Abstract

We examine the fine structure of clausal right-node raising constructions in Japanese, and argue that there are sentences in which a tensed verb is right-node-raised out of coordinated tensed clauses as well as sentences in which a verb stem is right-node-raised out of coordinated tenseless phrases. In the latter case, the tense morpheme has to be assumed to take a tenseless complement clause, and we note that the existence of such a structure contradicts the so-called lexicalist hypothesis, according to which a verb stem and the tense morpheme immediately following it always form a morphosyntactic constituent.

1 Introduction

The aim of this paper is to determine the details of the syntactic structure of Japanese sentences like the following, which involves right-node raising (RNR).

(1) [Hanako ga] [yama e], [Masao ga] [kawa e] itta.
[Hanako NOM] [mountain to] [Masao NOM] [river to] go-PAST
'Hanako went to the mountain and Masao went to the river.'

In this paper, we assume that the HPSG-based analysis of right-node raising advocated in works such as Yatabe & Tam (2017) is on the right track; in other words, we assume that a sentence like this involves coordination of two normal constituents out of which something is dislocated. Even on that assumption, there remain several possibilities as to what types of syntactic constituent are coordinated in a sentence like (1), and that is the question that will be addressed in this paper.

Before we embark on the main discussion, however, we will briefly consider the following question. Can the sentence above be an instance of some grammatical phenomenon other than right-node raising? Is it not analyzable as an instance of gapping or argument-cluster coordination, for example?

We regard a sentence like (1) as a case of right-node raising rather than a case of gapping (a phenomenon in which a complete clause appears to be coordinated with another clause-like expression in which some expressions appear to have been elided), for the following two reasons. First, an example like (2) indicates that the clause-final expression that seems to be shared by multiple conjuncts in a sentence like (1) belongs (or, at least, *can* belong) syntactically and semantically not just to the final clause but also to the non-final clause(s) as well.

(2) [Hanako ga] [yama e], [Masao ga] [kawa e], sorezore itta.
[Hanako NOM] [mountain to] [Masao NOM] [river to] individually go-PAST
'Hanako went to the mountain and Masao went to the river, the two of them acting individually.'

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The adverb *sorezore* 'individually' has the effect of emphasizing the distinctness of the multiple events being described by the clause involved, and cannot be used in front of a verb describing a single event, as shown in (3).

(3) *[Hanako ga] [yama e] sorezore itta.
[Hanako NOM] [mountain to] individually go-PAST
'Hanako went to the mountain individually.'

Thus, the fact that *sorezore* can be used in (2) shows that the sentence-final verb expresses (or at least *can* express) not just the event of Hanako going to the mountain but also the event of Masao going to the river. That in turn means that the sentence-final verb belongs to both conjuncts simultaneously, as predicted by the RNR analysis but not by the gapping analysis. Second, the kind of apparent ellipsis that we see in the first conjunct in a sentence like (1) takes place only at the right edge of such a conjunct. This is illustrated by the following examples.

(4) [Masao wa] ashita, (soshite) [Hanako wa] asatte [nani o] kau to yakusoku shita no?
[Masao TOP] tomorrow (and) [Hanako TOP] day after tomorrow [what ACC] buy-PRES COMP promise do-PAST NML
'What has Masao promised to buy tomorrow, and what has Hanako promised to buy the day after tomorrow?'

(5)?*[Masao wa] ashita kau to, (soshite) [Hanako wa] asatte [nani o] kau to yakusoku shita no?
[Masao TOP] tomorrow buy-PRES COMP (and) [Hanako TOP] day after tomorrow [what ACC] buy-PRES COMP promise do-PAST NML
'(Same as (4))'

In (4), the first conjunct appears to be missing the string *nani o kau to yakusoku shita no* at its right edge. If what is responsible for this apparent ellipsis is gapping rather than right-node raising, it is expected to be possible to interpret sentence (5) as missing the string *yakusoku shita no* at its right edge and the string *nani o* at the location between *ashita* and *kau to*, yielding a structure that would express the same meaning as (4). Such an interpretation, however, is not available for sentence (5), lending support to the view that the kind of apparent ellipsis we are considering here takes place only at the right edge of a conjunct, as predicted by the RNR analysis. While the first consideration above does not rule out the possibility that Japanese syntax has both right-node raising and gapping, this second consideration arguably allows us to draw a stronger conclusion: Japanese has right-node raising, but not gapping.

Likewise, we do not view a sentence like (1) as a case of argument-cluster coordination (a phenomenon in which arguments of a predicate form a constituent and is coordinated with another constituent consisting of arguments of the same predicate (Mouret (2006))), either, because what appears to be the initial conjunct

in a sentence like (1) does not have to be a sequence of arguments of the same predicate, as shown by an example like (6). In (6), what constitutes the apparent initial conjunct *Hanako wa aoi* is made up of a topicalized nominative subject of the verb *eranda* and an adjective that modifies the noun *kusuri*, and are not co-arguments of the same predicate.

(6) Hanako wa aoi, (soshite) Masao wa akai kusuri o
Hanako TOP blue-PRES (and) Masao TOP red-PRES pill ACC
eranda.
choose-PAST
'Hanako chose a blue pill, and Masao chose a red pill.'

There is one caveat to keep in mind. Strictly speaking, what sentences like (6) show is that a sentence like (1) *can* be analyzed as a case of right-node raising. They do not rule out the possibility that a sentence like (1) might be syntactically ambiguous between a structure involving right-node raising and one involving argument-cluster coordination. Thus, throughout the present paper, we will make an attempt to base our argumentation on example sentences that are not analyzable as instances of argument-cluster coordination.

