Head-Internal Relative Clauses in Japanese:

Movement vs. Agree

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Linguistics: The Study of the Language Faculty

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Preface

This thesis is concerned with the syntax of head-internal relative clauses (HIRCs) in Japanese. As suggested by the name, the head of an HIRC occupies the internal position in the clause, in contrast to general relative clauses (head-external relative clauses: HERCs). Despite its internal position, the HIRC's internal head is interpreted as the embedded argument as well as the matrix argument, like the external head of an HERC. The mysterious syntactic structure of HIRCs first addressed by Kuroda (1974) has been discussed in the literature for a long time.

One of the most outstanding works on this topic is Watanabe (1992), the goal of which is to correlate the syntax of HIRCs with that of wh-in-situ in Japanese. In Japanese, both HIRC-formation and wh-in-situ exhibit an island-sensitivity, contrary to Lakhota, in which wh-in-situ and HIRCs are island-insensitive (Williamson 1987). Watanabe (1992) proposes an operator movement theory that uniformly accounts for the island-sensitivity of HIRCs and wh-in-situ, but Watanabe (2004) replaces his old movement analysis with an Agree theory, due to the shift from the GB theory to the Minimalist Program.

This thesis will propose a new movement analysis, which builds on Watanabe's (1992) original movement theory, and will argue that this analysis accounts for the island-sensitivity of HIRCs headed by either wh-arguments or non-wh-arguments as well as for the island-sensitivity of wh-in-situ better than Watanabe's (2004) Agree theory.

While Watanabe (2004) assumes that HIRCs are formed by [-int] Focus checking, I will show in Chapter 3 that this analysis faces some complications. Contrary to Watanabe, I hypothesize that HIRC-formation involves checking of a [-int] Argument (Arg) feature in C (a nominalizer *–no*), which is also endowed with a [+int] Relative (Rel) feature. Through operator movement from Spec DP of the internal head of an HIRC to Spec CP of the HIRC, a [-int] Rel feature in the internal head of an HIRC is checked by [+int] Rel in the C, whereas a [-int] Arg in the C is checked by [+int] Arg of the internal head. I assume that this operator movement is sensitive to complex NP islands. As a result of these feature checking operations,

the HIRC-DP, which is assumed to be semantically defective due to a lack of a NP-projection, obtains a semantic argument status through the semantic co-indexation with the internal head, and it becomes capable of structurally receiving a thematic role from the matrix predicate by Merge, as defined by Chomsky (2000).

The outline of this thesis is as follows. Chapter 1 will introduce the fundamental characteristics of HIRCs in Japanese, especially for the benefit of the reader whose language does not have this type of relative clauses. Chapter 2 will explain and discuss the previous literature about HIRCs: Watanabe (1992, 2004), who analyzes the syntax of HIRCs, and Shimoyama (1999), who analyzes the semantics of HIRCs; these works will serve as a theoretical background. In Chapter 3, we will examine the island-sensitivity of wh-in-situ and three types of HIRCs: those headed by indefinites, quantifiers, and wh-arguments. We will also discuss how Watanabe's (2004) analysis accounts for each example and what kind of difficulties his theory faces. In Chapter 4, I will propose an operator movement theory, which builds on Watanabe (1992), and I will demonstrate how the new operator movement analysis explains the data discussed in Chapter 3 within a Minimalist framework better than Watanabe (2004) does. At the end of this chapter, I will discuss how the overt syntax structure can be shifted to an LF structure that captures the E-type interpretation of HIRCs. Chapter 5 is a conclusion, in which the definitions used in my movement theory will be summarized. Finally, I will mention some issues that are left open for further research.

Chapter 1: Introduction to head-internal relative clauses in Japanese

The aim of this chapter is to introduce the so-called head-internal relative clause (HIRC) in Japanese, which is the main topic of this thesis. Here, I will show that HIRCs differ from head-external relative clauses (HERCs), which can be found in many languages, including English, in the following respects: (i) the syntactic position of the relative clause's head, (ii) the identification of the head, (iii) the relative clauses' contribution to the truth-conditions of the sentence, and (iv) the LF position of the head.

1.1. The syntactic position of the internal head of HIRCs

Japanese has general relative clauses (head external relative clauses: HERCs), whose head positions are external to the relative clauses, like many other languages including English. Contrary to English, Japanese also has another type of relative clauses, which are called head-internal relative clause (HIRCs), and which were originally discussed by Kuroda (1974), (1975-76), and (1976-77). As suggested by the name, the head of an HIRC occupies a position that is internal to the relative clause.

Let us take a look at the difference in the head positions between HERCs and HIRCs in (1). (1a) is a sentence that contains an HERC, whereas (1b) is a sentence with an HIRC. The head of the relative clause is printed in bold-face.

(1) a. Mari-wa [[Shigeru-ga beddo-no sita-ni ø kakusiteoita] **ero-hon**]-o naishode moyashiteshimatta.

Mari$_{TOP}$ [[Shigeru$_{NOM}$ bed$_{GEN}$ below-in had-hidden] obscene-book]$_{ACC}$ secretly burned

'Mari secretly burned obscene books which Shigeru had hidden below the bed.'

b. Mari-wa [[Shigeru-ga beddo-no sita-ni **ero-hon**-o kakusiteoita]-no]-o naishode moyashiteshimatta.

Mari_{TOP} [[$\text{Shigeru}_{\text{NOM}}$ bed_{GEN} below-in $\text{obscene-book}_{\text{ACC}}$ had-hidden]-no]$_{\text{ACC}}$ secretly burned

As shown in (1a), the HERC contains a gap (ø) that is linked to the head, the position of which is external to the relative clause. Despite the unavailability of either relative pronouns or an overt distinction between restrictive relatives and non-restrictive relatives in HERCs in Japanese, the external position of the HERC indicates that this type of relative clauses in Japanese is not too different from relative clauses in English.

On the other hand, as shown in (1b), the HIRC does not contain a gap, and the head *ero-hon* 'obscene book' occurs in the internal position that the gap occupies in (1a). Contrary to the HERC in (1a), the HIRC has an overt complementizer *–no*, which in this case is followed by an accusative case marker *–o*. According to Shimoyama (1999), *-no* is a 'nominalizer', since it makes an HIRC look like a nominal element[1]. The reason why the accusative case marker is attached to the HIRC here is that the matrix predicate takes the nominal-like HIRC as its object. In fact, the HIRC is not a real nominal element, so that the head of this HIRC is interpreted as the matrix object rather than the proposition that the HIRC expresses. This phenomenon is called 'case-matching' (Kuroda 1999), which syntactically supports the view that HIRCs are relative clauses and not adverbial clauses, contrary to Mihara's (1994) and Mihara & Hiraiwa's (2006) claims. Note that case-matching does not mean that the case-marker of the internal head has to be identical to that of the HIRC.

As observed in (1b), nothing syntactically marks the embedded object as the head of the HIRC, whereas the external head position syntactically shows which argument is the head of the HERC in (1a). This characteristic of HIRCs sometimes causes semantic ambiguity in the identification of the internal head. In (1b), however, there is no problem in determining the embedded object as the internal head, because of the matrix predicate *moyashiteshimatta*

[1] Contrary to my assumption that *–no* is a complementizer of an HIRC, Shimoyama (1999) argues that the nominalizer *–no* occupies the D-position of an HIRC-DP, in accordance with her E-type analysis of HIRCs. I will briefly discuss Shimoyama's theory in Chapter 2.

‘burned’. We can easily imagine that Mari burned Shigeru’s obscene books, but it is hard to imagine that she burned him.

This suggests that the internal head of HIRCs is not overtly identified in syntax, so that the speaker must rely on semantics and pragmatics to identify the head. The next section will present a case in which the semantic identification of the internal head of an HIRC causes ambiguity.

1.2. Semantic ambiguity in the identification of the internal head

Because the internal head of HIRCs is not overtly identified in syntax as explained in the previous section, a semantic ambiguity sometimes arises for the identification of the internal head.

Let us consider (2), which is a sentence in which either the embedded subject or the dative object can be interpreted as the internal head of the HIRC. This is because both arguments are semantically appropriate as the external argument of the matrix predicate, contrary to the case in (1). In addition to the two interpretations, it is possible that both the two arguments are realized together as the internal heads of the HIRC. This phenomenon is called ‘split pivot’ (Kuroda 1975-76).

(2) [[Hahaoya-ga beddo-de musume-ni hon-o yondeyatteita]-no]-ga itsunomanika nemuri-ni-ochiteita.

[[mother$_{NOM}$ bed-on daughter$_{DAT}$ book$_{ACC}$ read]-no]$_{NOM}$ without_notice asleep-fell

(i) ‘A mother, who was reading a book to her daughter on the bed, fell asleep without notice.’

(ii) ‘A mother had been reading a book to her daughter, who fell asleep without notice, on the bed.’

(iii) ‘A mother had been reading a book to her daughter on the bed, and they fell asleep without notice.’

The embedded subject 'mother' is interpreted as the internal head in the interpretation (i), whereas the dative object 'daughter' is taken as the internal head in (ii). In (iii), both arguments are interpreted as the internal heads of the HIRC. Among the three readings, the reading (i) is the easiest to obtain. This is probably because it is easier to interpret an external argument as the internal head than an internal argument.[2] However, pragmatics allows us to gain the other interpretations (ii) and (iii), since it is natural to imagine that a daughter falls asleep when her mother was reading a book to her, or that both of them fall asleep without notice. As a result, the sentence in (2) is ambiguous.

In the case of the HERC counterpart of (2), such an ambiguity does not arise, because the external head position syntactically identifies which argument is the head of the HERC. Moreover, it is not possible for an HERC to have more than one head.

Thus, as demonstrated in (2), the determination of the internal head of HIRCs depends on semantics and pragmatics, contrary to the case of HERCs. We have seen that HIRCs differ from HERCs as to the head position and the identification of the head. In addition to these differences, the next section will explain that the two types of relative clauses are truth-conditionally different.

1.3. Truth-conditions

Shimoyama (1999) demonstrates the truth-conditional distinction between HIRCs and HERCs, on the basis of the interpretational contrast between (3a) and (3b). (3a) is a sentence containing an HIRC; (3b) is its HERC counterpart. In each of the sentences, the head of the relative clause is quantified by *hotondo* 'most'.

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[2] If we passivize (2) as shown below, it is the most natural to interpret *musume* 'daughter', which becomes the embedded subject, as the internal head. I assume that due to a parsing preference an external argument is easier to be taken as the internal head than an internal argument, in case there is more than one semantically possible candidate for the internal head of an HIRC.

[[Musume-ga hahaoya-ni beddo-de hon-o yondemoratteita]-no]-ga itsunomanika nemuri-ni-ochiteita.
[[Daughter$_{NOM}$ mother-by bed-on book$_{ACC}$ read]-no]$_{NOM}$ without_notice asleep-fell
'A daughter, to whom had been read a book by her mother, fell asleep without notice. '

(3) a. Taro-wa [[Yoko-ga reezooko-ni **kukkii-o hotondo** ireteoita]-no]-o paatii-ni motte-itta.

Taro$_{TOP}$ [[Yoko$_{NOM}$ refrigerator-in cookie$_{ACC}$ most put]-no]$_{ACC}$ party-to brought

'Yoko put most cookies in the refrigerator, and Taro brought them to the party.'

b. Taro-wa [[Yoko-ga reezooko-ni ø ireteoita] **kukkii-o hotondo**] paatii-ni motte-itta.

Taro$_{TOP}$ [[Yoko$_{NOM}$ refrigerator-in put] cookie$_{ACC}$ most] party-to brought

'Taro brought most cookies that Yoko had put in the refrigerator to the party.'

(Shimoyama 1999: 151)

Let us imagine that Yoko put 20 cookies in the refrigerator. (3a) is true if those 20 cookies are most of the existing cookies, and Taro brought all the cookies Yoko put in the refrigerator (20 cookies), whereas (3b) is false in this condition. (3b) is true if Taro brought 16 of them to the party. This contrast suggests that HIRCs and HERCs are truth-conditionally different.

As explained by Shimoyama, the truth-conditional contrast between (3a) and (3b) is accounted for by the differences in the scope of 'most' and the restriction for the domain of the quantifier. Firstly, the interpretational difference between (3a) and (3b) suggests that the matrix clause is the nuclear scope of the quantifier in (3b) but not in (3a). Secondly, the HERC restricts the domain of 'most' along with 'cookies' in (3b), while 'cookies' (but not the HIRC) restricts the domain of 'most' in (3a). These differences indicate that the internal head never moves out of the HIRC but remains within the clause at LF. In other words, the LF structure of HIRCs must differ from that of HERCs.

1.4. Low and high readings

This section will provide another piece of evidence that supports Shimoyama's (1999) view that the internal head does not move out of the HIRC to the external head position at LF. I will show that HIRCs only allow low readings, contrary to HERCs, which only allow high readings (see Davis 2006). This contrast suggests that the HIRC's internal head is interpreted

within the relative clause, whereas the HERC's external head is interpreted in the matrix clause.

Let us first take a look at the contrast between English HERCs and Japanese HERCs in (4). Bhatt (2002) argues that HERCs in English are formed by head raising, based on the availability of a low reading in (4a). On the other hand, Davis (2006) demonstrates that it is hard to obtain the low reading for the Japanese counterpart in (4b). The difficulty of obtaining the low reading in (4b) suggests that there is no raising of the external head in Japanese HERCs, as Davis argues (also see Murasugi 1991 and Matsumoto 1997 for the non-movement analysis of Japanese HERCs).

(4) a. The first book [that John said [that Tolstoy had written]]

High reading: The λx first [book, x] [John said that Tolstoy had written x]

= The first book about which John said that Tolstoy had written it.

Low reading: The λx first [John said that [first Tolstoy had written [book x]]]

= the x s.t. John said that the first book that Tolstoy had written was x.

English

(Bhatt 2002: 57-58)

b. [[Mishima-ga kaita to] sensei-ga osietekureta] saisho-no hon

[[Mishima$_{NOM}$ wrote C] teacher$_{NOM}$ taught] first$_{GEN}$ book

'The first book that the teacher told us that Mishima wrote'

High reading: the λx first [book, x] [teacher said that Mishima wrote x]

= the first book about which the teacher said that Mishima had written it

*(??) *Low reading*: the λx [teacher said that [first [Mishima had written [book, x]]]]

= the x s.t. the teacher said the first book Mishima had written was x

Japanese

(Davis 2006: 3)

On the other hand, HIRCs show the opposite behaviour, as shown in (5).

(5) [[Mishima-ga **saisho-no hon-o** kaita to] sensei-ga oshietekureta]-no](-ga ---- deshita).

[[Mishima$_{NOM}$ first$_{GEN}$ book$_{ACC}$ wrote C] teacher$_{NOM}$ taught]-no]($_{NOM}$ ---- was)

'The first book, which the teacher told us that Mishima wrote, (was -----).'

??High reading: the λx first [book, x] [teacher said that Mishima wrote x]

= the first book about which the teacher said that Mishima had written it

Low reading: the λx [teacher said that [first [Mishima had written [book, x]]]]

= the x s.t. the teacher said the first book Mishima had written was x

In contrast to (4b), (5) allows the low reading but hardly allows the high reading. This result is relevant to Shimoyama's (1999) argument that the internal head is not interpreted at the external head position in (3).

Finally, in addition to (4b), the non-movement analysis of HERCs is supported by (6), in which the HERC's external head is embedded within another HERC.

(6) [[*e* dashita tegami]-ga todokanakatta] hito]

[[sent letter]$_{NOM}$ not_arrived] person]

'The person$_i$ who the letter which$_j$ e_i sent *ej* did not arrive.'

