

# PROSODIC SCRAMBLING\*

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## 1 Introduction

It has been observed by Saito (1985) and Koizumi (2000) that if multiple constituents are scrambled out of an embedded clause in terms of long-distance scrambling, the result is degraded, as the contrast between (1) and (2) shows (Koizumi 2000: 239):

- (1) **Hawai-de<sub>1</sub>** John-ga [Kiyomi-ga *t<sub>1</sub>* Masami-ni purezento-o katta to] omotteiru (koto)  
Hawaii-in John-NOM Kiyomi-NOM Masami-DAT present-ACC bought C think (fact)  
'John believes that Kiyomi bought a present for Masami in Hawaii.'
- (2)??**Purezento-o<sub>3</sub> Masami-ni<sub>2</sub> Hawai-de<sub>1</sub>** John-ga [Kiyomi-ga *t<sub>1</sub> t<sub>2</sub> t<sub>3</sub>* katta to]  
present-ACC Masami-DAT Hawaii-in John-NOM Kiyomi-NOM bought C  
omotteiru (koto)  
think (fact)

As Koizumi (2000) and Fukui and Sakai (2006; 'F&S') observe, however, "multiple long-distance scrambling" improves significantly if the scrambled element forms an intonational phrase, though we argue here that the relevant phonological phrase is not an intonational phrase but a major phrase (aka "intermediate phrase"). The boundary of a major phrase is often marked by a pause or glottalization. The major phrase is also the domain for catathesis (downstep in McCawley 1968). In (3), the major phrase is italicized and put in parentheses; a major phrase

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contains two or more recursively embedded minor phrases, each consisting of one or more non-lexical words plus a lexical word:

- (3) (**Purezento-o Masami-ni Hawaii-de**) John-ga [Kiyomi-ga katta to] omotteiru (koto)  
 present-ACC Masami-DAT Hawaii-in John-NOM Kiyomi-NOM bought C think (fact)  
 'John believes that Kiyomi bought a present for Masami in Hawaii.'

Koizumi claims that there is vacuous overt verb raising in Japanese and that cases like (3) are derived by scrambling of the remnant VP whose head V has been raised as shown in (4):

- (4) [<sub>VP</sub> **Purezento-o Masami-ni Hawaii-de t<sub>V</sub>**] John-ga [Kiyomi-ga t<sub>VP</sub> katta to]  
 present-ACC Masami-DAT Hawaii-in John-NOM Kiyomi-NOM bought C  
 omotteiru (koto)  
 think (fact)

F&S counter that there is no vacuous overt verb raising in Japanese. Moreover, they show that it is possible to scramble a portion of an alleged VP as long as it forms an intonational phrase (5):

- (5) (**Masami-ni Hawaii-de**) John-ga [Kiyomi-ga purezento-o katta to] omotteiru (koto)  
 Masami-DAT Hawaii-in John-NOM Kiyomi-NOM present-ACC bought C think (fact)  
 'John believes that Kiyomi bought a present for Masami in Hawaii.'

For this reason they propose that the elements are reanalyzed at PF (extending Marantz's (1988) Morphological Merger) where they form a PF constituent. Scrambling then applies to this PF constituent. As F&S themselves admit, however, the notion of Phrase-Level Merger is obscure.

This paper presents a prosodic movement analysis of "multiple scrambling" in Japanese. The organization of this paper is as follows. Section 2 argues that there are two kinds of scrambling, *i.e.* syntactic scrambling and prosodic scrambling. It is shown that the latter type of scrambling, which targets a prosodic constituent rather than a syntactic constituent, accommodates "multiple scrambling." Section 3 presents consequences of our analysis. Section 4 discusses the lack of locality effects with prosodic scrambling. Section 5 makes concluding remarks.

