HOW THE SYNTAX KNOWS WHEN TO APPLY BINDING OR MOVEMENT TO
WH-EXPRESSIONS*

Hisashi Morita
Aichi Prefectural University

1. Evidence for Movement and Binding

In the literature, two types of analysis have been proposed to account for wh-questions in
wh-in-situ languages: movement and binding. Moreover, there are proposals which claim that
both of the types are necessary within the same language. Although a few ideas have been
presented about what licenses one type or the other, they seem not satisfactory enough to
explain the phenomenon. In this paper I will show that both movement and binding are
employed to derive wh-questions in Japanese, and claim that the derivation for movement
requires Agree followed by Move between C and wh-expressions while the one for binding
does not. This paper is organized as follows. The rest of Section 1 introduces three pieces of
evidence to show that there are two types of wh-questions in Japanese: the intervention effect,
the wh-island effect, and availability of multiple-pair readings. Section 2 compares the
semantics of the two types of wh-questions. Section 3 reveals under what condition each type
of wh-question is pragmatically licensed. Section 4 concludes the paper.

1.1. (Lifting of) The Intervention Effect

Before significant data are presented, let me define the intervention effect in Japanese as
follows:

(1) *[CP Q … intervener … wh …] (word order is irrelevant.)
    where Q is a question particle in C

The intervention effect arises when there is an intervener between a question particle (Q) such
as ka or no and wh-expressions. Interveners are mostly ones with focus particles such as ka or
mo. Below are examples, which are from Tomioka (2007: 1571):

(2) a. {??[Daremo-ga/??[Ken-ka Mary-ga]] nani-o yonda no?
      everyone-Nom -or -Nom what-Acc read Q
      ‘What did {everyone/Ken or Mary} read?’

b. Nani-o, {daremo-ga/Ken-ka Mary-ga} t_i yonda no? (scrambled)
   ‘What did {everyone/Ken or Mary} read?’

(3) a. ??[Dareka-]ga nani-o yonda no?
    someone-Nom what-Acc read Q
b. Nani-o, dareka-]ga t_i yonda no? (scrambled)
   ‘What did someone read?’

* I would like to thank the audience at GLOW in Asia IX for making invaluable comments and
  suggestions on my presentation. This study has been supported in part by a Grant-in-Aid for Young
  Scientists (B) from Japan Society for the Promotion of Science (#24720181).
(4) a. "Daremo nani-o yomanakatta no? anyone what-Acc read.not Q
    ‘What did no one read?’

    b. Nani-o, daremo *t_{ij} yomanakatta no? (scrambled)
    ‘What did no one read?’

Underlined expressions are interveners. When they precede wh-expressions, the intervention
effect is observed as in examples a, but when wh-expressions are scrambled before
interveners, the examples are grammatical as in examples b.

There are two kinds of accounts for this phenomenon. One is syntactic, and attributes it
to the economy condition (see Hagstrom (1998) and Morita (2009) for details). That is, Q is a
probe, and interveners as well as wh-expressions are goals. Since the economy condition
requires that Agree take place between a probe and the closest goal, examples a result in
ungrammaticality because C enters into Agree with the wrong goal, i.e., an intervener. The
other kind of account is pragmatic as found in Tomioka (2007). According to him, interveners
cannot become Topic, and hence, cannot be placed sentence-initially, which is the reason for
ungrammaticality in (2)a, (3)a and (4)a. One major motivation for the pragmatic account is
that there is judgment variability among speakers as well as interveners.

Apart from scrambling of wh-expressions across interveners, there are ways to lift the
intervention effect. Examine the following sentences:

(5) {Daremo -ga/Ken-ka Mary-ga} sonotoki nani-o yonda no?
    everyone-Nom -or -Nom at.that.time what-Acc read Q
    ‘What did {everyone/Ken or Mary} read at that time?’

(6) Dareka -ga sonotoki nani-o yonda no?
    someone-Nom at.that.time what-Acc read Q
    ‘What did someone read at that time?’

(7) Daremo sonotoki nani-o yomanakatta no?
    anyone at.that.time what-Acc read.not Q
    ‘What did no one read at that time?’

Addition of sonotoki ‘at that time’ lifts the effect, which cannot be easily explained under the
pragmatic account. However, if there are two types of wh-questions, the syntactic account can
still explain it without a stipulation. In other words, the addition of sonotoki induces binding
wh-questions. When binding is applied to wh-expressions, no movement arises, and hence, no
intervention effect.

