

Modality-Triggered Disjunction Movement*

Masaki SANO

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1. Introduction

Japanese is a language well-known for its “scope-rigidity”. That is, the scope of quantifiers is generally determined by their surface c-command relations alone.¹ To be more precise, a scope-bearing element cannot take scope over another scope-bearer unless the former c-commands the latter (or its trace) in overt syntax. The relevant scope-bearers that fall under this generalization include not only prototypical (universal or existential) quantifiers but also disjunctive phrases conjoined by *ka*, whose English counterpart *or* has been shown to have scopal properties similar to quantifiers or *wh*-phrases (Rooth and Partee 1982, Larson 1985, Schwarz 1999, among others). Consider the following example with a universally quantified subject followed by a disjunctive object:

- (1) Daremo-ga koohii-ka zyuusu-o nonda.
everyone-NOM coffee-or juice-ACC drank
'Everyone drank coffee or juice.'

Since the subject c-commands the object under the basic subject-object word order in Japanese, the subject takes scope over the object in (1) and not conversely, so that the sentence is unambiguously interpreted with the subject-object scope order as saying that everyone is such that he drank coffee or juice. (1) cannot be taken to mean that either everyone drank coffee or everyone drank juice (or that it is

either coffee or juice that everyone drank), although this sort of object-subject scope order reading is available if the disjunctive object is scrambled before the subject as in the following:

- (2) [koohii-ka zyuusu-o]_i daremo-ga t_i nonda.
coffee-or juice-ACC everyone-NOM drank
(Lit.) 'Coffee or juice, everyone drank.'

Since the bracketed scrambled object in (2) c-commands the subject and the subject c-commands its trace, (2) allows either scope order reading.

Assuming the generality of the constraint against a quantifier scoping over another quantifier (the trace of) which it does not c-command, Nakayama and Koizumi (1991) give the following examples to argue that the clause-initial subject of a transitive verb asymmetrically c-commands a temporal phrase like *2-zi-ni* 'at 2 o'clock' or a subject-oriented depictive predicate like *hadaka-de* 'naked' (at any stage of the derivation in overt syntax):

- (3) a. Daremo-ga 2-zi-ka 3-zi-ni
everyone-NOM 2 o'clock-or 3 o'clock-at
syorui-o teisyutusita.
documents-ACC handed-in
'Everyone handed in documents at 2 or 3 o'clock.'
- b. Daremo-ga hadaka-ka kimono-sugata-de
everyone-NOM naked-or in-kimono
hon-o yonda.
book-ACC read
'Everyone read a book naked or in kimono.'

In (3a), the universal subject scopes over and not under the disjunctive temporal phrase *2-zi-ka 3-zi-ni* '2 or 3 o'clock', so that the sentence is unambiguously interpreted as saying that everyone is such that he handed in documents at 2 or 3 o'clock, rather than that either everyone handed in documents at 2 o'clock or everyone handed them in at 3 o'clock. Similarly in (3b), the disjunctive secondary predicate *hadaka-ka kimono-sugata-de* 'naked or in kimono' must be within the scope of the subject it is predicated of. Although different adjuncts may have different properties, at least adjuncts of the sort just considered behave similarly to objects in that they must be within the scope of the preceding subject, and this is attributable to the asymmetric c-command relation.²

2. Relevance of Modality

2. 1. Anti-C-command Scope Order

Notice that the examples considered above end with the simple past form of a predicate and have no modal element attached to them. As such the sentences are most naturally taken as simple, "objective" descriptions of past events, without subjective judgment of the truth of what are described. This is crucial, because addition of a modal element indicating such subjective judgment seems to have an effect on scope order:

- (4) Daremo-ga koohii-ka zyuusu-o
 everyone-NOM coffee-or juice-ACC
 nonda-{nitigainai/hazuda/noda}.
 drank-{must/should/is}
 'It {must be/should be/is} that everyone drank
 coffee or juice.'
- (5) Daremo-ga 2-zi-ka 3-zi-ni
 everyone-NOM 2-o'clock-or 3-o'clock-at
 syorui-o teesyutusita-{nitigainai/
 documents-ACC handed-in-{must/
 hazuda/noda}.
 should/is}

'It {must be/should be/is} that everyone hand-
 ed in documents at 2 or 3 o'clock.'

The example (4) is formed from (1), and (5) from (3a), by simply adding a modal auxiliary predicate *nitigainai* 'must', *hazuda* 'should', or *noda* 'is-that'.³ The modalized versions (4) and (5) share with their nonmodalized counterparts the reading of the subject scoping over the disjunctive object/adjunct. This is the scope order reflecting the surface c-command relation between the two (the surface c-command (SCC) scope order), and is surely the reading that first comes to mind. However, (4) and (5) differ from (1) and (3a) in also allowing the opposite scope order reading, the anti-c-command (ACC) scope order reading, whereby the c-commanded disjunction scopes over the c-commanding subject in apparent violation of the widely-accepted constraint on scope order in Japanese. On this ACC scope order reading (4) may be translated with an English cleft construction as "it must/should be coffee or juice that everyone drank", and (5), as "it must/should be 2 o'clock or 3 o'clock that everyone handed in documents", with the disjunctive phrase occupying the focus position of a modalized cleft sentence.⁴

2. 2. Additional Modal Effect

The ACC scope order reading just observed with modal predicates is admittedly weak, and some speakers may only allow the SCC scope order reading irrespective of the presence of a modal predicate. The situation changes radically, however, if we further add a certain kind of modal adverb to the sentence:⁵

- (6) a. Daremo-ga *tabun* koohii-ka zyuusu-o
 everyone-NOM probably coffee-or juice-ACC
 nonda-nitigainai.
 drank-must
 'It must be that everyone probably drank cof-
 fee or juice.'