## 2 Prosodic Scrambling

We propose that there are two kinds of scrambling in Japanese, one in the syntax proper (involving an XP) and the other at PF (involving a prosodic constituent). We argue if material can scramble syntactically, it does. If scrambling targets material that is not a syntactic constituent, but is a prosodic constituent, then that material moves at PF (we call this movement *prosodic scrambling*). We also argue that the target prosodic constituent is not an intonational phrase, but a major phrase/intermediate phrase. We adopt Itô and Mester's (2007) idea that major phrases in Japanese are just recursive phonological phrases ( $\varphi$ 's), as shown below:

- (6) ((...) $\varphi$  (...) $\varphi$  ...) = major phrase (Itô and Mester 2007)

In (1a), since *Hawai-de* 'Hawaii-in', being a syntactic constituent, can scramble syntactically, it does. (2) cannot be generated by the narrow syntax because it does not involve movement of a syntactic constituent; neither can it be moved at PF because the fronted material is not combined into a single prosodic constituent. (3) cannot be derived syntactically, but it can involve prosodic scrambling because the fronted material forms a prosodic constituent by recursive embedding of multiple  $\varphi$ 's into a single  $\varphi$  (a major phase) as represented in (7):<sup>1</sup>

(7) ((*Purezento-o*) $\varphi$  (*Masami-ni*) $\varphi$  (*Hawai-de*) $\varphi$ ) $\varphi$  John-ga [Kiyomi-ga katta to] omotteiru

Our analysis predicts that there is a difference between syntactic and prosodic scrambling regarding syntactic conditions and LF interpretations. Syntactic scrambling obeys syntactic conditions, and is interpreted at LF either in its surface position or *in-situ* (due to radical reconstruction (Saito 1989)). Since prosodic scrambling occurs after syntax (in the PF component), it is not subject to syntactic conditions, and the scrambled material can only be interpreted *in situ* at LF. The next section shows that this prediction is borne out.

### 3 Consequences

#### 3.1 Scrambling of a "True Adjunct"

As pointed out by Saito (1985) and Koizumi (2000), long-distance scrambling of a "true adjunct" results in complete ungrammaticality (Saito 1985: 175; Koizumi 2000: 242):

- (8) a. Mary-ga [John-ga riyu-mo naku sono setsu-o sinjiteiru to] omotteiru (koto)  
 Mary-NOM John-NOM reason-even without that theory-ACC believe C think (fact)  
 'Mary thinks [that John believes in that theory without any reason].'  
 b.\* [**Riyu-mo naku**]<sub>i</sub> Mary-ga [John-ga **t<sub>i</sub>** sono setsu-o sinjiteiru to] omotteiru (koto)  
**reason-even without** Mary-NOM John-NOM that theory-ACC believe C think (fact)
- (9) a. Mary-wa [Bill-ga naze sono hon-o katta to] itta no  
 Mary-TOP Bill-NOM why that book-ACC bought C said Q  
 'Why<sub>i</sub> did Mary say [that Bill bought the book **t<sub>i</sub>**]?'  
 b.\* [**Naze**]<sub>i</sub> Mary-wa [Bill-ga **t<sub>i</sub>** sono hon-o katta to] itta no  
**why** Mary-TOP Bill-NOM that book-ACC bought C said Q

In (8b, 9b), the "true adjuncts" *riyu-mo naku* 'without any reason' and *naze* 'why' in the matrix domains can only be associated with the matrix clauses but not with the embedded clauses. In

<sup>1</sup> A question remains as to what motivates prosodic scrambling to be movement of two or more phonological phrases. It is worth pointing out, however, that our proposal is roughly parallel to Zec and Inkelas's (1990) analysis of Heavy NP-shift in English. They claim that a "shifted" noun phrase must contain at least two phonological phrases, while any attempt to shift an NP consisting of only a single phonological phrase is ungrammatical, as shown in (i):

- (i) a. Mark showed to John ((*some letters*) $\varphi$  (*from Paris*) $\varphi$ ) $\varphi$ .  
 b.\*Mark showed to John (*some letters*) $\varphi$ .

