallel when “they contain semantic-pragmatically

identical...material and one syntactic position in which they differ” (Riester et al. 2018: 419). Riester et al. (2018) posit that in these cases “the constant material [in parallel assertions] must re-occur inside the QUD, while the alternating parts of the assertions correspond to the wh-word in the QUD” (419). As an example they give (29), where in the analysis of Riester et al. (2018), the material in ‘you can wire tap’ is identical across assertions A_{15.1}’ and A_{15.1}” and therefore included in the QUD Q_{15.1}, even though it is not given in the prior discourse (and therefore would ordinarily violate Q-Givenness) (419).

Here I introduce another layer of Riester et al. (2018)’s formal conventions. Asterisks (*) next to numbers show the assertion’s order with respect to other assertions in the parallel structure (Riester et al. 2018: 419). Subnumbering is used to show the entailment by superquestions of subquestions (Riester et al. 2018: 422-423). I will cover the latter in more detail later.

- (29) A₁₄: and then you realize the power you have.
- Q₁₅: {What power do you [*i.e. the employees of the NSA*] have?}
- > Q_{15.1}: {Whom can you wire tap?}
- >> A_{15.1}’: You can wire tap the President of the United States,
- >> A_{15.1}”’: you can wire tap a Federal Judge (...)

(adapted from Riester et al. 2018: 419)

The case Riester et al. (2018) discuss in (29) involves assertions differing in the instantiation of only one variable while the other material is identical (419). However, they extend this treatment of parallel assertions to cases like (30) where “two (or more) assertions...are contrasted against each other at two different positions” (Riester et al. 2018: 422). In this case the parallel content allows for the analysis of a superquestion-

subquestion structure (see Riester et al. 2018: 422). (The various bracketings, tilde mark (~), ‘CT’, ‘T’ and ‘F’ are part of the authors’ formalism for annotating information structure (see Riester et al. 2018: 441). I have included them in this example and will explain them in detail later).

- (30) A₀: In many countries, as in America, too, the agencies like the NSA
are not allowed to spy within their own borders on their own
people.
- Q₁: {Who can spy on whom?}
- > Q_{1.1}: {Who can the Brits spy on?}
- >> A_{1.1}: So [[the Brits,]_{CT} for example, [they]_T can spy on [everybody but
the Brits]_F~
- > Q_{1.2}: {Who can the NSA spy on?}
- >> A_{1.2}: but [[the NSA]_{CT} can conduct surveillance [in England.]_F~
- (Riester et al. 2018: 422)

The subnumbering between Q₁ and Q_{1.1}/Q_{1.2} is meant to show “that [the questions] stand in an *entailment relation*...mean[ing] that any answer to the sub-questions is, at the same time, a (partial) answer to the super-question” (Riester et al. 2018: 422).

Riester et al. (2018) then show how the information structure of assertions can be derived once their QUDs have been established (417). The authors view all assertions as “contain[ing] an obligatory focus and an optional background” (417). The focus is identified with “that part of an assertion that answers its respective QUD” and is labeled in brackets with a subscript ‘F’ (417). The background “corresponds to the lexical material already present in the QUD” and in some cases may be empty (417). The

combination of the focus and background together is referred to as the focus domain, which excludes “discourse connectors...such as *and*, *or*, *but*, *although*, etc...[as well as] discourse particles (like *even* or *also*)” and is put in brackets with a tilde mark ([~]) (Riester et al. 2018: 419). The authors also suggest that the label of *aboutness topic* (labeled in brackets with a subscript ‘T’) be given to “distinguished discourse referent[s] identifying what the sentence is about” in the background of assertions (417). These must be referential in the authors’ framework. Another information-structural category to be annotated is *contrastive topic* (labeled in brackets with a subscript ‘CT’), which occurs in parallel structures like the one in (30) (Riester et al. 2018: 422). The authors note of (30) that “[the] question [of] whom agencies can spy on...is...not answered directly but broken down into partial answers about smaller parts or elements of the...[larger] term” ‘*who*’, namely ‘*the Brits*’ and ‘*the NSA*’, and it is these smaller parts that the authors move to label as contrastive topics (422). Contrastive topics are technically defined as “represent[ing] the instantiation of a variable within the background” of an assertion (422). In the context of (30), what this concretely means is that “the *contrastive topics* [of (30)] are *backgrounded* with respect to the subquestions $Q_{1.1}$ and $Q_{1.2}$ but behave like *foci* with respect to the higher question Q_I ” (Riester et al. 2018: 422). Contrastive topics do not need to be referential in the authors’ framework, although they can be (422).

Assertions analyzed under the authors’ framework will occasionally contain “optional information that does not contribute to [their] truth or falsity” (Riester et al. 2018: 428). Riester et al. (2018) separate these from the focus domain and label them as *non-at-issue material* (428), marking them in the annotation with subscript ‘NAI’ (429). Non-at-issue material is understood as “[t]he parts of a clause that do not answer

the current QUD” (Riester et al. 2018: 428), and is formally identified with the definition in (31):

(31) Non-at-issue material (relative to Q):

An expression X whose denotation is discourse-new and which is contained in an assertion A is non-at-issue with respect to the current QUD Q iff X is optional with respect to Q, where optional means that under deletion of X, A is still an answer to Q.

(Riester et al. 2018: 428)

The authors identify supplements and evidentials as carriers of non-at-issue content (429). Riester et al. (2018) posit that “it can be assumed that [non-at-issue material] has an information structure of its own,” but do not provide any means to analyze this information structure (431). They do, however, take sentence-final cases of non-at-issue material to be an exception, and analyze them as their own assertions, as in (32) (431). In (32), A₂₇ is non-at-issue with respect to Q₂₆, but gets its own question (Q₂₇) as it is sentence-final.

(32) Q₂₆: {Who was among those named in the Panama Papers?}

> A₂₆: [Among those named (in the Panama Papers) were (...) [Mr Gunnlaugsson,]F]~

> Q₂₇: {Who was Mr Gunnlaugsson?}

>> A₂₇: [then [the prime minister of Iceland]F]~

(Riester et al. 2018: 431)

3. Japanese conditionals in grammar and discourse

In this section, I review some of the literature on the grammatical and discourse functions of the Japanese conditionals *-ba*, *-tara*, *nara*, and *to*. It is far beyond the scope of this paper to survey the entire body of literature on these conditionals, as much has been written on them from many different perspectives. The studies that I review here are only relevant for the formulation of hypotheses regarding the information-structural distribution of the Japanese conditionals. I first review Masuoka (1993), who gives an overview of the relative differences in meaning across the four conditionals. I then review Kawabata et al. (2017), who look at the discourse functions of the conditionals *-ba*, *-tara*, and *to* in conversational corpus data.