- b. Daremo-ga *tasika* koohii-ka zyuusu-o
 everyone-NOM probably coffee-or juice-ACC
nonda-hazuda.
 drank-should
 'It should be that everyone probably drank
 coffee or juice.'
- c. Daremo-ga *kitto* koohii-ka zyuusu-o
 Everyone-NOM probably coffee-or juice-ACC
nonda-noda.
 drank-is
 'It is that everyone probably drank coffee or
 juice.'

The italicized adverb-predicate pairs in (6) represent some of the possible “modally harmonic” combinations (Lyons 1977:807), with the paired members “reinforcing” each other (Halliday 1970:331) in much the same way that the modal adverb and the modal auxiliary reinforce each other in English sentences like the following:

- (7) a. He *may possibly* have forgotten.
 (Lyons 1977:807)
- b. *Perhaps* he *might* have built it.
 (Halliday 1970:331)

Note that the adverbs in (7) do not necessarily require occurrence of the auxiliaries they are modally harmonic with; sentences like *he has possibly forgotten* and *perhaps he has built it* are just as acceptable as (7). But in Japanese, modal adverbs often require such a modally harmonic partner for the sentence to be complete; elimination of the modal predicate from a modally harmonic combination would leave the adverb “stranded” and make the sentence more or less awkward or incomplete as in *?Daremo-ga tabun koohii-ka zyuusu-o nonda* ‘everyone probably drank coffee or juice’.⁶ This is a phenomenon independent of the issues of quantifier scope we are concerned with now (but it becomes relevant later). What is surprising in the present context is that addition of

such modal adverbs to sentences like (4), as in (6), increases the availability of the ACC scope order that is otherwise weak. This is particularly so if the adverb is read in such a way that it forms a unit with, and directly modifies, the following disjunctive phrase *koohii-ka zyuusu-o* ‘coffee or juice’, perhaps with a pause before the adverb and after the disjunctive phrase but not in between. Thus, abstracting away the semantic effect of the modal predicate to simplify the paraphrase, each sentence in (6) may be taken as saying that it is probably coffee or juice that everyone drank, with the adverb construed as a modifier of the disjunction that scopes over the universal subject. This sort of ACC scope order reading appears as easily accessible as (or, depending on the intonation, more prominent than) the SCC scope order reading saying that for each person, it is probably coffee or juice that he or she drank. For want of a better term, we will refer to the improvement effect of an added modal adverb on the accessibility of the ACC scope order, as *the additional modal effect*.

The additional modal effect shows up only if the adverb is in a position that can form a syntactic unit with the disjunction. Thus if the adverb is not adjacent to the disjunction, there is no additional modal effect:

- (8) a. Tabun daremo-ga koohii-ka zyuusu-o
 probably everyone-NOM coffee-or juice-ACC
nonda-nitigainai.
 drank-must
 ‘It must be that probably everyone drank coffee or juice.’
- b. Tasika daremo-ga koohii-ka zyuusu-o
 probably everyone-NOM coffee-or juice-ACC
nonda-hazuda.
 drank-should
 ‘It should be that probably everyone drank
 coffee or juice.’
- c. Kitto daremo-ga koohii-ka zyuusu-o
 probably everyone-NOM coffee-or juice-ACC

nonda-noda.

drank-is

'It is that probably everyone drank coffee or juice.'

Here the adverbs are separated from the disjunction by the subject, and the ACC scope order is as weak as when a modal predicate is not accompanied by a modal adverb as in (4). The same applies to examples like (9) below, where the italicized adjunct *hitori-de* 'alone' intervenes between the adverb and the disjunction:

- (9) a. Daremo-ga tabun *hitori-de* koohii-ka
 everyone-NOM probably alone coffee-or
 zyuusu-o nonda-nitigainai.
 juice-ACC drank-must
 'It must be that everyone drank coffee or juice, probably alone.'
- b. Daremo-ga tasika *hitori-de* koohii-ka
 everyone-NOM probably alone coffee-or
 zyuusu-o nonda-hazuda.
 juice-ACC drank-should
 'It should be that everyone drank coffee or juice, probably alone.'
- c. Daremo-ga kitto *hitori-de* koohii-ka
 everyone-NOM probably alone coffee-or
 zyuusu-o nonda-noda.
 juice-ACC drank-is
 'It is that everyone drank coffee or juice, probably alone.'

Again, we see no additional modal effect, and the adverbs do not help the modal predicates to increase the availability of the ACC scope order reading.

Note furthermore that adverbs other than those modally harmonic with a modal predicate do not produce the additional modal effect even in a position adjacent to the disjunction; the weakness of the ACC scope order with a modal predicate alone is reproduced by a modal predicate occurring with any of the

adverbs in braces below:

- (10) Daremo-ga {a. *saiwai* / b. *mezurasiku* /
 everyone-NOM fortunately unusually
 c. *kekkyoku* / d. *daitanni-mo*} *koohii-ka*
 after all boldly coffee-or
 zyuusu-o nonda-nitigainai
 juice-ACC drank-must
 'It must be that everyone drank coffee or juice,
 {fortunately/unusually/after all/boldly}.'