There are more similar data:

(8) {Daremo -ga/Ken-ka Mary-ga} nani-awayo yonda no?
    everyone-Nom -or -Nom what-only-Acc read Q
    ‘Only what did everyone/Ken or Mary read?’

(9) Dareka -ga nani-awayo yonda no?
    someone-Nom what-only-Acc read Q
    ‘Only what did someone read?’

(10) Daremo nani-awayo yomanakatta no?
    anyone what-only-Acc read.not Q
    ‘What did no one read?’

This time dake ‘only’ is attached to wh-expressions, and the intervention effect is no longer
observed. Again this set of data can be accounted for if we assume that binding of
wh-expressions is initiated when *dake* is placed onto wh-expressions.

According to Bruening and Tran (2006), binding (as well as covert movement) is also
available in Vietnamese and is employed with a particle, *thê*, which represents realsis mood.
However, as the following data indicates, binding *wh*-questions can be initiated even in
irrealis mood in Japanese:

\[ (11) \{\text{Daremo/Ken-ka Mary}\text{-ga asita} \text{doko -ni} \text{\[\text{dake}\text{iku}\text{tumorideshoo ka?}} \text{Q} \]
\text{everyone/-or} \text{-Nom tomorrow where-to-only go will Q}
\text{‘Where will \{everyone/Ken or Mary\} go tomorrow?’} \]

Thus, (realsis) mood itself is not a direct cause of binding *wh*-questions in Japanese (and
possibly in Vietnamese too).

1.2. (Lifting of) The Wh-Island Effect

The *wh*-island shows a very similar situation to the intervention effect, but before
showing this, let us define the schematic form of the *wh*-island effect in Japanese as follows:

\[ (12)^*[\text{CP Q} \ldots [\text{CP Q} \ldots \text{wh}_1 \ldots]] \text{(no matrix interpretation for wh}_1) \]

The *wh*-island effect in Japanese basically indicates that a *wh*-expression in an embedded
interrogative clause cannot take scope at the matrix interrogative clause. This effect can be
explained syntactically too.\(^1\) A *wh*-expression, which is a goal, must enter into Agree with the
closest probe (Q), which is why no matrix interpretation is available for *wh*_1 in (12).

Here is one example:

\[ (13) \text{?Ken-\text{-wa}\{Mary-\text{-ga\ doko -ni itta\ ka}\ sitteimasu ka?}} \text{Q}
\text{-Top\ Nom\ where-to\ went\ Q\ know\ Q}
\text{‘Where does Ken know whether Mary went?’} \]

In (13), *doko* ‘where’ is expected to go into Agree with the closest *ka*, so a Yes/No question
reading is most readily available. In contrast, a *wh*-question interpretation is very difficult to
obtain because it would violate the economy condition.

However, if *dake* is attached to the *wh*-expression, the *wh*-question interpretation is easily
available as in (14):

\[ (14) \text{Ken-\text{-wa}\{Mary-\text{-ga\ doko -ni} \text{\[\text{dake}\text{itta\ ka}\}\ sitteimasu ka?}} \text{Q}
\text{-Top\ Nom\ where-to-only\ went\ Q\ know\ Q}
\text{‘Only where does Ken know whether Mary went?’} \]

The reason for this phenomenon is easily provided if one assumes that binding rather than
movement is applied to the *wh*-expression in (14) when *dake* is attached to *wh*-expressions as
in (8), (9), and (10).

The two types of data have been presented above to show that there are two kinds of
*wh*-questions in Japanese. One type requires movement of *wh*-expressions, and hence, it is
subject to the economy condition such as the intervention and the *wh*-island effect. The other
type employs binding, and hence, it is not subject to the economy condition. These findings
support that the intervention and the *wh*-island effect are syntactic, not pragmatic, phenomena
contra Tomioka (2007).

\(^1\) There is also a non-syntactic account. See Kitagawa (2005) for details.
1.3. (Lack of) Multiple-Pair Interpretations

The last piece of evidence for two types of *wh*-questions in Japanese comes from availability of multiple-pair interpretations in multiple-*wh* questions. Before going into details, let me introduce Dayal (2002), first. Examine the following sentences:

(15) Q: Which student came to the party yesterday?  
A₁: John did.  
A₂: #/* John and Mary did.