3.1. Relative characteristics of the conditionals: Masuoka (1993)

Masuoka (1993) is mainly concerned with identifying the central meanings of, and nature of the relative differences between, the conditionals *-ba*, *-tara*, *nara*, and *to* (1-2). This involves discussion of the kinds of events (sentences) each conditional can relate, and the nuances that result in those usages relative to other conditionals taking the same events. Here, I review the observations he makes about each conditional. I first review his accounts of the basic meanings of *-ba* and *-tara*. I then review his discussion of the ‘expansion of usage’ (*yōhō no kakuchō*) of *-ba* to express relationships between events typically related by *-tara*. I conclude with review of his accounts of *nara* and *to*.

3.1.1. *-ba* according to Masuoka (1993)

The main meaning of *-ba* in Masuoka (1993)’s account is that it expresses a general cause-and-effect relationship, independent of time, between the events in the antecedent and the consequent (2). *-ba* expresses the speaker’s understanding of the relationship (*as a whole*) of general dependence between the two events, as opposed to

expressing something about the events individually (Masuoka 1993: 2). As an example of this general cause-and-effect relationship he gives the sentences in (33a)~(b). Masuoka (1993) argues that, because the sentence final expression *mono da* (which expresses the property or characteristic of something being talked about) can be added to (33a) and other examples of *-ba* that he gives, it stands as evidence that the antecedent and consequent are in a general cause-and-effect relationship together (3).

(33) (a) Chiri mo tsumoreba yama to naru.
 dust even pile.up:if mountain COMP becomes
 ‘When dust piles up, it becomes a mountain.’

(Masuoka 1993: 2)

(b) Chiri mo tsumoreba yama to naru mono
 dust even pile.up:if mountain COMP becomes truism
 da.
 to.be.
 ‘(It is a truism that) when dust piles up, it becomes a mountain.’

(Masuoka 1993: 3)

Masuoka (1993) notes that *-ba* expresses how events are related naturally to one another, as opposed to how some instantiation(s) of those events in reality are (3). He notes that because of this characteristic, sentence-final expressions of modality in *-ba* sentences are limited to those that express the judgment of the speaker towards the truth or falsity of the sentence (3). Masuoka (1993) considers that, when a predicate containing *da* becomes the antecedent of a conditional sentence, the form corresponding to *-ba* is expressed with *nara*, as shown in (34) (3). He considers this appearance of *nara* to be of a different kind than the one he discusses (and which I review below) (3).

(34)	Kōtsū	ga	benri	nara,	chika	wa
	transport	GA	convenient	if	price.of.land	WA
	takaku		naru.			
	high:CONJ		become			

‘If transportation is convenient, the price of land goes up.’

(Masuoka 1993: 3)

3.1.2. *-tara* according to Masuoka (1993)

Masuoka (1993) considers the central meaning of *-tara*, in contrast with *-ba*, to be the expression of a dependence relationship between two individual events (3). Specifically, in uses of *-tara*, an individual event instantiated in space/time is expressed in the antecedent, and the consequent introduces another individual event which relies on the instantiation of the antecedent event for its realization (Masuoka 1993: 3-4). He outlines two subclasses of uses of *-tara* based on the sense in which they are ‘instantiated’ in this definition. The first of these he refers to as the ‘pre-realization’ use of *-tara*, for which he provides example (35) (4). In such ‘*pre-realization*’ uses, the individual event expressed in the antecedent is expected to take place eventually with the passage of time (Masuoka 1993: 4).

(35)	Benkyō	o	honkakuteki	ni	hajimetara	sugu
	study	ACC	earnest	CONJ	begin.if	immediate
	ni	wakaru	to	omou	kedo	ne.
	CONJ	understand	COMP	think	but	EMP

‘I think you’ll understand (it) immediately when you start studying seriously, though.’

(Masuoka 1993: 4)

This use of *-tara* is different than uses like the one in (36), which Masuoka (1993) characterizes as the use of *-tara* to express *hypothetical (unreal) events* in the antecedent (4). In these cases, it is unclear whether the individual event in the antecedent will be realized or not, and the sentence expresses what will happen in the case that the antecedent event is realized (Masuoka 1993: 4-5).

- (36) li hito ga itara gaibu kara mo iretai.
 good person GA to.be:if outside from even let.in:want.to
 ‘If there are good people, (one) wants to let them in from outside as well.’
 (Masuoka 1993: 4)

Masuoka (1993) notes that, in ‘pre-realization’ uses of *-tara*, only stage-level predicates can appear, where both stage- and individual-level predicates can appear in the ‘hypothetical’ use (5). He ascribes this to the fact that individual-level predicates do not express changes, and therefore do not fit in with the ‘pre-realization’ use, which as described above involve the expectation that an event will *take place* (meaning, change will happen) in the future (5).

Outside of these subclasses, Masuoka (1993) notes that *-tara* has also a counterfactual use (shown in (37)) and a use expressing realized states (shown in (38)) (6).

- (37) Moshi ano toki mō sukoshi shirabete
 by.chance that time more a.little search:CONJ
 itara, konna machigai wa shinakatta darō.
 to.have.done:if this.kind mistake WA to.do:NEG:PST to.be:VOL
 ‘If I had searched a little more then, I probably wouldn’t have made this kind of mistake.’

(Masuoka 1993: 6)

- (38) Basu o oritara, kao o shikametaku
 bus ACC get.off:if face ACC grimace:want.to:CONJ
 naru you na atsusa datta.
 become likeness is heat to.be:PST
 ‘When I got off the bus, it was hot enough to make you want to grimace.’
 (lit. ‘it was a heat like (the kind) one wants to grimace.’)

(Masuoka 1993: 7)

Masuoka (1993) notes also that *-tara* does not have the same restrictions on sentence-final modality expressions that *-ba* has (6). He notes that *-tara* may take modal expressions of judgment of truth, volition, wish, and request (6).

3.1.3. ‘Expansion of usage’ of *-ba*

Masuoka (1993) notes that, between *-ba* and *-tara*, there are cases where the two are interchangeable in terms of meaning (7). He moves to view these cases from the perspective of ‘expansion of usage’ (*yōhō no kakuchō*)—that is, in terms of the adaption of given grammatical forms to usages originally expressed by other grammatical forms (7). He notes of both *-ba* and *-tara* that there are instances in which they have been adapted to the other’s usages in this way (7). However, in his study, he restricts himself to focusing only on cases involving the use of *-ba* in usages associated with *-tara* (7). Here, I review his discussion of the ‘expansion of usage’ of *-ba* to usages associated with *-tara*.

Masuoka (1993) characterizes the ‘expansion of usage’ of *-ba* into *-tara* in terms of the ability to use *-ba* to express individual events instantiated in space/time (7-8). He looks at both the ‘pre-realization’ and ‘hypothetical’ uses of *-tara* and investigates the

extent to which *-ba* can replace them, starting with the ‘pre-realization’ use of *-tara* (8).

As examples of this ‘pre-realization’ use, he considers the sentences in (39) and

(40a)~(b):

(39) Ashita ni nattara, kekka ga wakaru.
 tomorrow LOC become:if result GA know
 ‘When tomorrow comes, (we) will know the result.’

(40) (a) Kono shigoto ga katazuitara, mina
 this work GA be.taken.care.of:if everyone
 kyūka wo toru darō.
 leave ACC take to.be:VOL
 ‘When this work is taken care of, everyone will probably take leave.’