(Kuno 1973; cited in Davis 2006: 2)

If Japanese HERCs involve movement, it would be subject to the CNPC in this example. I assume that HERCs involve a resumptive *pro*, which can be linked to the external head. Japanese is a *pro* drop language, and it is observed that *pro* can appear inside relative clauses (see Neeleman & Szendroi 2007). This would account for why (6) is allowed.

The reason why I have presented (6) here is that in Chapter 2 I will introduce Watanabe's (1992) operator movement analysis of HIRCs, whose formulation is based on the fact that HIRC-formation is very sensitive to the CNPC. I will discuss the island-sensitivity of HIRC-formation in detail in the following chapters.

1.5. Summary

To sum up, HIRCs are different from HERCs in the following respects: (i) the head position is internal to the relative clause; (ii) the internal head is not overtly identified in syntax (therefore, semantic ambiguity sometimes arises); and (iii) the internal head is interpreted within the HIRC but not in the matrix clause (from the truth conditional difference in (3) and the unavailability of the high reading in (5)).

Although we have seen that the identification of the internal head of HIRCs is dependent on semantics and pragmatics, we still need to consider how the internal head is syntactically licensed and how the HIRC is syntactically formed. As suggested by (3a) and (5), the internal head does not move out of the HIRC at LF, and it is interpreted in its internal position. If so, how can the internal head be realized as the matrix argument? In other words, how can be the internal syntactically linked to the matrix clause? The main goal of this thesis is to propose a theory that theoretically explains the syntax of HIRC-formation and the syntactic realization of the internal head.

In Chapter 2, I will introduce the previous analyses of the syntax of HIRC-formation in Watanabe (1992, 2004) as a theoretical background. I will discuss problems and complications that Watanabe's (2004) analysis faces on the basis of some island data (including wh-headed HIRCs, which are not discussed by Watanabe) in Chapter 3, and in Chapter 4 I will propose a new theory that builds on Watanabe's (1992) original theory, but which accounts for the syntax of HIRC-formation better than Watanabe's (2004) theory. Because Watanabe does not discuss the LF structure and the interpretation of HIRCs, Shimoyama's (1999) semantic analysis of HIRCs will also be explained briefly in the next chapter.

Chapter 2: Previous analyses of Japanese HIRCs

The aim of this chapter is to introduce the previous literature that analyzes HIRCs in Japanese. The first part of this chapter will present Watanabe (1992) and (2004), in which the syntactic formation of HIRCs is discussed on the basis of some island data, whereas the second part will deal with Shimoyama (1999), in which the interpretation of HIRCs is explained by an E-type analysis.

Because I will be developing a syntactic theory of Japanese HIRCs that builds on Watanabe's (1992) operator movement theory, and argue in Chapter 4 that this theory explains HIRC-formation better than Watanabe's (2004) approach in Chapter 4, I will focus on Watanabe's old and new theories rather than on Shimoyama's semantic analysis here.

2.1. Watanabe (1992, 2004): The syntax of HIRC-formation in Japanese

2.1.1. Overview

Watanabe (1992) and (2004) aim to explain the syntactic formation of HIRCs based on some correlations between HIRC-formation and wh-in-situ in Japanese. Watanabe (1992) argues that both HIRCs and wh-in-situ are formed by operator movement from Spec DP of the internal head of the HIRCs or the wh-argument to Spec CP, whereas Watanabe (2004) claims that they are formed by Agree rather than by operator movement. Despite the change in his analysis from 1992 to 2004, what his earlier and later works have in common is that (i) both the operator movement theory and the Agree theory are motivated by the island-sensitivity of HIRC-formation and wh-in-situ, and that (ii) both theories rely on specific properties of the internal structure of Japanese DP.

2.1.2. Watanabe (1992): Operator movement

Watanabe (1992) assumes that HIRCs are formed by movement to Spec CP of a

phonologically null operator that is generated in Spec DP of the internal head to Spec CP. The reason why he claims that HIRC-formation involves movement is that it is very sensitive to complex NP islands, as shown in (1b).

(1) a. [[John-ga [Mary-ga **subarasii ronbun**-o kaita to] homete-ita]-no]-ga shuppan-sareta.
[[John$_{NOM}$ [Mary$_{NOM}$ self$_{GEN}$ excellent paper$_{ACC}$ wrote C] praised]C]$_{NOM}$
was_published
'An excellent paper which John said in praise that Mary had written was published'

b. *[[John-ga [[**subarashii ronbun**-o kaita hito]-o hometeita]-no]-ga shuppan-sareta.
[[John$_{NOM}$ [excellent paper$_{ACC}$ wrote person]$_{ACC}$ praised-had]-no]$_{NOM}$ was_ published
'An excellent paper which John had praised the person who wrote (it) was published'

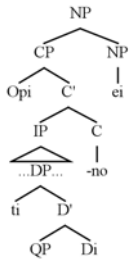
(Watanabe 1992: 9-10)

In contrast to (1a), where the internal head of the HIRC is allowed to be contained in the non-island embedded clause, the sentence in (1b) is unacceptable, where the internal head of the HIRC occurs in a complex NP island. The ill-formedness of (1b) demonstrates the island-sensitivity of the HIRC. This is why Watanabe claims that HIRC-formation should involve covert movement that is subject to the CNPC. Afterwards, at LF, the residue of the internal head undergoes raising to Spec CP.

Here, I summarize the derivation of HIRC-formation under Watanabe's (1992) analysis. First, Watanabe hypothesizes, following Cole (1987), that an HIRC-DP has a phonologically null external head that links to the internal head of the HIRC. Second, he assumes that the internal head of the HIRC is a QP that is the complement of a phonologically null D-head. A phonologically null operator is generated in Spec of the DP that contains the internal head QP; and this operator is selected by the D-head through Spec-Head agreement. Third, the operator undergoes covert movement to Spec CP of the HIRC, which is assumed to be subject to island restrictions, at S-structure (in overt syntax). As a result of this operator movement operation, the empty external-head can link to the internal head of the HIRC through the moved operator

in Spec CP, as indicated in (2) by the co-indexations among the external head, the moved operator, its trace and the D-head that selects the operator. Finally, Watanabe assumes that the residue of the internal head undergoes LF-raising to Spec CP rather than to the external head position, in contrast to Cole (1987). This suggests that the internal head stays within the relative clause at LF.

(2) [1]



Like HIRC-formation, wh-in-situ also displays island-sensitivity in Japanese, as shown in (3). Watanabe (1992) assumes two levels of movement for wh-in-situ; wh-operator movement in overt syntax (S-structure), which is subject to subjacency, and LF raising of the residue of the wh-phrase to adjoin to the moved operator in Spec CP, in order for the wh-phrase and the moved wh-operator to function together and induce a wh-interpretation.

(3) ?? John-wa [Mary-ga nani-o katta kadooka] Tom-ni tazuneta no?

John$_{TOP}$ [Mary$_{NOM}$ what$_{ACC}$ bought whether] Tom$_{DAT}$ tazuneta Q

'What did John ask Tom whether Mary bought?'

(Watanabe 1992: 12)

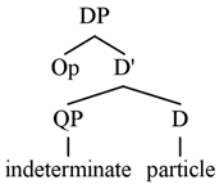
The ill-formedness of (3) suggests that wh-in-situ in Japanese is island-sensitive. Because of the island-sensitivity of HIRC-formation and wh-in-situ, Watanabe claims that the derivations

[1] In Watanabe (1992), Spec CP is located on the right side, whereas the other specifiers are situated on the left side. In this paper, I uniformly locate every specifier on the left side.

of the two are correlated, and he accounts for the degradedness of (3) by an operator movement analysis as well. In (3), the operator that is generated in Spec of the DP whose phonologically null D-head takes the wh-argument QP as a complement moves to Spec CP in the matrix clause in order to associate with the question particle *ka*, but this movement violates subjacency. Thus, Watanabe (1992) formulates a unified movement analysis of both HIRC-formation and wh-in-situ in Japanese.

This movement analysis makes use of the Japanese indeterminate DP structure illustrated in (4).

(4)



(Watanabe 2004: 61)

'Indeterminates' (the term is originally due to Kuroda (1965)) can form a variety of quantifiers or wh-phrases by associating with particles in either D or C. For example, let us use the indeterminate pronoun *nani* in (3). If the DP does not contain any quantificational particle, *nani* is interpreted as a wh-phrase 'what', by associating with a question particle *ka* in C. In case the particle *ka* is the D-head of the DP, *nani* forms an existential quantifier *nani-ka* 'something'. If the particle in D is *mo*, the indeterminate forms an NPI *nani-mo* 'anything'. Although indeterminate pronouns can also form universal quantifiers by associating with *mo*, *nani-mo* cannot be used as a universal quantifier. For example, *dare-mo*, followed by a case marker, is interpreted as a universal quantifier 'everyone', whereas *dare-mo*, not followed by a case marker, is interpreted as a NPI 'anyone'. We cannot use an

indeterminate pronoun such as *nani* without a particle.[2]

According to Watanabe (1992), for the cases of HIRC-formation and wh-in-situ, a phonologically null particle occupies the D-position in (4). The D-head selects an operator that is generated in Spec DP. It undergoes movement to Spec CP in order to associate with *ka* (or *no*) in C in the case of wh-in-situ or to link to an empty external head in the case of HIRC-formation.

For the case of wh-in-situ, this movement operation enables the indeterminate QP to associate with a question particle *ka* in C. In this respect, Watanabe's operator movement analysis makes use of the Japanese indeterminate system. On the other hand, for the case of HIRCs, whose internal heads are not necessarily indeterminate pronouns, the same movement operation is also assumed to account for their formation. In fact, the reason why Watanabe (2004) departs from the movement theory formulated in Watanabe (1992) is that it is unclear why HIRCs, which do not always use indeterminates as internal heads, need to be formed by the movement operation that aims to associate an indeterminate pronoun QP with a particle in C.

Watanabe (2004) realises that his old movement analysis is not general enough to account for the island-sensitivity of wh-in-situ and the HIRC construction in a uniformed way, because one makes use of the indeterminate mechanism but the other does not. Therefore, Watanabe (2004) has abandoned the old movement approach and shifted to a new Agree-based analysis, in order to overcome the problem.

2.1.3. Watanabe (2004): Agree

Watanabe (2004) replaces the operator movement analysis of HIRC-formation and

[2] In (i), *nani* associates with a particle *ka* in C, and it is interpreted as a wh-argument 'what'. On the other hand, (ii) is ill-formed, because there is no particle that *nani* can associate with.

(i) Tom-wa nani-o katta-no-desu-ka?
Tom$_{TOP}$ what$_{ACC}$ bought-Q
'What did Tom buy?'

*(ii) Tom-wa nani-o katta.
Tom$_{TOP}$ what$_{ACC}$ bought

wh-in-situ with a new Minimalist-style analysis that makes use of Agree. Agree is a feature checking operation based on the matching relation between a probe and a goal. In general, a probe contains [-interpretable] features, while a goal has [+interpretable] features that are fully specified in the lexicon. In order for an element that contains a [-int] feature as a probe to obtain full interpretation at LF, its [-int] feature has to be checked and deleted by matching with its goal that contains a [+int] feature. In other words, a probe with [-int] is active to search a goal for purpose of checking its [-int] feature. There are mainly two important syntactic conditions that are necessary for a [+int] feature in a goal to check a [-int] feature in a probe. First, a probe has to c-command its goal. Second, the goal has to be the most local one for the probe. In other words, any intervening element with the relevant feature creates an island between the two and causes the checking relation to fail.

Now, let us have a look at Watanabe's (2004) Agree theory, which explains HIRC-formation and wh-in-situ. First, the checking relations of wh-in-situ and HIRCs are presented in (5) and (6), respectively.

(5) *Wh-in-situ in Japanese*

a. [[..[QP D_{DP}] …$_{IP}$] C_{CP}]

[-int]Q [+int]Q

[-int]Focus [+int]Q

b. External Relation

i. probe: interpretable Q feature in C

ii. goal: interpretable Q feature in D & uninterpretable focus feature

c. Internal Relation

i. probe: interpretable Q feature in D

ii. goal: uninterpretable Q feature in the indeterminate

(Watanabe 2004: 73-74)

(6) *HIRC in Japanese*

a. [[[… [QP …$_{DP}$] $_{IP}$]C_{CP}] D_{DP}]

[-int] Focus [+int] (unspecified)

b. Sources of Checking Relation in HIRC

Internal relation: $QP_{goal} - D_{probe}$

(External relation: uninterpretable focus feature on the goal, without the EPP on the probe)

(Watanabe 2004: 85-86)

First of all, note that Watanabe assumes that a goal is active with a [-int] feature but a probe is not, contrary to the general definition of Agree. This is because indeterminate pronouns cannot achieve full interpretation without associating with some particle. Therefore, Watanabe assumes that indeterminate pronouns must bear [-int] Q features that have to be checked by [+int] Q features of particles. Because a probe has to c-command its goal, the indeterminate QP bearing a [-int] Q feature is assumed to be the active goal in (5). Similarly, in (6), the QP will not be interpretable as an internal head unless its [-int] Focus feature is checked by a [+int] (unspecified) feature of the D-head of the HIRC-DP. In this case, the internal head QP that is endowed with a [-int] Focus feature is dealt with as an active goal, under Watanabe's analysis.

Before considering the checking relation for HIRCs in (6), I will explain what kind of [+/- int] features are involved in the checking relations for wh-in-situ in (5). In addition to Q features, which are used in Agree relations for wh-phrases in Chomsky (2000), Watanabe assumes, based on the contrast between Japanese and Imbabura Quechua, that focus features are also involved in relations. Imbabura Quechua is problematic for Watanabe's hypothesis that wh-in-situ and HIRC must have some correlation, since this language has HIRCs but has obligatory overt wh-movement. In order to solve this problem, Watanabe compares this language with Old Japanese, which contrary to Modern Japanese had obligatory wh-movement.

(7)

	Indeterminate	HIRC	wh-Q	focus
Imbabura Quechua	particle	yes	movement	in-situ
Old Japanese (Nara period[3])	particle	no	movement	movement

(Watanabe 2004: 78)

In (7), there are two differences between the two languages; (i) Imbabura Quechua has HIRCs but Old Japanese did not, and (ii) the former is a focus-in-situ language, while the latter requires focus movement. However, after the Nara period, HIRCs appeared, whereas wh-movement disappeared. Based on this typological study, Watanabe hypothesizes that the existence of HIRCs should be related to the availability of either wh-in-situ (Modern Japanese) or focus-in-situ (Imbabura Quechua). Because Watanabe believes that not only wh-in-situ but also focus-in-situ must have some correlation with HIRCs, he incorporates focus features into the checking relations for wh-in-situ.

As shown in (5a), Watanabe assumes that wh-in-situ involves two checking relations: an external relation (between C_{probe} and D_{goal}) and an internal relation (between D_{probe} and QP_{goal}). A probe C, a question particle *ka* in C, bears an interpretable Q feature. Its [+int] Q feature needs to check and delete a [-int] Q feature of the active goal (the indeterminate QP), because of the assumed the association between the indeterminate pronoun and the particle. However, the intervening phonologically null D, which is also assumed to bear a [+int] Q feature, is the closest goal for the probe C, so that it would block the direct checking relation between the QP and the C. Therefore, the [-int] Q feature belonging to the active goal QP is checked by the [+int] Q feature in the probe D in the internal relation (see 5c), whereas the [-int] focus feature of its goal D is checked by the [+int] Q feature in the probe C in the external relation (see 5b). Note that Watanabe (2004) assumes that a [+int] Q feature can

[3] Nara period (710-794): The capital of Japan was located in Nara during this period.

check a [-int] Focus feature, contrary to the general Agree theory.

