Another Aspect of the Pair-List Reading in Japanese

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1. Introduction

It has been known since Hoji (1985) that Japanese object questions with a universal quantified subject only elicit Individual reading as opposed to their English counterparts that provide both Individual reading and Pair-list reading (PL-reading) (e.g. May 1985)[1].

(1) a. nani-o   daremo-ga   katta   no?
       what-Acc everyone-Nom bought Q
       What did everyone buy?

      Individual answer: ringo desu
                           apple Cop
                           '(intended) they all bought an apple'

(2) a. What did everyone buy?

      Individual answer: an apple
      Pair-list answer: John bought an apple, Mary a banana, …

As shown in (1) and (2), while at least two types of answers are available in English, only one in Japanese.

   However, Japanese also allows for both individual reading and PL reading for multiple-wh questions (e.g. Miyagawa 1997; Nishigauchi 1998);

(3) dare-ga   nani-o   katta   no?
    who-Nom what-Acc bought Q
    'Who bought what?'

   In this article, I present that two types of reading in question are also available for such Japanese multiple sluicing-like construction (MSC) as in (4)[2].

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[1] The glosses used in this paper are as follows: Nom = nominative Case, Acc = Accusative Case, Dat = dative Case, Q = Question particle, Cop = copula, Top = topic marker, Nmlz = nominalizer.

[2] Unlike English sluicing which is generally considered as TP deletion following overt wh-movement, as in (i), Japanese sluicing-like construction is considered as the deletion of the presupposition part of the clefting, as in (ii) (e.g. Kizu 1997;Kuwabawa 1997; Nishiyama, Whitman, and Yi 1996) (c.f. Hiraiwa and Ishihara 2002, 2012; Fukaya 2007, Nakamura 2012 etc).

(i) I know that John bought something, but I don't know what$_i$ [$_{TP}$ ~~John bought t$_i$~~]
(ii) Taroo-ga   nanika-o   katta   no-wa   sitteiru ga,
        -Nom something-Acc bought Nmlz-Top know   but
     boku-wa [[$_{CP}$~~Taroo-ga   katta   no~~]-ga   nani-o   ka] siranai.
     I-Top   -Nom bought Nmlz-Nom   what-Acc Q   don't.know
     '(lit.) I know that Taroo bought something, but I don't know what ~~it is that Taroo bought~~.'

As for MSC in Japanese, I'm under the impression that its structure has not been clarified as well as that of single-wh sluicing. Since identifying its underlying structure is beyond the scope of this paper, I leave it for

(4) dareka-ga   nanika-o   katta no-wa   sitteiru ga,
    someone-Nom something-Acc bought Nmlz-WA know   but
    boku-wa dare-ga   nani-o   ka sirani
    I-WA   who-Nom what-Acc Q don't.know
    '(intended) I know that someone bought something, but I don't know who or what.'

Sentence (4) can be interpreted under the individual reading that "I know that there is one person who bought a thing, but I don't know who the person is, or what he/she bought," and interpreted under PL reading that "I know that several people bought several things, but I don't know who they are, or what each of them bought." Since sentence (4) resembles sentence (3) in that both involves two wh-items, it is not very surprising that they allow for two types of readings. However, it is surprising that once the order of two wh-items in (4) is switched, PL reading comes to be more preferred. The following is the relevant sentence, which follows the first conjunct of (4).

(5)[3] boku-wa nani-o   dare-ga   ka siranai.
     I-WA   what-Acc who-Nom Q don't.know
     'I don't know what or who.'

In the following sections, we will explore the account for this preference, and I conclude that this unique tendency is accountable by Diesing's (1992) Mapping Hypothesis.

   The organization of this article is as follows. Section 2 briefly explains the Mapping Hypothesis. In section 3, three types of MSC that tends to induce PL reading is in order. Section 4 then provides the remaining issues that my analysis needs to handle. Section 5 will be a summary of the facts revealed in this article.

