COVERT PIED-PIPING
IN JAPANESE WH-QUESTIONS

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It will be argued that Agree alone is not sufficient to derive wh-questions in Japanese contra Watanabe (2006) and Munakata (2006). Specifically, covert movement or pied-piping must follow after Agree. To validate this claim, three new pieces of evidence will be presented: scope interaction, de re/de dicto interpretations of nan-satu no NP ‘how many NPs,’ and long-distance construal of zibun-zisin ‘oneself.’ This claim, if true, supports Chomsky’s (2004, 2007, 2008), in which he argues that covert movement (or pied-piping) and Agree are distinct operations. Hence, Chomsky’s (2000, 2001) claim that there is no covert movement in the syntactic module should be rejected.*

Keywords: pied-piping, covert movement, Agree

1. Introduction

In this section, after a brief history of the analysis of in-situ wh-questions in Chinese and Japanese, I will introduce two arguments for a pied-piping account of Japanese wh-questions: ittai and the intervention effects. Section 2 will show that it is possible to explain the same data without pied-piping. In section 3 I will provide three pieces of evidence for pied-piping in Japanese wh-questions. Section 4 will conclude the paper.

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1.1. Wh-questions in Japanese

Wh-question constructions in Chinese and Japanese have been discussed extensively in the literature (e.g. Huang (1982), Lasnik and Saito (1992), Watanabe (1992), and Hagstrom (1998) among many others) because, unlike in English, movement of wh-phrases is not directly observed. The main question is whether wh-phrases in Chinese and Japanese go through movement or not. Huang (1982) claims that wh-phrases indeed undergo movement in Chinese and this movement takes place in the LF (or covert) component. Furthermore, Nishigauchi (1986, 1990) and Choe (1987) claim that movement both in the SS (or overt) and the LF component is constrained by the subjacency condition, and the reason why in-situ languages allow wh-phrases to be generated within islands is due to a large-scale covert pied-piping mechanism. In other words, entire islands are covertly pied-piped and raised to spec-C. Since nothing crosses islands, no subjacency is violated. From this point forward, I will concentrate on Japanese wh-questions. Below I will introduce a few arguments presented thus far for the pied-piping analysis.\footnote{Other evidence for the pied-piping analysis has been presented in literature. For example, Nishigauchi (1986, 1990) claims that a short answer is disallowed when a wh-phrase is generated inside an island.}

1.1.1. Ittai

The first evidence is that the occurrence of ittai ‘in the world’ is affected by the presence of islands. Compare the following examples:

(1) Mary-ga Bob-ni ittai nani-o okutta no?  
Mary-Nom Bob-Dat ittai what-Acc sent Q  
‘What in the world did Mary send to Bob?’

(2) Ross-wa Mary-ga Bob-ni ittai nani-o okutta to  
Ross-Top Mary-Nom Bob-Dat ittai what-Acc sent Comp omotteiru no?  
think Q  
‘What in the world does Ross think that Mary sent to Bob?’

(3) John-wa ittai [Bob-ni nani-o okutta] hito-ni atta no?  
John-Top ittai Bob-Dat what-Acc sent person-Dat saw Q  
‘What in the world did John see [the person who sent ___ to Bob]?’

(1) Other evidence for the pied-piping analysis has been presented in literature. For example, Nishigauchi (1986, 1990) claims that a short answer is disallowed when a wh-phrase is generated inside an island.
In the above examples, islands (relative clauses) are bracketed. As the above examples show, *wh*-phrases remain in situ in Japanese. *Wh*-phrases can be generated within islands as in (3). Furthermore, *ittai* can appear in the same clause as a *wh*-phrase, which can be either a matrix or an embedded clause as in (1) and (2). However, as noted in Pesetsky (1987) and Hagstrom (1998), among others, *ittai* cannot be inside an island as in (4). Accordingly, Pesetsky considers that “*ittai* must be attached to the *wh*-phrase that actually undergoes movement” (Pesetsky (1987: 126)). Therefore, the reason why (4) is ungrammatical is that since the whole island undergoes movement due to pied-piping, and hence, should be regarded as a *wh*-element as a whole, *ittai* must be attached to the island, not to the *wh*-phrase, *nani*. If this argument is correct, the distribution of *ittai* supports the pied-piping analysis.

1.1.2. The Disappearance of the Intervention Effects

The second evidence is that the observation of the intervention effects is influenced by the presence of islands. Examine the following examples:

(5)?? Ken-ka Mary-ga nani-o uketotta no?
   Ken-or Mary-Nom what-Acc received Q
‘What did Ken or Mary receive?’

(6) nani-o, Ken-ka Mary-ga ti uketotta no?

(7) John-wa [Ken-ka Mary-ga nani-o uketotta.tara]
   John-Top Ken-or Mary-Nom what-Acc receive.if
   okorimasu ka?
   become.angry Q
‘What will John get angry [if Ken or Mary receives ____]?