Let us consider how this Agree derivation of wh-in-situ accounts for the well-formedness of (8a) as well as the ill-formedness of (8b). Contrary to (8a), a wh-argument is embedded within a wh-island.

(8) a. Mary-ga nani-o kowashita-no-desu-ka?

Mary$_{NOM}$ what$_{ACC}$ broke-Q

'What did Mary break?'

b. ??Tom-wa [Mary-ga nani-o kowashita kadooka] shitteiru-no-desu-ka?

Tom$_{TOP}$ [Mary$_{NOM}$ what$_{ACC}$ broke whether] know-Q

'What does Tom know whether Mary broke?'

The checking relations of wh-in-situ in (8a) and (8b) are schematically shown in (9a) and (9b), respectively.

(9) a. [Mary$_{NOM}$ [[what$_{QP}$] D$_{DP}$]$_{ACC}$ broke $_{IP}$] ka (C)$_{CP}$]

[-int]Q [+int]Q

[-int]Focus [+int] Q

b. ??[[Tom$_{TOP}$ [Mary$_{NOM}$ [[what$_{QP}$] D$_{DP}$]$_{ACC}$ broke $_{IP}$] whether$_{CP}$] knows $_{IP}$] ka (C) $_{CP}$]

[-int]Q [+int]Q

[-int] Focus **[+int]Q** [+int]Q

In (9a), a [-int] Focus feature in the goal D is checked by a [+int] Q feature in the probe C in the external relation. Next, a [-int] Q feature in the goal QP is checked by a [+int] Q feature in the probe D in the internal relation. The two checking relations are well-formed, so that (8a) is an acceptable sentence.

Contrary to (8a), (8b) is a sentence containing a wh-island formed by *kadooka* 'whether'. Watanabe (2004) assumes that *kadooka* is endowed with a [+int] Q feature. As

shown in (9b), [+int] Q in the embedded C intervenes in the external relation between [-int] Focus in the D and [+int] Q in the matrix C. The embedded C is the closest probe for the goal D, so that the external relation between the D and the matrix C is unsuccessful. Although [-int] Focus is checked and deleted by [+int] Q in the embedded C (*kadooka*), (8b) is ill-formed, because of a semantic problem. The indeterminate pronoun *nani-o* can induce a wh-interpretation only by associating with *ka* but not with *kadooka*. Because [+int] Q in *kadooka* rather than [+int] Q in *ka* checks [-int] Focus in the D, the QP cannot obtain the wh-interpretation in semantics.

Let us examine the case of complex NP islands. A wh-argument is embedded within a complex NP island in (10a), whereas it occurs in a wh-island contained in a complex NP island in (10b). The Agree derivation of wh-in-situ in (5) can account for the ill-formedness of (10b), which is a sentence that involves a wh-island. The checking relations of wh-in-situ in (10a) and (10b) are schematically illustrated in (11a) and (11b), respectively.

(10) a. [[[Mary-ga nani-o katta to] omotta] hito]-ga kubini-natta no?

[[[Mary$_{NOM}$ what$_{ACC}$ bought C] thought] person (D)]$_{NOM}$ was-fired Q

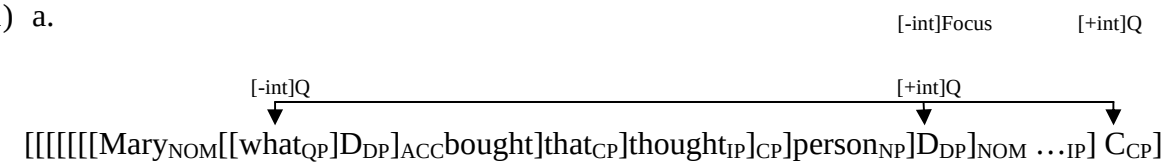
'The person who thought that Mary bought what got fired?'

b. ?? [[[Mary-ga nani-o katta kadooka] Tom-ni tazuneta] hito]-ga kubini-natta no?

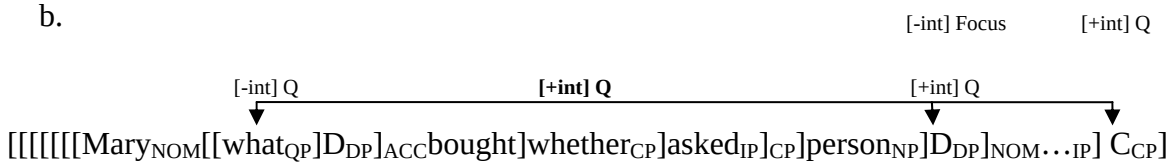
[[[Mary$_{NOM}$ what$_{ACC}$ bought whether] Tom$_{DAT}$ asked] person (D)]$_{NOM}$ was-fired Q

(Watanabe 2004: 71-72)

(11) a.



b.



(10a) is fine despite the fact that the wh-phrase is contained in the complex NP island. This is generally attributed to large-scale pied-piping of complex NP islands by wh-in-situ in Japanese (see Nishigauchi 1990 and Richards 2000). This phenomenon will be explained in detail in chapters 3 and 4. As shown in (11a), the two checking relations are successful. In the internal relation, a [+int] Q feature in the probe D checks a [-int] Q feature belonging to the goal QP *nani*. Contrary to (9a), the probe is assumed to be the D-head of the complex NP rather than the D-head that takes the QP as the complement, in order to account for pied-piping of the complex NP by wh-in-situ. In the external relation, [+int] Q in the probe C checks [-int] Focus in the goal D. The long-distance internal relation does not cross the complex NP boundary here, so that the sentence is well-formed. However, Watanabe (2004) does not explicitly explain what happens to a [-int] Focus feature in the D that takes the QP as the complement in this case. In Minimalist syntax, the derivation crashes if there is an uninterpretable feature that has not been eliminated. It is not clear which interpretable feature may check and delete [-int] Focus in this D.

In (11b), we have to assume that the D-head of the complex NP bearing [-int] Focus is the closest goal for the matrix C bearing [+int] Q in the external relation. This is because we have seen in (9b) that the external relation between [-int] Focus in the D and [+int] Q in the matrix C is blocked by [+int] Q in the embedded C. In other words, the external relation of wh-in-situ is sensitive to wh-islands. As schematically shown in (11b), the ill-formedness of (10b) indicates that a [+int] Q feature in the D cannot check a [-int] Q feature belonging to the indeterminate *nani* ‘what’, due to the intervening interrogative Q *kadooka* ‘whether’, which is endowed with [+int] Q, in the internal relation. (9b) and (11b) show that both internal and external relations of wh-in-situ are sensitive to wh-islands.

Let us turn to Watanabe’s (2004) Agree relation for HIRCs in (6). The problem of Watanabe’s (1992) analysis is that it does not fully explain why the HIRC and wh-in-situ are formed by the same operation (operator movement) despite the fact that the derivation of the former does not depend on the indeterminate mechanism. According to Watanabe (2004), the internal head (QP) of an HIRC has an uninterpretable focus feature that must be checked by

an unspecified [+int] feature in the probe D (the phonologically null D-head of the HIRC-DP).

In order to support his argument that HIRC-formation should be related to focus, Watanabe discusses HIRCs in Mooré (Tellier 1989), in which the internal head has to be marked by a focus marker, and those in Seediq (Aldridge 2002), where the internal head of the HIRCs undergoes movement to the focus position. On the basis of the correlation between HIRCs and focus observed in these languages, he assumes that HIRCs in Japanese can also have some connection with focus. However, Watanabe does not discuss how HIRC-formation is related to focus semantics.

In contrast with wh-in-situ in (5), HIRC-formation is assumed to involve a single checking relation between the internal head (QP) as a goal and the D-head of the HIRC-DP as its probe, as shown in (6). Here, I do not pass over the external relation (between an unspecified prove and a goal (the D-head of the HIRC-DP bearing [-int] Focus)), which is not directly relevant to HIRC-formation. According to Watanabe (2004), the internal relation of wh-in-situ (between QP and D) is "recruited" for the internal relation of HIRCs. The [-int] focus feature that sits on D in the external relation of wh-in-situ is "recruited" here as an uninterpretable feature in the internal head, in place of a [-int] Q feature in a QP. Because the internal head is not required to be an indeterminate pronoun (unlike with wh-phrases), the same uninterpretable feature (a [-int] Q feature) is not assumed to belong to the internal head.

Watanabe (2004) argues that a QP contains an uninterpretable focus feature that establishes the internal relation with D, in case it does not show any overt and special morphological realization (i.e. the morphological formation of wh-phrases and quantifiers by the association between indeterminates and particles). On the other hand, due to the following three reasons: (i) the internal head does not require any special morphology, (ii) there should be correlations between focus and the internal head based on Mooré and Seediq, and (iii) the checking relations for wh-in-situ also require the existence of a phonologically null D, he hypothesizes that the phonologically null D in both wh-in-situ and in HIRCs also should be endowed with a [-int] Focus feature for the external relation.

As shown in (6a), the internal head QP is an active goal that contains a [-int] Focus

feature. This [-int] Focus feature is checked by an interpretable feature of the probe D. Note that Watanabe leaves open which interpretable feature the probe D is endowed with. Here, I call this feature "[+int] F", since he leaves the identity of F unspecified. This derivation can account for the island-sensitivity of the HIRC in (1b). [+Int] F in the D-head of the complex NP blocks the checking relation between [-int] Focus in the QP and [+int] F in its probe D.

To sum up, in order to overcome the previous problem Watanabe (1992) faced, Watanabe (2004) correlates wh-in-situ with HIRCs by assuming that both of them have focus features in common. Despite replacing the old movement analysis with an Agree-based approach, this new theory accounts for the island-sensitivity of both wh-in-situ and HIRC-formation.

2.1.4. Discussion

To end this section, I would like to point out some of the pros and cons of Watanabe's (1992, 2004) analyses explained above. First, Watanabe's analyses can explain how the internal head of an HIRC can syntactically relate to the HIRC-DP. The internal head can be linked to the phonologically null external head of an HIRC through operator movement under Watanabe's (1992) theory, whereas the internal head can associate with the D-head of the HIRC-DP by Focus feature checking under Watanabe's (2004) approach. This is essential to accounting for why the internal head can be realized as an argument in the matrix clause, despite the internal position it occupies. Second, Watanabe's syntactic analyses can account for what semantic analyses of HIRCs (eg. Shimoyama 1999) may not explain such as the island-sensitivity of HIRCs and the correlations between HIRCs and wh-in-situ. Moreover, Watanabe explains how the internal head can be syntactically linked to the matrix clause without moving out of the HIRC, which is one of the puzzles of HIRCs raised at the end of Chapter 1. The HIRC's internal head is linked to the phonologically null external head in the matrix clause through operator movement under Watanabe's (1992) theory, whereas it is linked to the HIRC-DP through [-int] Focus checking by [+int] F in the D head of the HIRC-DP under Watanabe's (2004) approach.

Although I did not deal with Watanabe's (2004) typological research in the contrast

between Japanese HIRCs and Lakhota HIRC, which does not exhibit the island-sensitivity unlike Japanese ones, his research suggests that the Japanese unique DP structure, the D-head of which is occupied by a particle, would be relevant to the syntactic derivations of HIRCs and wh-in-situ.

Let us now turn to the problems Watanabe's theories face. First, Watanabe's (1992, 2004) explanations of wh-in-situ are syntactically more motivated than those of HIRCs. A wh-operator undergoes movement to Spec CP, whose head (*ka*) is endowed with [+wh], in the old version, while a [-int] Q feature of an indeterminate pronoun (QP) is checked and deleted through the two checking relations for Agree in the new version. In both cases, the operations are carried out in order for the indeterminate pronoun to associate with a question particle *ka* in C to induce an interrogative interpretation. In other words, Watanabe's theories for wh-in-situ make good use of the Japanese indeterminate mechanism. On the other hand, Watanabe's (1992) problem is that his operator movement theory does not explain why the indeterminate mechanism can also be applied to HIRC-formation, in which indeterminate pronouns are not necessarily used. This is why Watanabe (2004) makes use of [-int] Focus features that force checking between the internal head and the D-head of the HIRC-DP.

However, it is unclear whether Focus feature checking is the best candidate to syntactically motivate HIRC-formation, because we do not know whether Focus is relevant to HIRC-formation in Japanese the way it is in Mooré and in Seediq. At least, the internal head to be morphologically focus-marked or undergo movement to the focus position in the case of Japanese HIRCs, as is the case in Mooré and Seediq. Moreover, Watanabe does not explain how focus semantics is related to the interpretation of HIRCs in Japanese, although the [-int] Focus checking operation should induce a Focus-related interpretation.

Apart from the use of Focus features for HIRC-formation, another problem for Watanabe (2004) is that he defines the internal head of HIRCs as a QP rather than a DP. It is unclear how his theory might be made to explain the case in which the internal head is a quantifier formed by the adjacent association between an indeterminate pronoun (QP) and a particle (D), because the internal head should be regarded as a DP in this case, according to Watanabe's view of the Japanese DP structure. Although Watanabe (2004) weakens his old

view that the indeterminate mechanism explains HIRC-formation, the reason why he deals with the internal head as a QP seems to be that he still believes that the indeterminate system is related to the derivation of HIRCs in some degree. However, Watanabe does not discuss the case in which the internal head is a wh-argument, despite the fact that wh-arguments can be regarded as QPs.

In Chapter 3 and 4, I will discuss in detail whether it is plausible (i) to make use of Focus features for HIRC-formation and (ii) to deal with the internal head of an HIRC as a QP rather than a DP, as argued by Watanabe (2004).

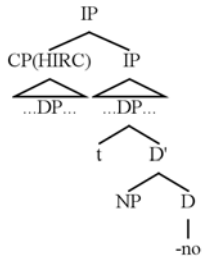
Finally, the other problem for Watanabe (2004) is that his analysis does not capture the interpretation of HIRCs in Japanese. According to Kuroda (1975-76) and Kitagawa (2005), HIRCs in Japanese are appropriately regarded as non-restrictive relatives rather than as restrictive relatives in a semantic sense. Because both Watanabe (1992) and (2004) hypothesize that the structure of HIRCs is restrictive, it is not very easy for his theories to explain the semantics of HIRCs on the basis of the proposed structure. In Chapter 4, I will refer to Shimoyama's (1999) E-type analysis of HIRCs and propose an LF structure for HIRCs that accommodates the semantics of HIRCs. Although this thesis focuses on the syntax of HIRCs rather than on the semantics, I will briefly introduce Shimoyama's semantic analysis in the next section, in order to facilitate the discussion in Chapter 4.

2.2. Shimoyama (1999): the semantics of HIRCs

Shimoyama (1999) argues that HIRCs are interpreted as independent sentences, like appositive (non-restrictive) relative clauses, but that HIRCs are not completely equivalent to appositives. Rather, she claims, following Hoshi (1995), that Japanese HIRCs induce E-type interpretations (Evans 1980).

Adopting Heim & Kratzer's (1998) analysis of E-type pronouns in English, Shimoyama assumes that the entire HIRC containing the internal head moves to an IP adjoined position at LF, as drawn in (12) (from Shimoyama 1999: 169). As a result of this LF movement, the moved HIRC is interpreted as a separate sentence.

(12)



In (12), the remnant HIRC-DP in the matrix clause is assumed to contain a phonologically null proform, which of type <e,t>, as an NP. Shimoyama considers that the nominalizer *–no* is not semantically vacuous but behaves like the definite article *the* in English. Under her analysis, *-no* occupies the D-head position (contrary to Watanabe (1992, 2004), who assumes that the nominalizer is a complementizer of the HIRC), and it is type of <<e,t>,e>. This HIRC-DP in the matrix clause works as an E-type pronoun at LF.