None of these adverbs is modally harmonic with the modal predicate *nitigainai* 'must'; the adverb and the predicate do not "reinforce" each other, and elimination of the modal predicate from (10) does not produce awkwardness or incompleteness of the sort produced by a modal adverb without its modally harmonic partner. It is interesting to note that although the adverbs in (10) are not adverbs of the epistemic-modality type given in (6), yet at least some of them (especially (10a) and (10d)) relate to the speaker's subjectivity and fall outside the propositional content of the sentence, and in that sense can be classified as modal adverbs. For example, *daitanni-mo* 'boldly' in (10d), while a subject/agent-oriented adverb, expresses the speaker's subjective opinion about the agent's behavior; the boldness attributed to the agent is only subjective, as indicated by the modal particle *mo* attached to the manner adverb *daitanni*, and is not part of the proposition.⁷ In spite of their possible modal nature, however, the adverbs in (10) do not increase the availability of the ACC scope order, unlike the modal adverbs in (6): the additional modal effect is only produced by an adverb in modally harmonic combination with the occurrence of a modal predicate.

3. Formulating the Problems

We are thus faced with three questions to answer:

- (11) (A) How is it that a modal predicate brings about the ACC scope order reading that is otherwise absent?
 (B) Why is this reading weak?
 (C) What is the mechanism of the additional modal effect, that is, how is it that an adverb that is adjacent to the disjunction and that is modally harmonic with the predicate improves the accessibility of the ACC scope order?

Under the standard assumption that scope order is determined by c-command, the ACC scope order with a disjunction scoping over a quantifier that it is c-commanded by in overt syntax must be the result of the disjunction covertly moving to a position that c-commands the quantifier. Since the ACC scope order is available only with a modal predicate, the landing site for such covert disjunction-movement must be a position provided by the predicate. If the movement is phrasal, moving the entire disjunctive phrase of the form *X-ka Y 'X-or Y'*, then the landing site will be a Specifier position of the modal predicate; if it is not phrasal but featural in the sense of Chomsky 1995:Ch.4 and Pesetsky 2000, with only the relevant features of the disjunctive head *ka* moved, then the landing site will be a position adjoined to the predicate, in a manner analogous to head movement. This partly answers the question (11A): the presence of a modal predicate is necessary to provide a landing site of the movement that gives rise to the ACC scope order. The unanswered part is why there should be such movement to a modal predicate. We also have to determine whether the movement is phrasal or featural.

4. The Intervention Effect

The covert movement analysis suggested above also answers question (11B): the ACC scope order is weak because of the intervention effect in the sense

of Hagstrom 1998 or the Minimal Quantified Structure Constraint proposed by Beck (1996). We will adopt the following formulation of the intervention effect given by Pesetsky (2000:67):

- (12) *Intervention effect (universal characterization)*
 A semantic restriction on a quantifier (including *wh*) may not be separated from that quantifier by a scope-bearing element.

In English, the intervention effect as formulated in (12) is illustrated by a pair of examples like the following ((13b) from Pesetsky 2000:64):

- (13) a. Which newspaper did almost everyone write to ___ about which book?
 b. ??Which book did almost everyone write to which newspaper about ___ ?

In these examples the relevant scope-bearing element that potentially acts as an intervener is *almost everyone*. In (13a) the in-situ *wh*-phrase, *which book*, undergoes covert *wh*-movement. Here there is no intervention effect because this covert *wh*-movement is a phrasal movement that moves *which book* as a whole, with no separation of the semantic restriction “book” from the *wh*-quantifier. The intervention effect shows up, however, in (13b), where under Pesetsky’s (2000) theory the in-situ *wh*-phrase, *which newspaper*, undergoes *featural* rather than phrasal *wh*-movement, with only its *wh*-feature moved and its semantic restriction left behind. Since this results in the restriction’s separation from the moved *wh*-feature by *almost everyone*, the sentence is degraded because of the intervention effect.⁸

As suggested by Pesetsky’s judgment indication of (13b) (along with many other similar examples from his and from Hagstrom 1998 and Beck 1996), the intervention effect appears to be not absolute but only relative, varying, in particular, with the kind of interveners involved. In *wh*-interrogative sentences

in Japanese with a universally quantified phrase as a potential intervener, for example, the intervention effect varies with the form and the semantics of the universal quantifier. Consider the following paradigm:

- (14) a. ??Daremo-ga nani-o nonda-no?
 everyone-NOM what-ACC drank-Q
 ‘What did everyone drink?’
 b. *Hotondo daremo-ga nani-o nonda-no?
 almost everyone-NOM what-ACC drank-Q
 ‘What did almost everyone drink?’
 c. Minna nani-o nonda-no?
 all what-ACC drank-Q
 ‘What did all drink?’

Pesetsky (2000) analyzes Japanese, a *wh*-in-situ language, as a language in which *wh*-movement generally shows up as feature movement, leaving the semantic restriction on the *wh*-feature behind. This will produce an intervention-effect configuration when the *wh*-feature of a *wh*-in-situ (such as *nani* ‘what’ in (14)) crosses a scope-bearing element (the subject in (14)) on its way to its landing site, the interrogative Q *no*. The examples in (14) show varying degrees of the intervention effect, with the potential intervener *minna* ‘all’ in (14c) producing no detectable effect and *daremo-ga* ‘everyone-NOM’ giving a stronger effect when modified by *hotondo* ‘almost’, as in (14a-b).⁹ This difference in detectability of the intervention effect appears to correlate nicely with the difference in accessibility of the ACC scope order. Observe the following examples with their subjects corresponding to those in (14):

- (15) {a. [??]Daremo-ga /b. [*]Hotondo daremo-ga /
 everyone-NOM almost everyone-NOM
 c. Minna} koohii-ka zyuusu-o nonda-nitigainai.
 all coffee-or juice-ACC drank-must
 ‘It must be that {everyone/almost everyone/all}
 drank coffee or juice.’