As (5) indicates, certain kinds of quantifiers cannot be base-generated between C and a *wh*-phrase, as a result of which is called “the intervention effects” (see Beck (1996), Beck and Kim (1997), Tanaka (2002), Hagstrom (1998), and Endo (2007) for more details including other language data). In the current examples, *ka* ‘or’ intervenes in the establishment of a certain kind of relation (i.e. covert movement or Agree) between C and a *wh*-phrase, so (5) is ungrammatical. If a *wh*-phrase is placed before such a quantifier as in (6) due to scrambling (the operation which I assume is not subject to the intervention effects), it becomes grammatical because nothing
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intervenes in a syntactic operation between C and the wh-phrase. However, as (7) shows, if interveners are embedded within islands, such as adverbial and relative clauses, the intervention effects are not observed (see Hagstrom (1998) for more examples of this nature). This fact can be accounted for if the whole island is (covertly) pied-piped and raised to spec-C, which is illustrated as follows:

(8) \( \text{[cp [if Ken or Mary receives what], C [John will get angry \( t \)]]} \)
In this case the \( w-h \)-phrase itself need not enter into a syntactic relation with C, and hence the intervener cannot intervene between the \( w-h \)-phrase and C. Hence, the intervention effects are not observed in (7). If this argument is correct, the asymmetry between (5) and (7) supports the pied-piping analysis.

Grammatical judgment of these types of examples is often controversial, however. For example, if the ungrammatical example appears in an embedded context, the grammaticality seems to be greatly improved:

(9) John-wa [Ken-ka Mary-ga nani-o uketotta ka]
John-Top Ken-or Mary-Nom what-Acc received Q
sitteirurasii.
seem.to.know
‘John seems to know what Ken or Mary received.’

Due to this unstable nature, Tomioka (2007) attributes the phenomenon to a pragmatic effect. However, Endo (2007) claims that D-linked \( w-h \)-phrases may escape the intervention effects and \( w-h \)-phrases in embedded clauses easily become D-linked (see Pesetsky (1987) for the discussion on D-linked \( w-h \)-phrases). There he shows that the intervention effects are clearly observed if a non D-linked \( w-h \)-phrase such as \( nansatu \) ‘how many’ is chosen:

(10) *Daremo hon-o nansatu kawa-nakat-ta no?
anyone book-Acc how.many buy-Neg-Past Q
‘How many books did no one buy?’ (Endo (2007: 53))

(11)?? John-wa [Daremo hon-o nansatu kawa-nakat-ta ka] kiita
John-Top anyone book-Acc how.many buy-Neg-Past Q asked
‘John asked how many books no one bought.’ (Endo (2007: 54))

okorimasu ka
get.angry Q

I would like to thank two anonymous EL reviewers for pointing this out to me.
‘(Lit.) Will Mary get angry if no one buys how many books?’

As (10) and (11) show, the intervention effects remain to be observed whether the intervener and the *wh*-phrase are embedded or not. But if both of the phrases are inside an island as in (12), the intervention effects do not surface, which supports the idea of pied-piping the whole island. If the grammatical judgment above is tenable, it seems that the intervention effects are “not entirely pragmatic in nature” (Endo (2007: 54)).

As the two pieces of evidence above show, there is asymmetry between simple *wh*-questions and complex *wh*-questions in which *wh*-phrases are generated inside islands. Hence, different mechanisms must be assumed to account for the asymmetry, and the pied-piping account seems to be a reasonable solution for the problem. However, it is possible that all the aforementioned data explained by the covert pied-piping mechanism are explained by Agree without subsequent covert pied-piping, that is, Agree alone. In the next section I will show that this is indeed possible.

2. The Agree-alone Analysis

Following Chomsky’s (2000, 2001) proposal, according to which there is no covert movement, Watanabe (2006) and Munakata (2006) argue that *wh*-questions in Japanese are licensed by Agree without subsequent covert movement. I will call such an account the “Agree-alone analysis” in contrast to the “pied-piping analysis,” which claims that covert large-scale pied-piping is applied when *wh*-phrases are not directly accessible to C. In this section I would like to discuss the aforementioned data under the Agree-alone analysis and show that it is indeed possible to explain the data under such an analysis.

The first evidence for the pied-piping analysis mentioned in this paper is *ittai*. It is impossible to use *ittai* inside an island as illustrated in (4). In contrast, if *ittai* is placed outside the island as in (3), the sentence becomes acceptable. This contrast has been presented to support the pied-piping analysis. However, it is possible to explain this fact under the Agree-alone analysis too. Watanabe (1992) claims that an invisible operator is base-

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3 However, Chomsky (2004, 2007, 2008) claims that covert (A’-)movement exists.