(b) ?Moshi kono shigoto ga katazuitara,
 by.chance this work GA be.taken.care.of:if
 mina kyūka wo toru darō.
 everyone leave ACC take to.be:VOL
 ‘When this work is by chance taken care of, everyone will probably take leave.’

(Masuoka 1993: 8)

Masuoka (1993) notes that between the antecedents in these two sentences, (39) is a certainty that must happen with the passage of time, whereas (40a) does not have to have the same level of certainty (8). He notes of (40a) that, because it supposes that the event in the antecedent (the work being completed) will happen in the future, it can’t include the adverb ‘*moshi*’, expressing hypothetical supposition, as in (40b) (8).

Masuoka (1993) then looks at the *-ba*-versions of the same sentences, given in (41) and (42a)~(b).

(41) Ashita ni nareba, kekka ga wakarū.
 tomorrow LOC become:if result GA know
 ‘When tomorrow comes, (we) will know the result.’

(42) (a) Kono shigoto ga katazukeba, mina
 this work GA be.taken.care.of:if everyone
 kyūka wo toru darō.
 leave ACC take to.be:VOL

‘If this work is taken care of, everyone will probably take leave.’

(b) Moshi kono shigoto ga katazukeba,
 by.chance this work GA be.taken.care.of:if
 mina kyūka wo toru darō.
 everyone leave ACC take to.be:VOL

‘If this work is by chance taken care of, everyone will probably take leave.’

(Masuoka 1993: 8)

Masuoka (1993) concludes that (41) and (39) are not different (8). On the other hand, he claims that (42a) contrasts with (40a) in that, where (40a) using *-tara* presumes that the antecedent event will eventually happen (the work will be completed in the near future), the one in (42a) using *-ba* does not have the same presumption, and may even carry the nuance that it is unclear whether the antecedent event will happen/the work will be completed (8). He notes that as a result of this, the sentence with *-ba* can take the adverb of hypothetical supposition ‘*moshi*’ as in (42b) (8). Masuoka (1993) proposes from these facts that *-ba*, when used to express individual events as *-tara* does, has a strong

tendency to express ‘hypothetical’ uses over ‘pre-realization’ ones (8-9). He argues that the use of *-ba* to express ‘pre-realization’ uses is limited to cases like the one in (41) where the realization of the antecedent event is certain (9).

Masuoka (1993) further notes that *-ba* may be used where *-tara* is used in the ‘hypothetical’ use described above (9). This includes both antecedents with stage-level predicates (as in (43)) and individual-level predicates (Masuoka 1993: 9). The use of *-ba* in ‘hypothetical’ uses also includes counterfactual sentences like the one in (44) (Masuoka 1993: 9).

- (43) Moshi wareware ni hantai sureba, anata
 by.chance us LOC oppose to.do:if you
 o yaburu tame ni AIPAC wa ugoku
 ACC defeat purpose CONJ AIPAC WA move
 darō.
 to.be:VOL
 ‘If you oppose us, AIPAC at least will likely move to neutralize you.’

- (44) Sensei ga ikite orarereba, kyō
 teacher GA live:CONJ to.be.doing;FRML:if today
 kono subarashii ensō o kiite
 this excellent performance ACC hear:CONJ
 itadaketa no desu ga...
 have.do;FRML:PST COMP to.be;FRML but
 ‘If our teacher were still alive, we could have received the favor of his/her hearing today’s splendid performance, but...’
 (Masuoka 1993: 9)

Masuoka (1993) concludes from the above facts that *-ba* is essentially limited to expressing ‘hypothetical’ uses when replacing *-tara* (10). He ascribes this limitation to the conceptual difference between the ‘cause-and-effect’ relationship observed in the main use of *-ba* and the sequential temporal relationship observed in the ‘pre-realization’ use of *-tara* (10). He finally notes that there are differences in the extent to which the usage of *-ba* has ‘expanded’ to include usages associated with *-tara*, seen in restrictions on sentence-final modality expressions in stage-level predicate antecedents (10). He notes that only modal expressions of judgment of truth can appear in those cases where the antecedent contains a stage-level predicate (10). On the other hand, when the antecedent consists of a individual-level predicate, the sentence does not have this restriction, and has the same options for modality expressions that sentences with *-tara* do (Masuoka 1993: 10-11).

3.1.4. *nara* according to Masuoka (1993)

Masuoka (1993) characterizes the basic usage of *nara* as expressing the speaker’s judgement or attitude in the consequent, on the basis of the material presented in the antecedent (12). In uses of *nara*, the antecedent material serving as the basis for the speaker’s statement of judgement/attitude in the consequent is assumed to be true, and the statement in the consequent is made on the basis of that assumption (Masuoka 1993: 12). The actual judgment of whether the antecedent material is true or not is deferred (Masuoka 1993: 12). Masuoka (1993) notes of the antecedent and consequent in *nara* usages that they are more mutually independent than in usages of *-ba* and *-tara* (13-14).

Masuoka (1993) gives three kinds of examples of usages of *nara*. The first kind he gives consists of examples where the antecedent contains something borrowed from

the context the utterance is made in, such as the previous statement of another interlocutor as in (45) (12). The second kind consists of examples where the speaker themselves presents some material in the antecedent to serve as the basis for hypothetical discussion (see example (46)) (Masuoka 1993: 13). Finally, *nara* may also express counterfactual sentences (as in (47)) (Masuoka 1993: 13).

(45) A: Watashi wa uso wa tsuite inai.
 I WA lie WA say to.be:NEG
 ‘I have not told any lies.’

B: Uso de nai nara yameru hitsuyou wa
 lie to.be:CONJ is.not if resign need WA
 nai no de wa nai ka.
 is.not COMP to.be:CONJ WA is.not Q
 ‘If (it’s) not a lie, isn’t it the case that you don’t have any need to resign?’
 (Masuoka 1993: 11)

(46) Kuroachia, Surobenia ryōkyōwakoku ga
 Croatia Slovenia both:republic GA
 heiwatekikōshō de dokuritsu wo jitsugen suru
 peaceful:negotiation by independence ACC realize to.do
 nara shōnin suru...
 if approve to.do
 ‘If both the Croatian and Slovenian republics realize independence through peaceful negotiations, then (we) approve...’
 (Masuoka 1993: 12)

(47) Mō sukoshi hayaku kara torikunde ita
 more a.little early from work.on:CONJ to.be.doing:PST

nara, kijitsu made ni ma ni atta darō.
 if deadline until CONJ time LOC meet:PST

‘If I had been working on (it) starting from a little earlier, I probably
 would have made it before the deadline.’

(Masuoka 1993: 13)

Masuoka (1993) notes that in the case of counterfactual usages, it is already decided that the antecedent is false, which makes them different from the other usages of *nara* (where the judgment of the antecedent’s truth is deferred); however, he claims that they can still be understood in terms of *nara*’s basic characteristics, in that the consequent expresses the speaker’s judgment given the supposition in the antecedent (13).