The main difference between Heavy NP-shift in English and scrambling in Japanese is that the movement is rightwards in the former but leftwards in the latter. We leave more detailed discussion for future research.

other words, (8b, 9b) are deviant with the interpretations of (8a, 9a). As pointed out by Koizumi (2000: 243), however, when a true adjunct is scrambled with another element with which it forms a prosodic constituent, the result becomes acceptable, as shown in (10, 11). Under our analysis, prosodic scrambling takes place in the phonological component and thus has no effect on LF. The scrambled "true adjuncts" in (10, 11) can be associated with the embedded clause:

- (10)a. *((Riyu-mo naku)<sub>φ</sub> (sono setsu-o)<sub>φ</sub>)<sub>φ</sub>* Mary-ga John-ga sinjiteiru to] omotteiru (koto)  
*(reason-even without that theory-ACC)* Mary-NOM John-NOM believe C think (fact)  
 'Mary thinks [that John believes in that theory without any reason].'  
 b. *((Sono setsu-o)<sub>φ</sub> (riyu-mo naku)<sub>φ</sub>)<sub>φ</sub>* Mary-ga [John-ga sinjiteiru to] omotteiru (koto)  
*(that theory-ACC reason-even without)* Mary-NOM John-NOM believe C think (fact)
- (11)a. *((Naze)<sub>φ</sub> (sono hon-o)<sub>φ</sub>)<sub>φ</sub>* Mary-wa [Bill-ga katta to] itta no  
*(why that book-ACC)* Mary-TOP Bill-NOM bought C said Q  
 'Why<sub>i</sub> did Mary say [that Bill bought the book *t<sub>i</sub>*]?'  
 b. *((Sono hon-o)<sub>φ</sub> (naze)<sub>φ</sub>)<sub>φ</sub>* Mary-wa [Bill-ga katta to] itta no  
*(that book-ACC why)* Mary-TOP Bill-NOM bought that said Q

### 3.2 Scrambling of a Nominative Subject

Saito (1985) has claimed that scrambling of a nominative subject is not possible:

- (12)a. John-ga [sono ressha-ga Tokyo-ni tsuita to] omotteiru (koto)  
 John-NOM that train-NOM Tokyo-in arrived C think (fact)  
 'John thinks that that train has arrived in Tokyo.'  
 b. \*?*Sono ressha-ga<sub>i</sub>* John-ga [*t<sub>i</sub>* Tokyo-ni tsuita to] omotteiru (koto)  
*that train-NOM* John-NOM Tokyo-in arrived C think (fact)
- (13)a. John-ga [shacho-no hoshin-ga shain-no urami-o katteiru to]  
 John-NOM president-GEN policy-NOM employee-GEN hostility-ACC earn C  
 omotteiru (koto)  
 think (fact)  
 'John thinks that the president's policy is making an enemy of the employees.'  
 b. \*?*Shacho-no hooshin-ga<sub>i</sub>* John-ga [*t<sub>i</sub>* shain-no urami-o katteiru to]  
*president-GEN policy-NOM* John-NOM employee-GEN hostility-ACC earn C  
 omotteiru (koto)  
 think (fact)

It should be noted that it is clear from the semantics that the preposed nominative subjects *sono ressha-ga* 'that train-NOM' and *shacho-no hoshin-ga* 'president-GEN policy-NOM' are to be interpreted as the subjects of the embedded clauses. When a nominative subject scrambles with another element and they form a major phrase, however, the result is acceptable as shown below:

- (14)a. *((Sono ressha-ga)<sub>φ</sub> (Tokyo-ni)<sub>φ</sub>)<sub>φ</sub>* John-ga [tsuita to] omotteiru (koto)  
*(that train-NOM Tokyo-in)* John-NOM arrived C think (fact)  
 'John thinks that that train has arrived in Tokyo.'