In what follows, we will consider the following three possible analyses of clausal right-node raising in Japanese. The first possibility we consider is that sentence (1) may involve coordination of two tensed clauses, as shown in (7).

(7) [[Hanako ga yama e itta], [Masao ga kawa e itta]]
→ Hanako ga yama e, Masao ga kawa e itta

In this analysis, what is right-node-raised in (1) is the tensed verb *itta*.

The second possibility we consider is that the sentence may involve coordination of two tenseless clauses, as shown in (8).

(8) [[Hanako ga yama e ik-] [Masao ga kawa e ik-]] ta
→ Hanako ga yama e, Masao ga kawa e ik- ta

In this analysis, what is right-node-raised is the verb stem *ik-*. Since the verb stem is a bound morpheme, the pre-RNR structure that is posited in this analysis is not something that can be used as a surface form. The structure becomes a pronounceable sentence only after the verb stem is right-node-raised and the verb stem and the sentence-final tense morpheme *-ta* are combined to yield a phonological word *itta*.

And the third possible analysis we will consider is one in which sentence (1) is derived by applying right-node raising to the sentence in (9), in which the first clause ends with *iki*, the so-called infinitive form of the verb *ik-* 'to go'.

(9) Hanako ga yama e iki, Masao ga kawa e itta.
Hanako NOM mountain to go-INF Masao NOM river to go-PAST
'Hanako went to the mountain and Masao went to the river.'

A clause ending with the infinitive form of a verb is often interpreted as being semantically conjoined with the immediately following clause, while it is not clear whether the first clause in such a structure is syntactically a conjunct or an adjunct. In this analysis, in which (9) is taken to be the pre-RNR form of (1), what is right-node-raised out of the first clause must be the infinitive form *iki*, and what is right-node-raised out of the second clause must be either the verb stem *ik-* or the tensed verb *itta*. We view this third analysis as something conceivable because it has been shown by Shiraïshi & Abeillé (2016) that there is a type of right-node raising in which slightly different forms of a verb are right-node-raised as if they were identical to each other.

It will be our contention in this paper that there is evidence that the first and the second analysis are both allowed in the grammar of Japanese whereas there is no evidence that the third analysis is allowed in the grammar. More specifically, we will argue that the sentence in (1) is structurally ambiguous between the first analysis and the second analysis, and that there are sentences that are amenable only to the first type of analysis as well as sentences that are amenable only to the second type of analysis.

The findings reported in this paper have implications regarding the basic clause structure of Japanese. There have historically been two schools of thought concerning the syntactic status of the tense morphemes in Japanese. On the one hand, there are authors who argue that a verb stem and the tense morpheme immediately following it always form not just a phonological constituent but a morphosyntactic constituent as well (see Sells (1995) among others). This line of thinking is often referred to as the lexicalist hypothesis in the literature. On the other hand, there are authors who argue that a verb stem and the tense morpheme immediately following it do not necessarily form a morphosyntactic constituent (see Tokieda (1950) and Fukui & Sakai (2003) among others). This view is sometimes referred to as the non-lexicalist view in the literature. The theory that we will advance in this paper, according to which the structure shown in (8) above is possible, entails that, at least in some cases, the tense morphemes in Japanese are syntactically independent and take tenseless clauses as complements. Thus, if the view that we are going to advocate is correct, the lexicalist hypothesis needs to be abandoned.

Before proceeding, we wish to clarify exactly what it means to reject the lexicalist hypothesis in the present context. It is an indisputable fact that a string made up of a tense morpheme and a verb stem immediately preceding it always form a phonological constituent (more specifically, a phonological word) in Japanese. At the same time, there is no easily available evidence that a string of that form is not a morphosyntactic constituent. Our claim in the present paper is that a string that is indisputably a phonological constituent can nevertheless be analyzed by the language learner as a morphosyntactic non-constituent, even when there is no easily available evidence for such an analysis.

2 RNR of mismatched verb forms?

We begin by examining the third type of analysis mentioned above. This analysis appears viable for RNR constructions like (1), which involve conjunction. The analysis, however, encounters a problem when it is applied to examples involving disjunction, such as (10).

(10) Hanako ga yama e, mata wa Masao ga kawa e itta.
Hanako NOM mountain to or Masao NOM river to go-PAST
'Hanako went to the mountain, or Masao went to the river.'

The pre-RNR structure posited for sentence (10) in this analysis is shown in (11). The problem is that sentence (11) is considerably unnatural as a sentence expressing simple disjunction of two propositions.

(11) [Hanako ga yama e iki], mata wa [Masao ga kawa e
[Hanako NOM mountain to go-INF] or [Masao NOM river to
itta].
go-PAST]

The sentence in (11) is acceptable as a sentence expressing something along the lines of "Hanako habitually went to the mountain and Masao habitually went to the river, and on any given day, one of the two types of events (namely either Hanako going to the mountain or Masao going to the river) took place," but it does not express simple disjunction, which *can* be expressed by (10).

Our assertion that a sentence like (11) cannot express simple disjunction devoid of the implication of habituality is justified by the result of a questionnaire study we conducted using (12) as one of the experimental sentences.