2. The Mapping Hypothesis

It is commonly believed that sentences derived at syntax are sent off to LF (e.g. Chomsky and Lasnik 1977), and mapped onto logical representation where sentences are interpreted. Logical representation consists of the following three components; an operator, a restrictive clause, and a nuclear scope (e.g. Lewis 1975; Heim 1982). To understand what they are, look at example (6), where (a) is the surface representation of a sentence, (b) LF of the sentence, and (c) logical representation of the sentence;

(6) a. Three apples were sold in the grocery store.   (surface representation)
    b. $[_{IP}$ Three$_i$ $[_{IP}$ $[t_i$ apples$]_j$ $[_{VP}$ t_j were sold in the grocery store$]]]$ (LF)
    c. Three$_x$[x is an apple] x was sold in the grocery store   (logical representation)

In (6c), *Three$_x$, [x is an apple]*, and *x was sold in the grocery store* are an operator, a restrictive clause, and a nuclear scope, respectively. Diesing (1992) argues that logical representation is created on the basis of LF structure, and that what phrase gets mapped onto each part of the logical representation is determined following the generalization to the effect that;

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future research.

[3] It has been discussed since Kuroda (1965) what the function of *-wa* is. Although it is still common to give it a gloss "Top" as the topic marker, it is generally considered that *-wa* has at least two functions; *thematic* and *contrastive* (Kuno 1973), the former of which is what is usually considered as topic interpretation. Therefore, I will gloss it *WA* throughout this paper.

> Material from VP is mapped into the nuclear scope.
> Material from IP is mapped into the restrictive clause.   (Diesing 1992; 15)

This is consistent with example (6), where *were sold in the grocery store* in VP is mapped into the nuclear scope and *apple* in IP is mapped into the restrictive clause.

She further argues that what is in the restrictive clause is presupposed unlike what is in the nuclear scope. This statement receives natural explanation if we consider a situation where sentence (6a) is uttered; that is, the speaker wouldn't produce the utterance unless he/she knows that the grocery store has apples. Also, in (6c), *apple* is within the domain of the quantifier *three*, so if there is no apple in the grocery store, the truth-condition of sentence (6a) cannot be defined to begin with. In this sense too, the existence presupposition of the expression in IP is corroborated.

Now, for the sake of comparison, look at the *there*-sentence in (7);

(7) a. There are three apples in the grocery store.   (surface representation)
   b. [$_{IP}$ there are$_i$ [$_{VP}$ t$_i$ three apples at the grocery store]   (LF)
   c. $\exists_x$ x is an apple $\land$ x is at the grocery store $\land$ the number of x is three.
                                                          (logical representation)

Unlike (6), *apples* is within VP in (7b), so it appears in the nuclear scope in (7c). This means that its existence is not presupposed. In fact, sentence (7a) can be uttered even though the speaker didn't know that the grocery store had apples. Hence, Diesing's generalization about the relation between LF-position of indefinites and its existence presupposition seems plausible.

In reference to the difference between sentences like (6) and those like (7), there is another thing to be pointed out; that is, sentence (6) presupposes not only the existence of *three apples* but also that the grocery store may still have more apples while sentence (7) is most likely to be interpreted that the grocery store has only three apples at the moment when the utterance is made. This existence presupposition of the entities that are not predicated by the sentence is a consequence of *partitive* reading; that is, in (6) *three apples* belong to a larger set of apples, and they are just a part of the set[4].

Lastly, before proceeding to the next section, I'd like to emphasize Diesing's argument that scrambling has an effect on presupposing the entity of the phrase that has undergone movement from within VP to outside VP. Although she didn't discuss the partitive reading induced by scrambling, De Hoop (1992) provides a Dutch example in (8) to show the relevant point.

(8) a. dat de politie gisteren   veel   taalkundigen opgepakt heeft
      that the police yesterday many linguists   arrested has
      'that the police arrested many linguists yesterday.'

   b. dat de politie [veel   taalkundigen]$_i$ gisteren   t$_i$ opgepakt heeft
      that the police many linguists   yesterday   arrested has
      'that the police arrested many linguists yesterday.'   (De Hoop 1992;139)

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[4] Sentences like (6) that presupposes the existence of an entity are examples of *strong* reading as opposed to *weak* reading that is exemplified in (7) that doesn't have existence presupposition. Although it has been known that strong reading has other three interpretations (i.e. *generic*, *specific*, and *generic-cardinal* interpretations) as well as partitive reading, they are not directly relevant to the main point of the present paper, so I won't provide any discussion about them.

Sentence (8b) derives from (8a) by scrambling *veel taalkundigen* 'many linguists.' As is clear from the phrase being to the left of the adverb *gisteren* 'yesterday' in (8b), the scrambled phrase is not within VP any longer, leading to the availability of partitive reading[5]; that is, the sentence carries an implicature that many linguists that the police arrested yesterday is just a part of all individuals that are linguists, and there are linguists that were not arrested as well[6]. In this way, scrambling that affects the LF-positions of phrases also relates to Mapping Hypothesis.