The judgment indication in brackets is meant to suggest acceptability of the ACC scope order reading of the relevant sentence; on the SCC scope order reading the sentences are all acceptable. The example (15a) with *daremo-ga* ‘everyone-NOM’ is already familiar to us: the ACC scope order reading, absent without the modal predicate, is available, but it is weak, as indicated by the double question marks. Adding *hotondo* ‘almost’ to the universal subject, as in (15b), eliminates this already weak reading, perhaps completely, as indicated by the asterisk. Comparing (15a) and (15c), we see that the ACC scope order is far more acceptable with *minna* than with *daremo-ga*.¹⁰

The acceptability parallelism just observed between (14) and (15) supports the analysis of the ACC scope order as resulting from movement of the disjunction to a position c-commanding the quantifier that it is to take scope over: only by assuming an operation that applies to (14) and (15) in the same way to potentially produce the intervention effect, could we account for why (14) and (15) show the parallelism that they do; and the most plausible candidate for such a shared operation is movement, realized as *wh*-movement in (14) and disjunction-movement in (15). Furthermore, if Pesetsky’s (2000) formulation of the intervention effect given in (12) is correct, the disjunction-movement analysis of the ACC scope order also answers the question raised above concerning the nature of the movement: it must be featural rather than phrasal. Only if it is featural does disjunction-movement separate the quantificational disjunctive feature from the semantic restriction on it, creating an intervention-effect configuration prohibited by (12) when the feature crosses a scope-bearing element.

5. The Nature of the Additional Modal Effect

5.1. Featural vs. Phrasal Movement

Let us turn to the question (11C), the nature of the additional modal effect. Observe first that an example like (14a) that is degraded because of the intervention effect improves greatly if we add an emphatic adverb *ittai* 'on earth' to the *wh*-phrase in question:

- (16) Daremo-ga ittai nani-o nonda-no?
 everyone-NOM on-earth what-ACC drank-Q
 'What on earth did everyone drink?'

Similarly, the intervention effect produced by the intervener *dono otoko-mo* 'every man' in (17a) disappears with *ittai* added to the *wh*-phrase as in (17b):

- (17) a. ??Dono otoko-mo nani-o nonda-no?
 every man what-ACC drank-Q
 'What did every man drink?'
 b. Dono otoko-mo ittai nani-o
 every man on-earth what-ACC
 nonda-no?
 drank-Q
 'What on earth did every man drink?'

As argued in Sano 2002, the elimination of the intervention effect by *ittai* is accounted for if *ittai* and the *wh*-phrase it is adjacent to form a single unit, an *ittai wh*-phrase, that as a whole undergoes phrasal movement, though covertly. Being phrasal, the movement does not separate the relevant quantificational features of the *ittai wh*-phrase from the semantic restriction on them, thereby circumventing the intervention effect. This covert phrasal movement may be an instance of *wh*-movement, or it may be a kind of focus movement to a position that is either distinct or nondistinct from the landing site of *wh*-movement (the Spec of FocP, the Spec of CP, etc.). Whatever the exact nature of the movement, it has essentially

the same effect that is achieved by *wh*-phrase scrambling (or overt *wh*-movement, in the spirit of Takahashi (1993)) over an intervener:

- (18) [Nani-o]_i {daremo-ga/dono otoko-mo} _{t_i} nonda-no?
 what-ACC everyone-NOM/every man drank-Q
 'What on earth did {everyone/every man} drink?'

Examples like (16) and (17b) bypass the intervention effect in the same way as does (18).

If the adverb *ittai* and the *wh*-phrase that it is associated with (or that it puts an emphatic focus on) are not adjacent and do not form a unit, *wh*-feature movement must be exercised just as when there is no occurrence of *ittai*, and the intervention effect reemerges:

- (19) ??Ittai {daremo-ga/dono otoko-mo} nani-o
 on-earth everyone-NOM/every man what-ACC
 nonda-no?
 drank-Q
 'What on earth did {everyone/every man} drink?'
 (20) Ittai Taro-ga nani-o nonda-no?
 on-earth Taro-NOM what-ACC drank-Q
 'What on earth did Taro eat?'

In (19) *ittai* is separated from the object *wh*-phrase by the universally quantified subject and does not help to eliminate the intervention effect as it does in (16) and (17b); note that *ittai* may in principle be separated from the *wh*-phrase it is associated with, as shown by the acceptability of (20), where the subject is not a scope-bearing element that induces the intervention effect.

By analogy, we now see the reason for the additional modal effect, that is, why occurrence of an adverb modally harmonic with a modal predicate should eliminate the intervention effect that is otherwise caused by the disjunction moving over a scope-bearer SB to the modal predicate to outscope SB. When such an adverb is adjacent to the disjunctive

phrase, it can form with it a syntactic unit that can undergo phrasal movement over SB without creating an intervention effect configuration (see (6)); when the adverb is absent or not adjacent to the disjunction, the latter must undergo the intervention-effect-producing feature movement (see (8)-(9)).