4 Chomsky (2007, 2008) claims that no Agree is necessary for A’-movement such as *WH*-movement. However, I assume throughout this paper that Agree is necessary to license *wh*-expressions in Japanese. I would like to thank an anonymous EL reviewer for pointing this out to me. See also the conclusion.
generated at the edge of a *wh*-phrase in simple *wh*-questions, but when a *wh*-phrase is placed inside an island, the invisible operator is base-generated at the edge of the island and this operator, not the *wh*-phrase, enters into a syntactic operation with C (i.e. *ka* (the question particle)). In this way, the subjacency condition is bypassed when *wh*-phrases are generated inside islands in Japanese. Now if this claim is adopted here, it is also possible to argue that only Agree is initiated between C and the invisible operator. Suppose *ittai* must c-command the invisible operator. Then, the contrast is accounted for by the Agree-alone analysis. In other words, the evidence about *ittai* does not necessarily support the existence of pied-piping in Japanese *wh*-questions.

The second evidence mentioned above for the pied-piping analysis is the disappearance of the intervention effects as shown in (5) and (7). It has been shown that the intervention effects are lifted if both a *wh*-phrase and an intervener are placed within the same island as in (7). According to Hagstrom (1998), the intervention effects are observed when the Minimal Link Condition (MLC) is violated. Specifically, C undergoes Agree with the closest goal, and an intervener and a *wh*-phrase share the same feature. Thus, if an intervener is closer to C than a *wh*-phrase is, as in (5), no Agree is initiated between C and a *wh*-phrase, leading to ungrammaticality. However, as suggested in Watanabe (1992) and above, if an invisible operator is base-generated at the edge of an island, the intervener inside the island cannot block Agree between C and the invisible operator. Hence, the Agree-alone analysis can account for the disappearance of the intervention effects too.

In this section, all data presented for the pied-piping analysis have been successfully reanalyzed under the Agree-alone analysis. Therefore, it is not

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5 In fact, Watanabe (1992), unlike Watanabe (2006), assumes that the invisible operator alone undergoes overt *wh*-movement and the rest of the island is covertly raised to Spec-C. Thus, Watanabe’s (1992) analysis is compatible with the evidence I provide later in this paper. I would like to thank an anonymous *EL* reviewer for pointing this out to me.

6 When the MLC was proposed in Chomsky (1995), there was no operation such as Agree. Thus, the MLC is applied to Move in Hagstrom (1998), but it is possible to reanalyze the condition so that it is applied to Agree instead of Move.

7 Actually, according to Hagstrom (1998), *ka*, a question particle, which is base-generated at *wh*-phrases, is overtly attracted by C. Thus, Agree is presumably initiated between C and *ka* in his analysis. Although I assume that Agree is applied between C and (an invisible operator of) a *wh*-phrase in this paper, the difference does not affect the present argument.
clear which account should be adopted for Japanese *wh*-questions: the pied-piping or the Agree-alone analysis. In the next section, I will present three new pieces of evidence to support the pied-piping analysis.

3. Three Pieces of Evidence for the Pied-piping Analysis

In this section three types of data will be presented to support the pied-piping analysis, which are (i) scope interaction, (ii) *de re/de dicto* readings of *nan-satu-no* NP ‘how many NPs,’ and (iii) long distance binding of *zibun-zisin* ‘oneself.’

3.1. Scope Interaction

In this subsection I will present examples whose scopal relations cannot be derived unless (covert) large-scale pied-piping is applied. Consider the following examples:

(13) Ken-wa Mary-ni [**daremo-ga** nani-o moratta to]
Ken-Top Mary-Dat everyone-Nom what-Acc received Comp
omow-ase-*nakat*-ta no?\(^8\)
think-make-Neg-Past Q
‘What didn’t Ken make Mary think that everyone received?’
Every >> Neg; *Neg >> Every

(14) Ken-wa Mary-ni [**dare-ga** dono.okasi.mo moratta to]
Ken-Top Mary-Dat who-Nom every.snack received Comp
omow-wase-*nakat*-ta no?
think-make-Neg-Past Q
‘Who didn’t Ken make Mary think received every snack?’
Every >> Neg; *Neg >> Every

Interestingly, the universal quantifiers, *daremo* ‘everyone’ and *dono.okasi.mo* ‘every snack,’ in both examples must take wide scope over the negation in the matrix clause, although the negation c-commands the two universal quantifiers in the surface structures. Accordingly, (13) implies that there is something that everyone received and Ken did not make Mary think that they received it. Similarly, (14) implies that a certain person received every snack and Ken did not make Mary think that the person received

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\(^8\) *Daremo* ‘everyone’ is an intervener, so it is expected to cause the intervention effects, but the fact that the example is perfectly grammatical independently provides support for the large-scale pied-piping of the entire embedded clause.
them. This fact is naturally explained if the embedded clause is pied-piped and moved to the matrix spec-C. The LF of (13) is schematically represented as follows (using the copy theory):

(15) \([[\text{everyone received what}], \text{C} [\text{Ken did not make Mary think [everyone received what]]}]\)^9