After the LF movement, the internal head within the moved HIRC is linked to the E-type pronoun (the HIRC-DP) in the matrix clause through a relation of E-type anaphora; as a result, the HIRC-DP is interpreted as a definite description that refers to the internal head.

Let us now go through a couple of Shimoyama's examples that support her analysis. Firstly, the examples in (13) illustrate the scopal difference between an HIRC (a) and an HERC (b).

(13) a. Taro-wa [[hotondo-no gakusei-ga **dono-syukudai-mo** teisyutusita]-no]-o yatto saitensioeta.

Taro$_{TOP}$ [[most$_{GEN}$ student$_{NOM}$ which-homework-MO turned-in]-no]$_{ACC}$ finally finished-grading

'Most students turned in every homework, and Taro finally finished grading them.'

most > every, *every > most

b. Taro-wa [[hotondo-no gakusei-ga ø teisyutusita] **dono-syukudai-mo**] yatto saitensioeta.

Taro_{TOP} [[most_{GEN} $\text{student}_{\text{NOM}}$ turned-in]which-homework-MO] finally finished-grading

'Taro finished grading every homework that most students turned in.'

*most > every, every > most

(Shimoyama 1999: 154)

If the LF structure of the HIRC were identical to that of the HERC due to LF raising of the internal head to the external head position, as argued by Ito (1986), the universal internal head should take wide scope in (13a) like in (13b). The narrow scope of the universal internal head in (13a) indicates that it does not occupy the external head position at LF, and that it is interpreted for scope in its original position inside the HIRC. This is why Shimoyama assumes that the internal head stays in situ at LF. Despite its internal position, the internal head is interpreted as the matrix argument as well, because the HIRC-DP refers back to it through the E-type anaphora relation.

Moreover, if the universal internal head scrambles across the quantified subject in (13a), the universal takes wide scope. In case we transform the HIRC in (13a) into a simple sentence 'most students turned in every homework', the universal takes narrow scope. However, if the object scrambles across the subject in the simple sentence, the universal takes scope over the quantified subject. According to Shimoyama (1999), the identical scope patterns that are displayed by the HIRC and its simple sentence counterpart suggest that the HIRC is interpreted as an independent sentence.

(14) shows why the HIRC-DP should be regarded as an E-type pronoun but not as a free variable or as a bound variable. The HIRC-DP in the matrix clause is interpreted as a definite description that shows a totality effect of E-type anaphora.

(14) Dono gakusei-mo$_i$ [soitu$_i$-ga / pro$_i$ kongakki **peepaa-o 3-bon** kaita]-no]-o kesa teisyutusita.

every student [(s)he$_{NOM}$ / pro this semester term paper$_{ACC}$ 3$_{CL}$ wrote]-NM]$_{ACC}$ this morning turned-in

'Every student wrote three term papers this semester and turned in *the term papers he or she wrote this semester* this morning.'

(Shimoyama 1999: 156)

First, if the anaphoric relation between the internal head and the HIRC-DP were one of simple coreference, the HIRC-DP would function as a free variable referring to a particular set of term papers, such as 'the term papers Jan wrote this semester', obtained from the context. However, the actual interpretation of the sentence depends on variable binding between a bound variable (the embedded subject) and its antecedent (the matrix subject), so that the set of term papers varies with which student is selected. Therefore, the interpretation in (14) cannot be predicted from simple coreferentiality.

Second, if the sentence involved bound variable anaphora, in which the HIRC-DP is bound by the internal head, the interpretation would be 'for every student x, there are three term papers y such that both x wrote y and x turned in y', which allows the situation that a few students wrote five papers but submitted three of them. However, (14) is false in this situation. This is because (14) is true only if every student turned in all the (three) papers he or she wrote this semester.

Thus, in (14), the interpretation of the HIRC can be expressed by a definite description that induces a totality effect; therefore, the anaphoric relation between the internal head and the HIRC-DP is assumed to be an E-type anaphora relation.

In summary, Shimoyama (1999) claims that (i) HIRCs are interpreted as independent sentences, that (ii) the LF structure of HERCs differs from that of HIRCs, and that (iii) the HIRC-DPs in the matrix clause are E-type pronouns that refer to the internal heads. Under her analysis, the entire HIRC undergoes LF movement to an IP adjoined position, and the internal head in the moved HIRC is linked to the remnant HIRC-DP in the matrix clause through

E-type anaphora. As a result of this operation, the HIRC is interpreted as a simple sentence, and the HIRC-DP is interpreted as a definite description. Finally, Shimoyama also claims that HIRCs are similar to non-restrictive relatives but not identical to them, although E-type anaphora is used to account for non-restrictive relatives (Sells 1986: cospecificational anaphora). This is because HIRCs can contain wh-phrases but non-restrictive relatives cannot.

As explained in this section, Shimoyama's (1999) E-type analysis accounts for the interpretation of HIRCs, which Watanabe's (1992, 2004) analyses do not explain. On the other hand, Shimoyama's semantic theory does not explain how the internal head is syntactically identified, or the island-sensitivity of HIRCs. I will come back to Shimoyama's E-type analysis in Chapter 4 and show how under my analysis the syntactic structure of HIRCs is transformed to an LF structure that accommodates the E-type interpretation.

Rather than on the semantics of HIRCs in Japanese, this thesis focuses on the syntax of HIRC-formation. The next chapter will examine the island-sensitivity of three types of HIRCs: HIRCs headed by indefinites, HIRCs headed by indeterminate quantifiers, and wh-headed HIRCs, in order to assess the plausibility of Watanabe's (2004) Agree-based analysis and explore the problems raised in the last section. After showing in Chapter 3 that Watanabe's approach has to face many complications, especially in the case of wh-HIRCs, I will propose a new operator movement theory in Chapter 4, which builds on Watanabe's (1992) original analysis.

Chapter 3: The island-sensitivity of HIRC-formation

The aim of this chapter is to examine the island-sensitivity of three types of internal heads of HIRCs: normal DPs, quantifiers formed by the adjacent association between indeterminates and particles, and wh-arguments. I will focus on by complex NP islands and wh-islands, and discuss how Watanabe's (2004) Agree theory for HIRCs accounts for them.

As introduced in Chapter 2, Watanabe (1992, 2004) pursues the correlation between wh-in-situ and HIRCs in Japanese on the basis of their island-sensitivities. As far as I aware, however, Watanabe does not discuss HIRCs whose heads are either wh-phrases or quantifiers, although his theories make use of the Japanese indeterminate mechanism that forms quantifiers and wh-phrases. On the other hand, Shimoyama (1999) demonstrates some example of HIRCs headed by wh-phrases and quantified expressions, but she does not discuss the syntax of these types of HIRCs.

This chapter is divided into four sections. The first section will introduce complex NP island effects and wh-island effects in Japanese found with wh-in-situ, and it will review how Watanabe's old (1992) and new (2004) theories account for the island effects and the availability of large-scale pied-piping. Afterwards, in the following three sections, we will test the island-sensitivity of HIRCs headed by normal DPs (indefinites), quantifiers, and wh-arguments respectively, and we will discuss how the results of the island tests would be explained by Watanabe's (2004) approach, for the purpose of evaluating his theory. Moreover, in Chapter 2, I came up with the following two questions for Watanabe's (2004) approach. Is it plausible to deal with the internal head of HIRCs as a QP rather than a DP? Is it appropriate to assume that the internal head is endowed with a [-int] Focus feature? We will also consider these issues on the basis of the results of the island tests.

3.1. Island restrictions in Japanese: on the basis of wh-in-situ

As a theoretical background, I would like to introduce what kind of island constraints

can be observed in Japanese syntax, based on the previous literature on the topic (summarized in Watanabe 2003), before starting to take a look at the island-sensitivity of HIRCs. This introduction only focuses on the case of wh-arguments; the case of wh-adjuncts is beyond the scope of this thesis. This is because a wh-adjunct cannot be the head of relative clauses.

First of all, wh-in-situ in Japanese exhibits a sensitivity to wh-islands, as discussed in Nishigauchi (1990) and Watanabe (2003). In (1), where two wh-phrases are located in a wh-island, neither of them takes scope over the matrix clause, so that the sentence must be interpreted as a yes-no question.

(1) Tanaka-wa [dare-ga nani-o tabeta ka] oboeteiru no?

Tanaka$_{TOP}$ [who$_{NOM}$ what$_{ACC}$ ate Q] remember Q

(i) 'Does Tanaka know who ate what?'

(ii) ?? 'For which x, x a person, does Tanaka remember what x ate'

(iii) * 'For which y, y a thing, does Tanaka remember who ate y?'

(iv) ?? 'For which x, x a person, and which y, y a thing, does Tanaka remember whether x ate y?'

(Watanabe 2003: 521)

Apart from the most natural reading (i), the readings in (ii) and (iv) become slightly better if a strong stress falls on 'who' for (ii) or on both 'who' and 'what' for (iv), but this option is not available for (iii). Although a marked stress pattern can slightly increase the acceptability of the readings in (ii) and (iv), which require one of or both the wh-phrases to take matrix scope, the difficulty in assigning matrix scope to the wh-arguments in (1) suggests that wh-in-situ in Japanese is subject to the wh-island effect.

(2) is the next piece of evidence that presents the wh-island effect on wh-in-situ. The wh-island, which is formed by *kadooka* 'whether', blocks matrix scope for the embedded wh-argument.

(2) ?? John-wa [Mary-ga nani-o katta kadooka $_{CP}$] Tom-ni tazuneta no?

John$_{TOP}$ [Mary$_{NOM}$ what$_{ACC}$ bought whether] Tom$_{DAT}$ asked Q

'What did John ask Tom whether Mary bought?'

(Watanabe 2004: 66)

Let us now turn to complex NP effects on wh-in-situ. As demonstrated in (3), a wh-argument within a complex NP island can take scope over the matrix clause, but if the wh-phrase is modified by *ittai* 'the-hell' to form an aggressively non-D-linked wh-phrase, its matrix scope becomes unavailable (see Pesetsky 1987).

(3) a. Mary-wa [[John-ni nani-o ageta] hito]-ni atta no?

Mary$_{TOP}$ [[John$_{DAT}$ what$_{ACC}$ gave] person]$_{DAT}$ met Q

'What did Mary meet someone that gave John?'

b. *Mary-wa [[John-ni ittai nani-o ageta] hito]-ni atta no?

Mary$_{TOP}$ [[John$_{DAT}$ the-hell what$_{ACC}$ gave]person]$_{DAT}$ met Q

(Pesetsky 1987: 110, 112)

Under Pesetsky's analysis, aggressively non-D-linked phrases, which never become referential, such as *ittai nani-o* 'what the hell' in (3b) are forced to move out of the islands; therefore, they have to be subject to the movement constraints. In (3b), *ittai* marks the wh-argument as an aggressively non-D-linked phrase and forces it to undergo movement out of the complex NP island. On the other hand, *nani* 'what' in (3a) is categorized as a non-D-linked wh-phrase but marginally can refer to the set of members in discourse, so that it is not forced to move out of the island in contrast to (3b). Rather, the whole complex NP island containing the wh-argument is assumed to undergo movement to Spec CP by large-scale pied-piping, as discussed by Richards (2000). The pied-piping enables the wh-phrase to escape from the complex NP island effect in (3a), but this option is not available

in (3b), in which the wh-phrase itself has to move out of the island due to the aggressively non-D-linking status.

Although Huang (1982) argues that the reason why a wh-argument can occur in a complex NP island in Chinese is that subjacency restricts only overt movement but not LF movement, the well-formedness of (3a) should not be accounted for by this idea. This is because it cannot explain why (3b) is out, contrary to (3a). Why is covert movement of the aggressively non-D-linked wh-phrase required to be subject to subjacency in (3b), if Huang's analysis is on the right track? On the other hand, the large scale pied-piping analysis accounts for the contrast between (3a) and (3b), if we adopt Pesetsky's argument. Therefore, the pied-piping approach is essential to explaining the contrast in (3).

In summary, the aggressively non-D-linked wh-phrase (with *ittai*) test indicates that complex NP islands would be actual islands for wh-in-situ in Japanese, but large scale pied-piping rescues general wh-arguments within the islands. On the other hand, as shown in (1) and (2), wh-in-situ is always restricted by wh-islands, and pied-piping of this type of islands is not available.

According to Richards (2000), the reason why pied-piping is not available for wh-islands is that a wh-argument would take two different scopes (the matrix scope and the embedded scope) at once, if pied-piping of wh-islands were possible. Let us imagine that the whole wh-island moves to Spec CP in the matrix clause for pied-piping. A wh-operator of the wh-argument within the wh-island is assumed to undergo internal movement to the embedded Spec CP, which is a position for the embedded scope. As a result of the internal movement of the wh-operator of the wh-argument in situ and the pied-piping of the wh-island, this wh-operator would take matrix scope as well as embedded scope at the landing site at once. Semantics disallows a single wh-element to occupy two different scope positions at the same time; therefore, pied-piping is considered to be unavailable for wh-islands.

Finally, let us briefly review how Watanabe's (1992) and (2004) approaches account for these island effects on wh-in-situ in Japanese. Consider the complex NP island case in (3a) again, as repeated in (4). Watanabe's (2004) explanation is schematically illustrated in (4b),

whereas Watanabe's (1992) analysis is shown in (4c).

(4) a. (= 3a)

Mary-wa [[John-ni nani-o ageta] hito]-ni atta no?

Mary_{TOP} [[John_{DAT} what_{ACC} gave] person]$_{\text{DAT}}$ met Q

'What did Mary meet someone that gave John?'

b. [[[[$_{\ldots}$ $\text{QP}_{\text{ACC}}\ldots_{\text{CP}}$] person D_{DP}]$_{\text{DAT}}$ met $_{\text{IP}}$] no (C) $_{\text{CP}}$]

(i) (ii)

(i) Internal relation: [-int] Q (QP) --- [+int] Q (D)

(ii) External relation: [-int] Focus (D) --- [+int] Q (C)

c. [Op_{i} [[t_{i} [$_{\ldots}$ $\text{QP}_{\text{ACC}}\ldots_{\text{CP}}$] person $\text{D}_{\text{i DP}}$]$_{\text{DAT}}$ met $_{\text{IP}}$] no (C) $_{\text{CP}}$]

In (4b), because a [-int] Q feature of the wh-argument can be checked by a [+int] Q feature of the D head of the complex NP island in the internal relation, the external relation does not need to cross the boundary of the complex NP island. In other words, large-scale pied-piping of the complex NP island by wh-in-situ is implemented, under Watanabe's (2004) analysis, by making use of the D of the complex NP for the long-distance internal relation. On the other hand, as shown in (4c), Watanabe (1992) assumes that an operator belonging to the complex NP rather than the one belonging to the wh-argument moves from Spec DP of the island to Spec CP in the matrix clause; as a result, this movement is not subject to the CNPC. Both Watanabe (1992) and (2004) do not assume that the whole complex NP island undergoes movement to Spec CP in the matrix clause for pied-piping, contrary to Richards (2000).

Next, the wh-island case in (2) (repeated in (5a)) is accounted for by Watanabe (2004) as shown in (5b).

(5)

a. (=2)

?? John-wa [Mary-ga nani-o katta kadooka$_{CP}$] Tom-ni tazuneta no?

John$_{TOP}$ [Mary$_{NOM}$ what$_{ACC}$ bought whether] Tom$_{DAT}$ asked Q

'What did John ask Tom whether Mary bought?'

b.