    With the discussion in this section in mind, we will, in the next section, examine PL reading of MSC in Japanese, a language that has also been known to have scrambling.

3. PL reading and Japanese MSC

In section 1, we've observed that MSC is likely to elicit PL reading when the order of two wh-items get reversed. This tendency is not specific to MSC where two wh-items are arguments, as in (5), and the same tendency holds for sentences like (9) as well, where one wh-item is an adjunct.

(9) Taroo-ga   nazeka   nanika-o   katta-no-wa   sitteiru ga,
          -Nom for some reason something-Acc bought-Nmlz-WA know   but
    I know that Taroo bought something for some reason, but'
          (a)[7] boku-wa naze nani-o   ka siranai   (Individual reading)
              I-WA   why what-Acc Q don't.know
              'I don't know why or what.''

          (b) boku-wa nani-o   naze ka siranai   (PL reading)
              I-WA   what-Acc why Q don't.know
              'I don't know what or why.'

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[5] Although it has been pointed out that numerals and plural weak determiners like *many linguists in* (8b) tend to trigger partitive reading, De Hoop didn't explain when partitive reading is obtained instead of other strong readings.

[6] In fact, she argues that partitive readings are available for both (8a) and (8b), and her point is that weak (existential) reading is not available for sentence (8b) although (8a) obtains it. Since what is in VP receives weak reading in Diesing's Mapping Hypothesis, the availability of partitive reading in (8a) seems to go against Mapping Hypothesis. But both Diesing's and De Hoop's observations regards a phrase in IP as having only strong reading, and this is what I want to emphasize in this section.

[7] It has been pointed out that a *naze-wh-item* sequence in interrogative sentence causes the ungrammaticality due to *Anti-Superiority Effect* violation (e.g. Watanabe 1992; Saito 2004), as in (i);

(i) *Taroo-wa naze nani-o   katta   no?
          -WA why what-Acc bought Q
    'Why did Taroo buy what?'
(ii) Taroo-wa nani-o   naze katta   no?
          -WA what-Acc why bought Q
    '*What did Taroo buy what?'

In English, as the translations of (i) and (ii) shows, sentence (ii) is ungrammatical because of the superiority effect violation. Although Japanese doesn't respect the superiority effect, sentences like (i), where *naze* 'why' precede the other wh-item, become ill-formed. However, Harada (forthcoming (b)) argues based on experimental results that this kind of sentence is unacceptable at the very most, and not ungrammatical. Also he, coupled with Harada (forthcoming (a)) shows that the unacceptability of the sentence improves significantly when wh-itmes are focalized by means of the prosody change or the change of its syntactic structure. Due to the limit of space, see Harada (forthcoming (a), forthcoming (b)) for more detailed discussion.

Sentence (a) and (b) are the second conjuncts that follow *Taroo-ga nazeka nanika-o katta-no-wa sitteiru ga*, and the former is likely to produce Individual reading, and the latter to produce PL reading, as shown by *(Individual reading)* and *(PL reading)* next to each sentence. It should be noted here again that these are their preferred readings, and it is not necessarily the case that the readings in question are the only interpretation; in fact, as far as the MSC I have investigated are concerned, both readings are available for most MSC, given an appropriate context.

In the following subsections, we will first observe three types of MSC that tends to elicit PL reading. Then, the subsequent subsections will examine those sentences based on Mapping Hypothesis.

3.1 Three types of PL reading-inducing structures

In this subsection, I'll present based on sentence (9) that there are three types of MSC that tends to trigger PL reading. The following are the relevant sentences, where the sentences in (10b)-(10d) that have the same meaning as the basic sentence in (10a) differ from the sentence only in the bold-faced parts;

(10) Taroo-ga   nazeka   nanika-o   katta-no-wa   sitteiru ga,
        -Nom for some reason something-Acc   bought-Nmlz-WA know   but
    'I know that Taroo bought something for some reason, but'
       a. boku-wa naze nani-o   ka siranai   (Individual reading)
         I-WA   why what-Acc Q don't.know
         'I don't know why or what."
       b. boku-wa **nani-o**   **naze** ka siranai   (PL reading)
         I-WA   what-Acc why Q don't.know
       c. boku-wa naze nani-o   ka-**wa** siranai   (PL reading)
         I-WA   why what-Acc Q-WA don't.know
       d. **[naze nani-o   ka]** boku-wa siranai.   (PL reading)
         why what-Acc Q I-WA   don't.know