- b. ((*Shacho-no*) $\varphi$  (*hoshin-ga*) $\varphi$  (*shain-no*) $\varphi$  (*urami-o*) $\varphi$ ) $\varphi$  John-ga [katteiru to]  
 (*president-GEN policy-NOM employee-GEN hostility-ACC*) John-NOM earn C  
 omotteiru (koto)  
 think (fact)  
 'John thinks that the president's policy is making an enemy of the employees.'

Under our analysis, since prosodic scrambling takes place at PF, it is not subject to the syntactic constraint on scrambling of a nominative phrase. Hence, (14a, b) are acceptable.

### 3.3 *Wh*-scrambling

Takahashi (1993) shows that when a *wh*-phrase is (syntactically) scrambled out of an interrogative clause by itself as shown in (15), the dominant reading is one where the scrambled *wh*-phrase has matrix scope:

- (15) **Dono hon-oi** John-ga [Mary-ga toshokan-kara *ti* karidashita ka] shiritagatteiru no  
 which book-ACC John-NOM Mary-NOM library-from borrowed Q want-to-know Q  
 'Which book does John want to know whether Mary borrowed from the library?'  
 \*?'Does John want to know **which book** Mary borrowed from the library?'

When the *wh*-phrase is scrambled with additional material and the fronted material forms a major phrase, however, only the embedded scope reading is allowed as shown in (16). This follows from our analysis, since prosodically scrambled material can only be interpreted *in situ* at LF.:

- (16) ((*Dono hon-o*) $\varphi$ (*Toshokan-kara*) $\varphi$ ) $\varphi$  John-ga [Mary-ga karidashita ka] shiritagatteiru no  
 which book-ACC library-from John-NOM Mary-NOM borrowed Q want-to-know Q  
 \*?'Which book does John want to know whether Mary borrowed from the library?'  
 'Does John want to know **which book** Mary borrowed from the library?'

### 3.4 Adjacency Condition on Long Distance Scrambled Phrases

Boeckx and Sugisaki (1999) observe that in "multiple long distance scrambling," elements undergoing scrambling cannot be split by an element in the higher clause. The following examples are taken from Hiraiwa (2010: 154):

- (17)a. **Reizoko-kara ringo-o** Naomi-ni Ken-ga [Yuko-ga nusunda to] iitsuketa  
 fridge-from apple-ACC Naomi-DAT Ken-NOM Yuko-NOM stole C told  
 'Ken told Naomin that Yuko stole some apples from the fridge.'  
 b.\* **Reizoko-kara** Naomi-ni **ringo-o** Ken-ga [Yuko-ga nusunda to] iitsuketa  
 fridge-from Naomi-DAT apple-ACC Ken-NOM Yuko-NOM stole C told

In (17), *reizoko-kara* 'fridge-from' and *ringo-o* 'apple-ACC' are scrambled out of the embedded clause through long distance scrambling. While (17a) is acceptable, (17b), where the matrix element *Naomi-ni* 'Naomi-DAT' splits up the two scrambled phrases, is not. Under our analysis, 'multiple long distance scrambling' is a PF operation, and so the scrambled elements *reizoko-kara ringo-o* 'fridge-from apple-ACC' must form a prosodic constituent (a major phrase) before prosodic scrambling as represented in (18); they cannot be intervened by any other element:

- (18) ((*Reizoko-kara*) $\varphi$  (*ringo-o*) $\varphi$ ) $\varphi$  Naomi-ni Ken-ga [Yuko-ga nusunda to] iitsuketa  
*fridge-from apple-ACC* Naomi-DAT Ken-NOM Yuko-NOM stole C told

### 3.5 Condition C of the Binding Theory

As pointed out by, among others, Van Riemsdijk and Williams (1981), Lebeaux (1988), and Chomsky (1995), there is an argument/adjunct asymmetry with reconstruction effects regarding binding facts in English *wh*-movement. Nishigauchi (2002) and Miyagawa (2005, 2006) observe that there is a similar argument/adjunct asymmetry with reconstruction effects in Japanese scrambling, as the contrast between (19a) and (19b) shows (Miyagawa 2005: 193):