3.1.5. *to* according to Masuoka (1993)

According to Masuoka (1993), *to* expresses that two events are linked in a sequential relationship where one is realized after the other (14). It expresses the ‘oneness’ of the two events in this relationship (Masuoka 1993: 14). Its main use is to refer to events existing in reality (Masuoka 1993: 14). However, it also has usages where it can refer to unrealized events (Masuoka 1993: 15). Masuoka (1993) notes that *to*, in that it is concerned with events observed in reality, contrasts with *-ba*, which expresses the speaker’s understanding of how events are naturally related (as reviewed in Section 3.1.1) (14). Regarding this distinction between *to* and *-ba*, he discusses the example in (48).

(48) Konna hi ni soto e deru to nurete
 this.kind day LOC outside LOC go.out if get.wet:CONJ
 shimau.
 happen.irreversibly

‘If (you) go out on a day like this, (you’ll) get wet.’

(Matsushita 1930 qtd. in Masuoka 1993: 14)

Matsushita (1930) claims that, in terms of meaning, *-ba* is ‘theoretical’ and *to* is ‘realistic’ (qtd. in Masuoka 1993: 14). Matsushita (1930) argues that in (48), it is not an issue whether there is a reason for one to get wet, and the fact observed in actuality that one will get wet if one goes out is what is relevant (qtd. in Masuoka 1993: 14).

Masuoka (1993) discusses *to*’s use in expressing real events and its use in expressing unrealized events (mentioned above) in order. I begin with his discussion of *to*’s use in expressing real events. Masuoka (1993) subdivides uses of *to* to express real events into two subcategories (14). In the first of these, the antecedent represents a single individual event (14-15). An example of this is in (49). The latter category consists of two repeatedly observed events about which a generalization is made (15). This is represented by the example in (50).

(49) Kenkyūshitsu ni modotte kuru to Arisugawa
 research:room LOC return:CONJ come if Arisugawa
 shūnin kyōjyu kara denwa ga kakatte
 chief professor from phone.call GA being.made:CONJ
 kita.
 come:PST

‘When (I) returned to the study, a phone call came from chief professor Arisugawa.’

(Masuoka 1993: 14)

(50) Tarō wa sake o nomu to uta o utau.
 Tarō WA alcohol ACC drink if song ACC sing

‘Tarō sings songs when he drinks alcohol.’

(Masuoka 1993: 15)

Masuoka (1993) then turns to uses where *to* expresses unrealized events. According to Masuoka (1993), these uses are characterized by the expression in the antecedent of an event that is predicted or feared to be realized, and the expression in the consequent of another event that will be realized along with the antecedent event (16). An example of this is given in (51). In cases where it is not entirely certain that the antecedent will be realized, the meaning becomes more hypothetical and the adverb of hypothetical supposition ‘*moshi*’ can be used, as in (52) (Masuoka 1993: 16).

(51) Te o hanasu to, abunai yo.
 hand ACC release if is.dangerous EMP
 ‘If you let go, it’s dangerous.’

(52) Moshi ima, Sorenkei Yudayajin no shukkoku
 by.chance now Soviet:type Jews GEN emigration
 o shien shinai to, karera wa mō nido
 ACC support to.do:NEG if they WA more second.time
 to dete korarenaku naru kara.
 COMP come.out:CONJ come:can.do:NEG:CONJ become because
 ‘If by chance, we don’t support the emigration of the Soviet Jews now,
 they will not be able to leave ever again.’

(Masuoka 1993: 16)

Masuoka (1993) argues, however, that the use of *to* to express unrealized events is only a derivative of its main characteristics (16). He cites that, as seen in the sentence in (53), *to* cannot express counterfactuals (16).

- (53) *Mō sukoshi hayaku kara torikunde iru
 more a.little early from work.on:CONJ to.be.doing
 to, kijitsu made ni ma ni atta darō.
 if deadline until CONJ time LOC meet:PST

‘If I had been working on (it) starting from a little earlier, I probably would have made it before the deadline.’

(Masuoka 1993: 16)

Furthermore, Masuoka (1993) notes that when *to* is used to express unrealized events, the nuance that the antecedent event is likely to be realized is stronger than when *-tara* is used in the same way (16). As an example of this he compares the sentence in (54) with the one in (51) (where *to* is used) (16):

- (54) Te o hanashitara, abunai yo.
 hand ACC release:if is.dangerous EMP

‘If you let go, it’s dangerous.’

(Masuoka 1993: 16)

Masuoka (1993) argues that (51) (using *to*) conveys the nuance that the hearer is likely to let go more strongly than (54) (using *-tara*) does (16-17). He ascribes this to the fact that, even when expressing unrealized events, *to* has a strong connection with events in reality (17).

3.2. Discourse functions of Japanese conditionals: Kawabata et al. (2017)

In contrast with previous research, which they characterize as having been focused on constructed data, Kawabata et al. (2017) are concerned with explicating the discourse functions of the Japanese conditionals—that is, “how [they] are actually (vs. theoretically) used” in the context of conversation (92). The authors adopt the view of

conditionals put forth in Ford and Thompson (1986) that “conditional clause[s] function[...] as constructing a framework for the subsequent conversation...[and are] worked as shared knowledge” between speakers (Kawabata et al. 2017: 92). Looking at how the conversational uses of the Japanese conditionals fit in with this view, the authors analyze conditional sentences in data from the Japanese Map Task Dialogue Corpus, in which *giver* participants instruct *follower* participants to draw a specific route (92). In this data, the authors observe the kind of content in both the antecedent and consequent clauses, and whether the content of antecedent clauses “appears in conversations prior to their usages” (92). As a result of these observations they “propose updated explanations about [the] discourse functions [of the Japanese conditionals]” (93). Here, I go over the distributions they observe for the conditionals *-ba*, *-tara*, and *to*, as well as their description of the discourse functions of those conditionals. *nara* is “omitted...from analyses, because it [is] used infrequently” in their data set (95).

The authors first start with the raw number of occurrences for each conditional in the data, looking at both giver and follower utterances, and including uses of the conditionals in “conjunctive phrases...[such as] ‘so-si-TARA’, ‘TARA’, ‘so-suru-TO’, ‘NARA’” and others (93). This first look at the data is expressed in **Figure 4.1** taken from the authors.

Conditional:	Conditional uses		Conjunctive uses		Total
	Giver	Follower	Giver	Follower	
<i>-tara</i>	120	12	195	11	338
<i>to</i>	115	24	47	20	206
<i>-ba</i>	20	53	0	0	73

<i>nara</i>	2	1	8	0	11
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Figure 4.1. Uses of conditionals to express conditional and conjunctive clauses

(adapted from Kawabata et al. 2017: 94)

The authors make some observations about the frequencies of conditionals observed in this table. They first note that “TARA and TO were used more frequently than the other two particles [and] NARA was least likely to be used” (93). With regards to *-ba*, the authors note that “the proportion of [its] usage...by followers relative to that by givers was noticeably high as compared with other particles” (93). Out of this raw data set, the authors exclude *nara* sentences and conjunctive uses of the conditionals, leaving only “data associated with TARA, TO and BA that were used as normal (i.e., non-conjunctive) clauses” (93-94).