It should be noted in passing that covert phrasal movement of the sort described above does not seem to be able to cross every type of SB equally. For example, adding *ittai* to the *wh*-phrase in (14b), which has a strong intervener *hotondo daremo-ga* ‘almost everyone’, does not eliminate the intervention effect completely; if at all, it weakens the effect only a little:

- (21) ?? Hotondo daremo-ga ittai nani-o
 almost everyone-NOM on-earth what-ACC
 nonda-no?
 drank-Q
 ‘What on earth did almost everyone drink?’

The low acceptability of (21), however, is paralleled by the low acceptability of the ACC scope order reading of the following example:

- (22) [??] Hotondo daremo-ga tabun koohii-ka
 almost everyone-NOM probably coffee-or
 zyuusu-o nonda-nitigainai.
 juice-ACC drank-must
 ‘It must be that almost everyone probably drank
 coffee or juice’

Although the ACC scope order in (22) with *tabun* ‘probably’ might be a little easier to obtain than in (15b) without the adverb, still it is evidently very weak. Since the ACC scope order reading of (22) requires the adverb-disjunction sequence to undergo the same type of movement as the *ittai wh*-phrase in (21) over the same strong intervener, it should not be surprising that we obtain the same degree of acceptability, whatever the reason for the low acceptability

may be.

5.2. Movement and Economy

Feature movement is probably motivated by economy; see for example Chomsky (1995:Ch. 4) and Pesetsky (2000:10f., 55f.). Thus, other things being equal, featural *wh*-movement and featural disjunction-movement would be more economical than their phrasal counterparts. When a *wh*-phrase is focused by an occurrence of *ittai* that forms a unit with it, however, the one-time phrasal movement of the entire *ittai wh*-phrase is preferred over the two-time featural movement applying individually to the adverb *ittai* and to the *wh*-phrase, by virtue of an economy principle requiring fewest possible steps in a derivation (Chomsky 1995:181f.); see Sano 2002 for an argument for invisible movement of *ittai* to the same position as the landing site of *wh*-movement.

Likewise, when a disjunctive phrase is focused by an adjacent adverb modally harmonic with the modal predicate that serves as the host of movement of the disjunction, the disjunctive phrase and the adverb can form a syntactic unit whose one-time phrasal movement to the modal predicate is favored over the two-time featural movement applying individually to the disjunction and to the adverb. Presupposed here is that in a modally harmonic adverb-predicate combination, the adverb moves (covertly) to its modally harmonic partner, the modal predicate, in the same way that *ittai* moves (covertly) to what may be regarded as its modally harmonic partner, the interrogative C; but when the adverb forms a larger phrase with the disjunction that also may be associated with the modal predicate by movement, it is this larger phrase that moves to the predicate, pied-piping the features of the adverb and those of the disjunction that would have moved independently. Recall from the discussion concerning (10) that only adverbs modally harmonic with a modal predicate induce the additional modal effect. A non-harmonic adverb does not move to (in fact does not

have any grammatical relation with) the modal predicate, so that even if it happens to be adjacent to the disjunction the two do not make up a unit amenable to phrasal movement to the predicate.

6. Modal Movement

6. 1. Relevance of *Ka*

We have yet to answer the most fundamental question: why there should be disjunction-movement to a modal predicate at all, the question raised in the penultimate sentence of the paragraph immediately below (11).

Note that it is precisely the disjunction by *ka* ‘or’ that can outscope a higher quantifier by movement to a still higher modal predicate, subject to the intervention effect. If the lower quantifier does not involve *ka*-disjunction but some other form of quantification, such movement does not take place and the presence of a modal predicate does not affect the general unavailability of the ACC scope order:

- (23) a. Dareka-ga daremo-o hihansita
 someone-NOM everyone-ACC criticized
 (-nitigainai/-hazuda/-noda).
 must should is
 ‘(It must be/it should be/it is that) someone criticized everyone.’
- b. John-ka Mary-ga dono nomimono(-o)-mo
 John-or Mary-NOM every drink(-ACC)
 nonda(-nitigainai/-hazuda/-noda).
 drank(-must/-should/-is)
 ‘(It must be/It should be/It is that) John or Mary drank every drink.’

In (23a) the universal object does not outscope the existential subject irrespective of the presence of any modal predicate in parentheses. Similarly in (23b) with or without a modal predicate, the universal object cannot scope over the disjunctive subject; the sentence is taken with the SCC scope order as saying

that (it must be, etc. that) either John drank every drink or Mary did, rather than with the ACC scope order as saying that (it must be, etc. that) every drink is such that John or Mary drank it.¹¹ One might say that the ACC scope order is masked by the intervention effect, but the situation does not change if an adverb is added to create a modally harmonic adverb-predicate combination, as in the following:

- (24) a. Dareka-ga tabun daremo-o
 someone-NOM probably everyone-ACC
 hihansita-nitigainai.
 criticized-must
 ‘It must be that someone probably criticized everyone.’
- b. John-ka Mary-ga kitto
 John-or Mary-NOM probably
 dono nomimono(-o)-mo nonda-noda.
 every drink(-ACC) drank-is
 ‘It is probably that John or Mary drank every drink.’

In (24), if the adverb-object sequence could undergo phrasal movement as a whole, the ACC scope order reading should be available with no detectable intervention effect. That such a reading is impossible indicates that no such phrasal movement takes place.