[[…[… [QP (D)$_{DP}$] … kadooka (C) $_{CP}$]…$_{IP}$] no (C)$_{CP}$]

(i) *(ii)

(i) Internal relation: [-int] Q (QP) --- [+int] Q (D)

(ii) External relation: [-int] Focus (D) --- [+int] Q (the matrix C)

The wh-argument cannot take scope over the matrix clause because a [+int] Q feature in the intervening interrogative C (*kadooka*) blocks the external relation between the D-head of the wh-argument and the matrix interrogative C. The pied-piping option is unavailable here since unlike in the complex NP island case there is no D such that helps the external relation to escape from the island effect. The internal relation is formed between [-int] Q in the indeterminate (wh-phrase) and [+int] Q in its phonologically null particle D. On the other hand, Watanabe (1992) assumes that operator movement from Spec DP of the wh-argument to Spec CP in the matrix clause violates subjacency, due to the presence of *kadooka* 'whether' in Spec CP.

This section has briefly introduced the theoretical background of island constraints in Japanese on the basis of wh-in-situ and has reviewed Watanabe's old and new explanations for them. Let us now move to the main topic of this chapter: the island-sensitivity of HIRCs.

3.2. HIRCs headed by indefinites

3.2.1. Complex NP islands

Let us start examining the island-sensitivity of HIRCs by some island tests and discuss how the results of the island tests can be accounted for by Watanabe's (2004) Agree theory. In this section, we will see how HIRCs headed by non-wh and non-quantified elements are sensitive to complex NP islands and wh-islands.

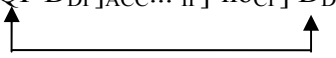
First of all, let us consider the case in (6b) in which the internal head of an HIRC is embedded in a complex NP island. The contrast between (6a) and (6b) suggests the existence of the complex NP island effect on HIRCs. In (6b), it is difficult to interpret the embedded object within the island as the internal head of the HIRC.

(6) a. [[Tom-ga **kudaranai eiga-o** seisakushita]-no]-ga daigaku-de zyooei-sareta.
[[Tom$_{NOM}$ third-rated film$_{ACC}$ had_made]-no]$_{NOM}$ university-in was shown
'A third-rated film, which Tom had made, was shown in a university.'

b. ??[[Tom-ga [**kudaranai eiga-o** seisakushita kantoku]-o kenashiteita]-no]-ga daigaku-de zyooei-sareta.
[[Tom$_{NOM}$ [third-rated film$_{ACC}$ had_made director]$_{ACC}$ criticized]-no]$_{NOM}$ university-in was shown.
'A third-rated film, which Tom criticized the director who had made (it), was shown in a university.'

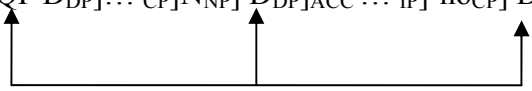
The Agree relations for (6a) and (6b) are schematically presented in (7a) and (7b), respectively. In contrast to (7a), the checking relation between [-int] Focus in the internal head QP and [+int] F (unspecified) in the D of the HIRC-DP is blocked by [+int] F in the D head of the complex NP island in (7b).

(7) a. [[…[QP D_{DP}]$_{ACC}$... $_{IP}$]-no$_{CP}$] D_{DP}]$_{NOM}$



[-int] Focus [+int] F

??b. [[[[[[QP D_{DP}]… $_{CP}$]N_{NP}] D_{DP}]$_{ACC}$ … $_{IP}$]-no$_{CP}$] D_{DP}]$_{NOM}$



[-int] Focus **[+int]F** [+int] F

As another piece of evidence for complex NP island effects on HIRCs, Watanabe (2004) introduces an example in which the internal head of one HIRC is embedded in another HIRC, as presented in (8a). Here, the internal head of the inner HIRC is not identical to that of the outer HIRC; as a result, the inner HIRC works as if it is a complex NP island for the outer HIRC-formation. The checking relation for (8a) is shown in (8b). [+Int] F in the D-head of the inner HIRC-DP blocks the checking relation between [-int] Focus in the accusative internal head and [+int] F in the D head of the outer HIRC-DP.

(8) a.*[John-ga [MIT-no gakusei-ga **subarashii rombun-o** kaita]-no]-o posuto-doku-toshite saiyoushite-ita]-no]-no shuppan-ga okureta.

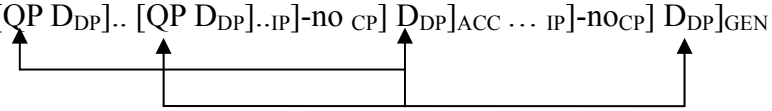
[John$_{NOM}$ [MIT$_{GEN}$ student$_{NOM}$ excellent paper$_{ACC}$ wrote]-no]$_{ACC}$ post-doc-as adopted-had]-no]$_{GEN}$ publication$_{NOM}$ was-delayed

'Publication of an excellent paper which John had hired as a post-doc an MIT student who wrote (it) was delayed.'

(Watanabe 2004: 64)

b.*

[[[[[[[QP D_{DP}].. [QP D_{DP}]..$_{IP}$]-no $_{CP}$] D_{DP}]$_{ACC}$ … $_{IP}$]-no$_{CP}$] D_{DP}]$_{GEN}$



[-int] Focus [-int] Focus **[+int]F** [+int]F

Contrary to Watanabe's (2004) claim, I argue that an HIRC would be a complex NP island only if each of the two HIRCs indentifies a different DP as its internal head as in (8). For example, consider the contrast in (9). (9a) is similar to (8) with respect that the internal head of the inner HIRC is different from that of the outer HIRC. On the other hand, the two HIRCs identify the same argument as the internal head for both of them in (9b), which is more acceptable than (9a).

(9) ??a. [[[[Karasu-ga **tomato-o** tsutsuiteita]-no]-o Tom-ga tsukamaeta]-no]-ga sarada-ni tsukawareta.

[[[[Crow$_{NOM}$ tomato$_{ACC}$ was pecking]-no]$_{ACC}$ Tom$_{NOM}$ caught]-no]$_{NOM}$ salad-for was used.

(Intended) 'Tomatoes, which were being pecked by crows, which Tom caught, were used for salad.'

b. [[[[**Karasu-ga** tomato-o tsutsuiteita]-no]-o Tom-ga oiharatta]-no]-ga sora-ni nigeteitta.

[[[[Crow$_{NOM}$ tomato$_{ACC}$ was pecking]-no]$_{ACC}$ Tom$_{NOM}$ got_rid_of]-no]$_{NOM}$ sky-to escaped

'Crows, which were pecking tomatoes and were got rid of by Tom, escaped to the sky.'

Consider the checking relation for (9b) in (10). In (9b), both HIRCs identify the same QP 'crows' as their internal head. First, I assume that [-int] Focus in the QP is checked by [+int] F in the lower D. As a result, the lower HIRC identify the QP as its internal head. As explained in Chapter 2, Watanabe (2004) assumes that D of the HIRC-DP is endowed with [-int] Focus for the external relation, although he does not explicitly explain where this feature is used. Assuming that the lower D bears [-int] Focus, this [-int] Focus feature in the lower D is checked by a [+int] F feature in the D of the higher HIRC-DP. Thus, the QP is licensed as the internal head of both of the HIRCs. Since the D head of the lower HIRC takes part in the same checking relation, it does not work as an intervener in (10), unlike in (8b).

(10) [[[[[[[QP D_{DP}]....$_{IP}$]-no $_{CP}$] D_{DP}]$_{ACC}$ … $_{IP}$]-no$_{CP}$] D_{DP}]$_{NOM}$

[-int] Focus [+int]F

[-int] Focus [+int] F

We have seen that the CNPC restricts HIRCs as discussed in the previous literature (Watanabe (1992, 2004) and Kuroda (1999)), and that Watanabe's (2004) analysis accounts for this island effect. On the other hand, the well-formedness of (9b) has not been discussed by Watanabe, but this case can also be explained under his approach, if we make use of a [-int] Focus feature in the D of the inner HIRC for the external relation to a [+int] F feature in the D of the outer HIRC.

3.2.2. Wh-islands

Let us now consider the wh-island sensitivity of HIRC-formation. Watanabe (1992) and Kuroda (1999) observe that HIRCs are much less sensitive to wh-islands than to complex NP islands. I will show in this subsection that their observations are correct. Wh-islands appearing in the following examples are formed by a wh-adjunct, *kadooka* 'whether' and a wh-argument.

Consider (11). The wh-island in (11a) is formed by a wh-adjunct *doko-ni* 'where' and a question particle *ka* in the embedded C, while the one in (11b) is formed by *kadooka* 'whether'. Despite their slight marginality, both sentences are acceptable.

(11) a.?[[[Tom$_i$-ga [**(zibun$_i$-no) konyakusha**-ga doko-ni itteshimatta ka] wakara-nai-deita]-no]]-no itai-ga kesa kaigan-de mitsukatta.

[[[Tom$_{NOM}$ [self$_{GEN}$ fiance$_{NOM}$ where-to had_gone Q] know-neg-had] C](D)]$_{GEN}$ corpse$_{NOM}$ this_morning beach-on be_found

'The corpse of Tom's fiancé, who Tom had not got known where she had gone, has been found on the beach this morning.'

b. ? [[Tom-ga **sotsuron-o** kakioeta kadooka] Mary-ga shinpaishiteita]-no]-ga kesa toshokan-ni bujini teishutu-sareta.

[[Tom_{NOM} $\text{thesis}_{\text{ACC}}$ had_finished_writing whether] Mary_{NOM} was_worried]-no]$_{\text{NOM}}$ this_morning library-to without-incident submitted-was

'A thesis, which Mary was worried whether Tom had finished writing (it), was submitted to a library this morning.'

The checking relations for each sentence in (11), according to Watanabe (2004), are schematically demonstrated in (12a) and (b), respectively.

(12) a. [[[Tom_{NOM} [QP_{NOM} [where-(D)]-ni V ka_{CP}] V $_{\text{IP}}$]-no_{CP}] D $_{\text{DP}}$]$_{\text{GEN}}$

[-int] Focus [+int]F

[-int]Q [+int]Q

[-int] Focus [+int] Q

b. [[…[QP D]$_{\text{ACC}}$… whether $_{\text{CP}}$] … $_{\text{IP}}$]-no_{CP}] D $_{\text{DP}}$]$_{\text{NOM}}$

[-int] Focus [+int] Q [+int]F

In (12a), the Agree relations for wh-in-situ and the HIRC are assumed to be established separately. Because it is possible to interpret the embedded argument as the internal head of the HIRC in (11a), the intervening C (*ka*) bearing a [+int] Q feature does not seem to block the checking relation for the HIRC. Similarly, in (12b), [+int] Q in the interrogative C 'whether' is assumed not to restrict the checking relation for the HIRC.

One puzzle is found in (12). Watanabe (2004) argues that in the external relation for wh-in-situ, a [-int] Focus feature in D is checked by a [+int] Q feature in C. If this is right, why isn't it possible for [-int] Focus in the internal head to be checked by [+int] Q in the intervening C in (12)? The weak intervention effect by [+int] Q on the checking relation for the HIRCs would contradict Watanabe's (2004) explanation for the Agree relation for

wh-in-situ.

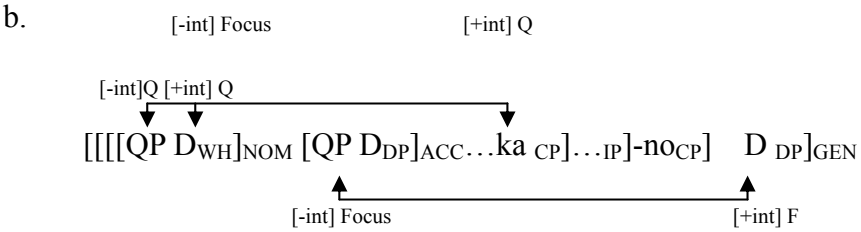
(11) indicates that Watanabe's (1992) and Kuroda's (1999) observations on the weak sensitivity of HIRCs to wh-islands are right. Finally, let us discuss the case in which a wh-island is formed by a wh-argument and *ka* in (13). This type of wh-islands is not discussed by either Watanabe or Kuroda. In (13a), although the sentence is slightly degraded, it is not very difficult to interpret the accusative DP as the internal head. The Agree relation by Watanabe's (2004) approach for this sentence is illustrated in (13b).

(13) a. ?[[[Dare-ga **sotsuron-o** sude-ni kakioeta ka] Eric-ga shiritagatteiru]-no]-no simekiri-wa hachigatsu-chuujun-da.

[[[who$_{NOM}$ thesis$_{ACC}$ already had_finished_writing C] Eric$_{NOM}$ wonders]-no]$_{GEN}$ deadline$_{TOP}$ August-mid-is.

'The deadline of a thesis, which Eric wonders for which x, x a person, x has already finished writing (it), is by mid-August.'

b.



In (13b), again, the intervening C bearing [+int] Q does not restrict the checking relation for the HIRC, although Watanabe's (2004) hypothesis for wh-in-situ entails that the [+int] Q feature would check the [-int] Focus feature in the internal head before the interpretable feature in D does.

In this subsection, we have seen that [+int] Q belonging to the interrogative C *ka* or *kadooka* is not a strong intervener for the Agree relations for HIRCs, contrary to a [+int] F feature in the D head of the complex NP. However, it is puzzling why [+int] Q in the interrogative C may not check [-int] Focus in the internal head, whereas it does so in the

external relation for wh-in-situ.

In summary, as observed in the previous literature, complex NP islands are strong islands for HIRC-formation, whereas wh-islands are not. This result suggests that a [+int] F feature on the D head of a complex NP island is a potential intervener for the Agree relation between a [-int] Focus feature in the internal head and a [+int] F feature in the D head of the HIRC-DP. On the other hand, a [+int] Q feature in the interrogative C does not strictly restrict HIRC-formation, contrary to the case of wh-in-situ. This puzzle makes me doubt whether it is appropriate to make use of a [-int] Focus feature as an uninterpretable feature belonging to the internal head of an HIRC.

In this section, we have focused on studying the island-sensitivity of HIRCs whose heads are normal indefinites, which are not formed by indeterminates. Because Watanabe's (2004) theory is based on the assumption that the Japanese indeterminate DP system is relevant to the syntax of wh-in-situ and HIRCs in Japanese, we also need to have a look at what happens if an indeterminate pronoun-related element (such as a wh-phrase or a quantifier) becomes the internal head of an HIRC. The following section will discuss the island-sensitivity of HIRCs headed by a quantifier formed by an indeterminate and a particle.

3.3. HIRCs headed by indeterminate quantifiers

3.3.1. Watanabe's (1992, 2004) analyses and Japanese indeterminates

One of the main reasons why Watanabe has shifted his operator movement analysis (used from 1992 to 2003) of HIRCs and of wh-in-situ to the Agree analysis in 2004 is that the old approach does not explain how HIRCs, whose internal heads are not necessarily indeterminates, can be formed by operator movement induced by the indeterminate mechanism. In Watanabe (1992), a phonologically null operator in Spec DP is selected by a null particle in D and undergoes movement to Spec CP in order for the indeterminate to associate with an interrogative C in the case of wh-in-situ, and he claims that the same

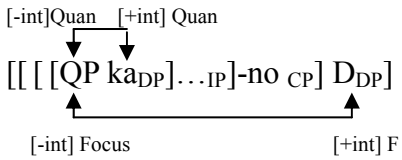
movement operation is available in the case of HIRCs. Wh-in-situ, which are always formed by the separate association between an indeterminate pronoun (wh-phrase) and a particle (a question particle *ka* in C), can be straightforwardly explained by this operator movement theory. This is because the D-head that takes a QP as the complement is always phonologically empty in the case of wh-in-situ. On the other hand, in the case of HIRCs, the D-head is not always phonologically covert. It is not clear how Watanabe's (1992) theory accounts for (14), in which the internal head of the HIRC is not an indeterminate but an existential quantifier that is formed by the adjacent association between an indeterminate *dare* and a particle *ka*. Even though the D-position is occupied by the overt existential particle *ka*, the HIRC is successfully formed.