(12) ??[Seifu-gun ga byôin o kûbaku shi], mata wa
[government forces NOM hospital ACC air strike do-INF] or
[hanran-gun ga byôin no sugu chikaku no buki-ko o
[rebel forces NOM hospital GEN immediate vicinity GEN arsenal ACC
bakuha shita] rashii.
explode do-PAST] it appears
'It appears that either the government forces did an air strike on the hospital or the rebel forces exploded the arsenal in the immediate vicinity of the hospital.'
<1, 4, 6, 4>

The respondents of the questionnaires mentioned in the present paper were all students at the University of Tokyo, and received 500 yen as a compensation for their time. The respondents were asked to judge the acceptability of given sentences on the scale of 1 to 4 described in Table 1. The order of sentences was randomized for each respondent. Each sentence was accompanied by a description of what the

Table 1: The 4-point scale used in the questionnaires

rating	meaning of the rating
1	'The sentence is perfectly natural under the intended reading.'
2	'The sentence is slightly unnatural under the intended reading.'
3	'The sentence is considerably unnatural under the intended reading.'
4	'The sentence is completely impossible under the intended reading.'

intended reading of that sentence was. The four figures shown after sentence (12) and some other sentences below indicate the number of respondents who chose 1, 2, 3, and 4 respectively for those sentences. A sentence for which the mean acceptability rating was R is shown throughout this paper with no symbol if $1 \leq R < 2$, with '?' if $2 \leq R < 2.5$, with '??' if $2.5 \leq R < 3$, with '?*' if $3 \leq R < 3.5$, and with '*' if $3.5 \leq R \leq 4$.

The questionnaire results reported in this paper come from six different questionnaire studies. The questionnaire for sentence (12) included three experimental sentences and 12 filler sentences, and involved 15 respondents. (The other experimental sentences contained in this questionnaire were structurally and lexically similar to sentence (12) but did not involve right-node raising.) The questionnaire for sentences (18), (23), (24), (25), (26), and (27) included six experimental sentences and nine filler sentences, and involved 10 respondents. The questionnaire for sentences (28), (29), (33), (34), (35), and (37) included six experimental sentences and nine filler sentences, and involved 15 respondents. The questionnaire for sentences (36) and (38) included two experimental sentences and 14 filler sentences, and involved 28 respondents. The questionnaire for sentence (41) included three experimental sentences and 20 filler sentences, and involved 15 respondents. (The other experimental sentences in this questionnaire were structurally and lexically similar to (41) but did not involve coordination.) And the questionnaire for sentences (42) and (43) included three experimental sentences and 20 filler sentences, and involved 11 respondents. (The remaining experimental sentence in this questionnaire was structurally and lexically similar to (42) and (43), but contained only one accusative noun phrase.) What we call filler sentences here are sentences that are irrelevant to the present paper. Some of those sentences were in fact not literally fillers but were included in the questionnaire for some specific purposes.

The questionnaire result for sentence (12) indicates that the sentence, which has the same structure as (11) but pragmatically disfavors habitual interpretation unlike (11), is considerably unnatural. If we assume (i) that sentence (10) can be derived from sentence (11) through application of a particular type of RNR and (ii) that the type of RNR invoked in generating (10) is meaning-preserving, we predict incorrectly that sentences like (11) and (12) must be able to express simple disjunction, since (10) is capable of expressing simple disjunction. Thus, if assumption (ii) above can be shown to be correct, then we will be able to conclude that assumption (i) must be incorrect. The question, of course, is whether assumption (ii)

can be shown to be correct.

Right-node raising can be meaning-changing under certain circumstances, but there is a reason to believe that the type of right-node raising that is invoked in generating (10) must be meaning-preserving. As noted in Yatabe (2012) and Valmala (2013), when right-node raising is meaning-changing, there has to be a prosodic boundary immediately preceding the right-node-raised expression, so that the right-node-raised expression is pronounced as an independent prosodic constituent (or a sequence of independent prosodic constituents) detached from the phrase (typically a coordinate structure) out of which it has been right-node-raised. In the case at hand, namely sentence (10), the right-node-raised expression is either the verbal expression *itta* 'go-PAST' as a whole or the verb stem that is at the left edge of that expression. There is no prosodic boundary immediately preceding the verb stem, and the verbal expression *itta* is pronounced as a normal part of the prosodic constituent that comprises the immediately preceding expression *kawa e* 'river to' and the verbal expression. This suggests that, even if the sentence in (10) had been derived from (11) by right-node-raising the verbal expression *itta* or a part of it, the right-node raising involved could not have changed the meaning of the sentence.

We therefore conclude that a sentence like (10) is not derived from a structure like (11).

From a logical point of view, it is possible that a sentence like (1), involving conjunction, can be derived from (9), even if a sentence like (10), involving disjunction, is not derived from (11). We believe, however, that that is a remote possibility. For one thing, it seems crosslinguistically common for there to be parallelism between structures involving conjunction and structures involving disjunction. For another, whatever mechanism derives sentence (10) will derive sentence (1) from a source distinct from (9), thus obviating the need to have a mechanism that derives (1) from (9). Therefore Occam's razor justifies a certain amount of prejudice against the view that (1) can be derived from (9).

3 RNR out of tensed clauses

Next, we will consider whether there are sentences that must be analyzed as involving RNR of a tensed verb out of coordinated tensed clauses, as depicted in (7). It turns out that there clearly are such sentences. (13) is one such sentence.

(13) Hanako wa osoraku yama, Masao wa osoraku kawa e,
Hanako TOP probably mountain Masao TOP probably river to
(sorezore) itta.
(individually) go-PAST
'Hanako probably went to the mountain and Masao probably went to the river (and the two of them were acting individually).'