In fact, even with the subject that does not induce the intervention effect, namely *minna* ‘all’, the ACC scope order is impossible if the lower quantifier does not involve disjunction by *ka* but by some other coordinator:

- (25) Minna kooonii matawa zyuusu-o
 all coffee or juice-ACC
 nonda-nitigainai.
 drank-must
 ‘It must be that all drank coffee or juice.’

The example (25) differs from (15c) only in the choice of the disjunctive coordinator: in (25) it is

matawa, and the sentence lacks the ACC scope order that is available in (15c) with *ka*. Interestingly, *matawa* and *ka* may be used together, in the syntactically duplicated form *ka matawa* but with the same disjunctive function as *ka* or *matawa* used independently, and in this case the ACC scope order emerges again:

- (26) Minna koohii-ka matawa zyuusu-o
 all coffee-or or juice-ACC
 nonda-nitigainai.
 drank-must
 'It must be that all drank coffee or juice.'

The presence of the ACC scope order in (26) and (15c) and the lack thereof in (25) strongly argue that some property of *ka*, in tandem with some property of a modal predicate, motivates the disjunction-movement that gives rise to the ACC scope order.

6. 2. The Focus Particle *Demo* and the Intervention Effect

Disjunction is by nature indeterminate as to the choice between elements disjunctively conjoined. If you say John kissed Mary or Susan, you are not committing yourself on which of the two, Mary and Susan, John kissed; it may be Mary, Susan, or possibly both, a matter simply left vague or indeterminate. This property of indeterminacy is also inherent in the focus particle *demo* '...or something', which is used to evade determinateness (Sadanobu 1995) or to suggest tentative exemplification (Moriyama 1998), by attaching to something that the speaker only wants to suggest tentatively and does not want to commit himself or herself to. As is well-known in the literature of Japanese grammar, this particle always calls for a modal predicate that suggests the speaker's mental state or attitude, in contrast with the disjunctive *ka*, which may be used without a modal predicate. For example, the object in (27a) below has *biiru* 'beer' conjoined with *nanika* 'something' by the disjunction

ka, and the sentence is acceptable with or without a modal predicate; but the object in (27b) has *biiru* 'beer' focused by *demo* (so that it has a meaning quite similar to the disjunctive object in (27a)), and the sentence is only acceptable with a modal predicate like those in parentheses:¹²

- (27) a. Taro-wa biiru-ka nanika-o
 Taro-TOP beer-or something-ACC
 nonda(-nitigainai).
 drank(-must)
 '(It must be that) Taro drank beer or something.'
- b. Taro-wa biiru-demo nonda-*(nitigainai/
 Taro-TOP beer-DM drank must
 noda/kamosirenai/yooda).
 is may seems
 'It {must be/is/may be/seems} that Taro drank beer or something.'

There is reason to believe that the relation between *demo* and the modal predicate it is construed with involves movement — in fact, feature movement of *demo* to the modal predicate — as indicated by the varying degrees of the intervention effect parallel to those seen in (14-15):

- (28) a. ??Daremo-ga biiru-demo nonda-nitigainai.
 everyone-NOM beer-DM drank-must
 'It must be that everyone drank beer or something.'
- b. *Hotondo daremo-ga biiru-demo
 almost everyone-NOM beer-DM
 nonda-nitigainai.
 drank-must
 'It must be that almost everyone drank beer or something.'
- c. Minna biiru-demo nonda-nitigainai.
 all beer-DM drank-must
 'It must be that all drank beer or something.'

This intervention effect is eliminated or weakened by occurrence of a modally harmonic adverb:

- (29) a. Daremo-ga tabun biiru-demo
 everyone-NOM probably beer-DM
 nonda-nitigainai.
 drank-must
 ‘It must be that everyone probably drank beer or something.’
- b. ??Hotondo daremo-ga tabun biiru-demo
 almost everyone-NOM probably beer-DM
 nonda-nitigainai.
 drank-must
 ‘It must be that almost everyone probably drank beer or something.’

Similarly, the intervention effect produced by an intervener like *dono otoko-mo* ‘every man’ in (30) below is eliminated by addition of a modally harmonic adverb in (31):

- (30) ??Dono otoko-mo biiru-demo
 every man beer-DM
 nonda-{nitigainai/noda}.
 drank-{must/is}
 ‘It {must be/is} that every man drank beer or something.’
- (31) a. Dono otoko-mo tabun biiru-demo
 every man probably beer-DM
 nonda-nitigainai.
 drank-must
 ‘It must be that every man probably drank beer or something.’
- b. Dono otoko-mo kitto biiru-demo
 every man probably beer-DM
 nonda-noda.
 drank-is
 ‘It is probably that every man probably drank beer or something.’