It is important that wh-phrases are generated in embedded clauses. Thus, if there is no wh-phrase in the embedded clause, universal quantifiers in the embedded clause cannot take wide scope over negation, which is illustrated as follows:

(16) Ken-wa Mary-ni [\text{daremo-ga sono okasi-o moratta to}] omow-ase-\text{nakat-ta}.
    Ken-Top Mary-Dat everyone-Nom that snack-Acc received C think-make-Neg-Past
    ‘Ken didn’t make Mary think everyone received that snack.’
    *Every >> Neg; Neg >> Every

(17) Ken-wa Mary-ni [John-ga \text{dono.okasi.mo moratta to}] omow-ase-\text{nakat-ta}.
    Ken-Top Mary-Dat John-Nom every.snack received C think-make-Neg-Past
    ‘Ken didn’t make Mary think John received every snack.’
    *Every >> Neg; Neg >> Every

(18) \text{Dare-ga Mary-ni [John-ga \text{dono.okasi.mo moratta to}] who-Nom Mary-Dat John-Nom every.snack received C omow-ase-\text{nakat-ta no?}}
    think-make-Neg-Past Q

^9 After Transfer, the representation is expected to change into the semantic representation:

(i) \text{WH(y) [everyone(x) [[x received thing(y)]] C [Ken did not make Mary think x received y]]}

Here I make two assumptions in the semantic component. First, following Watanabe (1992), an invisible operator which serves as a WH operator is base-generated at the edge of a pied-piped element (represented as ‘WH’ above). This assumption makes it possible to avoid a semantic problem raised by Stechow (1996), who claims that proper semantic representations are unavailable if one regards a wh-phrase in a pied-piped phrase as a WH operator. Secondly, operators in their uppermost copies remain as operators such as ‘WH(y)’ and ‘everyone(x)’ in (i) whereas the same operators in the lower copies get deleted or turn into variables. This assumption is necessary because if a new operator is created every time an operator is moved and its copy is made, proper semantic representations will not be available. This operation enables the universal quantifier to take scope over negation and there is only one WH operator and one universal quantifier in (i).
‘Who didn’t make Mary think that John received every snack?’

*Every >> Neg; Neg >> Every

In all the above examples there is no *wh*-phrase generated in the embedded clauses. As a result, the universal quantifiers in the embedded clauses cannot take wide scope with respect to negation in the matrix clauses.¹⁰ For example, (16) cannot mean that everyone received that snack and Ken did not make Mary think that they received it. Instead, it implies that Ken made Mary think that not everyone received the snack. Similarly, in (17) and (18) (the latter of which has a *wh*-phrase in the matrix clause), Mary was forced to think that John received not every snack. Therefore, all of the above examples indicate that it is necessary for an embedded clause to have a *wh*-phrase if a quantifier in the same embedded clause should take wide scope over the matrix negation. Accordingly, the wide scope reading of the universal quantifiers in (13) and (14) is due to the fact that the whole embedded clauses are pied-piped and raised to spec-C. Furthermore, the wide scope reading cannot be explained with the Agree-alone analysis because Agree alone does not change structural hierarchy. Nevertheless, one question arises: why is pied-piping of the entire embedded clause necessary in spite of the fact that no islands are present in (13) and (14)?¹¹

The necessity of pied-piping in (13) and (14) can be accounted for in the following way. On the basis of German data, Beck (1996) argues that negation must not bind the trace of a covertly moved *wh*-expression, which is called the Minimal Negative Structure Constraint (MNSC). If this claim is correct and applies to Japanese, it is impossible to covertly raise the *wh*-phrase alone in (13) and (14) because if it is covertly raised, its trace will be bound by the negation in the matrix clause. Thus, the entire embedded clause must first be scrambled to a position higher than negation, which guarantees that no covertly moved *wh*-trace is left under the c-command domain of the negation. Then, the embedded clause is covertly pied-piped to

¹⁰ Along with (13) and (14), I have consulted four native speakers of Japanese as to the interpretations of (16), (17) and (18). All of them agreed that there is a contrast between (13) and (14) on one hand and (16), (17), and (18) on the other. The former examples have a presupposition that everyone received a certain thing in (13) or a presupposition that a certain person received every snack in (14), both of which indicate that the two universal quantifiers take wide scope over negation. In contrast, there are no such presuppositions (where universal quantifiers take wide scope over negation) available in (16), (17), and (18).

¹¹ I would like to thank an anonymous *EL* reviewer for pointing this problem out to me.
matrix spec-C. This is why pied-piping of the embedded clause is necessary in (13) and (14).