(16) Q: Which professor likes which linguist?  
A₁: Professor Smith likes Professor Brown. (single-pair)  
A₂: Professor Smith likes Professor Brown and Professor King likes Professor Matthew. (multiple-pair)  
Dayal (2002: 512)

(17) Q: Which linguist will be offended if we invite which philosopher?  
A₁: Professor Smith will be offended if we invite Professor Brown. (single-pair)  
A₂: #/* Professor Smith will be offended if we invite Professor Brown, and Professor King will be offended if we invite Professor Matthew. (multiple-pair)  
Dayal (2002: 512)

As (15) indicates, *which N* requires one referent as an answer; however, when there is more than one *which N* in a question, multiple-pair answers are possible as in A₂ of (16). Interestingly, Dayal (2002) notes that when one *which N* is inside an island, multiple-pair readings are unavailable as in (17). Accordingly, she claims that every *wh*-expression must be raised to CP to have multiple-pair interpretations.

The same observation is made in Japanese. I employ *docchi-no N* ‘which N of the two’ here. Examine the following sentences:

(18) Q: Docchi-no gakusei-ga paatii-ni kimasita ka which.of.the.two-Gen student-Nom party-to came Q  
‘Which student of the two came to the party?’  
A₁: John-ga kimasita. ‘John did.’  
A₂: #/* John to Mary-ga kimasita. ‘John and Mary did.’

(19) Q: Mary-ga docchi-no gakusei-ni docchi-no hon-o yondeageta no?  
Mary-Gen which student-Dat which student which book-Acc read Q  
‘To which student of the two did Mary read which book of the two?’  
A₁: Mary-ga John-ni kochira-no hon-o yondeagemasita.  
‘Mary read this book to John.’ (single-pair)  
A₂: Mary-ga John-ni kochira-no hon-o, sosite Taroo-ni achira-no hon-o yondeagemasita.  
‘Mary read this book to John, and that book to Taro.’ (multiple-pair)

(18) shows that *docchi-no N* requires one referent, while (19) exhibits availability of multiple-pair answers in the case of multiple *docchi-no N* questions.

Interestingly, when an intervener precedes the *wh*-expression, multiple-pair readings disappear. Observe the following examples:
When to Apply Binding or Movement in Wh-Questions (H. Morita)

(20) Q: \{\text{Daremo -ga/Ken-ka Mary-ga}\} docchi-no gakusei-ni docchi-no hon-o everyone-Nom -or -Nom which-Gen student-Dat which-Gen book-Acc yondeageta no?\(^2\) read Q

‘To which student of the two did \{everyone/Ken or Mary\} read which book of the two?’

A\(_1\): John-ni kochira-no hon-o yondeagemasita.

‘(Everyone/Ken or Mary) read this book to John.’

A\(_2\): \#\(^*\) John-ni kochira-no hon-o, sosite Taroo-ni achira-no hon-o yondeagemasita.

‘(Everyone/Ken or Mary) read this book to John, and read that book to Taro.’

In (20), interveners such as \textit{daremo} ‘everyone’ and \textit{Ken-ka Mary} ‘Ken or Mary’ precede the \textit{wh}-expressions, so the intervention effect surfaces and the usual judgmental variability follows (as noted “(??)”). Nonetheless, it is possible to think of their possible interpretations. Clearly, no multiple-pair interpretation is available in the examples. This fact indicates that \textit{wh}-expressions do not move in the examples above; that is, no movement strategy, i.e. binding as will be shown below, is used when the intervention effect is involved.

As expected, no multiple-pair interpretation is available in the case of the \textit{wh}-island effect:

(21) Q: \{\text{Docchi-no sensee-ga [asita docchi-no seeto -ga kuru ka]}\} which -Gen teacher-Nom tomorrow which-Gen student-Nom come Q (dare-ni) tazuneta no? who-Dat asked Q

‘Which teacher asked (who) which student would come tomorrow?’

A\(_1\): Tanaka-sensee-ga [asita Taro-ga kuru ka] (Mary-ni) tazunemasita.

‘Mr. Tanaka asked (Mary) whether Taro would come tomorrow.’


‘Mr. Tanaka asked (Mary) whether Taro would come tomorrow, and Mr. Miyake asked (Ken) whether John would come tomorrow.’

These data suggest that there is no \textit{wh}-movement when the intervention and the \textit{wh}-island effect are lifted.

In addition, multiple-pair interpretations are incompatible with \textit{sonotoki} (or \textit{dake}). I will introduce one example here:

(22) Q: \{\text{Mary-ga [konotoki]} docchi-no gakusei-ni docchi-no hon-o at-that.time which-Gen student-Dat which-Gen book-Acc yondeageta no?\} read Q

‘To which student of the two did Mary read which book of the two?’