These must be instances of the additional modal effect; the intervention effect is circumvented by phrasal movement of the string consisting of the modally harmonic adverb and the *demo*-phrase.¹³ Again, this phrasal movement is not possible if the adverb and the *demo*-phrase are separated and do not form a unit, in which case the intervention effect reemerges:

- (32) a. ??Tabun {daremo-ga/dono otoko-mo}
 probably everyone-NOM/every man}
 biiru-demo nonda-nitigainai.
 beer-DM drank-must
 ‘It must be that probably everyone/every man drank beer or something.’ (cf. (29a))
- b. ??Kitto dono otoko-mo biiru-demo
 probably every man beer-DM
 nonda-noda.
 drank-is
 ‘It is probably that every man drank beer or something.’ (cf. (31b))

6. 3. Modal Agreement

Demo, one of the many focus particles in Japanese, is a sort of modal particle indicating the speaker’s ambiguous or uncertain attitude, as hinted at by Sadanobu’s (1995) or Moriyama’s (1998) characterization of the function of the particle noted above. Thus there is some sort of modal agreement between the particle and the modal predicate it co-occurs with: a modal property inherent in *demo* requires a modal predicate for agreement (see (27b)), and moves (covertly) to the predicate by feature-movement or by phrasal movement as the case may be. Let us refer to the modal property as [M]. Under the standard assumption that a lexical item is a collection of linguistic properties, or features (cf. Chomsky 1995), *demo* is obligatorily assigned in the lexicon the feature [M] along with other features, the feature requiring agreement with a modal predicate.

Now assume that the disjunctive particle *ka* may

also be assigned the feature [M], but only optionally. If *ka* has [M] assigned to it, it requires a modal predicate and moves to it, again by feature-movement or by phrasal movement as determined by other properties of grammar; if *ka* does not have [M] assigned to it, it does not require a modal predicate. This accounts for the similarity and the difference between *ka* and *demo*: the presence of a modal predicate is obligatory for *demo* but not for *ka*, but otherwise the two particles behave similarly, moving to the modal predicate it is associated with, subject to the intervention effect. Recall that another disjunctive coordinator, *matawa*, does not give rise to the ACC scope order. This suggests that *matawa* is never assigned [M], so that it does not move to a modal predicate to give the ACC scope order. All the three lexical items probably share something like an indeterminate feature, say [Ind] (see the first paragraph of section 6.2), but this feature should not be something that by itself induces agreement with or movement to a modal predicate.

This analysis naturally extends to the modally harmonic adverb-predicate combination discussed above. Recall that the adverb in such a combination becomes “stranded” if its paired modally harmonic predicate is left out (see the discussion below (7)), and we suggested in section 5.2 a movement operation that moves such a modal adverb (covertly) to the predicate. The natural assumption is that the same [M] feature that is assigned to *demo/ka* is also assigned to the modally harmonic adverb, and undergoes movement to the same type of modal predicate as targeted by ([M] of) *demo/ka*. In short, *demo*, *ka* and the type of adverb in question are subject to the same type of “modal-movement”.

Note, however, that there is no intervention effect on the adverb-predicate modally harmonic combination, even with a strong intervener like *hotondo daremo* ‘almost everyone’:

- (33) (Hotondo) daremo-ga tabun biiru-o
 almost everyone-NOM probably beer-ACC
 nonda-nitigainai.
 drank-must
 ‘It must be that (almost) everyone probably
 drank beer.’

This is expected if we assume, as seems natural, that the relevant adverb lacks a quantificational feature (see the formulation of the intervention effect in (12)), unlike a *wh*-phrase, *ka*-disjunction, or *demo*. Suppose that the indeterminate feature [Ind] suggested above is an instance of quantificational features that interact with a higher scope-bearing element to give rise to the intervention effect. If so, the presence of the intervention effect on *demo* and *ka* and the lack of it on an adverb when they are linked with a modal predicate across an intervener may reduce to the presence and the absence of [Ind]. In the case of a phrase focused by *demo* or conjoined by *ka*, the quantificational feature, [Ind], is pied-piped when [M] of *demo* or *ka* is moved to its associated modal predicate, which possibly creates an intervention-effect configuration prohibited by (12). But an adverb modally harmonic with a modal predicate lacks [Ind] or any quantificational feature so that even if [M] of the adverb is feature-moved to the predicate across a scope-bearing element, there is no intervention effect.

7. Conclusion: Why Move?

Although we have sketched a modal-agreement analysis of movement of *ka*, *demo*, and a certain type of modal adverb, the question why there should be such movement at all is not completely answered: we have only suggested that the feature [M] induces agreement with a modal predicate, leaving open how this agreement interacts with other properties of grammar to trigger movement. If we adopt theories of agreement and movement developed by Chomsky

(2000, 2001a, b), we may assume something like an EPP-feature on the targeted modal predicate that effectively induces movement, but we will also have to consider the interpretability of the features involved in agreement. A detailed analysis along these lines must, however, await future research.

Notes

*I am indebted to Toshinobu Mogi for stimulating discussion on some of the materials discussed in this paper.

- 1 Kuroda 1970, Hoji 1985, 1986, and subsequent works. For a recent argument against this traditional view, see Kuno and Takami 2002.
- 2 As compared with the “clock-time adjunct” in (3a) which relates to the time of the day, “day-adjuncts” relating to the days of the week seem to be able to scope over the preceding subject:

- (i) Daremo-ga kayoobi-ka suiyoobi-ni
 everyone-NOM Tuesday-or Wednesday-on
 syorui-o teisyutusita.
 documents-ACC handed-in
 ‘Everyone handed in documents on Tuesday or Wednesday.’

Probably, day-adjuncts, because of their possible scene-setting function, can be pure-merged with a clausal projection (say TP) that contains the subject. The word order in (i) can then be the result of the universal subject having been moved (or scrambled) over the scene-setting disjunctive day-adjunct. On this derivation the adjunct c-commands the trace of the moved subject and thus may scope over as well as under the subject. Such a derivation will not be available with clock-time adjuncts that do not have a scene-setting function.