The authors then look at this remaining data in terms of (1) the kind of content in the antecedent and consequent and (2) whether the content of the antecedent had previously occurred in the discourse (92). They begin by creating four distinct classifications for the content of conditional clauses: namely *direct route description*, *hypothetical action*, *change in a point of view*, and (*self*) *questioning* (94). They also include the category of ‘other’ for conditional sentences whose antecedents cannot be put into any of these and do not discuss those sentences (94). The authors give the labeling of *direct route description* to “[c]lauses that included descriptions of route without any hypothetical actions nor changes in points of views” (94). Antecedents expressing *hypothetical action* “included information that can be used to complete the task but [which, with regards to such information,] the followers were not assumed to take any action...[as in the sentence] ‘if you go straight toward north and find a bakery, then you

are at the correct location” (94). Antecedents expressing *change in a point of view* “suggested...changing viewpoint[s]...[as in the sentence] ‘if you look at the whole map, then the bakery is located at the east side’” (94). Conditional usages also came up in instances when “participants asked other participants as well as themselves...[questions like] ‘how I should say.’ [and] ‘what should I do.’”, and the authors put these kinds of antecedents under the label of (*self*) *questioning* (94). The kinds of content occurring in conditional antecedents by conditional are shown in **Figure 4.2**.

Conditional	<i>Direct route description</i>	<i>Hypothetical action</i>	<i>Change in a point of view</i>	<i>Questioning</i>	Other
<i>-tara</i>	108 (72%)	5 (4%)	3 (2%)	13 (10%)	3 (1%)
<i>to</i>	82 (59%)	21 (15%)	35 (25%)	0 (0%)	1 (0%)
<i>-ba</i>	53 (73%)	1 (1%)	4 (5%)	14 (19%)	1 (0%)

Figure 4.2. Content of antecedents in non-conjunctive usages of *-ba*, *-tara*, and *to*

(adapted from Kawabata et al. 2017: 94)

The authors note of the data in **Figure 4.2** that “[p]articipants used only TARA or BA for *questioning* clauses, while they almost exclusively used TO for *hypothetical action* and *change in a point of view* clauses” (94).

The authors also look at whether the content of antecedents carrying *direct route description* information had previously occurred in discourse for each conditional (*-ba*, *-tara*, and *to*) (94). Their data is shown in **Figure 4.3**.

Conditional	Giver			Follower		
	Previously occurring	Not previously	Total	Previously occurring	Not previously	Total

		occurring			occurring	
<i>-tara</i>	92	10	102	6	0	6
<i>to</i>	40	29	69	12	1	13
<i>-ba</i>	1	5	6	38	9	47

Figure 4.3. Previously occurring usages of *-ba*, *-tara*, and *to* within *direct route description* antecedents (adapted from Kawabata et al. 2017: 94)

They note that “[p]articipants tended to use TARA and/or BA in clauses in which their contents have already appeared in previous conversations...[and] TO in clauses in which their contents have not appeared in previous conversations” (sic) (94).

Kawabata et al. (2017) then create four more distinct classifications for the type of content carried by *consequents* in the data, namely *next action*, *consequence*, *assessment*, and *map information*, as well as the category of ‘other’ for outliers in the same way as before (94). The authors assign the label of *next action* to those sentences where “the content of a main clause indicated a next action that a giver wanted...its follower to take” (94). They give the sentence in (55) as an example of this kind of consequent.

(55) Sagarimashitara, kondo daitai mata gosenchi
 go.down:FRML:if this.time approximately again five:centimeter
 gurai hidari ni itte kudasai.
 around left LOC go:CONJ IMP
 ‘When you go down, this time go around 5 centimeters to the left again.’

(adapted from Kawabata et al. 2017: 92)

The authors give the label of *consequence* to sentences where “the content of a main clause indicated a consequence of a proper action suggested by a conditional clause”, giving the sentence in (56) as an example (94).

- (56) Massugu ue ni yuku to kita no numa
 directly.straight up LOC go if north GEN pond
 no mannaka atari ni tsukiatarimasu yo ne.
 GEN direct.center area LOC run.up.against:FRML EMP EMP
 ‘If you go straight up, you run up against the middle area of the northern
 pond, don’t you?’

(adapted from Kawabata et al. 2017: 92)

Consequents categorized under the term *assessment* in the authors’ framework “[were] used to confirm or ask whether the followers was in the correct location” (sic), as in the sentence in (57) (94).

- (57) Tekkyō o watareba ii n desu yo
 iron.bridge ACC cross:if good COMP to.be:FRML EMP
 ne.

EMP

‘All I have to do is cross the iron bridge, right?’

(lit. ‘If I cross the iron bridge, it’s okay, right?’)

(adapted from Kawabata et al. 2017: 92-93)

The authors finally give the label of *map information* to those sentences where “the content of a main clause only included information about the map” (94).

Kawabata et al. (2017) then look at the distribution of these types of consequents across *-ba*, *-tara*, and *to* by antecedent type (94-95). They start with sentences that have *direct route descriptions* in their antecedents. The number of sentences of each consequent type by conditional for sentences with direct route description antecedents is shown in **Figure 4.4**.

Conditional	Previously occurred?	<i>Next action</i>	<i>Consequence</i>	<i>Assessment</i>	<i>Map information</i>	Other
<i>-tara</i>	Total	82	10	0	0	2
	Previously occurring	71	8	0	0	2
	Not previously occurring	11	2	0	0	0
<i>to</i>	Total	3	68	0	2	1
	Previously occurring	2	39	0	2	1
	Not previously occurring	1	29	0	0	0
<i>-ba</i>	Total	0	1	47	0	0
	Previously occurring	0	0	34	0	0
	Not previously occurring	0	1	13	0	0

Figure 4.4. Consequents of *direct route description* antecedents, by conditional (adapted

from Kawabata et al. 2017: 95)

The authors note of this data that “[t]he main clauses of...TARA were most likely to indicate next actions...the main clauses of...TO were most likely to indicate consequences...[and t]he main clauses of...BA...were most likely to indicate assessments” (94). They note further that these trends were observed irrespective of the antecedents having appeared previously in discourse (94).

The authors then look at the distribution of consequents across antecedents expressing *hypothetical action* and *change in a point of view*, respectively shown in **Figures 4.5** and **4.6**.