Since topic phrases like *Hanako wa* and *Masao wa* cannot appear inside a tenseless

phrase (see Takubo (1987)), this sentence can only be analyzed as involving RNR of the tensed verb *itta* 'go-PAST' out of two coordinated tensed clauses.

There are two potential problems with this account that need to be addressed. The first potential problem concerns the grammatical status of the postulated pre-RNR structure. In the account we are advocating here, sentence (13) is derived from a structure like (14).

(14) Hanako wa osoraku yama e itta, Masao wa osoraku kawa e
Hanako TOP probably mountain to go-PAST Masao TOP probably river to
itta.
go-PAST
'Hanako probably went to the mountain, Masao probably went to the river.'

The problem is that it is not intuitively obvious that this string is allowed as a possible sentence in Japanese; example (14) is an acceptable string in Japanese, but it is conceivable that it is licensed only as a sequence of two independent sentences, rather than as a single grammatical sentence. Our account cannot be correct if a string like (14) is not allowed to be a single grammatical sentence.

This potential problem turns out not to be a real problem for our account, since an example like the following indicates that a juxtaposition of two sentences like (14) can indeed be licensed as a single syntactic constituent in the language.

(15) Kare wa kekkyoku iwanakatta, [kare-jishin ga iku, kare-jishin
he TOP ultimately say-NEG-PAST [he himself NOM go-PRES he himself
ga tatakau to].
NOM fight-PRES COMP]
'He ultimately did not say that he would go himself and he would fight himself.'

The string *kare-jishin ga iku, kare-jishin ga tatakau* 'he would go himself and he would fight himself' in this sentence can only be analyzed as a syntactic constituent consisting of two juxtaposed clauses.

It might seem possible to view sentence (15) as having been derived from (16) by right-node-raising the sentence-final complementizer *to*.

(16) Kare wa iwanakatta, [kare-jishin ga iku to, kare-jishin
he TOP say-NEG-PAST [he himself NOM go-PRES COMP he himself
ga tatakau to].
NOM fight-PRES COMP]
'He ultimately did not say that he would go himself, that he would fight himself.'

If that is a possible analysis of sentence (15), then the sentence will no longer provide evidence that two juxtaposed tensed clauses can form a syntactic constituent. It is, however, arguably impossible to analyze (15) as a result of such application

of RNR, because (15) is not synonymous with (16). Sentence (15) can mean that the man referred to did not say "I will go myself, and I will fight myself." On this reading, the sentence can be true even if the man expressed the content of one of the two embedded clauses, as long as he did not express the content of the other embedded clause. On the other hand, sentence (16) cannot express that meaning; it can only mean that the man did not express the content of either of the two embedded clauses.

As we noted in the previous section as well, right-node raising can be meaning-changing under certain circumstances, but the difference in meaning between (15) and (16) cannot be ascribed to right-node raising, if we are correct in assuming that the meaning-changing kind of right-node raising always creates a prosodic boundary immediately before the right-node-raised expression; the sentence-final complementizer *to* in sentence (15), which is the right-node-raised expression in the hypothetical scenario under discussion, does not have to be preceded by an intonational break, and can be pronounced as part of a phonological word that comprises the immediately preceding verbal expression *tatakau* 'fight-PRES' and the complementizer. Thus, sentence (15) must be generated without application of RNR at least when the sentence-final complementizer is not immediately preceded by an intonational break, and we can therefore conclude that a juxtaposition of two tensed clauses is allowed to form a syntactic constituent.

The second potential problem with the proposed account of sentence (13) is that the postulated source for it, namely (14), cannot be used in all contexts in which (13) can be used. A case in point is the contrast between (17) and (18).

(17) Daijôbu sa, Hanako wa osoraku yama, Masao wa osoraku
OK I assure you Hanako TOP probably mountain Masao TOP probably
kawa e itta kara.
river to go-PAST because
'It's going to be OK, I assure you, because Hanako probably went to the mountain and Masao probably went to the river.'

(18) ?Daijôbu sa, Hanako wa osoraku yama e itta, Masao
OK I assure you Hanako TOP probably mountain to go-PAST Masao
wa osoraku kawa e itta kara.
TOP probably river to go-PAST because
'It's going to be OK, I assure you, because Hanako probably went to the mountain and Masao probably went to the river.'
<2, 5, 0, 3>

In the proposed account, (17) is derived from (18) by right-node-raising the string *e itta* 'to go-PAST' out of the two embedded clauses. Thus, the fact that (18) is slightly awkward unlike (17) appears problematic.

In our view, this is also not a real problem for the proposed account. The reason sentence (18) is awkward most probably has to do with the fact that the sentence-final morpheme *kara* 'because' is an enclitic, i.e. an expression that needs

to be phonologically dependent on an expression that immediately precedes it. This view receives support from the fact that the syntactic structure exemplified by (18) is perfectly acceptable when the sentence-final morpheme is clearly not an enclitic, as in (15) above. The complementizer *to*, which immediately follows the juxtaposed tensed clauses in (15), can be pronounced as an independent phonological word, separated from the preceding expressions by an intonational break, as in (19), where the use of a comma before *to* is meant to indicate the presence of an intonational break there.

