句構造文法による日本語のtough構文分析について

A Note on a PSG Account of the *Tough*-construction in Japanese
句構造文法による日本語の tough 構文分析について

Yasushi YOSHIMOTO
吉 本 靖

This paper aims to demonstrate that the Phrase Structure Grammar (PSG) account of the English *tough*-construction presented by Jacobson (1984) can be successfully adopted to account for the syntactic properties of the Japanese *tough*-construction. The *tough*-constructions in both languages exhibit the same case-marking pattern. This case-marking pattern can be correctly described by positing a rule that sanctions a "free gap." After reviewing Jacobson's account of the English *tough*-construction in section 1, I will show in section 2 that Jacobson's insights can be employed to correctly derive the Japanese *tough*-sentences, including those containing double objects and complex sentences. Section 3 discusses how word-order variation in Japanese can be described in the PSG framework. Finally, section 4 summarizes our discussion with some additional comments.

key words: *tough*-construction, Japanese, Phrase Structure Grammar

1. Jacobson's analysis of the *tough*-construction in English

Jacobson's (1984) primary concern is to account for the absence or presence of what she calls "connectivity" in English sentences within

the framework of Phrase Structure Grammar (PSG). *Tough*-constructions are representative of constructions that exhibit lack of connectivity. Consider the examples in (1), taken from Jacobson (1984).

(1) a. He is hard to please.
b. *Him is hard to please.
c. *It's hard to please he.
d. It's hard to please him.

The adjective *hard* belongs to what is customarily called "*tough*-adjectives," which also include such adjectives as *tough*, *easy*, and *fun*. The verb *please* in (1) subcategorizes for an object NP. Thus, in some of the earlier analyses of *tough*-construction in transformational grammar, it was argued that the subject NP *he* in (1a) originated in the object position of the verb *please* at D-structure, and moved to the subject position at S-structure.[1] Notice that the moved NP *he* bears the nominative case as in (1a), and cannot bear the accusative case as shown in (1b). This fact contrasts with the case pattern exhibited in (1c-d): the base-generated object NP of the verb *please* must bear the accusative case, and cannot bear the nominative case. Thus, there is a discrepancy in case-marking between the moved NP and the NP in situ. This is what Jacobson means by "lack of case-marking connectivity."

Interestingly enough, case-marking connectivity is present in the *wh*-movement construction, as illustrated in (2).

(2) a. Whom did you see?
b. *Who did you see?
c. Who did you say is coming?
d. *Whom did you say is coming?

The judgments reported in (2) are based on what Jacobson calls the *who/whom* dialect. In this dialect, the case of the moved *wh*-phrase is identical to the case it would have received in its original position at D-structure. This fact contrasts sharply with the case-marking pattern exhibited in the *tough*-construction in (1).

Thus, some of the earlier treatments of *tough*-construction in the transformational approach had to face the challenge of explaining why case-marking connectivity is absent in the *tough*-construction, and why it is present in the *wh*-movement construction. Of course, the current standard analysis of the *tough*-construction in the transformational approach no longer embraces the view described above, although Jacobson (1984) does not discuss it. The standard analysis of the *tough*-construction, originally proposed by Chomsky (1977), does not take the subject NP of this construction to have moved from a D-structure object position. According to the current version of this analysis, the S-structure of sentence (1a), for example, should be as in (3).

(3) He is hard $[_{CP}$ Op_i $[_{IP}$ PRO to please t_i]]

Here, the subject NP *he* is inserted in its S-structure subject position from the beginning.[2] The object position of the verb *please* is

occupied by a trace (in fact a "copy") of the moved empty operator, Op. By a rule of predication, Op gets bound by *he*, leading to the correct interpretation that the semantic object of the verb *please* is identical to the subject *he*.

Jacobosn's (1984) analysis of the *tough*-construction in the PSG framework can be understood as an alternative way to express the core insight expressed in the structure in (3). In particular, the absence of case-marking connectivity in the *tough*-construction is explained in her analysis by positing a "free gap" in object position that is not syntactically connected to the NP in subject position. Specifically, Jacobson assumes the following phrase structure rules ("PS rules" hereafter) to derive *tough*-sentences.[3]

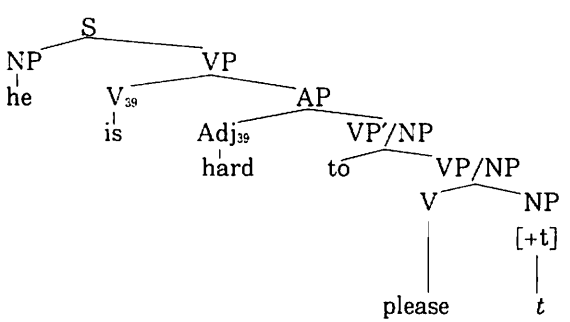
(4) a. S → NP VP

b. VP → V_{39} AP (where V_{39}=*be, seem*, etc.)

c. AP → Adj_{39} (PP) VP′/NP (where Adj_{39}=*hard, easy*, etc.)