	<i>Next action</i>	<i>Consequence</i>	<i>Assessment</i>	<i>Map information</i>	<i>Other</i>
<i>-tara</i>	2	2	1	0	0
<i>to</i>	0	18	0	0	0
<i>-ba</i>	0	1	0	0	0

Figure 4.5. Consequents of *hypothetical action* antecedents, by conditional (adapted from Kawabata et al. 2017: 95)

	<i>Next action</i>	<i>Consequence</i>	<i>Assessment</i>	<i>Map information</i>	<i>Other</i>
<i>-tara</i>	1	0	0	0	0
<i>to</i>	4	1	0	23	3
<i>-ba</i>	0	1	0	2	2

Figure 4.6. Consequents of *change in a point of view* antecedents, by conditional (adapted from Kawabata et al. 2017: 95)

The authors observe that, in cases where *to* expressed *hypothetical action* in the antecedent, the consequent “almost exclusively indicated *consequence*” (94). They also observe that, where *to* expressed change in a point of view in the antecedent, the consequent “[was] most likely about *map* information” (94-95). Finally, the authors note that when antecedents are used to express (*self*) *questioning* in their data, the consequents invariably belong to the *assessment* category (95).

Based on the patterns discussed above, the authors move to define the discourse functions of *-ba*, *-tara*, and *to* (95). They posit that *-tara* is used in cases where “developing a mutual belief about *completing* (or completing a simulation of) the action mentioned in the conditional clause enhances comprehension of the content of the main clause...[t]hat is TARA sets the *consequence* of the action mentioned in the conditional clause as the context for the main clause” (95). The authors argue that in uses of *-tara* “the consequences of the actions mentioned in conditional clauses were assumed to be mutually understood”, citing the fact that many of the consequents in uses of *-tara* belonged to the *next action* category (95). They posit that *to* is used in cases where “developing a mutual belief about *executing* or *simulating* the action mentioned in the conditional clause enhances comprehension of the main clause...[t]hat is TO sets *executing* or *simulating* the action mentioned in the conditional clause as the context for the main clause” (95). In support of this they cite the fact that many of the consequents in uses of *to* belonged to the *consequence* category, and claim that “if [participants] did assume that actions [in the antecedent] were completed, then it seems there was no need to describe consequences [of those actions] in the main clauses” (96). Finally, they posit that *-ba*’s discourse function is to “make[...] the context for the main clause vague or

uncertain” (95). They point out that many of the main clauses where *-ba* was used belonged to the *assessment* category and required the evaluation of the listener, and argue that “performing, simulating, or completing action [as with *-tara* and *to*] is not necessarily assumed before an evaluative main clause [in uses of *-ba*], because evaluation would be performed after uttering the main clause” (96).

4. Hypotheses on the information-structural distribution of conditionals

In this section, I make hypotheses about the distribution of the Japanese conditionals *-ba*, *-tara*, *nara*, and *to* with respect to the categories of information structure discussed in Section 2. These hypotheses correspond to the narrow hypotheses outlined in Section 1, under the broader hypothesis that information structure is a conditioning element of the distribution of the Japanese conditionals. I propose that the hypotheses I make in this section are supported by findings about the Japanese conditionals in the previous literature reviewed in Section 3. I do not, however, make any effort to prove the hypotheses in this paper; they will need to be tested rigorously in future research. First, in section 4.1, I argue that conditional antecedents in general have the ability to be delimiters. Then, in section 4.2, I hypothesize regarding *-ba* that it may appear in two information-structural environments: either (1) marking antecedents in narrow focus or (2) in complex sentences where both antecedent and consequent are in wide focus. I also hypothesize that *-ba* cannot be a delimiter. In section 4.3, I hypothesize regarding *nara* that it is a delimiter in the sense outlined in section 4.1. Lastly, in section 4.4, I hypothesize regarding *-tara* and *to* that they are delimiters in the sense outlined in section 4.1, and that antecedents marked with *to* are more salient in discourse than those marked with *-tara*.

Before I enter into the details of the hypotheses for each conditional, I must first clarify one point about the definitions for information-structural concepts applied in this section. So far, I have looked at the definitions in two different authors for concepts of information structure: those of Krifka and Musan (2012) and Riester et al. (2018). Based on the literature review in Section 2, these two frameworks do not appear to be hugely at odds with each other on the surface. It might even be claimed that, for some concepts of information structure, their definitions overlap or say the same thing. Nonetheless, they are different frameworks, and so it is possible that there are theoretical or definitional incompatibilities between the two authors at some level. It is beyond the scope of this paper to investigate whether and in what areas these theoretical incompatibilities exist. It is also beyond the scope of this paper to independently propose any new definitions for information structural concepts where those of the above authors may lack. In formulating the hypotheses in this section, I have only referred to the definitions in Krifka and Musan (2012) and Riester et al. (2018) covered in Section 2. I have attempted to be explicit about which authors' definition of 'focus' I consider in each definition, etc. in the formulation of each hypothesis.

4.1. Conditional antecedents as delimiters

Before I offer hypotheses for the information-structural distribution of each of the conditionals, I suggest in this section that it is possible for conditional antecedents in general to have a delimiting function in the sense of Krifka and Musan (2012) as reviewed above. It has been discussed in the syntactic literature on conditionals that they exhibit a "formal parallelism with *yes/no* questions" (Haegeman 2010: 601). Haegeman (2010) illustrates this parallelism with the sentences in (58a)~(d).

- (58) (a) I asked him if he had said that he would leave.
 (b) If he had said that he would leave, (...)
 (c) Had he said that he would leave?
 (d) Had he said that he would leave, (...)

(Haegeman 2010: 601)

Haegeman (2010) notes that *if* expresses both embedded yes/no questions and conditionals, as in (58a) and (58b) respectively (601). She also notes that the T/C movement observed in the formation of the yes/no question in (58c) “may be used to derive a conditional clause” as in (58d) (601). This structural parallelism leads Arsenijević (2009) to argue that “[c]onditionals are analyzed as yes-no relative clauses, restrictive clauses in which the truth value of a proposition is restricted...[where t]he proposition represented by the conditional clause restricts the set of worlds compatible with the proposition represented by the head clause” (qtd. in Lipták 2009 qtd. in Haegeman 2010: 602).

When viewed in this way, conditional antecedents (which limit the set of worlds where the proposition in the consequent is true) can be compared to frame setters as discussed by Krifka and Musan (2012) (see section 2.1). Recall that Krifka and Musan (2012) describe frame setters as “choos[ing] one out of a set of frames and stat[ing] that the proposition holds within this frame” (32). Frame setters and conditional antecedents, then, appear to be alike in that they both limit the truth of the proposition to the dimension or set of worlds they express. Krifka and Musan (2012) view frame setters as an example of delimitation as, when they are used, “the current common ground management contains the expectation that information of a different, e.g., more

comprehensive, type is given, and the frame setter indicates that the information actually provided is restricted to the particular dimension specified” (32). They describe frame setters as “imply[ing] that there are other aspects for which other predications might hold” (32). It is possible that conditional antecedents could be used in conversation in the same restricting or delimitating way as frame setters. That is, a speaker in a discourse may use a conditional clause to restrict the truth of their proposition to one set of situations, and in such an event they may want to suggest that in alternate situations other propositions are true. Later, in sections 4.3 and 4.4, I will hypothesize that *nara*, *-tara* and *to* are delimitators in this sense. In the next section, however, I present my hypotheses regarding *-ba*. There I will also argue that *-ba* cannot be a delimitator in this sense.