(19) Kare wa kekkyoku iwanakatta, [kare-jishin ga iku, kare-jishin
he TOP ultimately say-NEG-PAST [he himself NOM go-PRES he himself
ga tatakau, to].
NOM fight-PRES COMP]
'(Same as (15))'

In contrast, the postposition *kara*, which immediately follows the juxtaposed tensed clauses in (18), cannot be pronounced as an independent phonological word; there cannot be an intonational break immediately before that postposition. These observations justify our hypothesis that *kara* is an enclitic whereas *to* is not. Thus, we can capture both the awkwardness of (18) and the well-formedness of (15) by postulating a constraint like (20).

(20) An enclitic like *kara* must not immediately follow a coordinate structure, when it is not possible for the enclitic to become phonologically dependent on a host that is part of each of the conjuncts (such as an expression that has been right-node-raised out of each of the conjuncts).

This constraint is consistent with the overall theory that we are arguing for in this paper. Moreover, the postulated constraint would not be an unreasonable one; it is arguably a mirror image of the constraint that blocks expressions like (21) and (22) in French (see Bonami & Tseng (2010) for a recent discussion of phenomena of this type).

(21) *de le père et la mère
of the father and the mother

(22) *du père et la mère
of the father and the mother

Suppose that the preposition *de* is a proclitic (i.e. an expression that needs to be phonologically dependent on an expression that immediately follows it) when its complement is either a non-coordinate structure that starts with the determiner *le* or a coordinate structure one of whose conjuncts starts with *le*. Suppose also that French has a constraint that prohibits a proclitic like *de* from preceding a coordinate structure when it is not possible for the proclitic to become phonologically dependent on a host that is part of each of the conjuncts. Then (21) and (22) will

both be correctly ruled out because in (21) *de* is not phonologically dependent on any host and in (22) *de* is phonologically dependent on a host that is part of the first conjunct alone.

At first blush, the analysis that we have proposed seems to be contradicted by the following observation: a sentence like (18) improves when the word *soshite* 'and' is added between the two juxtaposed embedded clauses, as in (23).

(23) Daijôbu sa, [Hanako wa osoraku yama e itta, soshite
OK I assure you [Hanako TOP probably mountain to go-PAST and
Masao wa osoraku kawa e itta kara].
Masao TOP probably river to go-PAST because]
'It's going to be OK, I assure you, because Hanako probably went to the mountain and Masao probably went to the river.'
<6, 4, 0, 0>

If addition of the word *soshite* does not alter the syntactic structure involved, sentence (23) is expected to be as awkward as sentence (18), but that expectation is not fulfilled. The Wilcoxon signed-rank test showed that (23) was rated as significantly more acceptable than (18) ($Z = 2.21$, $p = 0.03$).

We submit that addition of *soshite* in this case does alter the syntactic structure involved. More specifically, we hypothesize that what looks like two juxtaposed clauses in a sentence like (23) is in fact not a coordinate structure but a non-coordinate headed structure such that what looks like the second conjunct in it (that is, the clause that starts with the word *soshite*) is its sole head and what looks like the first conjunct in it is an adjunct. If this hypothesis is correct, the enclitic *kara* in (23) can become phonologically dependent on the immediately preceding verbal expression *itta* without violating the constraint in (20).

One piece of evidence for this hypothesis comes from observations like the following.

(24) ?Kimi wa, [[sono biru ni kaminari ga ochita], soshite
you TOP [[that building LOC lightning NOM fall-PAST] and
[kekka-teki ni nani ga okita] kara] komatta no?
[as a result what NOM happen-PAST] because] be troubled-PAST NML
'What is the thing x such that you got into trouble because a lightning hit that building and x happened as a result?'
<3, 3, 3, 1>

(25) ?*Kimi wa, [[sono biru ni nani ga ochita], soshite [kekka-teki ni
you TOP [[that building LOC what NOM fall-PAST] and [as a result
kaji ga okita] kara] komatta no?
fire NOM happen-PAST] because] be troubled-PAST NML
'What is the thing x such that you got into trouble because x hit that building and a fire broke out as a result?'
<1, 1, 3, 5>

In both these sentences, the word *kara* 'because' takes as the complement a sequence of juxtaposed clauses joined by *soshite*, and one of the clauses contains the *wh* expression *nani* 'what'. The *wh* word is contained in the second of the juxtaposed clauses in (24), and it is contained in the first of the juxtaposed clauses in (25). If the juxtaposed clauses constitute a normal coordinate structure, these sentences are expected to have the same level of acceptability, but the Wilcoxon signed-rank test revealed that sentence (24) was rated as significantly more acceptable than sentence (25) ($Z = 2.73$, $p < 0.01$). We take this to be a piece of evidence that the juxtaposed clauses in sentences like (23), (24), and (25) do not constitute coordinate structures.

The complementizer *to*, which is not an enclitic, contrasts with *kara* in this regard as well, as shown by the following examples.