These and other PS rules generate the structure (5) for the *tough*-sentence (1a).

(5)



Among the PS rules in (4), the crucial one is rule (4c). The *tough*-adjectives (here designated as Adj_{39}) take a complement VP′/NP that sanctions a "free gap."[4] In the tree diagram (5), the free gap is the NP that is the sister of the verb *please*.

This free gap is sanctioned by what Jacobson calls "Slash Elimination Principles":

(6) *Slash Elimination Principles*

i. For every rule of the form A → ... B ..., there is a rule:

$$A/B \rightarrow \ldots \underset{[+t]}{B} \ldots$$

ii. For every category of the form $\underset{[+t]}{B}$ there is a rule:

$$\underset{[+t]}{B} \rightarrow t.$$

For example, given the rule in (7), the Slash Elimination Principles allow the rules in (8):

(7) VP → V NP

(8) a. $VP/NP \rightarrow V\ \underset{[+t]}{NP}$

b. $\underset{[+t]}{NP} \rightarrow t$

The PS rules in (8) are utilized to derive a lower subtree in (5). The feature [+t] in (8) indicates that the NP with this feature is phonologically empty, dominating an empty category "*t*" as in (8b).[5] Importantly, the free gap in (5) has no syntactic connection with any other NPs in the sentence. (See note 4.) Hence, it is not surprising

that there is no case-marking connectivity between the subject NP and the gap in (5). Of course, the free gap in (5) does have a semantic connection with the subject NP, guaranteeing that the referent of this NP is identical to that of the subject NP. Jacobson shows that this fact can be explained by positing semantic rules that are associated with the syntactic rules in (4).[6]

In this way, the properties of the *tough*-construction can be adequately described within the PSG framework, once we assume the existence of free gaps. The occurrence of a free gap is correlated with the occurrence of a *tough*-adjective by virtue of the PS rule (4c). It is this fact that leads to the correct conclusion that the characteristic properties of the *tough*-construction are determined by *tough*-adjectives themselves. The lack of case-marking connectivity in the *tough*-construction, in particular, follows from the syntactic independence of a free gap, whose existence is sanctioned by the occurrence of a *tough*-adjective.

2. Jacobsonian analysis of the *tough*-construction in Japanese

We now consider the *tough*-construction in Japanese. Unlike English, the *tough*-adjectives in Japanese are bound morphemes that attach to a verb stem. This fact is exemplified in (9), where a *tough*-adjective *yasu* is attached to a verb stem *yomi*.[7]

(9) yomi-yasu-i
read-easy-PRES
'easy to read'

Apart from this morphological difference, the *tough*-construction in Japanese reveals striking similarities to its English counterpart. In particular, the absence of case-marking connectivity is also observed in the *tough*-construction in Japanese. Consider the following examples.

(10) a. Boku-wa kono hon-o yon-da.
I-TOP this book-ACC read-PAST
'I read this book.'

b. Kono hon-ga boku-niwa yomi-yasu-katta.
this book-NOM I-for read-easy-PAST
'This book was easy for me to read.'

c. *Kono hon-o boku-niwa yomi-yasu-katta.
this book-ACC I-for read-easy-PAST

As indicated in (10a), the verb *yon* (=*yomi*) case-marks its object with *o* (=accusative case). However, in the *tough*-construction (10b), the logical object NP *kono hon* 'this book' is marked with *ga,* which is the nominative case-marker. If *o* in (10b) is replaced with *ga,* the sentence becomes ungrammatical as shown in (10c). This case-marking pattern is identical to that in English shown in (1).

2.1. An account of simple *tough*-sentences in Japanese

Let us consider how the lack of case-marking connectivity in the Japanese *tough*-construction can be accounted for within the PSG framework, adopting Jacobson's insights on the English *tough*-construction. To start with, let us assume the PS rules in (11) in order to generate *tough*-sentences in Japanese.