4.2. *-ba*

I hypothesize that *-ba* can appear in two different information-structural environments, namely (1) with antecedents in narrow focus and (2) with both antecedent and consequent in wide focus, where ‘focus’ is to be interpreted in the sense of Riester et al. (2018) as reviewed in Section 2.2. That is, with uses of *-ba* either the antecedent or the antecedent and consequent together are to be understood as the answer to the *wh*-word in some explicit or implicit QUD, as per Riester et al. (2018)’s definition of focus (see Riester et al. 2018: 417). The findings in Masuoka (1993) support this interpretation. As reviewed in Section 3.1, Masuoka (1993) crucially notes that *-ba* expresses the speaker’s understanding of the relationship of general dependence *itself* between two events (as opposed to expressing something about the events individually) (2), and that *-ba* expresses how events are related naturally to one another, as opposed to how some

instantiations of those events in reality are (3). If the antecedent or antecedent and consequent together are in focus with uses of *-ba* (and therefore answering the *wh*-word in the current QUD), this interpretation would make sense, as it would mean that the statement that the antecedent follows from the consequent (logically, that $p \rightarrow q$) is what is most relevant for communication in the assertion. Masuoka (1993)'s description of the meaning of *-ba* also allows us to make the hypothesis that it does *not* express delimitation in the sense outlined in Section 4.1. If we assume that, by using a conditional antecedent as a delimitator, a speaker in a discourse wants to express that other propositions are true in worlds where their antecedent (*p*) does *not* hold, then their communicational concern is not with the relationship of $p \rightarrow q$ itself, which is what *-ba* expresses.

The hypothesis that *-ba* occurs with antecedents under either narrow or wide focus is also supported by the findings of Kawabata et al. (2017). As reviewed in Section 3.2, Kawabata et al. (2017) propose that the discourse function of *-ba* is to “make[...] the context for the main clause vague or uncertain” (95). Recall also that, in their analysis of the discourse functions of Japanese conditionals, they adopt the view in Ford and Thompson (1986) that “conditional clause[s] function[...] as constructing a framework for the subsequent conversation...[and are] worked as shared knowledge” between speakers (92). If antecedents expressed with *-ba* are ‘vague’ or ‘uncertain’ in terms of how they provide the context for communication that belongs to such ‘shared knowledge’, this may be because they don’t serve as the context but instead are the new or relevant part of the sentence in the context of discourse—which may be the focus. Of course, as covered in Section 2.1, Krifka and Musan (2012) warn that newness is a

“statistical correlation[...and] not [a] definitional feature[...] of focus” (18). But if the antecedent is the answer, or part of the answer, to the *wh*-word in a QUD as in Riester et al. (2018)’s approach, it would make sense why their status as conversational framework is described as ‘vague’ by Kawabata et al. (2017).

4.3. *nara*

I hypothesize that *nara* is a delimitator in the sense outlined in Section 4.1—that is, that speakers may use it to suggest that when the antecedent does not hold, other propositions (or potential consequents) may be true. Masuoka (1993)’s description of *nara* supports this hypothesis. As reviewed in Section 3.1, Masuoka (1993) describes that the antecedent material is assumed to be true and used as the basis for the consequent, and that the actual judgment of the truth of the antecedent is deferred (12). However, he also notes that *nara* can express counterfactuals (where it is already known that the antecedent is false) (13). Masuoka (1993) rationalizes this by arguing that the basic characteristics of *nara*—the supposition of the truth of the antecedent, and the speaker’s judgment based on that supposition in the consequent—still apply in counterfactual usages (13). However, I argue that an analysis of *nara* based on the concept of delimitation avoids this problem of truth and allows us to generalize its function more intuitively. *nara* appears to signal that its consequent holds in the case of the antecedent, and that when the antecedent does not hold, other potential consequents may be true. What is deferred in uses of *nara* is not necessarily the judgment of truth—*nara* can express counterfactuals that are known to be false—but rather the ‘complete’ answer about all possible antecedents, in the same way that contrastive topics and frame setters

in Krifka and Musan (2012)'s account signal that "the current contribution [they make to the discourse] only gives a limited or incomplete answer" (32).

4.4. *-tara* and *to*

I hypothesize that *-tara* and *to* are delimiters in the sense outlined in Section 4.1—that is, that like *nara*, speakers may use them to suggest that when the antecedent does not hold, other propositions (or potential consequents) may be true. I also hypothesize that antecedents marked with *-tara* and *to* differ in terms of their *salience* (defined under the concept of *givenness* as "the degree to which [some linguistic item] is present...in the immediate common ground" in Krifka and Musan 2012) (22).

Specifically, I propose that events in antecedents marked with *to* are more salient than those with *-tara* for speakers in discourse.

Masuoka (1993)'s descriptions of *-tara* and *to* provide evidence for the hypothesis that they are delimiters in the sense of Section 4.1. As reviewed in Section 3.1, *-tara* expresses a dependence relationship between two individual events (Masuoka 1993: 3), as opposed to *-ba* which expresses the speaker's understanding of the relationship *itself* between two events (Masuoka 1993: 2). Also reviewed in Section 3.1, Masuoka (1993) contrasts *to*'s expression of events in reality with *-ba*'s focus on natural relationships between events (Masuoka 1993: 14). What is common about both of these contrasts with *-ba* is that the antecedents marked by *-tara* and *to* appear to be more independent than those marked by *-ba* in terms of their informational role in the sentence. That is, if what is at issue in uses of *-tara* and *to* is not the relationship between events itself (as with *-ba*), the antecedents are free to take other informational roles, and delimitation may be among those roles. Other support for this hypothesis can be found in

the analysis of Kawabata et al. (2017). Summarizing the discourse functions of *-tara* and *to*, Kawabata et al. (2017) claim (as reviewed in Section 3.2) that “TARA sets the *consequence* of the action mentioned in the conditional clause as the context for the main clause” and “TO sets *executing* or *simulating* the action mentioned in the conditional clause as the context for the main clause”, respectively (95). Both of these functions do not exclude the possibility of their use as delimiters in the sense outlined in section 4.1—that is, assuming the consequence, or simulation of, the event in antecedent clause in a conditional sentence with *-tara* or *to* does not seem to disallow the use of the that antecedent clause to suggest that other propositions hold for alternate antecedents.

The hypothesis that antecedents marked with *to* are more salient than those with *-tara* is supported by Masuoka (1993)’s observation (reviewed in Section 3.1, with discussion of examples (51) and (54)) that *to* suggests more strongly than *-tara* that the event in the antecedent is likely to happen in cases when the antecedent event is unrealized (16). If antecedents marked with *to* are perceived as more likely to happen than those with *-tara*, it may be that *to* is licensed by the saliency of its antecedent.