(26) ?Kimi wa, [[sono biru ni kaminari ga ochita], soshite
you TOP [[that building LOC lightning NOM fall-PAST] and
[kekka-teki ni nani ga okita], to] omotteru no?
[as a result what NOM happen-PAST] that] think NML
'What is the thing x such that you think that a lightning hit that building and x happened as a result?'
<1, 6, 3, 0>

(27) ?Kimi wa, [[sono biru ni nani ga ochita], soshite [kekka-teki ni
you TOP [[that building LOC what NOM fall-PAST] and [as a result
kaji ga okita], to] omotteru no?
fire NOM happen-PAST] that] think NML
'What is the thing x such that you think that x hit that building and a fire broke out as a result?'
<0, 7, 3, 0>

In both these sentences, *to* takes as the complement a sequence of two juxtaposed clauses, with the word *soshite* in between. In (26), the second of those juxtaposed clauses contains a *wh* word *nani*, and in (27), the first of the juxtaposed clauses contains that word. There is no discernible difference in acceptability between the two examples. This observation makes sense if we assume that a sequence of juxtaposed clauses with *soshite* in between is structurally ambiguous and can be analyzed not only as a non-coordinate headed structure but also as a normal coordinate structure. When such a sequence of clauses is followed by *kara*, it has to be analyzed as a non-coordinate structure because of the constraint stated in (20). On the other hand, when such a sequence is followed by *to*, it can be analyzed as a normal coordinate structure, with the result that a *wh* word is allowed to occur in any of the juxtaposed clauses, albeit somewhat marginally.

Thus, there does not appear to be any fundamental problem with the hypothesis that a tensed verb can be right-node-raised out of juxtaposed tensed clauses in Japanese.

4 RNR out of tenseless phrases

In this section, it will be argued that there are sentences that are amenable only to the analysis depicted in (8), which is incompatible with the lexicalist hypothesis. Our argument here is based on sentence (28).

(28) Mai-asa chan to, [jûgo-fun gurai jogingu o suru ka],
every morning regularly [about 15 minutes jogging ACC do-PRES or]
chôshoku mae ni udetatefuse, chôshoku go ni sukuwatto o shita.
before breakfast pushup after breakfast squat ACC do-PAST
'Every morning, I regularly either jogged for about 15 minutes or did pushups before breakfast and squats after breakfast.'
<6, 6, 0, 3>

In the latter half of this sentence, the string *chôshoku mae ni udetatefuse* 'pushups before breakfast' and the string *chôshoku go ni sukuwatto* 'squats after breakfast' are juxtaposed with each other. Since neither of the juxtaposed strings consists of co-arguments of the same predicate, this portion of the sentence cannot be regarded as an instance of argument-cluster coordination. Thus, if we are to adhere to the lexicalist hypothesis, it has to be assumed that this sentence is derived from sentence (29) by right-node-raising the accusative case marker *o* and the tensed verb *shita*.

(29)?*Mai-asa chan to, [jûgo-fun gurai jogingu o suru ka],
every morning regularly [about 15 minutes jogging ACC do-PRES or]
chôshoku mae ni [udetatefuse o] shita, chôshoku go ni [sukuwatto
before breakfast [pushup ACC] do-PAST after breakfast [squat
o] shita.
ACC] do-PAST
'(Same as (28))'
<0, 3, 5, 7>

This assumption, however, is problematic. As shown by the questionnaire result, sentence (29) is considerably unnatural under the intended interpretation. The Wilcoxon signed-rank test showed that (29) was rated as significantly less acceptable than (28) ($Z = 2.94$, $p < 0.01$). The only meaning that sentence (29) can express appears to be something along the lines of "Every morning, I regularly either jogged for about 15 minutes or did pushups before breakfast, and I did squats after breakfast." In other words, whereas the structure of the verb phrase in (28) is (30), the structure of the verb phrase in (29) seems to be (31).

(30) [VP1 [VP2 VP3]]

(31) [[VP1 VP2] VP3]

Thus, (29) cannot be the pre-RNR structure of (28) unless it is assumed that RNR can induce restructuring of the kind that can transform (31) into (30). Such an assumption appears to us to be far-fetched in the first place, and it is made all the more implausible by the fact that there is no intonational break immediately before the right-node-raised expression in (28), a fact that suggests that the right-node raising involved in generating (28) is of the meaning-preserving type.

In contrast, such a problematic assumption is not forced on us if the analysis depicted in (8) is applied to (28). On such an account, sentence (28) can be generated as follows.

(32) [Mai-asa chanto
[[jûgo-fun gurai jogingu o suru ka]
[[chôshoku mae ni udetatefuse o s-]
[chôshoku go ni sukuwatto o s-]]]-ta]
↓
[Mai-asa chanto
[[jûgo-fun gurai jogingu o suru ka]
[[chôshoku mae ni udetatefuse]
[chôshoku go ni sukuwatto o s-]]]-ta]

The bound morpheme *s-* is the verb stem of the verb *suru* 'to do', and *-ta* is the past tense morpheme. In this analysis, the complement of the past tense morpheme has a structure like (30), where VP1, which ends with *ka* 'or', is headed by the present tense form of a verb (*suru*), whereas VP2 and VP3 are both headed by a verb stem (*s-*). What is right-node-raised is the sequence made up of the accusative case marker *o* and the verb stem *s-*. After the application of RNR, the verb stem and the tense morpheme are combined to become the phonological word *shita*.

The following three examples are variants of sentences (28) and (29), and exhibit the same pattern of acceptability as those sentences.