(10a) represents the most basic sentence, and it tends to show Individual reading. However, the sentence comes to trigger PL reading once it is slightly modified by the switch of two wh-items' order, the addition of *-wa*, or the movement of the remnant phrase in (b), (c), and (d), respectively. In fact, each modification used in (b), (c), and (d) can be combined together as follows;

         e. **[nani-o   naze ka]-wa** boku-wa siranai   (PL reading)
          what-Acc why Q-WA I-WA   don't.know
          'what or why' I don't know.'

In (10e), three ways of inducing PL reading that we looked in (10) are all used, giving rise to PL reading as well. In this way, PL reading can be a standard interpretation by means of some syntactic operations.

3.2 Movement and PL reading

The primary question for the preference of PL reading in some sentences is why certain modifications enable native speakers of Japanese to presuppose multiple events; for instance, in the case of (10b), PL reading is not available unless we can imagine a situation where

Taroo bought multiple things for multiple reasons. It is for this reason that Diesing's Mapping Hypothesis, especially the partitive reading, is relevant to the availability of PL reading. As described in section 2, partitive reading is applicable to the expressions in IP, so it is a good start to assume that wh-items originating within VP in (10a) have undergone movement in (10b)-(10d). It is obvious that (10d) involves movement since Japanese is an SOV language, and *naze-nani-o ka* 'why-what-Acc Q' that is the complement of the verb, *siranai* 'don't know,' is in the sentence-initial position in (10d). How about other two types of sentences? With regard to sentence (10c), although it is indeed difficult to prove that wh-items have undergone movement without a fail, we can first confirm that an adverb phrase, *hontooni* 'really,' can be inserted between *naze nani-o ka-wa* and *siranai*;

(11) boku-wa naze nani-o   ka-wa **hontooni** siranai   (PL reading)
     I-WA   why what-Acc Q-WA really   don't.know
     'I don't really know why or what.'

Although (11) doesn't prove that wh-items in (10c) have undergone movement, it proves such movement is possible in (10c) because the complement clause of the maximal verb *siranai* 'don't know, i.e. *naze nani-o ka-wa* 'why what-Acc Q-WA,' is not adjacent to *siranai* in (11). In light of this, remember that when movement took place in (8), partitive reading was the only available interpretation. In fact, the same result holds for Japanese counterparts of the sentences in (8);

(12) a. Keisatu-wa kinoo   ookuno gengo   gakusha-o   taiho sita   (✓partitive)
       police-WA yesterday many   language scholar-Acc arrest did   (✓existential)
       'The police arrested many linguists yesterday.'
    b. Keisatu-wa [ookuno gengo   gakusha-o]$_i$ [kinoo   t$_i$ taiho sita]   (✓partitive)
       police-WA many   language scholar-Acc yesterday   arrest did   (*existential)
             'The police arrested many linguists yesterday.'

Although sentence (12a) allows both partitive and existential readings, once the relevant expression undergoes movement, only partitive reading is permitted, as in (12b). Therefore, it is highly possible that strong preference of PL reading in (10c) is the consequence of movement that gets us only partitive reading. Lastly, as for sentence (10b), it should be the case that *nani-o* has undergone movement independently from the position in between *naze* and *ka*. This is because considering Japanese is a verb-final language[8], *katta* 'bought' that

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[8] It is known as exemplified in (i) that even strict verb-final languages like Japanese have operation called *afterthought*, but it is not allowed in the subordinate clause (Kuno 1973);

(i) Kimi(-wa) [nani(-o)   tabeta ka] oboete   iru ↗ konoaida   ano resutoran-de ↘
   you(-WA) what(-Acc) ate   Q remembering are   other day   that restaurant-at
   'Do you remember what we ate at that restaurant the other day?   (Kuno 1973;60)

(ii) a. Kimi [Taroo-ga   Hanako-to   kekkonsita] koto sitte   iru ↗
     you   -Nom   -with married   that know are
     'Do you know that Taroo married Hanako?'
   b. *Kimi [Taroo-ga   kekkonsita Hanako-to]   koto sitte   iru ↗
      you   -Nom married   -with that know are   (Kuno 1973:63-64)
                               (the arrows indicate the intonation)