- (19) a. ??/?\*[Minna-no **John<sub>i</sub>**-no hihan-o]<sub>j</sub>; **kare<sub>i</sub>**-ga [Hanako-ga *t<sub>j</sub>* oshiete-kureta to] itta  
 everyone-GEN **John**-GEN criticism-ACC **he**-NOM Hanako-NOM told-him C said  
 'Everyone's criticism of **John<sub>i</sub>**, **he<sub>i</sub>** said that Hanako told him.'  
 b. [[Minna-ga **John<sub>i</sub>**-kara kakushite-ita] hihan-o]<sub>j</sub>; **kare<sub>i</sub>**-ga [Hanako-ga *t<sub>j</sub>*  
 everyone-NOM **John**-from was-hiding criticism-ACC **he**-NOM Hanako-NOM  
 oshiete-kureta to] itta  
 told-him C said  
 'The criticism that everyone was hiding from **John<sub>i</sub>**, **he<sub>i</sub>** said that Hanako told him.'

While *John* and *kare* 'he' can be coreferential in (19b), they cannot be coreferential in (19a). The R-expression *John* is an argument of the noun *hihan* 'criticism' in (21a), whereas it is within the adjunct modifying *hihan* 'criticism' in (19b). Assuming Lebeaux's analysis, Nishigauchi and Miyagawa claim that in (19a), *John* must be merged with *hihan* 'criticism' when *hihan* 'criticism' first appears in the complement position of *oshiete-kureta* 'told-him'. The copy of *John* is visible in this position, which results in a Condition C violation. In (19b), on the other hand, *John* may be merged after scrambling has taken place; there is no Condition C violation.

We observe that such argument/adjunct asymmetry disappears with 'multiple long-distance scrambling' as shown in (20). Crucially, (20b) violates Condition C, even though *John* is within the adjunct modifying *hihan* 'criticism':

- (20) a. ??/?\*((*Okuno tomodachi-ni*) $\varphi$  (*minna-no*) $\varphi$  (**John<sub>i</sub>**-no) $\varphi$  (*hihan-o*) $\varphi$ ) $\varphi$  **kare<sub>i</sub>**-ga  
*(many friend-to everyone-GEN John-GEN criticism-ACC) he*-NOM  
 [Hanako-ga barashita to] itta  
 Hanako-NOM disclosed C said  
 Lit. '[Everyone's criticism of **John<sub>i</sub>** to many friends], **he<sub>i</sub>** said that Hanako  
 disclosed.'

- b.??/?\**((Okuno tomodachi-ni) $\varphi$  (minna-ga) $\varphi$  (**John**<sub>i</sub>-kara) $\varphi$  (kakushite-ita) $\varphi$  (hihan-o) $\varphi$ ) $\varphi$   
 (many friend-to everyone-NOM **John**-from was-hiding criticism-ACC)  
**kare**<sub>i</sub>-ga [Hanako-ga barasita to] itta  
**he**-NOM Hanako-NOM disclosed that said  
 Lit. '[The criticism that everyone was hiding from **John**<sub>i</sub> to many friends], **he**<sub>i</sub> said  
 that Hanako disclosed.'*

The deviancy of (20b) is unexpected under the analysis proposed by Lebeaux, Nishigauchi, and Miyagawa. Under our analysis, scrambling in (20) takes place at PF because the moved constituent is not syntactic but prosodic (a major phrase). The entire scrambled phrase in (20b), therefore, is interpreted *in-situ* at LF, which leads to a Condition C violation.