(33) Mai-asa chan to, [jûgo-fun gurai jogingu o suru ka],
every morning regularly [about 15 minutes jogging ACC do-PRES or]
chôshoku mae ni udetatefuse, chôshoku go ni sukuwatto o shita?
before breakfast pushup after breakfast squat ACC do-PAST
'Did you regularly either jog for about 15 minutes or do pushups before breakfast and squats after breakfast, every morning?'
<11, 2, 2, 0>

(34) *Mai-asa chan to, [jûgo-fun gurai jogingu o suru ka],
every morning regularly [about 15 minutes jogging ACC do-PRES or]
chôshoku mae ni udetatefuse o shita? chôshoku go ni sukuwatto o
before breakfast pushup ACC do-PAST after breakfast squat ACC
shita?
do-PAST

‘(Same as (33))’
<1, 1, 4, 9>

(35) *Mai-asa chan to, [jûgo-fun gurai jogingu o suru ka],
every morning regularly [about 15 minutes jogging ACC do-PRES or]
chôshoku mae ni udetatefuse o shita, chôshoku go ni sukuwatto o
before breakfast pushup ACC do-PAST after breakfast squat ACC
shita?
do-PAST
‘(Same as (33))’
<0, 1, 7, 7>

Sentence (33) is an interrogative variant of sentence (28), and is as acceptable as the latter. Sentences (34) and (35) are interrogative variants of (29), and are both even less acceptable than the original, non-interrogative sentence. The only difference between (34) and (35) is that the former contains two question marks whereas the latter contains only one question mark.

The following example shows that sentence (29) does not become acceptable even if the word *soshite* is added between the two juxtaposed tensed clauses.

(36) *Mai-asa chan to, [jûgo-fun gurai jogingu o suru ka],
every morning regularly [about 15 minutes jogging ACC do-PRES or]
chôshoku mae ni udetatefuse o shita, soshite chôshoku go ni
before breakfast pushup ACC do-PAST and after breakfast
sukuwatto o shita.
squat ACC do-PAST
’(Same as (28))’
<0, 0, 9, 19>

This observation is consistent with what our hypothesis leads us to expect.

The following example, which is modelled after an example discussed in Kuroda (2003), shows that the process that we have claimed takes place inside the complement of a tense morpheme can take place inside the complement of the causative morpheme *(s)ase*. This observation adds to the plausibility of the proposed account.

(37) Hanako wa Masao ni, [sôji o shite fuyôhin o
Hanako TOP Masao DAT [cleaning ACC do-GER unnecessary items ACC
subete shobun suru ka], heya-dai o kyô jû, chûshajô-dai
all get rid of-PRES or] rent ACC within today parking space fee
o kongetsu chû ni zengaku shiharawaseru koto ni
ACC withing this month DAT the entire amount pay-CAUS-PRES NML DAT
shita.
do-PAST

'Hanako decided to make Masao do one of two things, where option 1 was to clean the place and get rid of all the unnecessary items, and option 2 was to pay up the rent before the end of the day and the parking space fee before the end of the month.'
<10, 4, 1, 0>

In this sentence, the causative morpheme *ase* (which is embedded in the phonological word *shiharawaseru*) takes a complement whose pre-RNR structure has the form shown in (30), where VP1 is a verb phrase followed by *ka* 'or' (i.e. the bracketed expression in (37)), and VP2 and VP3 are both tenseless verb phrases ending in the verb stem *shiharaw-*. The verb stem (together with the dative case marker *ni* and the noun *zengaku* 'the entire amount') is right-node-raised out of VP2 and VP3, and fuses with the causative morpheme and the tense morpheme to become the phonological word *shiharawaseru*. There is arguably no other way to analyze the structure of (37).

Note that sentence (37) itself poses the same problem for the lexicalist hypothesis that sentence (28) does. In order to analyze the sentence in accordance with the lexicalist hypothesis, it is necessary to derive it from (38) by right-node-raising the string *ni zengaku shiharawaseru*, but sentence (38) cannot express the same meaning as (37).

(38) ??Hanako wa Masao ni, [sôji o shite fuyôhin
Hanako TOP Masao DAT [cleaning ACC do-GER unnecessary items
o subete shobun suru ka], heya-dai o kyô jû
ACC all get rid of-PRES or] rent ACC within today
ni zengaku shiharawaseru, chûshajô-dai o
DAT the entire amount pay-CAUS-PRES parking space fee ACC
kongetsu chû ni zengaku shiharawaseru koto ni
withing this month DAT the entire amount pay-CAUS-PRES NML DAT
shita.
do-PAST
'(Same as (37))'
<2, 7, 11, 8>

To summarize the discussion so far, we have two arguments for the non-lexicalist analysis of (28). Unlike the lexicalist analysis, it does not require us to assume that RNR (more specifically, the type of RNR that does not induce a prosodic boundary immediately before the right-node-raised expression) can induce restructuring of the kind that transforms (31) into (30). Moreover, there is an independent reason to believe that the syntactic structure that it postulates is allowed by the grammar.

In the remainder of this section, we wish to address one apparent problem with our analysis. The account that we have presented above relies on the hypothesis that a structure of the following form can be analyzed as a coordinate structure.

(39) [[. . . V PRES] ka [. . . V]]
(where V is a verb stem and PRES is a present tense morpheme.)

It is not immediately obvious whether this hypothesis, which we owe to Kuroda (2003), is indeed correct or not.

The first thing to be noted about the structure depicted in (39) is that the first disjunct and the second disjunct belong to different syntactic categories, the former being tensed and the latter being not tensed. This might appear problematic, but it is not; all it means is that this structure is an instance of coordination of unlikes. In general, the conjuncts (including disjuncts) of a coordinate structure do not necessarily have to belong to the same syntactic category, as demonstrated in Bayer (1996) and the literature cited there. We can assume, without a problem, that the grammar of Japanese contains a phrase structure schema that licenses a coordinate structure consisting of one or more *ka*-marked phrases headed by the present-tense morpheme, followed by a VP headed by a tenseless verb stem. One way to deal with coordination of unlikes in general within the HPSG framework is presented in Yatabe (2004).