(11) a. $S \rightarrow NP_{nom}\ AP$

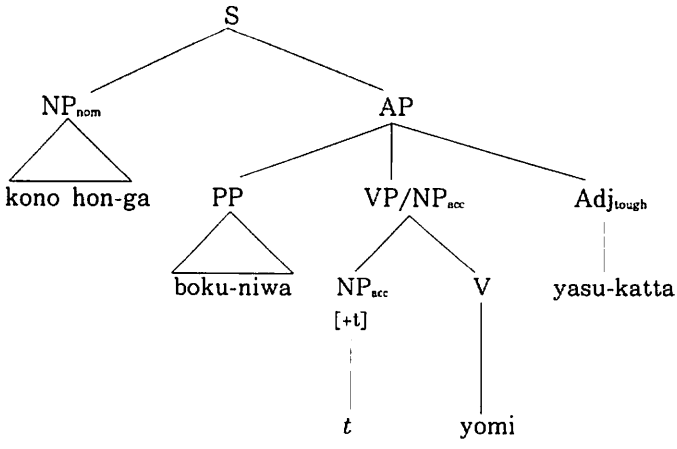
b. $AP \rightarrow (PP)\ VP/NP\ Adj_{tough}$

c. $VP \rightarrow NP_{acc}\ V$

In (11b), the category Adj_{tough} includes such adjectives as *yasu(-i)* 'easy', *niku(-i)* 'hard', etc. Since predicative adjectives in Japanese function as a predicate of a sentence without a supporting copula, there is no VP in the rewriting rule of S in (11a). The AP-rewriting rule in (11b) is what ultimately sanctions a free gap. We understand that the NP in (11b) is unspecified as to its case so that NP with any case can be a gap. In (11a), the symbol NP_{nom} dictates that the NP that appears in this position should bear the nominative case (i.e., the case-marker *ga* must attach to this NP). Similarly, NP_{acc} in (11c) indicates that the NP that appears in this position must have the accusative case-marker *o* attached to it.[8]

These rules yield the structure in (12) for the sentence in (10b).

(12)



Notice that the rewriting rule of the category VP/NP$_{acc}$ is not given in (11), but the Slash Elimination Principles sanction the rules in (13), once the PS rule in (11c) is given.

(13) a. $\text{VP/NP}_{acc} \rightarrow \underset{[+t]}{\text{NP}_{acc}}\ \text{V}$ (by (6i))

b. $\underset{[+t]}{\text{NP}_{acc}} \rightarrow t$ (by (6ii))

Since the gap in the object position of the verb *yomi* in (12) is a free gap, it has no syntactic connection with the subject NP *kono hon*. The subcategorization requirement of the verb is satisfied by the presence of the free gap NP. Since the NP *kono hon* appears in the subject position, the nominative case marker *ga* is attached to it. The semantic component of the grammar takes up the job of guaranteeing the identity between the referent of the subject NP *kono hon* and that

of the empty object NP.[9] Exactly as in the English case, the PS rule (11b) expresses the essence of the *tough*-construction: it is the *tough*-adjectives themselves that trigger the characteristic properties of the *tough*-construction.

Before closing this section, it should be mentioned that the *tough*-sentence (10b) has a well-formed variant in which the PP *boku-niwa* appears in the sentence-initial position:

(14) Boku-niwa kono hon-ga yomi-yasu-katta.
I-for this book-NOM read-easy-PAST
'For me, this book was easy to read.'

Evidently, (14) cannot be generated using the PS rules in (11). However, PSG is equipped with a tool to deal with generation of sentences like (14), which are considered to be derived by a movement rule called "scrambling" in the transformational approach. This issue will be taken up in section 3. For now, let us continue our analysis of the Japanese *tough*-construction, looking into more complex examples.

2.2 *Tough*-constructions involving double objects

Consider *tough*-constructions that contain ditransitive verbs. Example (15) is the double object construction from which we want to construct *tough*-sentences:

(15) Mary-ga John-ni ringo-o age-ru.
-NOM -DAT apple-ACC give-PRES
'Mary gives John an apple.'

The well-formed *tough*-sentences containing the proposition expressed in (15) include the following.

(16) a. John-**ga** (Mary-niwa) ringo-o age-yasu-i.
-NOM -for apple-ACC give-easy-PRES
'John is easy (for Mary) to give apples to.'

b. Ringo-**ga** (Mary-niwa) John-ni age-yasu-i.
apples-NOM -for -DAT give-easy-PRES
'Apples are easy (for Mary) to give to John.'

An ill-formed sentence is obtained if the case-markers of the object NPs in (15) remain the same in the *tough*-construction:

(17) *John-**ni** (Mary-niwa) ringo-**o** age-yasu-i.
-DAT -for apple-Acc give-easy-PRES

How can these facts be accounted for in the PSG framework? First, we need a VP-rewriting rule that can generate double object constructions. The following rule will suffice for our purposes:

(18) $VP \rightarrow NP_{dat}\ NP_{acc}\ V_{di}$

The symbol NP_{dat} in (18) designates that the NP occurring in this position requires the dative case-marker *ni* attached to it. Similarly, NP_{acc} designates that the accusative case-marker *o* must be attached to the NP occurring in this position. The symbol V_{di} stands for a ditransitive verb.