In (i), the postposing of *konoaida ano resutoran-de* doesn't affect the grammaticality of the sentence, but sentence (iia) become ill-formed once *Hanako-to* is postposed, as in (iib). Since what we are discussing is the structure of the embedded clause, the possibility of *naze* having been postposed can be excluded.

presumably used to exist but is deleted in (10b) should have been in between *naze* and *ka*, and thus, *nani-o* that is the complement of *katta* should have been adjacent to the verb conforming to the locality principles, and undergone movement, as shown in (13);

(13)[9] naze nani-o   katta $\rightarrow$ nani-o$_i$ naze t$_i$ katta $\rightarrow$…
      why what-Acc bought   what-Acc why   bought

Therefore, the assumption that all sentences that tend to produce PL reading in (12) involve movement seems to be on the right track. A prediction that we can immediately make from this assumption is that PL reading is not as tempting as in (10b) if two wh-items in a sentence structurally identical to (10b) are adjuncts. Look at the following example. The prediction is indeed born out.

(14) Taroo-ga   ituka   dokoka-de   Hanako-to   asondeita no-wa   oboeteiru ga
        -Nom sometime somewhere-at   -with hung out Nmlz-WA remember but
      'I remember that Taroo was hanging out with Hanako sometime somewhere, but'
        a. boku-wa itu   doko-de ka oboeteinai   (Individual reading)
          I-WA   when where-at Q don't. remember
          'I don't remember when or where.'
        b. boku-wa doko-de itu   ka oboeteinai   (Individual reading)
          I-WA   where-at when Q don't. remember
          'I don't remember where or when.'

If the induction of PL reading is associated with movement as described above, it is plausible that the sentences in (14) are likely to be interpreted under individual reading, since adjunct phrases don't undergo movement. Interestingly, PL reading is still preferred when two adjunct wh-items are used in structures like (10c) and (10d), where two argument wh-items are considered to have undergone movement out of the VP;

        c. boku-wa itu   doko-de ka-**wa** oboeteinai   (PL reading)
          I-WA   when where-at Q-WA don't. remember
          'I don't remember when or where.'
        d. **[itu   doko-de ka]$_i$** boku-wa t$_i$ oboeteinai   (PL reading)
          when where-at Q   I-WA   don't. remember
          'I don't remember when or where.'

This is an interesting asymmetry, but the result is consistent with our analysis; this is so because unlike (14b), we can assume the movement of wh-items in (14c) and (14d) for the same reason for which we assumed the movement of wh-items in (10c) and (10d). Therefore, I'm led to conclude that the preference of PL reading in some types of Japanese MSC is related to the movement of wh-item.

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[9] We've decided not to delve into the underlying structure of MSC in Japanese, and I'm not arguing that *nani-o$_i$ naze t$_i$ katta* in (13) is the structure immediately before sluicing applies. The point is that that word order should've been created at some stage of derivation. Admittedly, if the underlying structure of MSC too is cleft construction, and if base-generation analysis (e.g. Hoji 1990; Kizu 2005) is adopted for Japanese cleft construction, it might be possible that *nani-o naze* sequence is the canonical word order. But since there is also movement analyses of Japanese clefting (e,g, Hiraiwa and Ishihara 2002; Takarashi 2006), and the underlying structure of Japanese MSC is unclear, I will put this possibility aside, and I won't here commit myself to either analysis of Japanese clefting, either.

3.3 Undesirable situations for PL reading

So far, we have looked at two types of Japanese MSC in terms of the availability of individual/PL reading; one that tends to produce PL reading, and the one that doesn't seem to have any preference, and thus more default option, individual reading, is likely to be obtained. One thing that I should repeat for those types of sentences is that they both allow two readings under an appropriate context given. In this subsection, however, we will explore another type of MSC, where PL reading is difficult to achieve.

First, PL reading is mostly unobtainable when certain verbs take a remnant phrase as their complement. The following is a relevant example;

(15) Ituka   dareka-ga Taroo-o   korosita no-wa   oboeteiru ga,
    One day someone-Nom   -Acc killed Nmlz-WA remember but
    'I remember that someone killed Taroo one day,'
          a. boku-wa itu   dare-ga ka oboeteinai   (Individual reading)
            I-WA   when who-Nom Q don't remember
            'I don't remember when or who.'
          b oku-wa dare-ga   itu   ka oboeteinai   (Individual reading)
            I-WA   who-Nom when Q don't remember   ($^\#$PL reading)
            'I don't remember who or when.'