### 3.6 Scope Economy

It has been pointed out by, among others, Tada (1993) and Miyagawa (2005, 2006, 2008) that long-distance scrambling does not lead to a new scope relation (Miyagawa 2005: 201):

- (21) **Daremo-ni<sub>i</sub> dareka-ga** [John-ga  $t_i$  kisushita to] omotteiru  
**everyone-DAT someone-NOM** John-NOM kissed C think  
 Lit. 'Everyone, someone thinks that John kissed.'  
 \*everyone>someone, someone>everyone

While the existential quantifier *dareka-ga* 'someone-NOM' may take scope over the universal quantifier *daremo-ni* 'everyone-DAT', the inverse scope reading is not allowed; the scrambled phrase *daremo-ni* 'everyone-DAT' must be reconstructed to its original position at LF. Miyagawa (2005, 2006, 2008) observes, however, that if the embedded subject is replaced by a quantificational expression, the sentence becomes ambiguous (cf. Miyagawa 2008: 20):

- (22) **Daremo-ni<sub>i</sub> dareka-ga** [itsuka futari-no-kodomo-ga  $t_i$  kisushita to] omotteiru  
**everyone-DAT someone-NOM** sometime two-GEN-kids-NOM kissed C think  
 Lit. 'Everyone, someone thinks that at some point two kids kissed.'  
 OK/??everyone>someone, someone>everyone

Miyagawa argues that the contrast between (21) and (22) follows from Fox's (2000) Scope Economy, which claims is that optional application of QR is possible if it leads to a new scope relation. Miyagawa assumes that scrambling of a quantifier counts as an instance of overt QR. In (21), scrambling of *daremo-ni* 'everyone-DAT', which does not create any new scope relation, does not count as overt QR due to the Scope Economy; *daremo-ni* 'everyone-DAT' cannot take scope over *dareka-ga* 'someone-NOM' in the matrix subject position. In (22), on the other hand, *daremo-ni* 'everyone-DAT' first moves to the  $\nu$ P edge, where it takes scope over *futari-no kodomo-ga* 'two-GEN-kids-NOM', then moves to the CP edge, where it again creates a new scope relation relative to *itsuka* 'sometime'. These movement operations are licensed as QR. *Daremo-ni* 'everyone-DAT' further moves across another quantifier, *dareka-ga* 'someone-NOM' in the matrix clause. This movement also leads to a new scope relation and thus counts as QR; the scrambled

quantifier *daremo-ni* 'everyone-DAT' can take scope over *dareka-ga* 'someone-NOM'. We observe that such scope economy effects disappear with "multiple long-distance scrambling":

- (23) ((**Daremo-ni**) $\varphi$  (*sono hon-o*) $\varphi$ ) $\varphi$  **dareka-ga** [itsuka futari-no-kodomo-ga ageta to]  
 (*everyone-DAT that book-ACC*) **someone-NOM** sometime two-GEN-kids-NOM gave C  
 omotteiru  
 thinks  
 'Someone thinks that at some point two kids gave that book to everyone.'  
 \*?everyone>someone, someone>everyone,

Although the embedded clause contains two quantified expressions *itsuka* 'sometime' and *futari-no-kodomo-ga* 'two-GEN-kids-NOM', *daremo-ni* 'everyone-DAT' cannot take scope over the matrix subject *dareka-ga* 'someone-NOM', which is unexpected under Miyagawa's scope economy account. Under our analysis, prosodic scrambling takes place at PF and *daremo-ni* 'everyone-DAT' can only be interpreted *in-situ*; it cannot take scope over the matrix subject.

## 4 Locality Constraints

Saito (1985) observes that "normal" long-distance scrambling is sensitive to island constraints like the Complex NP Constraint and the Adjunct Condition, as shown in (24b, c) and (25b, c), though the island effects with scrambling are weak for some unknown reasons. Japanese scrambling is also subject to the left-branch condition; no genitive phrase can be scrambled out of a nominal phrase, as shown in (26b). In (26b), the genitive phrase *Suzy-no* 'Suzy-GEN' is scrambled out of the nominal phrase:

- (24) a. Mary-ga [[Bill-ni sono hon-o watashi wasureta] hito]-o sagashiteiru (koto)  
 Mary-NOM Bill-DAT that book-ACC give forgot person-ACC look-for (fact)  
 'Mary is looking for the person who forgot to give that book to Bill.'  
 b.??**Bill-ni**<sub>i</sub> Mary-ga [[**t<sub>i</sub>** sono hon-o watashi wasureta] hito]-o sagashiteiru (koto)  
**Bill-DAT** Mary-NOM that book-ACC give forgot person-ACC look-for (fact)  
 c.??**Sono hon-o**<sub>i</sub> Mary-ga [[Bill-ni **t<sub>i</sub>** watashi wasureta] hito]-o sagashiteiru (koto)  
**that book-ACC** Mary-NOM Bill-DAT give forgot person-ACC look-for (fact)
- (25) a. Mary-ga [John-ga Bill-ni sono tokei-o ageta kara] okotteiru (koto)  
 Mary-NOM John-NOM Bill-DAT that watch-ACC gave because be-angry (fact)  
 'Mary is angry because John gave that watch to Bill.'  
 b.??**Bill-ni**<sub>i</sub> Mary-ga [John-ga **t<sub>i</sub>** sono tokei-o ageta kara] okotteiru (koto)  
**Bill-DAT** Mary-NOM John-NOM that watch-ACC gave because be-angry (fact)  
 c.??**Sono tokei-o**<sub>i</sub> Mary-ga [John-ga Bill-ni **t<sub>i</sub>** ageta kara] okotteiru (koto)  
**that watch-ACC** Mary-NOM John-NOM Bill-DAT gave because be-angry (koto)
- (26) a. John-ga [Mary-ga [Suzy-no hon]-o yonda to] omotteiru (koto)  
 John-NOM Mary-NOM [Suzy-GEN book]-ACC read C think (fact)  
 'John thinks that Mary read Suzy's book.'  
 b.\* **Suzy-no**<sub>i</sub> John-ga [Mary-ga [**t<sub>i</sub>** hon]-o yonda to] omotteiru (koto)  
 Suzy-GEN John-NOM Mary-NOM book-ACC read C think (fact)

We observe that if multiple elements forming a major phrase are preposed out of islands, the acceptability improves, as shown in (27-28). We also observe that when the genitive phrase is scrambled out of a nominal phrase with additional material and form a major phrase, the result becomes better, as shown in (29) (though it is still awkward):

- (27) **((Bill-ni) $\varphi$  (sono hon-o) $\varphi$  ) $\varphi$**  Mary-ga [watashi wasureta] hito]-o sagashiteiru (koto)  
**(Bill-DAT that book-ACC)** Mary-NOM give forgot person-ACC look-for (fact)  
 'Mary is looking for the person who gave that book to Bill.'
- (28) **((Bill-ni) $\varphi$  (sono tokei-o) $\varphi$  ) $\varphi$**  Mary-ga [John-ga ageta kara] okotteiru (koto)  
**(Bill-DAT that watch-ACC)** Mary-NOM John-NOM gave because be-angry (fact)  
 'Mary is angry because John gave that watch to Bill.'
- (29) ??**((Mary-ga) $\varphi$  (Suzy-no) $\varphi$  ) $\varphi$**  John-ga [hon-o yonda to] omotteiru (koto)  
 Mary-NOM Suzy-GEN John-NOM book-ACC read C think (fact)  
 'John thinks that Mary read Suzy's book.'

As we mentioned in section 1, when multiple constituents are scrambled out of an embedded clause in terms of syntactic long-distance scrambling, the result is degraded. Hence, if (27-28) were derived by syntactic scrambling, they should be worse than (24b, c) and (25b, c), respectively, where only one constituent is scrambled out of an opaque domain. The result, however, is the opposite of what any syntactic scrambling analysis predicts. As for the left branch condition, if (29) were derive by syntactic long-distance scrambling, the result should be as bad as (26b). Our prosodic scrambling analysis, on the other hand, can account for this fact. When a syntactic constituent is scrambled, it is scrambled in the narrow syntax and obeys the expected syntactic conditions. When a prosodic constituent is scrambled, on the other hand, it is scrambled at PF and therefore insensitive to any syntactic locality constraints.<sup>2</sup>

## 5 Conclusion

In this paper, we have proposed that there are two kinds of scrambling in Japanese, *i.e.* syntactic scrambling and prosodic scrambling. Unlike syntactic scrambling which targets an XP, prosodic scrambling targets a major phrase and ignores the usual syntactic constraints. It was also shown that prosodically scrambled elements are interpreted as if they were *in-situ*.