In our view, the hypothesis that an expression of the form shown in (39) can be a coordinate structure in Japanese is not only unproblematic but empirically justified by the following two considerations.

First, since part of a conjunct cannot be preposed out of the coordinate structure in Japanese (see Yatabe (2003)), the hypothesis in question leads us to expect that a part of the second VP in a structure like (39) cannot be preposed out of the expression that is assumed here to be a coordinate structure, and this expectation is fulfilled, as shown by the contrast between (40a) and (40b).

(40) a. Mai-asa [jogingu o suru ka] [hon o] yonda.
every morning [jogging ACC do-PRES or] [book ACC] read-PAST
'Every morning, I either jogged or read a book.'

b. *Mai-asa [hon o] [jogingu o suru ka] yonda.
every morning [book ACC] [jogging ACC do-PRES or] read-PAST
'(Same as (40a))'

According to the hypothesis we are pursuing, sentence (40a) contains a coordinate structure in which a VP of the form *jogingu o suru* 'jogging ACC do-PRES' and another VP of the form *hon o yom-* 'book ACC read' are coordinated by the word *ka* 'or'. The noun phrase *hon o* is part of the second conjunct in this structure, and hence is expected to be impossible to prepose out of the coordinate structure. This expectation is fulfilled by the unacceptability of sentence (40b). In contrast, if what we took to be the first conjunct of a coordinate structure is instead assumed to be, say, some kind of adjunct, then the unacceptability of (40b) will likely remain mysterious.

Second, we can use the so-called double-*o* constraint to show that the two or more expressions that are joined by the word *ka* in a structure like (39) have

identical syntactic status, as is predicted by the hypothesis that those two or more expressions are conjuncts of a coordinate structure. The double-*o* constraint is a grammatical rule of Japanese whose effect is illustrated by the following example.

(41)?*[Hizashi ga tsuyoku natte kita node], Satô sensei
[sunlight NOM strong become-GER come-PAST because] teacher Sato
wa [kodomo-tachi o], [seibô o kaburu ka] [hiyake-dome
TOP [children ACC] [school hat ACC put on-PRES or] [sunscreen
o] nuraseru koto ni shita.
ACC] apply-CAUS-PRES NML DAT do-PAST
'Because the sunlight became strong, Sato, the teacher, decided to make the children either put on the school hat or apply sunscreen to themselves.'
<1, 3, 5, 6>

In this example, the causee (*kodomotachi* 'children') is marked by the accusative case marker *o*, and the complement of the causative morpheme consists of two VPs which both consist of a transitive verb and a grammatical object marked by *o*. This sentence is ruled out by the double-*o* constraint, which prohibits the causee from being accusative when the complement of the causative morpheme is headed by a transitive verb.

Now, compare this sentence with the following two sentences.

(42) [Hizashi ga tsuyoku natte kita node], Satô sensei
[sunlight NOM strong become-GER come-PAST because] teacher Sato
wa [kodomo-tachi o], [seibô o kaburu ka] [kyôshitsu e]
TOP [children ACC] [school hat ACC put on-PRES or] [classroom to]
modoraseru koto ni shita.
return-CAUS-PRES NML DAT do-PAST
'Because the sunlight became strong, Sato, the teacher, decided to make the children either put on the school hat or return to the classroom.'
<3, 6, 2, 0>

(43) [Hizashi ga tsuyoku natte kita node], Satô sensei
[sunlight NOM strong become-GER come-PAST because] teacher Sato
wa [kodomo-tachi o], [kyôshitsu e modoru ka] [seibô o]
TOP [children ACC] [classroom to return-PRES or] [school hat ACC]
kaburaseru koto ni shita.
put on-CAUS-PRES NML DAT do-PAST
'Because the sunlight became strong, Sato, the teacher, decided to make the children either return to the classroom or put on the school hat.'
<4, 5, 2, 0>

In both these sentences, the causee is marked by the accusative case marker, and the complement of the causative morpheme contains two VPs, as in (41) above.

In sentence (42), the first VP in the complement of the causative morpheme is headed by a transitive verb, and the second VP is headed by an intransitive verb. In sentence (43), on the other hand, the first VP is headed by an intransitive verb, and the second VP is headed by a transitive verb. The questionnaire result indicates that these two sentences are equally acceptable.

This arguably means that the two VPs contained in the complement of the causative morpheme in these sentences have identical syntactic status, in conformity with the hypothesis that the structure shown in (39) constitutes a coordinate structure. Given that hypothesis, the status of sentences (41), (42), and (43) can be captured by a constraint like the following.

(44) The causee argument of a causative morpheme can be accusative only if the complement of that causative morpheme is either a single VP headed by an intransitive verb or a coordinate structure such that one of the conjuncts is headed by an intransitive verb.

In contrast, if the structure shown in (39) were, say, some kind of head-adjunct structure, sentence (42) and sentence (43) would have to differ from each other in acceptability, contrary to what we have seen.

5 Summary

We have examined the fine structure of clausal right-node raising constructions in Japanese, and argued that there are sentences in which a tensed verb is right-node-raised out of coordinated tensed clauses as well as sentences in which a verb stem is right-node-raised out of coordinated tenseless phrases. In the latter case, the tense morpheme has to be assumed to take a tenseless complement clause, and we have noted that the existence of such a structure contradicts the so-called lexicalist hypothesis, according to which a verb stem and the tense morpheme immediately following it always form a morphosyntactic constituent.

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