Since the truth condition for sentence (15b) is undefinable under PL reading, the sentence is interpreted under Individual reading even though the order of two WH's are *dare-ga itu* 'who-Nom when.' This is a natural result if we read (15b) taking our world into consideration, since the event of *killing Taroo* cannot occur more than once. Just in case that *dare-ga-itu* 'who-Nom when' sequence itself might have something to do with the unavailability of PL reading for (15b), let's see whether PL reading is obtained in (16b), which also involves *dare-ga-itu*;

(16) Ituka   dareka-ga   KU-ni kuru-to-wa   sitteiru ga,
    sometime someone-Nom   -to come-that-Top   know but
    'I know that someone comes to KU sometime,
          a. boku-wa itu   dare-ga ka siranai   (Individual reading)
            I-WA   when who-Nom Q don't.know
            'I don't know when or who.'
          b. boku-wa dare-ga   itu   ka siranai   (PL reading)
            I-WA   who-Nom when Q don't.know
            'I don't know who or when.'

As shown in (16b), PL reading is preferred though two wh-items in the sentence are *dare-ga itu*. Therefore the word sequence *per se* shouldn't be the reason for the unavailability of PL reading in (15b).

The other case where PL reading can hardly be obtained is by virtue of the order of quantified expressions in the first conjunct of MSC. Let us first look at such an example, where the key part of the sentence is in bold faced;

(17) Taroo-ga **nanika-o   nazeka**   katta-no-wa   sitteiru ga,
        -Nom something-Acc for some reason bought-Nmlz-WA know   but
      boku-wa nani-o   naze ka siranai   (Individual reading)
      I-WA   what-Acc why Q   don't.know
      'I know Taroo bought something for some reason, but I don't know what or why.'

Sentence (17) is identical to (9b) except for the order of *nanika-o nazeka* in the first conjunct, and this distinction is giving rise to the unavailability of PL reading in (17)[10]. A potential reason for the different readings between (17) and (9b) that suddenly comes to our mind might be the word order match/mismatch between quantified expressions in the first conjunct and wh-items in the second conjunct; in other words, while the order of *nanika-o nazeka* in the first conjunct is congruent with that of *nani-o naze* in the second conjunct in (17) where individual reading is strongly preferred, the orders of quantifiers and wh-items in (9b) are incongruent, enabling PL reading. Although this analysis sounds attractive at first glace, this cannot explain the preference of PL reading in sentences like (10c) and (10d); if word order mismatch is a crucial reason for the predominance of PL reading, (10c) and (10d) should tend to produce individual reading, or those sentences as well as (17) should cause an interpretation problem because they should produce PL reading due to the existence of movement operation but they should also produce individual reading from the perspective of the word order congruence. Therefore, this analysis must be rejected. Instead, I would attribute the considerable difficulty of PL reading in (17) to the limit of our focus caused by the movement of *nanika-o* in the first conjunct. Essentially, the movement of *nanika-o* is contributing to the contrastive reading of the objects that Taroo bought. To understand what contrastive reading is, look at the following sentence, corresponding to the embedded clause of the first conjunct in (17), where quantifiers are replaced by nominal expressions;

(18) Taroo-wa piza-o$_i$ [[onakaga-ga   suite-ita   kara]   t$_i$ katta]
        -WA pizza-Acc stomach-Nom empty-was because   bought
      'Taroo bought a piece of pizza because he was hungry.'

Sentence (18) is grammatical even though *piza-o* hasn't undergone movement, but when movement occurs, the sentence comes to carry an implicature that it is pizza and not others that Taroo bought because he was hungry. So the sentence is contrasting what Taroo bought because he was hungry and what he bought for other reasons, and thus it can be said that the movement of *piza-o* is resulting in the contrastive reading in (18). In fact, the relation between movement and contrastive reading is put forward from the perspective of contrastive *-wa* in Japanese as well (Hoji 1985), so it is reasonable to assume that *nanika-o*, a single stuff Taroo bought, is focused in the first conjunct in (17), and thus PL reading, which in (17) requires us to distribute our focus to each stuff Taroo bought, is difficult to achieve because we can no longer distribute our attention to multiple things he bought. If this is the right analysis, it is predicted that MSC doesn't allow PL reading regardless of the presence of movement in the first conjunct, as long as one of two wh-items in the first conjunct gets contrastive reading at least. In the remainder of this subsection, we will explore the difficulty of obtaining PL reading from the perspective of prosodic analysis.