However, another question arises at this point: could the wide scope reading of the universal quantifier be due to the scrambling, not the pied-piping, of the embedded clause? In other words, as one anonymous EL reviewer points out, the wide scope reading of the universal quantifiers could be due to the scrambling of the embedded clauses to a position higher than negation. However, this possibility cannot be supported. Consider the following examples in which the embedded clause of (18) is scrambled and placed before Mary-ni or dare-ga:

(19) **Dare-ga [John-ga dono.okasi.mo moratta to], Mary-ni t;**
who-Nom John-Nom every.snack received Comp Mary-Dat
omow-ase-nakat-ta no?
think-make-Neg-Past Q
‘Who didn’t make Mary think that John received every snack?’
*Every >> Neg; Neg >> Every

(20) [John-ga dono.okasi.mo moratta to], Dare-ga Mary-ni t;
omow-ase-nakat-ta no?
*Every >> Neg; Neg >> Every

Despite the scrambling, the universal quantifier cannot take wide scope over the matrix negation in either case.\(^{12}\) Hence, what enables the universal quantifiers in (13) and (14) to take scope over the matrix negation is not scrambling itself, but pied-piping of the embedded clauses. In fact, at the end of the next subsection, I will show that the scrambling in (13) and (14) is part (i.e. in the same chain) of the pied-piping & raising process.

3.2. De Re/De Dicto Readings of How Many NPs

In this subsection I will offer the second piece of evidence for the pied-piping analysis by considering how the interpretation of nan-satu no NP ‘how many NPs’ changes according to the environment where its restriction (copy) appears. As discussed in Cresti (1995) and Rullmann (1995) among others, the wh-expression how many NPs generates ambiguity in a certain environment. Consider the following English wh-question, for instance:

(21) How many books does Mary think that John read yesterday?

This example is two-way ambiguous depending on the scope of many

\(^{12}\) I have consulted four native speakers of Japanese as to the interpretations of (19) and (20) and all of them found no change in interpretation after scrambling.
books, which is interpreted as an existential quantifier binding the variable of ‘book.’ The two semantic interpretations are roughly represented as follows:

(22) What is the number \( n \) such that there are \( n \) books that Mary thinks that John read yesterday?

(23) What is the number \( n \) such that Mary thinks that there are \( n \) books that John read yesterday?

In (22), the scope of many books is outside Mary’s thinking, which I call a de re reading following Rullmann (1995). Therefore, a speaker of the sentence presupposes that there are books relevant to the current discourse in this interpretation. On the other hand, in (23) the scope of many books is inside Mary’s thinking, which I call a de dicto reading again following Rullmann (1995). Thus, a speaker of the sentence does not presuppose that there are books relevant to the current discourse in the interpretation of (23). (That is, all such things can be Mary’s imagination.) These two readings are thought to be derived due to the pied-piping of (how) many books. Strictly speaking, only how is a wh-word, but it is impossible to raise only how. Hence, many books is pied-piped and raised along with how. Due to this pied-piping and raising process, there are two possible sites for the scope of many books to take: outside Mary’s thinking as in (22), or inside Mary’s thinking as in (23).

One clear piece of evidence for the pied-piping analysis of Japanese wh-questions is that the same ambiguity is observed in Japanese. Examine the following example:

(24) (Harry Potter, Narnia, LOTR no.uchi/ Jissaiwa sokoni hon-wa
    Harry Potter, Narnia LOTR among actually there book-Top
    nakatta ga) Mary-wa John-ga kinoo nan-satu-no
    not.existed but Mary-Top John-Nom yesterday what-CL-Gen
    hon-o yonda to omotteiru no?
    book-Acc read Comp think Q
    ‘(Among Harry Potter, Narnia, and LOTR/ Although there is no
    book there actually), how many books does Mary think that John
    read yesterday?’

This example is ambiguous in the same way as the English one, i.e. (21) is. Following Morita (2002, 2004), I have added the first half in the parentheses (‘among Harry Potter, Narnia, and LOTR’), which forces the existence of books in the discourse, so the compatibility with it shows that de re readings are generated. On the other hand, the latter half in the parentheses (‘although there is no book there actually’) forces de dicto readings. Since
(24) is compatible with both of the parts in the parentheses, it allows both *de dicto* and *de re* readings of *how many NPs*.

However, as one anonymous *EL* reviewer points out, it may be the case that the availability of *de re* readings of *nan-satu-no hon* is due not to pied-piping of the embedded clause, but to some other mechanism. The same *EL* reviewer suggested the possibility of attributing the ambiguous interpretation of *how many NPs* to a special mechanism such as Reinhart’s (1997, 1998) choice functions. The choice functions make it possible for indefinite NPs and *in-situ wh*-phrases to take either the embedded or the matrix scope without movement because they regard indefinite NPs and *in-situ wh*-phrases merely as function variables which range over entities denoted by NPs, and the function variables are subject to existential closure which can apply “arbitrarily far away.” It seems that this account can be applied to the analysis of indefinite NPs in Japanese. Examine the following sentence:

(25) *(Harry Potter, Narnia, LOTR no.uchi/ Jissaiwa sokoni hon-wa*

Harry Potter Narnia LOTR among actually there book-Top
nakatta  ga) Mary-wa [John-ga kinoo hon-o not.existed but Mary-Top John-Nom yesterday book-Acc
yonda to] omotteiru/omotteinai
read Comp think/think.NEG
‘(Among Harry Potter, Narnia, and LOTR/ Although there is no book there actually), Mary thinks/doesn’t think that John read books yesterday.’