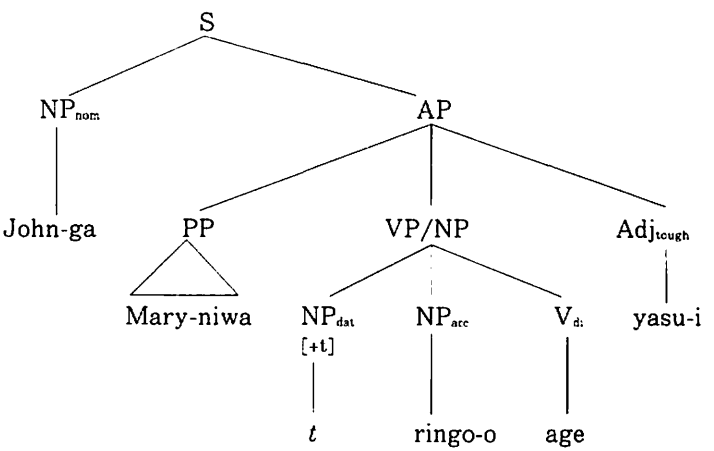
Given (18), the Slash Elimination Principles in (6) sanction the following rules.

(19) a. $VP/NP \rightarrow \underset{[+t]}{NP_{dat}}\ NP_{acc}\ V_{di}$

b. $\underset{[+t]}{NP_{dat}} \rightarrow t$

The PS rules (18), (19), and (11) jointly produce the structure (20) for the *tough*-sentence (16a):

(20)



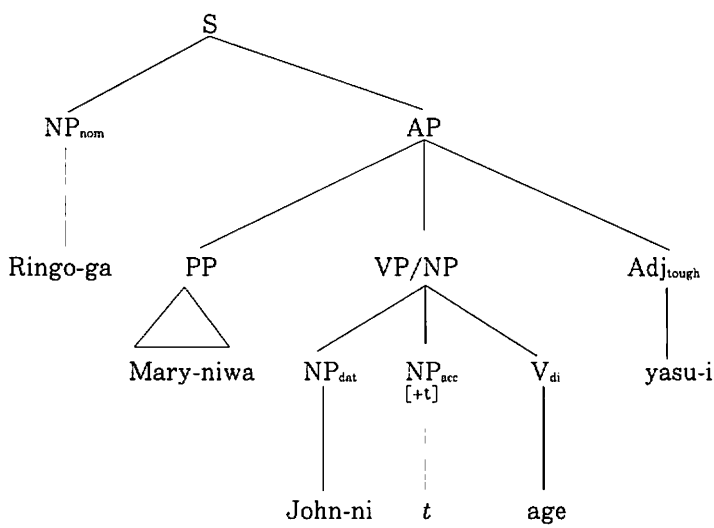
Note that the Slash Elimination Principles also sanction the rules in (21) in addition to those in (19).

(21) a. $VP/NP \rightarrow NP_{dat}\ \underset{[+t]}{NP_{acc}}\ V_{di}$

b. $\underset{[+t]}{NP_{acc}} \rightarrow t$

These rules are exactly what we need in order to generate sentence (16b). Applying the rules in (21), the following structure can be generated to yield sentence (16b).

(22)



In this way, the Japanese *tough*-construction containing double objects can also be successfully accounted for, in the manner parallel

to the English *tough*-construction.

Finally in this section, consider the ungrammatical example (17), repeated here as (23).

(23) *John-ni (Mary-niwa) ringo-o age-yasu-i.
-DAT -for apple-ACC give-easy-PRES

We can readily account for the ill-formedness of this example. Given the PS rules we posited, it is impossible for the object NPs of a ditransitive verb to be both overt: one of them must be phonologically empty. Furthermore, the NP that are semantically linked to such an empty NP must bear the nominative case, since it occupies the subject position. Hence, sentences like (23) can never be generated.

2.3 *Tough*-constructions containing embedded clauses

Our next task is to account for complex *tough*-sentences such as (24) and (25).

(24) Kono hon-ga Mary-niwa John-ni kau yooni tanomi-yasu-i.
this book-NOM -for -DAT buy COMP ask-easy-PRES
'This book is easy for Mary to ask John to buy.'