   The reason why (10b) is not precluded from acquiring PL reading is reduced to the absence of a movement operation that induces contrastive reading in the first conjunct. However, contrastive reading can be created by increasing the prosodic prominence of an

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[10] The difficulty of obtaining PL reading by the order of quantified expressions is applicable not only to structures like (17) (= (10b)), but also to structures like (10c) and (10d) as well.

expression that the speaker wants to compare with others[11]. Look at the following sentences, where bold-faced phrases have got additional prominence;

(19) a. Taroo-wa   onaka-ga   suiteiru kara   **piza-o**   katta
          -WA stomach-Nom empty   because pizza-Acc bought
      'Taroo bought pizza because he was hungry.'

    b. Taroo-wa **onaka-ga**   **suiteiru kara**   piza-o   katta
          -WA stomach-Nom empty   because pizza-Acc bought
      'Taroo bought pizza because he was hungry.'

Sentence (19a) carries the same implicature as (18), and sentence (19b) implies that it is because Taroo was hungry that he bought pizza and not because, for instance, he missed American food. In this way, it is true that prosodic change can lead to producing contrastive reading.

    With this much in mind, we can predict that PL reading can be prevented even without a movement if one of two WH's in the first conjunct is pronounced with additional prosodic prominence. For that matter, look at the following sentences, where (a) and (b) precedes the second conjunct independently;

(20) a. Taroo-ga   **nazeka**   nanika-o   katta-no-wa   sitteiru ga,
          -Nom for some reason something-Acc bought-Nmlz-WA know   but
      'Taroo bought something for some reason, but'
    b. Taroo-ga   nazeka   **nanika-o**   katta-no-wa   sitteiru ga,

    boku-wa nani-o   naze ka siranai   (Individual reading)
    I-Top   what-Acc why Q don't.know
    'I don't know what or why.'

The result is that the second conjunct tends to elicit individual reading in both cases where (a) precedes the second conjunct and where (b) does, despite the fact that movement has taken place in the second conjunct. Therefore, prosody also seems to be relevant to the likelihood of PL reading.

    To sum up, in this subsection, we looked at two cases where PL reading is suppressed. Although they seem to go against my analysis on the relation between PL reading and Mapping Hypothesis at first site, it turned out that they don't and are rather consistent with my analysis in reality.

    Throughout the section 3, it was revealed that the availability of PL reading of MSC is dependent on what type of verbs takes the sluiced clause as its complement or on the existence of contrastive reading in the first conjunct, and the preference of PL reading is dependent on the existence of partitive reading in the second conjunct. Therefore, it can still be said that the predominance of PL reading is associated with the Mapping Hypothesis.

4. Remaining issues

In section 3, we confirmed that the induction of PL reading was ascribed to the movement of wh-items, and since partitive reading is the only available interpretation for expressions in IP,

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[11] By saying "prosodic prominence" I assume that the increase of F0, intensity, and/or duration would be relevant. With regard to exactly which acoustic information is relevant, it is not clear and not directly relevant to this paper, so I won't assert anything about it.

and not in VP, we assumed that moved expressions got out of VP. If we remember three types of MSC that tends to produce PL reading, the one with movement of the remnant phrase all the way to the beginning of the second conjunct wouldn't have any problem. But there is no independent evidence to prove that wh-items have undergone movement to the outside of VP for the other two types of sentences. The answer for this question is important in that it would explain the asymmetry in terms of the likelihood of PL reading between ordinary direct multiple-wh questions and MSC. First, observe the following examples.

(21) Direct multiple-wh question
    Taroo-ga   dareka-ni   nanika-o   ageta tte kiita kedo,
        -Nom someone-Dat something-Acc gave that heard but
    'I heard that Taroo gave someone something, but'
    Taroo-wa **nani-o**   **dare-ni** ageta no?   (Individual reading)
        -WA what-Acc who-Dat gave Q
    '(lit.) What did Taroo give who?'