(14) [[**Dare-ka-ga** eiki-de shisshinshiteita]-no]-ga byooin-ni hakobareta.
[[who-KA$_{NOM}$ station-in was_fainted]-no]$_{NOM}$ hospital-to carried
'Someone, who had fainted in a station, was rushed to a hospital.'

In this case, it is not certain if an operator can be generated by selection by the overt D, if we straightforwardly follow Watanabe's (1992) hypothesis. In fact, Kitagawa (2005) argues against Watanabe in this respect. Kitagawa claims that Watanabe's analysis would account only for wh-headed HIRCs, whose heads are genuine indeterminate pronouns.

On the other hand, Watanabe (2004) assumes that an HIRC is formed by Agree between the internal head and the D of the HIRC-DP, but he does not make use of the D of the internal head, contrary to Watanabe (1992). This is why the D-head of the internal head is not counted as an intervener for the checking relation of HIRCs under Watanabe's (2004) analysis. At the same time, he still makes use of the Japanese indeterminate system for his Agree-based theory, in which the internal head is a QP that associates with the D of the HIRC-DP. The derivation for (14) is schematically illustrated in (15). Note that Watanabe (2004) assumes that an indeterminate pronoun QP is endowed with a [-int] quantificational (Quan) feature, which is checked by [+int] Quan belonging to a particle in D, for non-wh quantification.

(15)



The acceptability of (14) suggests that the Agree relation between the internal head and D of the HIRC-DP is successful. The [+int] Quan feature in the intervening D (*ka*) seems not to block the checking relation for the HIRC.

There are two types of association between indeterminate pronouns and particles. One is adjacent association such as in *dare-ka* 'someone', in which *ka* is directly attached to the indeterminate within the same DP as shown in (14), whereas the other is separate association; for example, *dare* associates with *ka* in C to obtain a wh-interpretation as shown in (1). This idea is based on the uniform analysis that assumes that *ka* in D and *ka* in C are the same particles, but the way of association makes a difference in the semantics of the indeterminates, as discussed by Shimoyama (2006), Yatsushiro (2009), and Kobuchi-Philip (2010), after Kuroda's (1965) original discussion.

I think that the uniform analysis of indeterminates is a beautiful idea; on the other hand, I do not know how I can express this idea within the Minimalist framework. For instance, in (15), *ka* in D should not be endowed with [+int] Q but with [+int] Quan, since the internal head is not interpreted as a wh-argument but as a quantifier. However, for the analysis of wh-questions, we need to assume that *ka* in C is endowed with an interrogative feature such as [+int] Q. So, in the Minimalist framework, it would not be easy to make a theory showing that *ka* appearing in the two different positions is the identical particle on the basis of the uniform analysis. This is beyond the scope of this thesis, so I will leave this problem open for further research. I will assume that there are different uses of *ka*, with different feature sets, in different positions.

Let us now go back to Watanabe's (2004) analysis. I have found one puzzle in (14) and (15). If the internal head of an HIRC is a QP rather than a DP as proposed by Watanabe

(2004), the HIRC's internal head would be the indeterminate pronoun *dare* rather than the existential quantifier *dare-ka* 'someone'. However, what is interpreted as the internal head here is the existential quantifier. This puzzle has already been mentioned in Chapter 2.

The following subsection will show that a quantifier that is formed by the indeterminate system can be the internal head of an HIRC without a problem, and that the island sensitivity of this type of HIRCs is not different from that of HIRCs headed by normal indefinites, which was examined in the last section. Then, we will discuss some puzzles for Watanabe's (2004) theory.

3.3.2. Wh-islands & complex NP islands

Let us examine the island-sensitivity of HIRCs headed by quantifiers formed by the indeterminate mechanism. We first discuss the case of wh-islands.

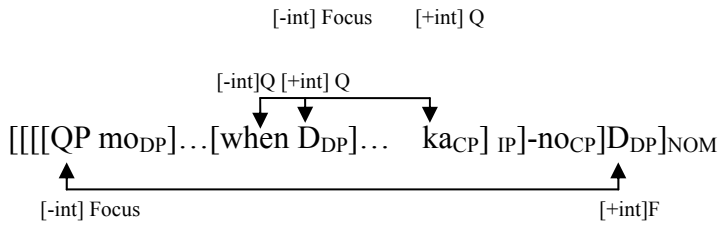
First, in (16a), the internal head is a universal quantifier formed by an indeterminate and the universal particle *mo*, and it is embedded within a wh-island. The acceptability of the sentence is a bit degraded but not so problematic. (16b) schematically shows that [-int] Focus in the internal head would not be checked by [+int] Q on *ka* in C, as we have seen in the case of the general HIRCs. I will skip explaining [-int] Quan checking for quantification of the internal head, since we have seen that a [-int] Quan feature does not intervene in the checking relation of the HIRC in (15).

(16) a.?[$_{CP}$[$_{IP}$Tom-ga [$_{CP}$**dono-shoozooga-mo** itsu kanseisuru ka] ki-o-mondeita]-no]-ga asita yatto todoku-yooda.

[[Tom$_{NOM}$ [Which-portrait-mo when will_be_completed Q] wondered]-no]$_{NOM}$ tomorrow finally be_delivered-seem

'Every portrait, which Tom wondered when (it) will be completed, seems to be delivered finally tomorrow.'

b.



The acceptability of (16) is similar to that of (11a), in which the internal head of the HIRC is an indefinite. A [+int] Q feature in the interrogative C (*ka*) does not strongly intervene in the checking relation between a [-int] Focus in the QP and a [+int] feature in the D-head of the HIRC-DP. Although (16b) does not include [-int] Quan checking for universal quantification, a [+int] Quan feature belonging to *mo* does not block the checking relation of the HIRC, either.

Next, consider (17), in which the internal head of an HIRC occurs in a complex NP island.

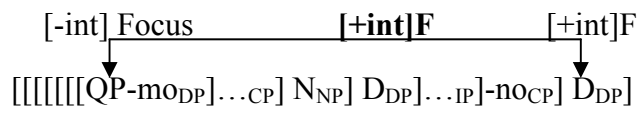
(17) a. Tom-wa [[[**dono-jogakusei-mo** paatii-ni shootaishita] sensei]-ga tanoshiku utatteita]-no]-ni kisushita.

Tom$_{TOP}$ [[[which-female_student-mo party-to had invited] teacher]$_{NOM}$ happily was_singing]-no]$_{DAT}$ kissed.

??(i)‘Tom kissed every female student whom the teacher, who was happily singing, had invited to the party.’

(ii) ‘Tom kissed the teacher that had invited every female student to the party, who was happily singing.’

b. ??



As shown in (17b), the CNPC is strong enough to disallow the quantifier to be

interpreted as the internal head of the HIRC. Rather, the external head *sensei* 'teacher' of the complex NP is likely to be interpreted as the internal head (in this case, (17a) is acceptable). We have seen that this type of quantifier is allowed to function as the internal head of the HIRC in (16), so that it is unreasonable to argue that a [+int] Quan feature in *mo* (D) blocks the checking relation between a [-int] Focus feature in the QP and a [+int] F feature in the D-head of the HIRC-DP. Under Watanabe's (2004) analysis, what intervenes in the checking relation would be a [+int] F feature in the D-head of the complex NP.

Next, (18) is a sentence in which an indeterminate pronoun *dare* 'who' and a particle *mo* belonging to *sensei* 'teacher' form universal quantification by the separate association. Again, we observe that the head of the complex NP rather than the indeterminate pronoun is likely to be interpreted as the internal head.

(18) a. Tom-wa[[[[[**dare-o** paatii-ni shootaishita$_{CP}$] sensei$_{NP}$]-mo$_{DP}$] tanoshiku nondeita $_{IP}$]-no $_{CP}$]$_{DP}$]-ni kisushita.

Tom$_{TOP}$[[[[[who$_{ACC}$party-tohad_invited]teacher]-mo] happily was_drinking]-no]$_{DAT}$ kissed.

(i) ?? 'Tom kissed someone whom every teacher who had invited her to the party, was happily drinking.'

(ii) 'Tom kissed every teacher who had invited someone to the party, who was happily drinking.'

b. ?? [-int] Focus **[+int]F** [+int]F

[[[[[[[QP$_{ACC}$…$_{CP}$] N$_{NP}$] mo $_{DP}$]…$_{IP}$]-no$_{CP}$] D$_{DP}$]

Based on Watanabe's (2004) hypothesis of the DP-structure, *mo* should occupy the D-position of the complex NP in (18). The possible interpretation in (18a) suggests that a [+int] F feature in the overt D *mo* intervenes in the checking relation for the HIRC, as shown in (18b). The parallelism between (17b) and (18b) indicates that either covert D or overt D of

the complex NP can be an intervener, although Watanabe (2004) does not deal with the latter option.

Finally, consider (19) in which the internal head is embedded in another HIRC. The result is similar to that of (9b) in which the internal head is a normal indefinite.

(19) [[[[Tom-ga **nani-ka-o** beddo-no shita-ni kakushiteita]-no]-o Mary-ga mitsukete toriageta]-no]-ga yokujitsu gomi-ni dasareteshimatta.

[[[[Tom_{NOM} $\text{something}_{\text{ACC}}$ bed_{GEN} below-in had_concealed]-no]$_{\text{ACC}}$ Mary_{NOM} found_and dispossessed]-no]$_{\text{NOM}}$ the_next_day dump-to was_taken_out

'Tom had concealed something below the bed, Mary found and dispossessed him of it, and it was taken out to the dump the next day.'

b. [[[QP ka_{DP}]$_{\text{ACC}}$ …..$_{\text{IP}}$]-no_{CP}] D_{DP}]$_{\text{ACC}}$…..$_{\text{IP}}$]-no_{CP}] D_{DP}]$_{\text{NOM}}$

[-int] Focus [+int]F

[-int] Focus [+int]F

Since the two HIRCs identify the same argument as the internal head, we need to assume that Agree operates recursively in (19b). [-Int] Focus in the QP is checked by [+int] F in the D of the lower HIRC-DP, and [-int] Focus in the D-head is checked by [+int] F in the D of the higher HIRC-DP.

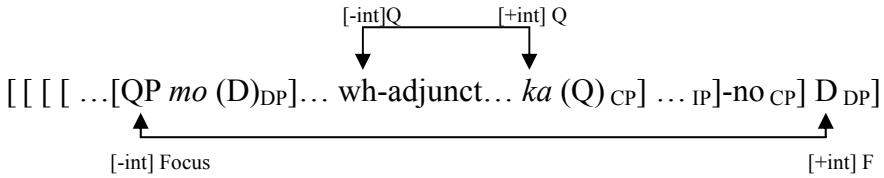
As demonstrated in this subsection, the island-sensitivity of this type of HIRCs is not different from that of HIRCs headed by normal indefinites. In the case of complex NP islands, we found that either covert D or overt D of the complex NP may intervene in the checking relation between a [-int] Focus in the internal head QP and a [+int] F feature in D of the HIRC-DP, although the latter case is not discussed by Watanabe (2004).

3.3.3. Summary

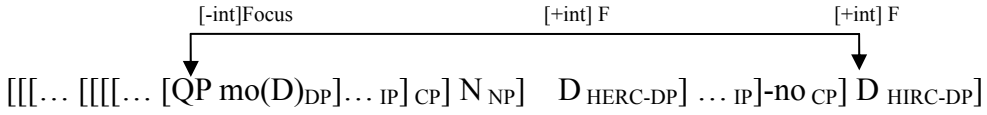
To summarize, the island-sensitivity of HIRCs headed by quantifiers is not so different from that of HIRCs headed by indefinites. The result of each of the island tests is illustrated in (20).

(20)

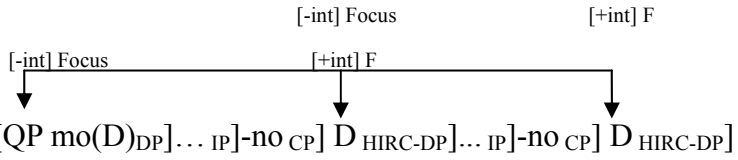
a. *Wh-island* (?)



b. Complex NP island (HERC) (*)



c. Double HIRC construction



Firstly, although Watanabe (2004) defines the internal head of an HIRC as a QP, this would be problematic to deal with HIRCs headed by indeterminate quantifiers, which we have discussed in this section. This is because these quantifiers are DPs (QP=indeterminate, D=particle: *ka* or *mo*), if we follow his view of the Japanese DP structure.

Secondly, we have seen that a [+int] Quan feature in an overt particle (*ka/mo*) in D does not intervene in the Agree relation for HIRC-formation. However, *mo* can also be used as a focus marker (with a marked stress: see Kobuchi-Philip (2010)), so that it would be possible

to assume that *mo* would be endowed with a [+int] Focus feature that can check a [-int] Focus feature belonging to a QP. The acceptability of (17) suggests that this derivation is unavailable, but I doubt whether the internal head really bears [-int] Focus.

Third, I argue that a phonologically null D, which Watanabe (2004) makes use of, is not the covert counterpart of an overt particle (*ka/mo*). In the case of overt particles, if an overt particle intervenes in the separate association between an indeterminate and another particle, there would be an intervention effect (see Kratzer & Shimoyama 2002 for details). On the other hand, for example, in (16), neither *mo* in D nor *ka* in C blocks the checking relation between the internal head and the phonologically null D-head of the HIRC-DP. This indicates that the checking relation for HIRC-formation has a different nature than the association for indeterminate quantification. So, I assume that HIRC-formation makes use of the Japanese DP structure, not of the indeterminate mechanism.

3.4. HIRCs headed by wh-phrases

The previous sections have demonstrated that HIRCs headed by normal indefinites and by quantifiers formed by indeterminates and particles do not show any difference in their island-sensitivity. Contrary to these two types of HIRCs, whose heads are not indeterminates, this section deals with the third type of HIRCs (wh-HIRCs), whose internal heads are indeterminates that obtain interrogative interpretations by separate association with *ka* in C.

The aim of this section is to examine wh-headed HIRCs, which involve both the derivations of HIRC-formation and of wh-in-situ, in order to discuss whether the internal relation of wh-in-situ (between QP and D) can be incorporated into that of HIRCs, or the checking relation of wh-in-situ and that of HIRCs take place independently. The former is a "uniformed" derivation, whereas the latter is an "independent" derivation. I assume that these are two possible versions of his theory that might be used to explain wh-HIRCs, which Watanabe does not discuss, and that one of the two versions can be the correct one. It would be ideal for Watanabe's (2004) claim that the syntax of HIRC-formation and that of wh-in-situ

must be correlated if we were to find that the derivation of wh-in-situ is shared with that of an HIRC in the course of wh-HIRC-formation.

Based on Watanabe's (2004) original checking relations of wh-in-situ and HIRCs in (21a) and his recruitment of the internal relation of wh-in-situ for that of HIRCs, we might hypothesize two types of checking relations for wh-HIRCs, as shown in (21b) and (21c). (21b) is a "uniformed" checking relation, in which the internal relation of wh-in-situ is shared with that of HIRC-formation, whereas (21c) is an "independent" checking structure, in which the derivation of wh-in-situ and that of the HIRC take place separately. The wh-internal head has to undergo two separate checking relations in the latter case. As schematically shown in (21b) and (21c), what makes the two types of derivations differ is the position of [-int] Focus. In the uniformed checking relation, a [-int] Focus feature belongs to the D-head of the HIRC-DP, while it sits in the wh-internal head (QP) for the internal relation for HIRC-formation as well as in the D-head for the external relation for wh-in-situ in the independent checking relations.