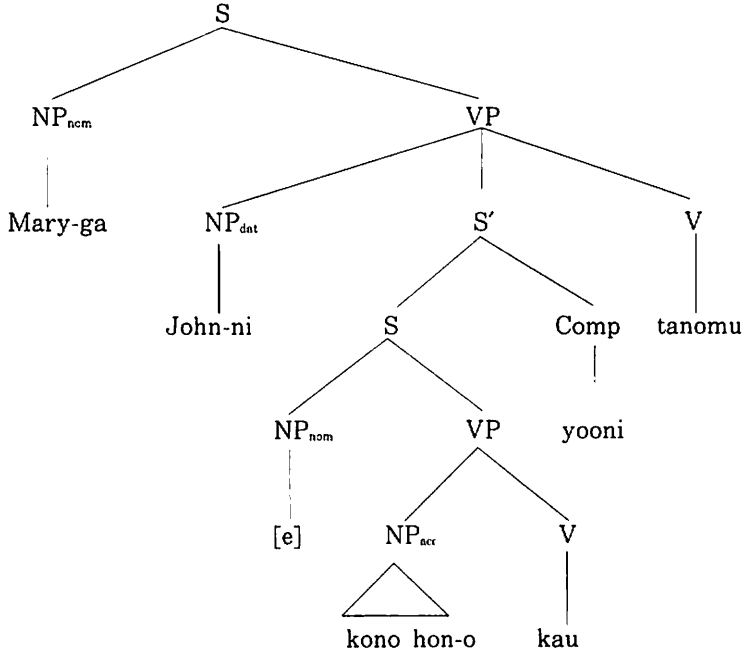
(25) John-ga Mary-niwa kono hon-o kau yooni tanomi-yasu-i.
-NOM -for this book-ACC buy COMP ask-easy-PRFS
'John is easy for Mary to ask to buy this book.'

These sentences contain the proposition expressed by sentence (26).

(26) Mary-ga John-ni [$_{S'}$ kono hon-o kau yooni] tanom-u.
-NOM -DAT this book-ACC buy COMP ask-PRES
'Mary asks John to buy this book.'

We assume that (26) has the following structure.

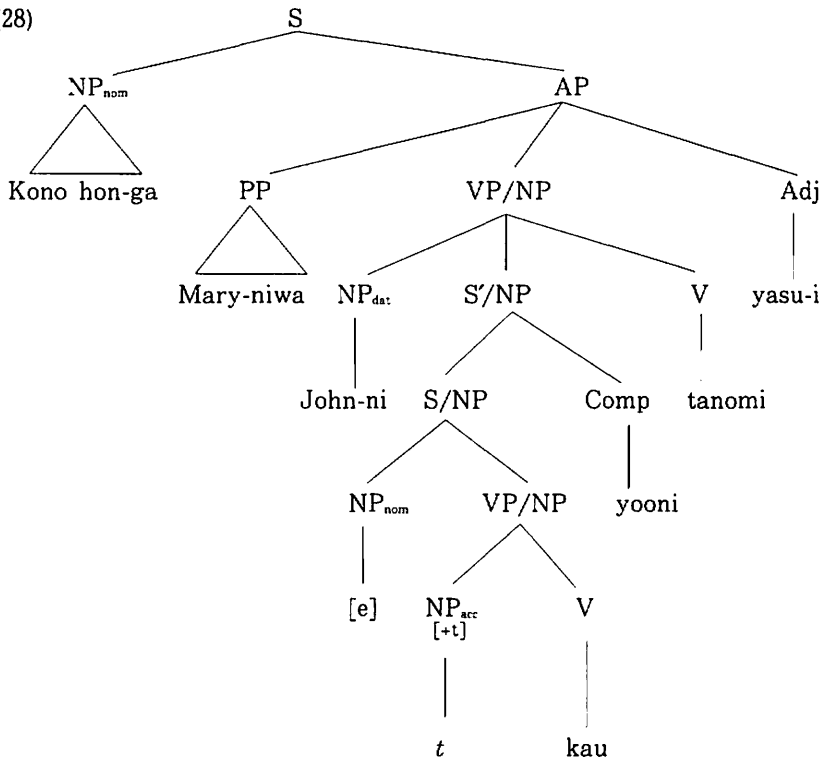
(27)



We also assume that the empty category [e] in (27) is interpreted to be coreferential with the dative NP *John* by some mechanisms of grammar.

Returning now to the *tough*-sentence (24), its structure should look like (28).

(28)



Notice that the free gap in (28) is placed in the embedded clause. Nevertheless, this structure is permitted in PSG by virtue of the Slash Passing Principle:

(29) *Slash Passing Principle*

For every rule of the form A → ...C..., there is a rule of the form

A/B → ...C/B..., where A, B, and C are basic categories.

Given (29), existence of the (a) rules in (30)-(31) entails existence of the (b) rules in (30)-(31), respectively.