A\(_1\): Mary-ga John-ni kochira-no hon-o yondeagemasita.

‘Mary read this book to John.’ (single-pair)

\(^{2}\) Note that ordinary \textit{wh}-expressions such as \textit{dare} and \textit{nani}, which do not have the presupposition of a single answer, will somehow generate multiple-pair readings as follows:

(i)Q: \{\text{Daremo -ga dare-ni nani-o yondeageta no?}\} everyone-Nom who-Dat what-Acc read Q

‘To whom did everyone read what?’

A: John-ni Hamlet-o, sosite Taro-ni Macbeth-o yondeagemasita. (multiple-pair)

‘(Everyone) read Hamlet to John, and read Macbeth to Taro.’
A₂: “Mary-ga John-ni kochira-no hon-o, sosite Taroo-ni achira-no hon-o yondeagemasita.
‘Mary gave this book to John, and that book to Taro.’ (multiple-pair)

This example confirms that expressions such as sonotoki (and dake) lead to a non-movement mechanism such as binding rather than movement of wh-expressions because if wh-expressions move to CP spec, multiple-pair answers would be available contrary to the fact. In this section, I have presented three pieces of evidence to claim that there are two types of wh-questions in Japanese. In the next section, I will discuss the semantics of the two types of wh-questions, which is necessary in section 3 to find out what licenses one type of wh-questions or the other.

2. Presuppositional Difference between the Two Types of Wh-Questions

In this section I will compare the meaning of movement wh-questions with that of binding wh-questions and will show that one presuppositional difference exists between the two versions.

For movement wh-questions, I assume with Huang (1982) (for Chinese) and Lasnik and Saito (1984, 1992) among others that wh-expressions are moved to CP spec and serve as operators. According to Hamblin (1973), the meaning of wh-questions is a set of propositions. Examine the following question and its semantic representation:

(23) What did Bill buy yesterday?

\[
\lambda p \exists x [\text{thing}(x) \land p = ^\text{Bill bought } x \text{ yesterday}] \quad \text{(derived via movement)}
\]

(24) \{Bill bought a yesterday, Bill bought b yesterday, ..\}, \quad \text{where } a, b, .. \text{ are things.}

(24) is the semantic representation, and is equivalent to (25), which is a set of propositions. An answerer is expected to choose true propositions out of the set and utter them as an answer.

For binding wh-questions, I follow Baker (1970), Hankamer (1974), Stroik (1992), Tsai (1994), Ouhalla (1996), and Yanagida (1996) in that wh-expressions are all unselectively bound by Q in C. I present the semantic representation of (23) as follows:

\[
\lambda x [\text{Bill bought thing}(x) \text{ yesterday}] \quad \text{(derived via binding)}
\]

According to (26), the meaning derived through unselective binding is not a set of propositions, but a function which takes the value of x as input and returns a proposition as output. In other words, an answerer can complete a proposition by specifying x.

One presuppositional difference is expected between the two semantic representations. In the case of movement wh-questions, an answerer can select more than one proposition out of the set, and each proposition does not have to be on the same occasion. Therefore, one could answer (23) in the following two ways:

(27) A₁: Bill bought a flower, a book, and an umbrella yesterday.
A₂: Bill bought a flower in the morning, bought a book at noon, and bought an umbrella in the afternoon.

In the case of binding wh-questions, on the other hand, it provides only one proposition, so it must be an inquiry about a single event. Accordingly, A₁ of (27) is possible whereas A₂ is not.

If the account above is correct, all of the phenomena mentioned above can be explained
in a simple manner. The use of sonotoki ‘at that time’ or dake ‘only’ forces the interpretation to be an inquiry about a single event. This is why they initiate binding wh-questions, and the economy condition such as the intervention and the wh-island effect is unobserved. Moreover, multiple-pair interpretations are always unavailable in binding wh-questions. This fact can also be accounted for naturally in this account.  

3. Remaining Issues

On the basis of the previous section, I will clarify what licenses one type of wh-question or the other, and account for the source of judgmental variability observed in the intervention and the wh-island effect. I also compare the present account with others who also argue that both binding and movement are necessary to derive wh-questions.

3.1. About D-linking

There are a few accounts as to what licenses binding. For example, S. Watanabe (1995) argues that binding rather than movement is the derivation by default. Bruening and Tran (2006) claim that binding is available in Vietnamese when a realis mood particle, thẹ, is employed. However, it has been indicated above that it is not always the case in Japanese (cf. (11)). Moreover, as noted in Pesetsky (1987), D-linked wh-expressions do not necessarily obey the superiority effect as in (28)a, which is one type of the economy condition and dictates that the closest wh-expression must be raised to C as in (28)b:

(28)a. Which linguist does which professor like?
   b. * Who does who like?