(21) a. Watanabe's (2004) original checking relations

wh-in-situ

[[… [QP D $_{DP}$] …$_{IP}$]…C $_{CP}$]

(i) (ii)

(i) [-int] Q--- [+int] Q

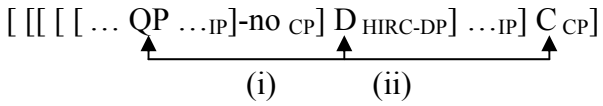
(ii) [-int] Focus --- [+int] Q

HIRC

[[[…QP…$_{IP}$]-no $_{CP}$] D $_{DP}$]

[-int]Focus [+int]F

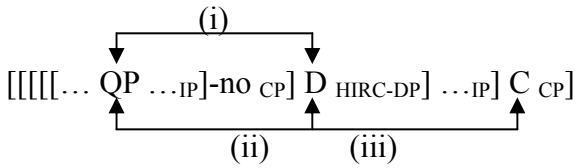
b. “Uniformed” checking relation



(i) Internal relation: [-int] Q --- [+int] Q

(ii) External relation: [-int] Focus --- [+int] Q

c. “Independent” checking relations



(i) Internal relation for the HIRC: [-int] Focus --- [+int] F

(ii) Internal relation for wh-in-situ: [-int] Q--- [+int] Q

(iii) External relation for wh-in-situ: [-int] Focus --- [+int] Q

First, for the case of the uniformed checking relation in (21b), I assume that the QP would be endowed with a [-int] Q feature rather than a [-int] Focus feature. One of the reasons why Watanabe (2004) makes use of [-int] Focus as an uninterpretable feature belonging to the HIRC’s internal head as shown in (21a) is that it is the feature that does not require overt morphological realization (eg. the presence of a focus-marker). The QP internal head bearing [-int] Focus fits for the HIRC whose head is not an indeterminate. However, in the case of wh-HIRCs, the indeterminate internal head overtly shows that it should be endowed with a [-int] Q feature. So, it would be possible to locate [-int] Q in the wh-internal head in order to perfectly incorporate the internal relation of wh-in-situ into that of HIRC-formation. As a result, in (21b), the internal relation between [-int] Q in the QP and [+int] Q in the D-head of the HIRC-DP is the checking relation for wh-in-situ as well as for the HIRC. Following Watanabe’s assumption that [-int] Focus sits in the D-head of the HIRC-DP, the external relation for wh-in-situ is formed between [-int] Focus in the D-head of the HIRC-DP and [+int] Q in the interrogative C.

Next, for the case of the independent checking relations, the derivations for wh-in-situ and for HIRC-formation operate independently. As shown in (21c), [-int] Focus belongs to two different positions: the internal head QP (for the internal relation of the HIRC) and the D-head (for the external relation of wh-in-situ). Contrary to the case of the uniformed derivation, this option assumes that the wh-internal head QP is endowed with [-int] Focus as well as [-int] Q. Although the indeterminate QP overtly shows that it must bear [-int] Q for wh-in-situ, it should also bear [-int] Focus as a default feature for HIRC-formation. [-Int] Focus also sits in the D for the external relation of wh-in-situ.

On the basis of Minimalist economy considerations, the uniformed checking relation in (21b), which fits in Watanabe's approach that pursues the syntactic correlation between wh-in-situ and HIRC-formation, is preferable to the independent one in (21c), since a single derivation is a cheaper option than separate derivations in (21c). However, the following subsections will show on the basis of island tests that the uniformed checking relation in (21b) is available only in a limited situation, due to the difference between HIRCs and wh-in-situ in their island-sensitivity.

3.4.1. Wh-islands

Firstly, consider the wh-island case. Wh-in-situ is sensitive to wh-islands (see (1) and (2)), while HIRCs headed by non-wh-arguments (including indefinites and quantifiers) are very weakly affected by them. In other words, making use of Watanabe's (2004) terminology, either the external or the internal relation of wh-in-situ is sensitive to wh-islands, whereas the internal relation of HIRCs is almost insensitive to them. We will examine the island-sensitivity of wh-HIRCs, which involve the derivation of HIRC-formation as well as that of wh-in-situ, and will discuss which theory (the "uniformed" theory or the "independent" theory) can correctly account for their island-sensitivity.

Let us first examine (24), in which only one wh-argument occurs within the wh-island formed by *ka* in C. According to Nishigauchi (1990), even such a construction can be used for

testing wh-island effects in Japanese, since *ka* is also interpreted as a yes-no question marker, if it does not associate with any wh-phrase.

(22) [[[**Dare-ga** Tom-o koroshita ka] Mary-ga shiritaggatteita]-no]-ga tsuini keisatsu-ni taihosareta-no-desu-ka?

[[who$_{NOM}$ Tom$_{ACC}$ had_killed Q] Mary$_{NOM}$ wanted_to_know]-no]$_{NOM}$ finally police-by was_arrested-Q

(i) 'Mary wanted to know [for which x, x a person, x had killed Tom], and was the person x arrested by police finally?'

(The wh-phrase associates with the embedded *ka*, and the matrix *ka* is interpreted as a yes-no question marker.)

(ii) ?? 'For which x, x a person, Mary wanted to know whether x had killed Tom, and the person x was arrested finally by police.'

(The wh-phrase associates with the matrix *ka*, and the embedded *ka* is interpreted as *whether*)

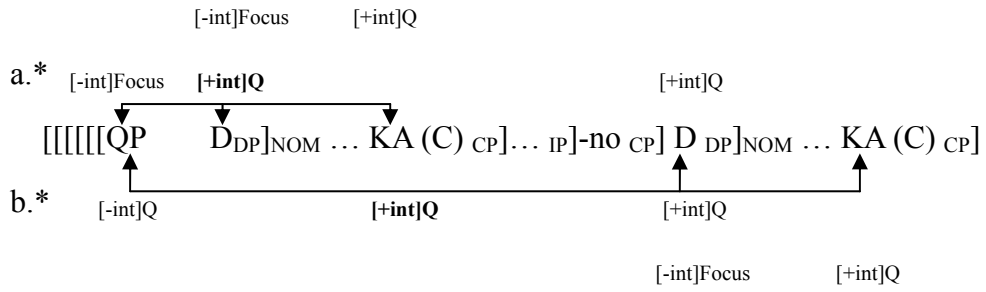
(22) has reading (i), in which the wh-argument takes scope over the embedded interrogative clause but not over the matrix clause, whereas reading (ii) is hard to obtain here.

Let us discuss (22) on the basis of the two possible derivations: the uniformed checking relation and the independent checking relations. Firstly, under the "uniformed" theory, the derivation for reading (i) and that for reading (ii) are illustrated in (23a) and (23b), respectively. Contrary to the fact, both (23a) and (23b) predict that the ill-formedness of the sentence in (22). (23a) predicts that the embedded scope of the wh-argument (reading (i)) is available, but it incorrectly predicts that the sentence would be ill-formed due to the failure of HIRC-formation. As schematically illustrated in (23a), in order for the QP to take the embedded scope, the internal relation should be formed between [-int] Q in the QP and [+int] Q in the D head that takes it as the complement, and the external relation should be formed between [-int] Focus in the D and [+int] Q in the embedded interrogative C. As a result, the

checking relation cannot be extended to the D-head of the HIRC-DP bearing [+int] Q for HIRC-formation.

(23b) predicts that the matrix scope of the wh-argument (reading (ii)) is unavailable, but again it incorrectly predicts that (22) would be ill-formed due to the failure of HIRC-formation. The [-int] Q feature belonging to the wh-argument can be checked by the [+int] Q feature in the embedded interrogative C rather than by the one in the D-head of the HIRC-DP.

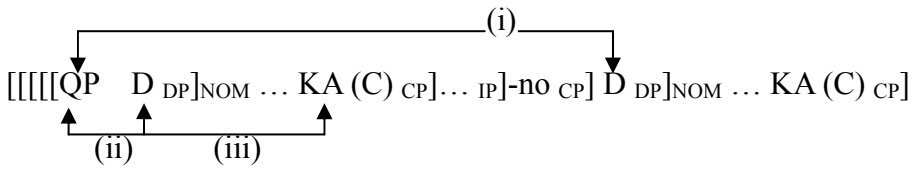
(23)



Contrary to the predictions of the uniformed derivations in (23), the acceptability of (22) suggests that the HIRC construction can be formed without a problem. This indicates that the internal relation of wh-in-situ and that of HIRC-formation are not uniformed here, because of the difference in their island-sensitivity.

On the other hand, as schematically shown in (24a), the "independent" theory predicts that the HIRC formation will not be problematic (so that the sentence will be acceptable), and that reading (i) can be obtained (as shown in (24a)). It also predicts the unavailability of reading (ii) due to the wh-island effect either on the internal relation or on the external relation for wh-in-situ, as illustrated in (24b).

(24) a.



(i) HIRC: internal relation (insensitive to a wh-island effect)

DP [-int] Focus --- D [+int] F

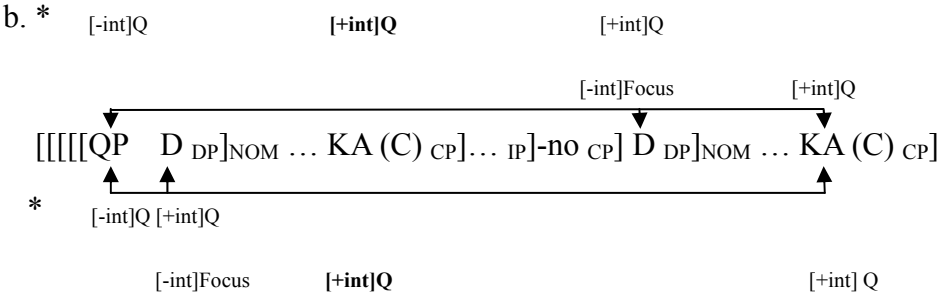
(ii) Wh-in-situ: internal relation

QP [-int]Q --- D [+int] Q

(iii) Wh-in-situ: external relation (sensitive to a wh-island effect)

D [-int] Focus --- C (Q) [+int] Q

b. *



In (24a), the internal relation for HIRC-formation in (i), which is assumed to be insensitive to the wh-island effect, is not blocked by [+int] Q in the embedded interrogative C. On the other hand, the external relation for wh-in-situ is sensitive to it (as shown in (24b)), so that [-int] Focus in the D-head that takes the QP as the complement is checked by [+int] Q in the embedded C but not by the same feature in the matrix C. Even if the internal relation for wh-in-situ were formed between [-int] Q in the QP and [+int] Q in the D-head of the HIRC-DP as illustrated in (24b), it would be blocked by [+int] Q in the embedded C. Because the HIRC-formation is not blocked by [+int] Q in the embedded C, the grammaticality of the sentence in (22) is not problematic. Reading (i) is obtained for the sentence, but reading (ii) is not available due to the wh-island effect.

Thus, for the case of (22), the prediction from the independent derivations is correct but

that from the uniformed one is not. In the well-formed independent derivations in (24a), however, there is a puzzle why [+int] Q in the embedded C does not block the internal relation of the HIRC between [-int] Focus in the QP and [+int] F in the D head of the HIRC-DP, although it intervenes in the external relation of wh-in-situ between [-int] Focus in the D head and [+int] Q in the matrix C as shown in (24b).

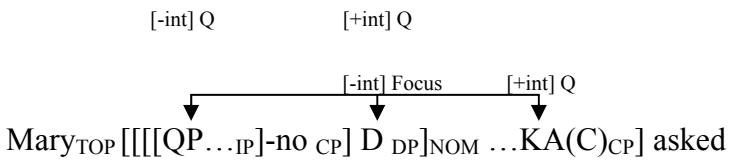
Contrary to (22), in (25a), there is no intervening interrogative C between the internal head of the HIRC and the D of the HIRC-DP. As shown in (25b), the uniformed derivation is available and correctly predicts the well-formedness of (25a). In addition, the independent derivation is also available and predicts the same result (see (25c)).

(25) a. Mary-wa [[**dare-ga** kooen-de yuukaisareta]-no]-ga mada mitsukatteinai-no-ka] tazuneta.

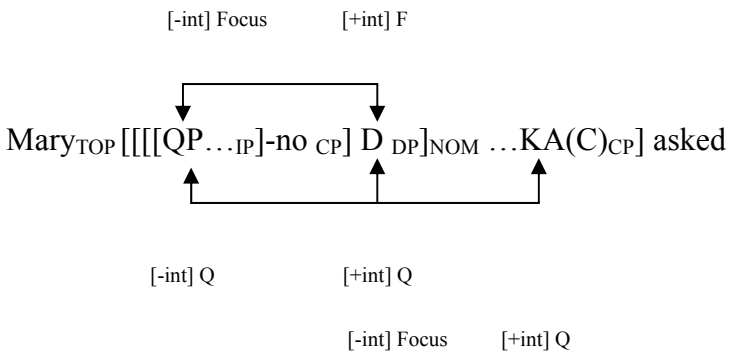
Mary$_{TOP}$ [[who$_{NOM}$ park-in had_been_kidnapped]-no]$_{NOM}$ yet has_not_been_found-Q] asked.

'For which x, x a person, Mary asked [x had been kidnapped in a park and has not been found yet].'

b.



c.



The contrast between (22) and (25) confirms that the reason why the matrix scope of the wh-internal head is difficult to obtain in (22) is the wh-island formed by the intervening interrogative C (*ka*).

Let us now consider (26), in which the internal head of the wh-HIRC occurs within two wh-islands. The lower wh-island is formed by *ka*, whereas the higher island is formed by *kadooka* 'whether'.

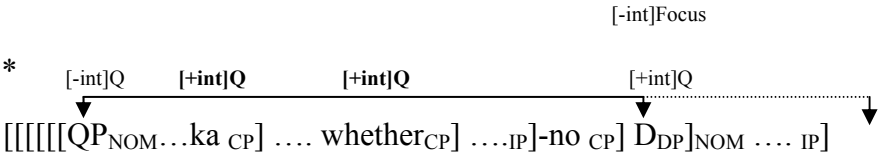
(26) ?[[**Dare-ga** Tom-o koroshita ka] Mary-ga shitteiru kadooka] Peter-ga tazuneru-tsumoridatta]-no]-ga sono-maeni taihosareta.

[[Who$_{NOM}$ Tom$_{ACC}$ killed-Q] Mary$_{NOM}$ knows whether] Peter$_{NOM}$ ask-intended]-no]$_{NOM}$ that-before was_arrested

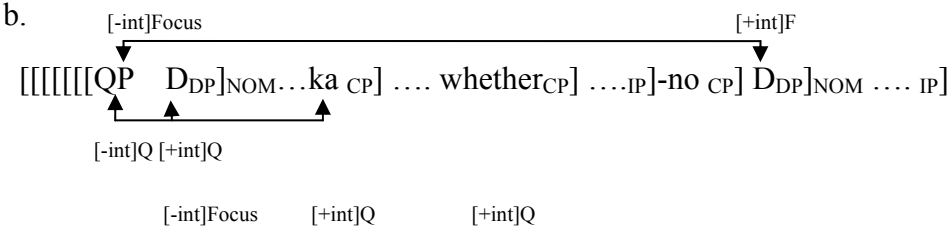
'Peter intended to ask Mary whether she knows [for which x, x a person, x killed Tom], and the person x was arrested before that (=before Peter asks Mary).'

For (26), the uniformed derivation predicts the ill-formedness of the sentence, as shown in (27a), whereas the independent derivations predict that both the relations for wh-in-situ and for the HIRC are well-formed, as shown in (27b). The latter prediction is correct.

(27) a. *



b.