(30) a. S′ → S Comp
b. S′/NP → S/NP Comp

(31) a. S → NP VP
b. S/NP → NP VP/NP

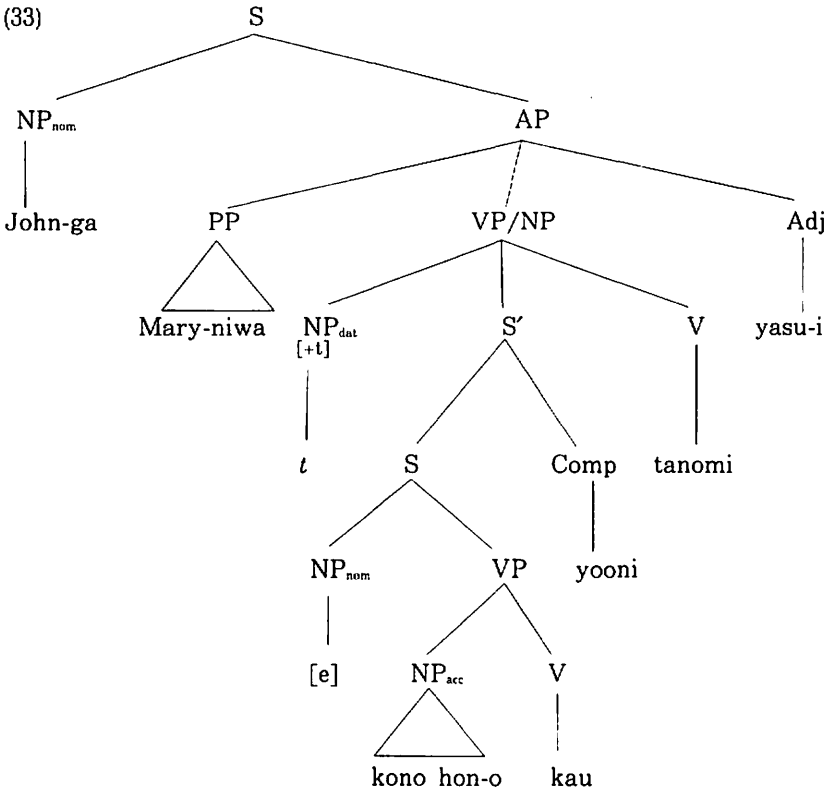
Utilizing the (b) rules in (30)-(31), coupled with the PS rules we are already assuming, the structure in (28) can be generated.

Let us turn to the other *tough*-sentence in (25), repeated here as (32) for convenience.

(32) John-ga Mary-niwa kono hon-o kau yooni tanomi-yasu-i.
-NOM -for this book-ACC buy COMP ask-easy-PRFS
'John is easy for Mary to ask to buy this book.'

The following structure can be assigned to this sentence.

(33)



In contrast to (28), the free gap in (33) is a matrix-clause constituent. As such, this structure can be generated without recourse to the Slash Passing Principle.

To summarize this subsection, we have seen that complex *tough*-constructions containing embedded clauses can also be generated successfully in the approach we are adopting. This is accomplished by virtue of the Slash Passing Principle, which allows a free gap to be deeply embedded within a sentence.

Recapitulating section 2, we conclude that the Jacobsonian account of the English *tough*-construction can be successfully adopted to account for the Japanese *tough*-construction. Apart from formulating PS rules to fit the Japanese grammar, we have added nothing to the tools already existing in Jacobson's account of the *tough*-construction in English. Our result, then, gives additional support to the Jacobsonian approach to the *tough*-construction within the framework of PSG.

3. Accounting for word-order variation in PSG

So far, our investigation has been carried out as if word order of Japanese sentences were as rigidly fixed as that of English sentences. Of course it is not. As is well known, arguments in Japanese sentences can freely exchange their linear positions as long as they do not violate certain constraints of the grammar. In this section, we will show how this property of word-order variation in Japanese can be described in the PSG framework.

Let us start with simple sentences. Consider examples in (34).

(34) a. Mary-ga John-o home-ta.
-NOM -ACC praise-PAST
'Mary praised John.'

b. John-o Mary-ga home-ta.
-ACC -NOM praise-PAST
'Mary praised John.'

Both sentences express the same proposition. However, the subject NP and the object NP are ordered differently in (34a) and (34b). The standard transformational account of this phenomenon claims that (34b) is derived from the underlying form (34a) by a movement rule called scrambling: the object NP in (34a) is moved by this rule to the sentence-initial position, yielding (34b).[10]

In the PSG framework, we can resort to a general PS rule of the form (35) to account for the word-order variation in Japanese.