In this example, the indefinite NP, *hon-o* ‘book-Acc,’ can allow either a *de dicto* or a *de re* reading. This ambiguity seems to be easily explained by Reinhart’s choice functions.

Nonetheless, the way indefinite NPs generate *de dicto/re* readings is distinct from *in-situ wh*-phrases in Japanese. For example, in the case of *in-situ wh*-phrases, only *de re* readings are possible when matrix verbs are negated as we will see below (i.e. (26)), whereas in the case of indefinite NPs, there is no such constraint as in (25). Therefore, if *in-situ wh*-phrases denote choice functions in Japanese, it is not clear why there is such constraint in *wh*-questions. If one assumes movement of *in-situ wh*-phrases, it is possible to account for the constraint with Beck’s (1996) MNSC as is discussed in the previous subsection. However, if there is no movement of *in-situ wh*-phrases as the choice function account assumes, Beck’s condition cannot be invoked in the choice function account. Accordingly, explaining the ambiguity of *how many NPs* without recourse to movement seems not
well-supported.  

Coming back to the main discussion, only a *de re* reading is available if the matrix verb is negated. Examine the following example:

(26) (Harry Potter, Narnia, LOTR no.uchi/ *Jissaiwa sokoni hon-wa
Harry Potter Narnia LOTR among actually there book-Top
nakatta ga) Mary-wa [John-ga kinoo nan-satu-no
not.existed but Mary-Top John-Nom yesterday what-CL-Gen
hon-o yonda to] omotteinai no?
book-Acc read Comp think.NEG Q
‘(Among Harry Potter, Narnia, and LOTR/ Although there is no
book there actually), how many books doesn’t Mary think that
John read yesterday?’

The above example allows only a *de re* interpretation because of Beck’s
MNSC, which disallows a covertly left *wh*-trace to be bound by nega-
tion. Hence, the entire embedded clause must be overtly A-scrambled to
a position higher than the negation in (26). As a result, *nan-satu-no hon*
‘how many books’ manages to stay outside the scope of Mary’s negative
thinking, and the reason why only the *de re* reading is possible follows.

As is also observed in the previous subsection, scrambling of an embed-
ded clause is automatically executed when a *wh*-phrase is in an embedded
clause and the matrix verb is negated (or is a non-bridge verb as we will
see below), but the nature of such scrambling remains to be accounted
for. I claim that such scrambling is not an independently motivated op-
eration but part of the pied-piping & raising process of the embedded
clause.  

In other words, the scrambling observed in the above examples
and the subsequent pied-piping & raising process are actually part of the
same movement. There are two reasons for this claim.

First, *naze* ‘why,’ which cannot resort to pied-piping (cf. Nishigauchi
(1986, 1990)), cannot be used in an embedded clause when the matrix verb
is negated or is a non-bridge verb. Before discussing this fact, let us com-
pare the following examples:

(27) Mary-wa [Ken-ga itsu kaita] hon-o yomimasita ka?
Mary-Top Ken-Nom when wrote book-Acc read Q

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13 See Morita (2002) for other problems with the use of the choice functions in *wh*
questions of *in-situ* languages such as Japanese.
14 Here I assume that the overt movement and the scrambling which is applied to
avoid an intervener (cf. (6)) are different kinds of movement.
'(Lit.) Did Mary read books that Ken wrote when?'

(28) *Mary-wa [Ken-ga naze kaita] hon-o yomimasita ka?
Mary-Top Ken-Nom why wrote book-Acc read Q

'(Lit.) Books that he wrote why are interesting?'

In (27) *itsu ‘when’ is inside the relative clause, but the example is grammatical. Presumably covert pied-piping of the relative clause takes place there. In contrast, in (28), *naze cannot be used inside relative clauses, which form islands. This fact seems to indicate that *naze cannot induce pied-piping. With this fact in mind, consider the following example:

(29) *Ken-wa [Mary-ga naze sono hon-o katta to] comp
Ken-Top Mary-Nom why that book-Acc bought Comp
omow.anak.attan no? think.NEG.PAST Q

'Why didn’t Ken think that Mary bought that book?'

Covert movement of *naze alone is disallowed due to Beck’s MNSC. Furthermore, *naze cannot induce pied-piping, so pied-piping of the whole embedded clause is impossible. If scrambling of the embedded clause is applied independently of wh-movement (or pied-piping), we would expect it to be available in (29), and the example should be grammatical. Hence, scrambling of the embedded clause is not an independent operation but part of the pied-piping & raising process, which is unavailable in the case of *naze.