## References

- Agbayani, Brian and Chris Golston. 2010. Phonological movement in Classical Greek. *Language* 86.1: 133-167.
- Boeckx, Cedric and Koji Sugisaki. 1999. How to get a free ride: Additional scrambling effect and the Principle of Minimal Compliance. In *WCCFL 18*, ed. S. Bird, A. Carnie, J. D. Haugen and P. Norquest, 43–54. Somerville, MA: Cascadilla Press.

<sup>2</sup> This immunity to syntactic islands is also attested with movement of prosodic constituents in Classical Greek (Agbayani & Golston 2010).

- Chomsky, Noam. 1995. *The minimalist program*. Cambridge, MA: MIT Press.
- Fox, Danny. 2000. *Economy and semantic interpretation*. Cambridge, MA: MIT Press.
- Fukui, Naoki, and Hiromu Sakai. 2006. The visibility guideline for functional categories: Verb raising in Japanese and related issues. In *Theoretical Comparative Syntax*, by Naoki Fukui, 289-336. New York: Routledge.
- Hiraiwa, Ken. 2010. Scrambling to the edge. *Syntax* 13.2: 133-164.
- Itô, Junko and Armin Mester. 2007. Categories and projections in prosodic structure. Paper presented at the 4<sup>th</sup> Old World Conference in Phonology, Rhodes.
- Koizumi, Masatoshi. 2000. String vacuous overt verb raising. *Journal of East Asian Linguistics* 9.3: 227-285.
- Lebeaux, David. 1988. *Language acquisition and the form of the grammar*. Doctoral dissertation, University of Massachusetts, Amherst.
- Marantz, Alec. 1988. Clitics, morphological merger, and the mapping to phonological structure. In *Theoretical morphology: Approaches in modern linguistics*, ed. by Michael Hammond and Michael Noonan, 253-270. San Diego: Academic Press.
- McCawley, James D. 1968. *The phonological component of a grammar of Japanese*. The Hague: Mouton.
- Miyagawa, Shigeru. 2005. EPP and semantically vacuous scrambling. In *The free word order phenomena: Its syntactic sources and diversity*, ed. by Joachim Sabel and Mamoru Saito, 181-220. Berlin: Mouton de Gruyter.
- Miyagawa, Shigeru. 2006. Moving to the edge. In *Proceedings of the 2006 KALS-KASELL international conference on English and linguistics*, 3-18. Busan, Korea: Pusan National University.
- Miyagawa, Shigeru. 2008. Optionality. Unpublished manuscript, MIT.
- Nishigauchi, Taisuke. 2002. Scrambling and reconstruction at LF. *Gengo Kenkyu* 121: 49-105.
- Saito, Mamoru. 1985. *Some asymmetries in Japanese and their theoretical consequences*. Doctoral dissertation, MIT.
- Saito, Mamoru. 1989. Scrambling as semantically vacuous A'-movement. In *Alternative conceptions of phrase structure*, ed. by Mark Baltin and Anthony Kroch, 182-200. Chicago: University of Chicago Press.
- Tada, Hiroaki. 1993. *A/A' partition in derivation*. Doctoral dissertation, MIT.
- Van Riemsdijk, Henk and Edwin Williams 1981. NP structure. *The Linguistic Review* 1: 171-217.
- Zec, Draga, and Sharon Inkelas. 1990. Prosodically constrained syntax. In *The phonology-syntax connection*, ed. by Sharon Inkelas and Draga Zec, 365-378. Stanford: CSLI publications / Chicago: University of Chicago Press.

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