(22) MSC
    Taroo-ga   dareka-ni   nanika-o   ageta-no-wa   sitteiru ga,
        -Nom someone-Dat something-Acc gave-Nmlz-WA know   but
    'I know that Taroo gave someone something, but'
    boku-wa **nani-o**   **dare-ni** ka siranai   (PL reading)
    I-WA   what-Acc who-Dat Q don't.know
    'I don't know what or who.'

Unlike (22), (21) doesn't tend to produce PL reading even though *nani-o* has moved to precede *dare-ni* in both sentences. Since Saito (1985), it has been a long-standing analysis that maximal projections such as IP and VP are the landing sites for scrambled phrases, so if *nani-o* in (21) is adjoined to VP while that in (22) to TP, the resulting reading for each sentence is reasonable and consistent with my analysis about the relation between PL reading and Mapping Hypothesis. Therefore, it is of great importance to justify the movement of *nani-o* in (22) to a position outside of VP so that we can explain the difference in the availability of PL reading between (21) and (22), and for the justification of movement, it is also important to elucidate the underlying structure of Japanese MSC.

    The other issue that needs to be solved is the distribution of contrastive reading and partitive reading, i.e. when contrastive reading is obtained and when partitive reading is obtained as a result of movement. If we remember sentence (12) and (18), the movement of a quantified expression, *ookuno gengo gakusha-o* 'many language scholar-Acc,' in (12) led to the partitive reading, and movement of non-modified nominal expression, *piza-o* 'pizza-Acc,' led to contrastive reading in (18). So the first impression is that syntactic category of the moved phrase determines the resulting reading, contrastive or partitive reading. In fact, when *ookuno* is removed from (12) and it is added to (18), the former comes to have contrastive reading and the latter partiitve reading.

(23) (= (12b) except for the absence of *ookuno*)
    Keisatu-wa [gengo   gakusha-o]$_i$ [kinoo   t$_i$ taiho sita]   (contrastive)
    police-Top   language scholar-Acc yesterday   arrest did
    'The police arrested many linguists yesterday.'

(24) (= (18) except for the addition of *ookuno*)

Taroo-wa ookuno piza-o$_i$ [[onakaga-ga   suite-ita   kara] t$_i$ katta]   (partitive)
-WA many   pizza-Acc stomach-Nom empty-was because bought
'Taroo bought many piece of pizza because he was hungry.'

In MSC, however, we observed that the movement of a quantified expression, *nanika-o* 'something-Acc,' resulted in contrastive reading. This means that contrastive reading, and not partitive reading, can be obtained by the movement of either quantified expression or unmodified nominal expression, as shown below.

(25)

	Contrastive reading	Partitive reading
Quantified expression	✓	✓
Unmodified nominal expression	✓	✗

The result in and of itself is reasonable because partitive reading is a subcategory of contrastive reading[12]. But a question still remains as regards why the movement of *nanika-o* constantly creates contrastive reading, and not partitive reading. Therefore, the distribution of the two readings cannot simply be determined by what syntactic category the moved expression is of.

5. Conclusion

This paper aimed to represent the relation between PL reading in Japanese MSC and Mapping Hypothesis. Essentially, the preference of PL reading in three types of sentences could successfully be reduced to one syntactic operation, movement. The discussion was extended to the cases where PL reading should be possible at first site according to my analysis, but is impossible in reality. But it ended up that those cases were indeed far from undermining my analysis, and rather consistent with my analysis. Despite some remaining issues, my analysis seems quite solid, and expected to be applied to the analysis of the availability of PL reading in other types of sentence structures like (1) and (3). Since the inspection of the validity of my analysis and unraveling the underlying structure of Japanese MSC are interrelated, the further research on those issues should be promoted from both semantic and syntactic point of view.

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[12] As mentioned in footnote 2, Japanese *–wa* has two functions; thematic and contrastive. The attachment of contrastive *–wa* produces contrastive reading as it's caused by the movement we have looked at thus far. Also, Kuroda's (2005) *anti-exhausitive listing* reading seems to have the same concept as partitive reading, and he hypothesizes using 'topic' referring to "thematic" in Kuno's terminology that "the contrastive *wa*, but not the "topic" *wa*, entails the anti-exhaustive listing reading (Kuroda 2005; 8)." Therefore, it is considered that contrastive reading entails partitive reading if one adopts Kuroda's hypothesis.

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