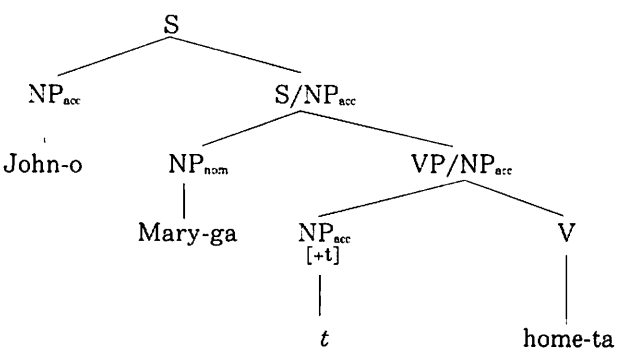
(35) $S \rightarrow \alpha\ S/\alpha$

In (35), α is a variable ranging over category labels, such as NP and PP. One specific instance of (35) is the rule (36).

(36) $S \rightarrow NP\ S/NP$

Given (36), example (34b) can be generated with the following structure.

(37)



Again, the Slash Passing Principle and the Slash Elimination Principles are crucially used in order to obtain some of the PS rules employed in the generation of (37). Notice that the NP gap in (37) is linked to the sentence initial NP *John-o* via the slash categories VP/NP_{acc} and S/NP_{acc}. Hence, there is case-marking connectivity between the gap and the NP *John-o*. Note also that this account of the word-order variation in Japanese can be viewed as an alternative way to express the core idea of the transformational account: in such sentences as (34b), there exists a gap, which is linked in some way with a "displaced" constituent.

With this much background, let us return to the *tough*-sentence that we left unaccounted for in section 2.1. Example (14) is repeated here as (38) for convenience:

(38) Boku-niwa kono hon-ga yomi-yasu-katta.
I-for this book-NOM read-easy-PAST
'For me, this book was easy to read.'

We assumed the PS rules in (39) (=(11)) to generate sentence (40) (=(10b)).

(39) a. $S \rightarrow NP_{nom}\ AP$
b. $AP \rightarrow (PP)\ VP/NP\ Adj_{tough}$
c. $VP \rightarrow NP_{acc}\ V$

(40) Kono hon-ga boku-niwa yomi-yasu-katta.
this book-NOM I-for read-easy-PAST
'This book was easy for me to read.'

In (40), the PP *boku-niwa* appears after the subject NP, conforming to PS rules (39a,b). In (38), however, the same PP appears sentence-initially, and the rules in (39) cannot generate this word order, although the sentence is perfectly grammatical.

A solution to this problem in the PSG framework is straightforward. Again, we can resort to a rule of the general form (35). This time, the specific form of the rule should look like (41).

(41) $S \rightarrow PP\ S/PP$

In addition, the Slash Passing Principle sanctions PS rule (42) from PS rule (39a).

(42) $S/PP \rightarrow NP_{nom}\ AP/PP$

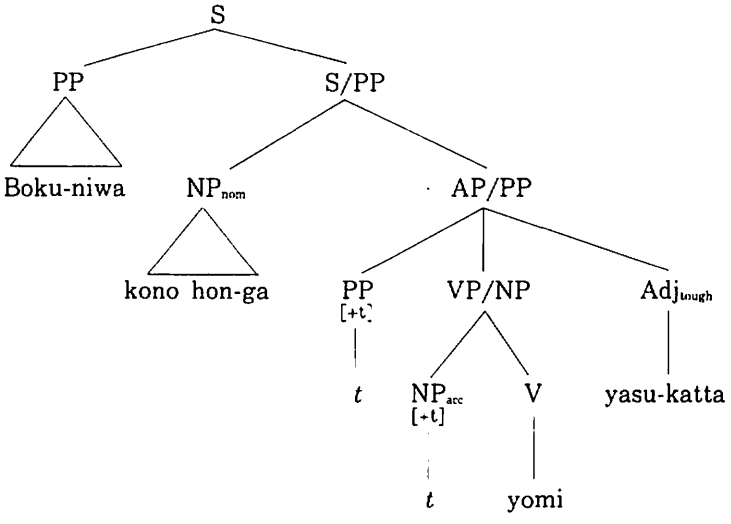
Furthermore, the Slash Elimination Principles sanction the PS rules in (43) from PS rule (39b).

(43) a. $AP/PP \rightarrow \underset{[+t]}{PP}\ VP/NP\ Adj_{tough}$

b. $\underset{[+t]}{PP} \rightarrow t$

Given these PS rules, sentence (38) can successfully be generated, with its structure in (44).