5. Limitations of Riester et al. (2018)

In this section, I discuss two limitations of the approach to analyzing information structure in language data developed in Riester et al. (2018) as a tool for testing the hypotheses in this paper regarding the information-structural distribution of the Japanese conditionals. These are namely (1) the underprediction of information structure of delimiters by their approach and (2) the difficulty of accurately measuring the *saliency* and *memory-activatedness* of linguistic items in discourse (which are mentioned as dimensions of information structure under *givenness* in Krifka and Musan 2012) (see

Krifka and Musan 2012: 22). I discuss these two limitations in sections 5.1 and 5.2, respectively. I have included the discussion of these limitations because they are important for a scientifically rigorous test of the hypotheses (broad and narrow) mentioned in Section 1, and will need to be answered by some solution or other framework in future research. I do not seek to provide any solutions to these problems in this paper due to space limitations; however, since one of the broader aims of this paper is to show that an information-structural analysis of the Japanese conditionals is worth pursuing in future research, I do consider it relevant to discuss them here, as future research will have to address them in one way or another.

5.1. Underprediction of information structure of delimiters

As reviewed in Section 2.2, Riester et al. (2018) note of their own framework that it is “conservative [in terms of QUD formulation] and will in some cases assume a question that is too wide” (416). For the rigorous testing of the hypotheses in this paper, this is a weak point, in that superficial language data analyzed by their approach may not fully reveal the information structure behind it. An example of this can be seen in the example in (19) in section 2.1, where the sentence *I was at home* is analyzed as containing a delimiter (contrastive topic), and is suggested to accommodate a broader communicative goal such as the question *Who was where?* (Krifka and Musan 2012: 30). When it is already known that the common ground management in (19) includes or involves the broader communicative goal of answering the question *Who was where?*, the delimitation is easily observed. However, in the analysis of natural language data through the approach of Riester et al. (2018), it may not always be obvious that this broader communicative goal is present in the text. In fact, without such knowledge, it is entirely

possible to analyze the response in (18) as having the following information structure in (59) using Riester et al. (2018)'s approach.

(59) Q₁: Where were you at the time of the murder?

> A₁: [I was [at home]_F]~.

In this case the answer is interpreted as a neutral statement of where the speaker was, without any indication that there are other informational needs in the common ground management about other contrastive topics (as per the definition of delimitation in Krifka and Musan 2012; see also the discussion of example (18) in section 2.1).

The approach in Riester et al. (2018) does identify contrastive topics when they appear as “the instantiation of a variable within the background” in a parallel construction involving a superquestion-based discourse structure (422). But there is no rule that contrastive topics must always be used in the context of an explicit parallel construction answering other parts of the superquestion. In (19) the single response containing the contrastive topic (*I was at home*) is completely fine without such additional parallel assertions. Ultimately, delimiters not in parallel constructions and/or without enough context might be missed by the approach of Riester et al. (2018). If one or more of the Japanese conditionals is a delimiter (or contrastive topic) underlyingly, there has to be a parallel environment in the data, or knowledge of a broader communicative goal in the common ground management in order for it to be clearly observed, neither of which has to always be the case.

5.2. Difficulty of measuring salience/memory-activatedness of linguistic items

I now discuss the difficulty of accurately measuring the salience and memory-activatedness of linguistic items with the approach developed in Riester et al. (2018).

Recall the definition of givenness in Krifka and Musan (2012) reviewed in Section 2.1, repeated here as (60) for convenience.

(60) A feature X of an expression α is a givenness feature if X indicates whether the denotation of α is present in the common ground or not, and/or indicates the degree to which it is present (its *saliency*) in the immediate common ground.

(Krifka and Musan 2012: 22)

As reviewed in Section 2.1, Krifka and Musan (2012) identify two other parameters of givenness not explicitly mentioned in this definition (though subsumed by it): (1) the memory-activatedness of linguistic items in the minds of speakers (see Krifka and Musan 2012: 22) and (2) whether discourse referents “mentioned in the linguistic context of an utterance...[are mentioned] in the sentence right before, or...several sentences earlier” (Krifka and Musan 2012: 22). From now on I will refer to the latter parameter with the term *recency*, although it should be made clear that this is my term for their concept and not theirs.

Based on the above definition of givenness, it does not seem to be impossible at all to tell with Riester et al. (2018)’s approach whether or not some linguistic item in a discourse is given. This is because in their approach (as reviewed in Section 2.2), assertions and explicit questions in the discourse are arranged in QUD trees, and what has already been mentioned at a particular point in the discourse can be discerned by looking at the referents in the tree leading up to that point (see Riester et al. 2018: 405). In the same way, the QUD trees in Riester et al. (2018)’s approach would also enable analysts to observe the *recency* of the mention(s) of linguistic items in discourse as well. Two of

the principles used in QUD formulation in Riester et al. (2018)'s approach, namely Maximize-Q-Anaphoricity and Q-Givenness, directly make reference to the givenness of linguistic items in discourse (see (26) and (27) respectively). This means that any discourse analysis done with their framework would naturally require the analyst to take inventory of what is given. In summary, it seems to be possible to observe both the givenness and recency of discourse items in Riester et al. (2018)'s framework.

However, in their theory of givenness, Krifka and Musan (2012) include the concept of *saliency*, defined as “the degree to which [some linguistic item] is present...in the immediate common ground” (22). They also identify the memory-activatedness of discourse referents in the minds of speakers as another parameter of givenness, as mentioned above (22). These two parameters of givenness do seem to be difficult to identify with the approach of Riester et al. (2018). It could be argued that items that are less recent (in the sense of *recency* outlined above) may also be less salient or less memory-activated for speakers in discourse. However, Riester et al. (2018)'s approach only shows the way surface assertions in discourse texts are related to the implicit or explicit QUDs they answer—it cannot directly predict anything about the mental states of the interlocutor(s) at the time they produce those texts.

This constitutes a limitation for the study of the information-structural distribution of the Japanese conditionals, in that if the salience/memory-activatedness of hypothetical situations expressed by conditional sentences were conditioning the distribution between any of them in any way, there would be no way to objectively observe it in Riester et al. (2018)'s framework. However, this problem is likely not limited to Riester et al. (2018). It seems extremely difficult to have a framework that accurately predicts how

subconsciously activated one imaginary situation is over another for any subject at a given time. The development of such a framework is likely to be technologically far beyond what current cognitive science can do.

6. Conclusions

In this paper, I have proposed that information structure is (at least in part) a conditioning element for the distribution of, and differences in felicity between, the Japanese conditionals. Under this broad hypothesis, I have posited that *-ba* cannot be a delimitator, whereas *-tara*, *nara*, and *to* may be. I have also posited that antecedents in sentences using *-ba* are subsumed under either wide or narrow focus, and that antecedents marked with *to* are more salient in discourse than those marked with *-tara*. Furthermore, I have outlined cases in which the approach in Riester et al. (2018) underpredicts the underlying information structure of delimitators, and cases in which it cannot measure the salience or memory-activatedness of linguistic items.

Future research will need to test the hypotheses in this paper by looking at the distribution of these conditionals in natural language data. For that purpose, it is ideal to have an approach that does not suffer from the same problems as the ones identified in Riester et al. (2018) in Section 5, although the design of such an approach might be difficult. Analysis of the information-structural distribution of the conditionals in future will also likely be benefitted by deeper studies into their uses in discourse, in the vein of Kawabata et al. (2017).

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