- 3 *Noda* is morphologically formed from the nominal complementizer (or formal noun) *no* ‘that’ combined with *da* ‘be’, the latter a copulative element associated with assertive force, or modality of assertion. The entire *noda* construction bears some formal and semantic resemblance to the English *it is that* construction discussed by Delahunty (1990) and Declerck (1992); both constructions can express an explanation or an inference-based interpretation with regard to something relevant to the discourse. But perhaps unlike the *it is that* construction, the *noda* construction often suggests the speaker’s assertive attitude, that the proposition expressed in it is indeed true; this is obviously due to the modality associated with *da*. See McGloin and Terakura 1978 for the use of *nodesu*, the polite form of *noda*, for the speaker’s subjective and emphatic assertion.

- 4 Compare these translations with the paraphrase of the (unavailable) object-subject scope order reading of (1) that is given in parentheses in the second sentence after the example (1) and that is also expressed with a cleft construction.

- 5 Although the three adverbs in italics in (6) are all glossed as ‘probably’, this is a very crude approximation and they differ in meaning from one another in ways that are not directly relevant to the present discussion. The difference in meaning may well be related to the difference in possible *modally harmonic combinations* discussed immediately below.

- 6 This sentence becomes natural if we add a sentence-final particle like *yo*, which has a modal function whereby the adverb can form a modally harmonic combination with it.

- 7 See Nakau 1980:182ff. for the modal nature of some subject-oriented adverbs; see Dillon 1974:228ff. for the ambiguity of certain “manner” adverbs in English, including *boldly*, between the two senses represented by Japanese *daitainni-mo* and *daitanni*.

- 8 To quote Pesetsky 2000:64f., “[I]t is difficult or impossible to understand [(13b)] as any sort of pair-list multiple question. To the extent that it is acceptable at all, it is only a request for a single-pair answer (e.g., *Almost everyone wrote to this newspaper about that book*).” The single-pair interpretation is obtained from a structure to which the intervention effect is not relevant (Pesetsky 2000:esp.74). If *almost everyone* in (13b) is replaced by just *everyone*, either the sentence must be a request for a single-pair answer or else *everyone* must be quantifier-raised to a position that does not induce the intervention effect—to a (CP-adjoined) position that is higher than, and scopes over, the *wh*-moved elements—an option unavailable with *almost everyone* (Pesetsky 2000:62-64).

Note also that the degraded acceptability of (13b) (on the relevant interpretation) is not due to the superiority effect, since this effect is obviated when the relevant *wh*-phrases are D(iscourse)-linked (Pesetsky 1987). Since *wh*-phrases with *which* favor D-linked interpretations, the superiority effect seen in an example like (ia) below disappears in (ib), and hence must also be suspended in (13b):

- (i) a. ?*What did John write to whom about ___ ?
 b. Which book did John write to which newspaper about ___ ?

- 9 That *minna* ‘all’ does not produce the intervention effect is noted by Pesetsky (2000:116-7, n. 101), who credits the observation to Miyagawa (1998).

- 10 Note that even *minna* does not allow the ACC scope order reading if the modal predicate *nitigainai* is left out, as in the following:

- (i) Minna koohii-ka zyuusu-o nonda.
 all coffee-or juice-ACC drank
 'All drank coffee or juice.'

Here, as in other cases without modal predicates, the SCC scope order is the only option available.

Note also that the unavailability of the ACC scope order in (15b) does not seem to be related to the semantics of the subject, namely its "almost universal" meaning; with another form of the subject with essentially the same "almost universal" meaning, such as *hotondo-no hito(-ga)* 'most people/almost all the people(-NOM)', the ACC scope order is available:

- (i) Hotondo-no hito-ga koohii-ka zyuusu-o
 almost-GEN person-NOM coffee-or juice-ACC
 nonda-nitigainai
 drank-must
 'It must be that most people drank coffee or juice.'

Here we get the ACC scope order reading (unavailable if the modal is left out) saying that it must be that either most people drank coffee or they drank juice (or that it must be either coffee or juice that most people drank), as well as the SCC scope order reading whereby most people are such that they either drank coffee or juice.

- 11 Kuno and Takami (2002) argue that an object can sometimes scope over a subject in the subject-object word order, and their observation might carry over to sentences like (23) under certain conditions, contextual or phonological. Our point, however, is that the special role played by a modal predicate in the availability of the ACC scope order is only possible with disjunction by *ka* (and with focalization by the focus particle *demo*, discussed below).
- 12 (27b) is acceptable without an overt modal predicate if *demo* is construed as a focus particle that means 'even' rather than 'or something'; we will ignore this usage. Here and below, we simply gloss *demo* as DM.
- 13 Curiously, scrambling a *demo*-phrase over an intervening quantifier does not have the ameliorating effect that is produced by *wh*-phrase scrambling in (18); examples like (ia) and (ib) below are as bad as or even worse than the nonscrambled versions (28a-b):

- (i) Biiru-demo {a. ?*daremo-ga /b. hotondo daremo-ga/
 beer-DM everyone-NOM almost everyone-NOM
 c. Taro-ga} nonda-nitigainai.
 Taro-NOM drank-must
 (Lit.) 'It must be that something like beer, everyone/
 almost everyone/Taro drank.'

The acceptability of (ic) indicates that the *demo*-phrase can in principle precede a subject (whether by scrambling or by pure Merge). The unacceptability of examples like (ia-b) must be accounted for independently.

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