(44)



Along these lines, core facts with regard to the word-order variation in Japanese can be correctly described in PSG.[11]

4. Conclusion

To recapitulate our entire discussion, I have argued that the core insights of Jacobson (1984) regarding the *tough*-construction in English can be successfully applied to account for the *tough*-construction in Japanese. The central idea of Jacobson in this regard is that there exists a free gap in the *tough*-construction. Indeed, once we assume the existence of free gaps in the Japanese *tough*-construction as well as in the English *tough*-construction, the identical case-marking pattern in this construction in both languages immediately follows.

In addition to simple *tough*-sentences in Japanese, I have also analyzed more complex *tough*-constructions involving ditransitive verbs and embedded clauses. I have argued that these complex cases can be readily accounted for by utilizing the Slash Passing Principle and the Slash Elimination Principles, which are independently needed in PSG.

Finally, we have seen that the word-order variation observed in Japanese sentences can also be described by PSG. The approach to this problem presented in section 3 assumes a gap in the position where transformational theories assume a trace (or a copy). The gap is linked with another NP in the sentence via slash categories, just as a trace (or a copy) is linked with another NP in terms of movement chains in the transformational approach. Thus, although the specific mechanisms are different, the PSG account of word-order variation presented here and the transformational account of it are strikingly alike.

A similar comment can be made about the PSG account of the English *tough*-construction and the transformational counterpart of it. As mentioned in section 1, the current transformational analysis of this construction claims no syntactic connectivity between the subject NP and the object gap, just as Jacobson's account of it in PSG entails. Thus, these approaches share the same belief concerning one of the core properties of the *tough*-construction in English. Whether or not the same comment can be made about the *tough*-construction in Japanese is an interesting issue that I have to leave for future research.

Notes

1. See, for example, Postal (1971). Postal's analysis of *tough*-constructions posits the underlying structure like (i) for sentence (1a).

   (i) It is hard for X [$_S$ X to please him]

   The rule called Tough Movement then moves the underlying object *him* to replace the initial *it*.

2. In the Government-Binding Theory, the subject NP of the *tough*-construction was assumed not to be base-generated. Instead, it was assumed to be inserted in the subject position in the course of the derivation. The complication was due to the requirement that the θ-Criterion be observed at D-structure: the subject position of the *tough*-construction is a non-θ-position, and hence, no NP can occupy it at D-structure. This state of affairs constituted one of the empirical motivations for the Minimalist Program to dispense with the level of D-structure altogether. See Chomsky (1995: 188).

3. For typographical reasons, I use the symbol VP′ in the PS rule (4c) instead of the single-bar notation that Jacobson uses.

4. The other type of gaps is called "linked gaps." Linked gaps are sanctioned by PS rules of the general form of (i) or (ii):

   (i) $A \rightarrow \alpha\ B/\alpha$

   (ii) $\alpha \rightarrow A\ B/\alpha$

   Here, the α after the slash is responsible for sanctioning a gap. The gap thus sanctioned shares its properties with the other α in the same rule (i.e., its properties are linked with those of the other α). Hence, the term "linked gap." The fact that *wh*-movement construction exhibits case-marking connectivity follows from the

contention that this construction involves linked gaps.

Free gaps, on the other hand, are sanctioned by PS rules of the general form (iii):

(iii)　A → B C/D

Here, D after the slash is responsible for sanctioning a free gap. D has no link with another category in the same rule. Hence, the gap sanctioned by rules of this form are "free."

5. Obviously, the symbol "*t*" is borrowed from the transformational theory in which it is used as an abbreviation for "trace." The choice is somewhat misleading, since traces in the transformational theory are created by movement, an operation that the PSG theory does not assume.
6. See Jacobson (1984: 557-8).
7. The following abbreviations are used in the gloss of Japanese examples: NOM=nominative case marker; ACC=accusative case marker; DAT=dative case marker; TOP=topic marker; PAST=past tense marker; PRES=present tense marker.
8. We assume that this requirement applies only to overt NPs. The same comment applies to any other NP labels with a case specification, including NP_{nom}.
9. This can be done along the lines of Jacobson's semantic analysis of the English *tough*-construction.
10. An alternative view of this rule has recently been proposed by Bošković and Takahashi (1998). According to their view, sentence (34b) would not be derived from the underlying order of (34a). Rather, (34b) would be generated in its surface order, and in the LF component, the object NP would be moved downward to the

complement position of the verb for θ-theoretic reasons. This account of word-order variation in Japanese is attractive, since it accords well with the Minimalist assumption that all movement operations are feature-driven. Miyagawa (1997), however, defends the traditional view of scrambling within the Minimalist framework.

11. Gunji (1987: Ch.6) contains an alternative way to account for the word-order variation in Japanese within a PSG framework, together with the "slash approach" that is similar to the approach taken here.

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