Barss (2000) also notes that there is no multiple-pair reading available in (28)a, and claims that syntactic wh-features of a wh-expression, [wh] and [Q] proposed in Chomsky (1995), can be omitted in D-linked wh-expressions, which is why they may not necessarily follow the economy constraint.

A similar phenomenon is observed in Japanese. Compare the following examples:

(29)a. ?? Dare-ga {Ken-ka Mary/dareka} -ni nani-o yondeageta no?  
   who-Nom -or /someone-Dat what-Acc read Q  
   ‘Who read what to {Ken or Mary/someone}?’

b. Dare-ga {Ken-ka Mary/dareka} -ni docchi-no hon-o yondeageta no?  
   who-Nom -or /Dat which-Gen book-Acc read Q  
   ‘Who read which book to {Ken or Mary/someone}?’  

A non-D-linked wh-expression is used in (29)a while a D-linked wh-expression is employed in (29)b. Example b are better than examples a, which supports that D-linked wh-expressions can lose their syntactic wh-features, so they may not be raised. Moreover, the fact that no multiple-pair interpretation is available in (29)b confirms Barss’ claim.

However, D-linking alone is not sufficient to induce binding wh-questions as follows:

---

3 The present account also shows that Reinhart’s (1998) choice function is unnecessary to account for in-situ wh-expressions because her representation is essentially equivalent to Hamblin (1973) in that it provides a set of propositions, so the presuppositional difference mentioned in the text would be unexpected under her representation.

4 In contrast, Pesetsky (2000) argues that multiple-pair readings are possible. However, I assume with Barss (2000) in this paper.
In English, one wh-expression must be raised to C whether it is D-linked or not as in (30). Similarly, in Japanese, the intervention and the wh-island effect are observed whether wh-expressions are D-linked or not, as in (31), (32), and (33). Therefore, although D-linked wh-expressions can lose their syntactic wh-features, they are insufficient to initiate the derivation via binding. Specifically, not only wh-expressions but also C must abandon their syntactic wh-features.

3.2. Then What Licenses Binding Wh-Questions?

The present account claims that both C and wh-expressions must not have syntactic wh-features to induce binding wh-questions, whereas C and wh-expressions enter into Agree in movement wh-questions. In other words, the two types of wh-questions are syntactically different derivations, so syntax does not change its derivation from one type to the other wh-question. Accordingly, S. Watanabe’s (1995) claim that binding wh-questions are default derivations is not supported. Also, section 2 has shown that binding wh-questions must be inquiries about single events. However, movement wh-questions do not have such presupposition; that is, they can inquire about single or multiple events. Therefore, the pragmatic condition for binding wh-questions is more constrained than that for movement ones. Thus, binding wh-questions imposes more specific context than movement wh-questions, and this is the source of judgment variability in the intervention and the wh-island effect.

When asking for grammatical judgment, examples are normally presented to speakers without context, and in this situation, they are very likely to choose a wh-question which needs less specific context first, i.e. a movement wh-question. However, for example, when there are interveners before wh-expressions, the intervention effect, and hence, ungrammaticality will follow. At this point, they may judge the presented examples as ungrammatical. However, some of them do not stop there and may imagine more specific context which accommodates the presupposition of binding wh-expressions, in which case the same examples are judged as grammatical. When specific context is provided beforehand or sonotoki or dake is included in examples, speakers are likely to choose the derivation of binding wh-question, so no confusion arises. An important point here is that the ability to imagine specific context depends on individuals: some are better than others. Therefore, judgmental variability can arise even in syntactic phenomena if there is more than one derivation available and the surface structures happen to be the same.

4. Conclusion

This paper has shown that there are two types of wh-questions in Japanese, and because of the two options with the same word order, judgmental variability arises in the syntactic
condition such as the intervention and the wh-island effect. This confusion does not arise in English because one wh-expression moves to CP spec overtly. This is how English speakers can judge it as a movement wh-question. Binding wh-questions are also available in English as echo or quiz questions, and they are clear because no movement appears there. In contrast, Japanese is misleading on this matter because both movement and binding wh-questions do not change word order: wh-expressions are moved covertly in Japanese. This is why people get confused with examples of the intervention and the wh-island effect because there is no way to distinguish the two types of wh-questions in surface forms if no contextual aid is available.

References