Negation is not the only way to trigger scrambling of an embedded clause. Non-bridge verbs such as *tubuyaku ‘mumble’ and *sasayaku ‘whisper’ induce Beck’s MNSC. Thus, the ungrammaticality of the following example is expected:

(30) *Ken-wa [Mary-ga naze sono hon-o katta to] comp
Ken-Top Mary-Nom why that book-Acc bought Comp
*tubuyaita no?15 mumbled Q

'Why did Ken mumble that Mary bought that book?'

Therefore, non-bridge verbs also trigger overt movement of embedded clauses.

The second reason for regarding overt movement of the embedded clauses as part of the pied-piping & raising process is that the intervention effects are lifted when matrix verbs are non-bridge verbs. Compare the following

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15 This observation is due to Hoji (1985: 394).
examples:

(31) *Daremo nan-satu-no hon-o yomanakatta no?
    Anyone what-CL-Gen book-Acc read.not Q
    ‘How many books did nobody read?’

(32) ??Ken-wa [daremo nan-satu-no hon-o yomanakatta
    Ken-Top anyone what-CL-Gen book-Acc read.not
to] omotta no?
    Comp thought Q
    ‘How many books did Ken think that nobody read?’

(33) (??)Ken-wa [daremo nan-satu-no hon-o yomanakatta
    Ken-Top anyone what-CL-Gen book-Acc read.not
to] tubuyaita no?\(^\text{16}\)
    Comp mumbled Q
    ‘How many books did Ken mumble that nobody read?’

In section 1.1.2, we saw that the intervention effects are lifted when the illegitimate sequence of an intervener and a \textit{wh}-phrase are in the same island, and this fact is attributed to pied-piping of the island. If this explanation is correct, it is possible to explain the contrast between (32) and (33): pied-piping of the embedded clause is executed in (33) to satisfy Beck’s MNSC. This argument, if correct, further shows that overt movement of the embedded clause is not an independently motivated scrambling, but part of pied-piped movement to [spec, the matrix C]. This is because, if the overt movement of the embedded clause were an independently motivated scrambling, from the scrambled position the \textit{wh}-expression alone could undergo covert movement to [spec, the matrix C], and this movement should be subject to the intervention effects as in (32). The fact that no intervention effects are observed in (33) suggests that overt pied-piping of the embedded clause to a position higher than the non-bridge verb is first executed (which I have been calling scrambling), and then covert pied-piping to

\(^{16}\) The grammatical judgment of this sentence differed among native speakers of Japanese. I consulted four native speakers who detect the intervention effect in examples such as (31). Two detected improvement whereas the other two found no change.
COVERT PIED-PIPING IN JAPANESE WH-QUESTIONS

[spec, the matrix C] is applied.\textsuperscript{17} Due to the two reasons above, it seems reasonable to claim that the scrambling of the embedded clauses is part of the pied-piping and raising process (i.e. WH-movement).\textsuperscript{18} Furthermore, if this is correct, the \textit{de re} interpretation of \textit{nan-satu-no hon} ‘how many NPs’ is made available due to pied-piping. This second evidence for pied-piping cannot be explained by the Agree-alone analysis because Agree itself does not change structural hierarchy.\textsuperscript{19}

\textsuperscript{17} One may expect to see the same result if matrix verbs are negated. However, judgment is sometimes difficult to obtain because non-syntactic factors may be involved. Examine the following sentence:

(i) *Ken-wa [daremo nan-satu-no hon-o yomanakatta to] omowanakatta
Ken-Top anyone what-CL-Gen book-Acc read.not Comp thought.not no?
Q
‘How many books didn’t Ken think that nobody read?’

Since the negated matrix verb causes scrambling of the embedded clause with a \textit{wh}-phrase, lifting of the intervention effects would be expected in (i). Nonetheless, (i) is ungrammatical, so this fact may not support the present claim that overt movement of the embedded clause is part of the pied-piping and raising process. However, the ungrammaticality of (i) may be attributed to some other reason. Consider the following example:

(ii) ??Ken-wa [daremo sono hon-o yomanakatta to] omowanakatta no?
Ken-Top anyone that book-Acc read.not Comp thought.not Q
‘Didn’t Ken think that nobody read that book?’

The \textit{wh}-phrase of (i) is replaced with a non-\textit{wh}-phrase in (ii) and it remains ungrammatical. This fact may indicate that the source of ungrammaticality in (i) and (ii) lies not in the intervention effects but in the processing of double negation, \textit{yomanakatta to omowanakatta} ‘didn’t think … nobody read …’ To avoid this processing factor, non-bridge verbs are employed in the main discussion.

\textsuperscript{18} The question of how the computation decides to move a syntactic object overtly or covertly is beyond the scope of the present paper, but see Takahashi (1993) for the cases in which scrambling counts as \textit{WH}-movement.

\textsuperscript{19} As in (24), both \textit{de re} and \textit{de dicto} readings of \textit{how many NPs} are available even if the \textit{wh}-expression is generated inside an island as follows:

(i) (Harry Potter, Narnia, LOTR no.uchi/ Jissaiwa sokoni hon-wa nakatta
Harry Potter Narnia LOTR among actually there book-Top not.existed
{
 ga) Ken-wa John-ga [nan-satu-no hon-o yonda] seito-ni atta
but Ken-Top John-Nom what-CL-Gen book-Acc read student-Dat saw
 to omotteiru no?
Comp think Q

‘(Lit.) (Among Harry Potter, Narnia, and LOTR/ Although there is no book there actually,) does Ken think that John saw the student who read how many books?’

The \textit{wh}-expression is employed inside a relative clause in (i). As predicted, (i) allows both \textit{de re} and \textit{de dicto} readings because the whole island is pied-piped.
3.3. Long Distance Binding of Zibun-zisin ‘Oneself’

The third piece of evidence for the pied-piping analysis comes from an anaphoric item, zibun-zisin, in wh-questions (for detailed discussions of zibun-zisin, see Katada (1991) and Aikawa (1994)). Before presenting such data, let us first consider English examples:

(34) John,i thinks that Bill,j saw a picture of himself. 
(35) John,i wondered which picture of himself Bill,j saw. (Chomsky (1995: 205))

An anaphoric expression such as himself must find a local binder as in (34). But if the wh-phrase with picture of himself is pied-piped and raised as in (35), the long-construal becomes available. Due to the pied-piped movement, the domain in which himself finds its antecedent ranges over either the embedded clause or the matrix clause. As a result, himself can refer to either Bill or John.

Next let us consider the following Japanese example:

(36) John,-wa musume,-ga zibun-zisin,-no shasin-o kiratteiru. John-Top daughter-Nom self-Gen picture-Acc dislike to omotteiru. Comp think ‘John thinks that his daughter dislikes the picture of zibun-zisin.’

As this example indicates, like himself in (34), zibun-zisin must find its binder within the same clause. Thus, the long-distance binding of zibun-zisin by John results in the slight marginality in (36).20 Examine the following wh-questions next:

(37) John,-wa musume,-ga dochira-no zibun-zisin,-no shasin-o kiratteiru ka siritagatteiru. John-Top daughter-Nom which-Gen self-Gen picture-Acc dislike Q want.know ‘John wants to know which picture of himself his daughter dislikes.’

(38) John,-wa musume,-ga donoyoona zibun-zisin,-no shasin-o John-Top daughter-Nom what.kind.of self-Gen picture-Acc

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20 Here native speakers judge differently with regard to long-distance binding of zibun-zisin. Katada (1991) claims it is unacceptable whereas Aikawa (1994) argues that it is almost acceptable (as noted by “?” in her paper). I agree with Aikawa’s (1994) judgment in this paper. However, I take it to be an important observation that long distance construal of zibun-zisin is not perfect.
kiratteiru ka siritagatteiru.
dislike Q want.know
‘John wants to know what kind of picture of himself his daughter dislikes.’

If zibun-zisin is headed by wh-expressions as in (37) or (38), the slight marginality disappears completely. That is, the long-distance construal of zibun-zisin is perfectly acceptable. This observation is naturally explained if the pied-piping account is adopted. In other words, the wh-phrases pied-pipe zibun-zisin-no shasin ‘picture of oneself’ and are raised to the embedded spec-C. After this movement, zibun-zisin is bound by the matrix subject, and hence, the long-distance construal becomes available in (37) and (38).

In this section three pieces of evidence have been presented to support that covert movement or pied-piping is applied in Japanese wh-questions.

4. Conclusion

In this paper I have presented three pieces of evidence for the pied-piping account of Japanese wh-questions: scopal interaction, de re/de dicto readings of nan-satu-no NP ‘how many NPs,’ and long distance binding of zibun-zisin ‘oneself.’ These data suggest that Agree alone is not sufficient to derive Japanese wh-questions, but covert movement or pied-piping must be applied after Agree. This finding lends support to Chomsky’s (2004, 2007, 2008) claim that not only Agree, but also covert movement exists in the syntactic module.

Before closing, let me mention Chomsky (2007, 2008) briefly, according to which WH-movement (or A’-movement in general) is induced by a feature called edge feature (EF). Although it is an uninterpretable feature, and hence, needs to be deleted eventually, it does not require Agree and can be applied either before or after Transfer. Although covert movement is still an available operation, it does not involve Agree in Chomsky (2007, 2008). In this paper, I have assumed that Agree is in fact necessary to initiate (covert) pied-piping. However, the three pieces of evidence I have provided are largely compatible with Chomsky (2007, 2008) because all of the evidence has to do with the effects on the C-I. Nevertheless, if the argument about the intervention effects is correct (cf. section 1.1.2 and 3.2), we still need to assume the existence of Agree even in the case of covert movement.
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