In case the uniformed derivation is possible, the internal relation for wh-in-situ is

incorporated into that for the HIRC, as shown in (27a), but it would be intervened by [+int] Q features belonging to the embedded C and the matrix C. In addition, a [-int] Focus feature in the D of the HIRC-DP would remain unchecked. So, this predicts that the sentence in (27) would be ill-formed. However, this prediction is incorrect. On the other hand, the prediction from the independent derivations in (27b) is correct for (26). The wh-argument's [-int] Focus feature is checked by [+int] F in the D of the HIRC-DP; as a result, the wh-argument is interpreted as the internal head of the HIRC. For the case of wh-in-situ, [-int] Q in the QP can be checked by [+int] Q in the D that takes it as the complement, and [-int] Focus in the D-head can be checked by [+int] Q in the embedded *ka*. As a result, it takes embedded scope.

(26) suggests that the internal relation of the HIRC between [-int] Focus in the internal head and [+int] F in the D of the HIRC-DP is not intervened by [+int] Q in either *ka* or *kadooka*. However, the external relation of wh-in-situ indicates that [-int] Focus is always checked by [+int] Q. This entails that [+int] F (unspecified) in the D of the HIRC-DP must be [+int] Q. If so, it should be checked by [+int] Q in the interrogative C. This is one of the puzzles Watanabe's (2004) analysis has.

On the other hand, (28a), which is a sentence in which *kadooka* forms the lower wh-island, is worse than (26) due to the failure of wh-in-situ. In addition to the absence of the uniformed derivation (like in (27a)) as shown in (28b), the independent derivation predicts the ill-formedness of the sentence as illustrated in (28c).

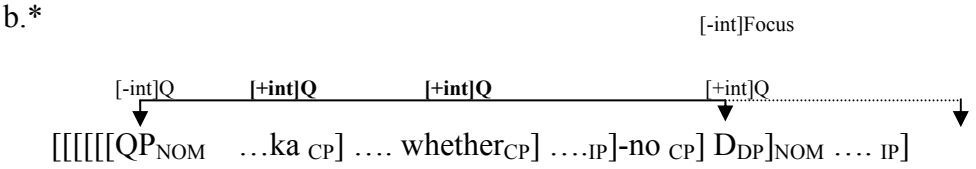
(28)

a.*[[**Dare-ga** Tom-o koroshita kadooka] Mary-ga shitteiru ka] Peter-ga tazuneru-tsumoridatta]-no]-ga sono-maeni taihosareta.

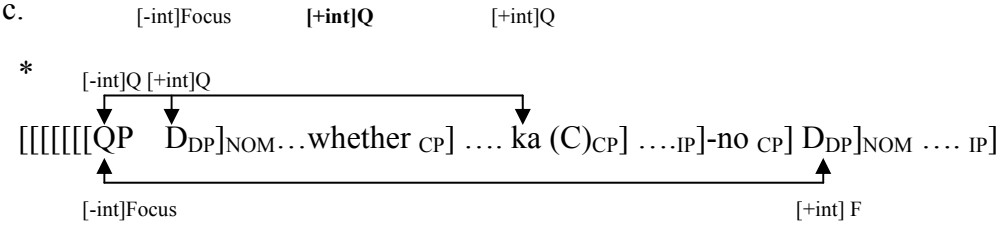
[[Who$_{NOM}$ Tom$_{ACC}$ killed whether] Mary$_{NOM}$ knows Q] Peter$_{NOM}$ ask-intended]-no]$_{NOM}$ that-before was_arrested

'Peter intended to ask Mary [for which x, x a person, she knows that x killed Tom] and whether x was arrested before that.'

b.*



c.



Like in (27a), the uniformed derivation fails in (28b), due to the unchecked [-int] Focus feature in the D of the HIRC-DP and the intervening [+int] Q features belonging to *ka* and *kadooka*. Here, the prediction from the uniformed checking relation matches the ill-formedness of (28a), but this derivation does not account for the contrast between (26) and (28a). In (28c), the independent checking relations correctly predict that the internal relation between [-int] Focus in the D head and [+int] Q in *ka* will be blocked by [+int] Q in *kadooka*, and that (28a) will be ill-formed.

To sum up, we have discussed whether the derivations of HIRCs and wh-in-situ can be accounted for by the "uniformed" theory or by "independent" theory, which are two versions of Watanabe's (2004) theory that might be used to explain wh-HIRCs, in case the internal head of a wh-HIRC occurs in a wh-island. Here, the "independent" theory accounts for all the three examples in (22), (26), and (28a), but the "uniformed" theory does not. Although Watanabe (2004) "recruits" the internal relation of wh-in-situ for that of HIRCs because of the correlations between the two, the two internal relations cannot be uniformed in the case of wh-islands, since one is restricted by wh-islands but the other is not. On the other hand, the uniformed derivation is available if no wh-island intervenes in the HIRC-formation, as shown in (25).

It seems that Watanabe (2004) can explain the sensitivity of wh-HIRCs to wh-islands if he adopts the "independent" theory. However, we have found a real problem for Watanabe

(2004). In the independent derivations, [+int] Q in C (a wh-island) blocks the external relation of wh-in-situ between [-int] Focus in D and [+int] Q in C, whereas it does not intervene in the internal relation of HIRC-formation between [-int] Focus in the internal head QP and [+int] F in the D-head of the HIRC-DP. Then, [+int] F must not be a [+int] Q feature. If so, what is [+int] F? This must not be a [+int] Focus feature, either, because Watanabe assumes that the D of the HIRC-DP is endowed with [-int] Focus. It is not possible for the D to have both [+int] Focus and [-int] Focus. I assume that the reason why Watanabe (2004) leaves [+int] F in the D unspecified is that he cannot make use of [+int] Q as an interpretable feature belonging to the D of the HIRC-DP, because of this contradiction described above.

The next subsection will deal with the complex NP island case. From previous studies, we know that the sensitivity of HIRCs and wh-in-situ to this type of island is different, too. Therefore, we expect that the derivation of HIRCs would also be distinct from that of wh-in-situ again.

3.4.2. Complex NP islands

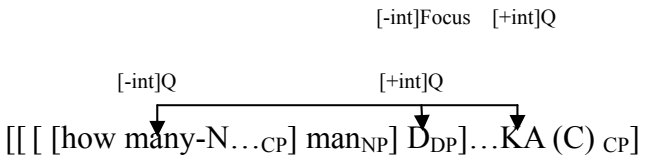
Let us now turn to the complex NP island case. As explained before, due to the possibility of large scale pied-piping of a complex NP island by wh-in-situ, a wh-argument that occurs in such an island can avoid violating CNPC, but it takes scope below the complex NP that contains it, as demonstrated in (29) (also see Nishigauchi 1990).

(29) a. [[**Nannin-no-seijika-o** jyuugekishita] otoko]-ga yutorehito-ni kakureteiru-no-desu-ka?

[[How_many$_{GEN}$-politicians$_{ACC}$ had_shot] man]$_{NOM}$ Utrecht-in is_hiding-Q

'A man that had shot how many politicians is hiding in Utrecht?' ∃ > how many

b.

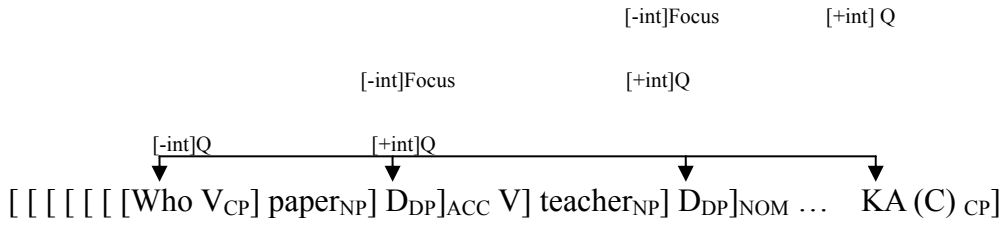


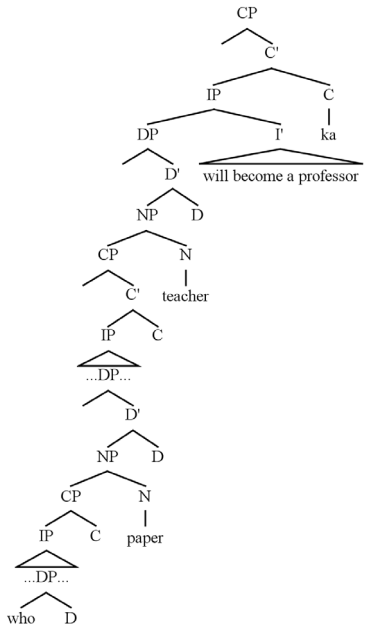
(29a) is well-formed, even though the wh-argument occurs in a complex NP island. Under Watanabe's (2004) approach, large scale pied-piping of the complex NP by wh-in-situ in (29a) can be implemented by the long distance internal relation illustrated in (29b). Because the entire complex NP island is pied-piped, the wh-argument does not take scope over the NP that contains it.

Even if a wh-argument is embedded in more than one complex NP island, the sentence is acceptable, as shown in (30).

(30) a. [[Dare-ga kaita] rombun]-o hometeita] sensei]-ga kyoozyu-ni naru-no-desu-ka?
[[Who$_{NOM}$ had_written] paper]$_{ACC}$ praised] teacher]$_{NOM}$ professor$_{DAT}$ become-Q
'A teacher that praised a paper that who had written will become a professor?'

b.





As illustrated in (30b), a [-int] Q feature in the wh-argument is checked by a [+int] Q in the D-head of the lower complex NP. Next, a [-int] focus feature in the lower D is supposed to be checked by a [+int] Q feature in the D-head of the higher complex NP, and then a [-int] focus feature of the higher D is checked by a [+int] Q feature in the matrix C. In our further discussion, it should be borne in mind that pied-piping of more than one complex NP by wh-in-situ is allowed in Japanese.

Now, in (31a), we embed the complex NP in (29a) in an HIRC, in order to examine the island-sensitivity of wh-HIRC-formation to a complex NP island.

(31) a. Jan-wa [[**nannin-no-seijika-o** jyuugekishita] otoko]-ga byooin-ni nyuuinshiteita]-no]-ni shuzaishita-no-desu-ka?

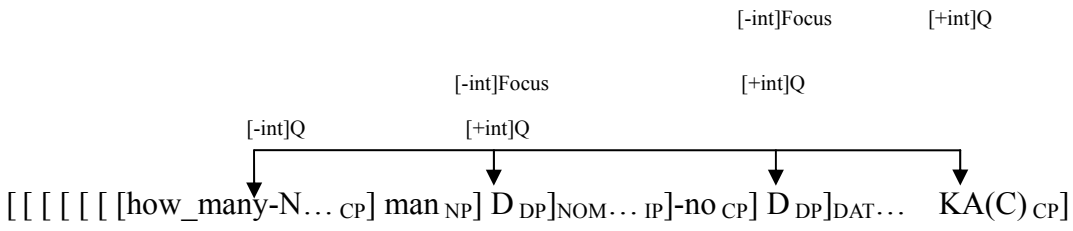
Jan$_{TOP}$ [[how_many$_{GEN}$-politician$_{ACC}$ had_shot] man]$_{NOM}$ hospital-in was]-no]$_{DAT}$ interviewed-Q

(i)?? ‘Jan interviewed how many politicians that the man had shot and that were in

hospital?'

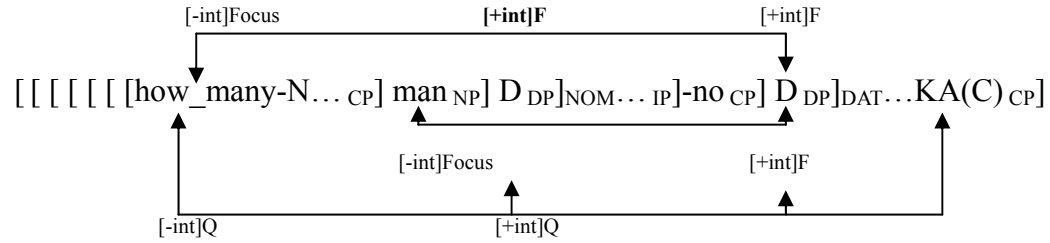
(ii) 'Jan interviewed a man that had shot how many politicians and was in hospital? (Internal head= *otoko* 'man')

b. The uniformed derivation for reading (i)

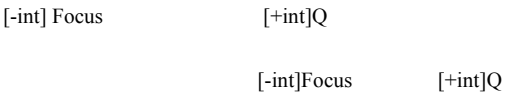


c. The independent derivations

??(i)



(ii)



Like in the case of HIRCs headed by indefinites and quantifiers (see examples in (6b) and (17a)), the wh-argument within the complex NP is hard to interpret as the internal head of the HIRC in (31a), so that reading (i) is hard to obtain. As a result, the NP *otoko* 'man' is likely to be interpreted as the internal head, giving reading (ii).

Let us examine the uniformed derivation and the independent derivations for (31a), as schematically shown in (31b) and (31c), respectively. First, the uniformed derivation (for reading (i)) in (31b), in which the internal relation of HIRC-formation is incorporated into the recursive internal relation of wh-in-situ, should not be available. This is because this

derivation predicts that both the wh-argument and the complex NP would be the internal heads of the HIRC. Such an interpretation is unavailable in (31a).

Second, in (31c), the independent derivations for the reading (i) predict that the internal relation between [-int] Focus in the wh-argument and [+int] F in D of the HIRC-DP would be blocked by [+int] F in D of the complex NP, but that the checking relations for wh-in-situ would have no problem, due to the availability of large-scale pied-piping. This prediction matches the interpretation of (31a). In fact, the failure of HIRC formation with the bold-faced DP as the internal head in (31a) suggests that the internal relation for the HIRC cannot be long-distance by means of pied-piping; therefore, the internal relation for wh-in-situ cannot be used for the HIRC. The acceptability of the sentence on reading (ii), in which the external head of the complex NP is interpreted as the internal head, indicates that the unavailability of reading (i) for (31a) is due to the complex NP island effect on the internal relation of the HIRC, not to a failure of the wh-in-situ derivation.

Here, we have found that even if the internal head of an HIRC is a wh-argument, large scale pied-piping is not available for the HIRC, as shown in (31b), in contrast to the wh-in-situ derivation. Although Watanabe (2004) "recruits" the internal relation of wh-in-situ for that of HIRC-formation, the two internal relations are hard to uniformize. The "uniformed" theory's prediction is wrong again, whereas the "independent" theory correctly accounts for (31).

We should also take a look at the case in which the internal head of one HIRC is embedded within another HIRC. Contrary to (31), the sentence that contains two HIRCs in (32) is acceptable and can be interpreted as a wh-question.

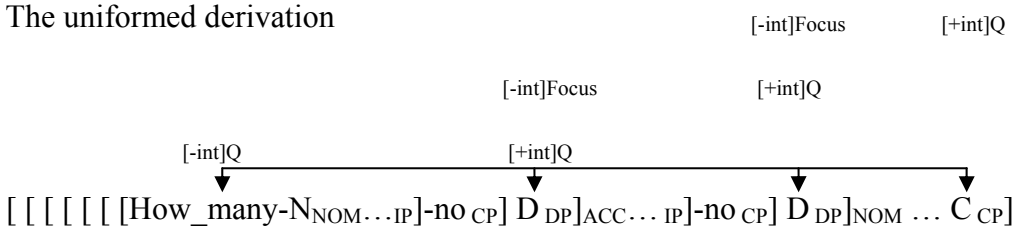
(32) a. [[[[**Nanko-no-keeki-ga** yakiagatteita]-no]-o Tom-ga tsukue-no ue-ni oiteoita]-no]-ga nusumareteshimatta-no-desu-ka?

[[How_many-cake$_{NOM}$ had_been_baked]-no]$_{ACC}$ Tom$_{NOM}$ table$_{GEN}$ on$_{LOC}$ put]-no]$_{NOM}$ have_been_stolen-Q

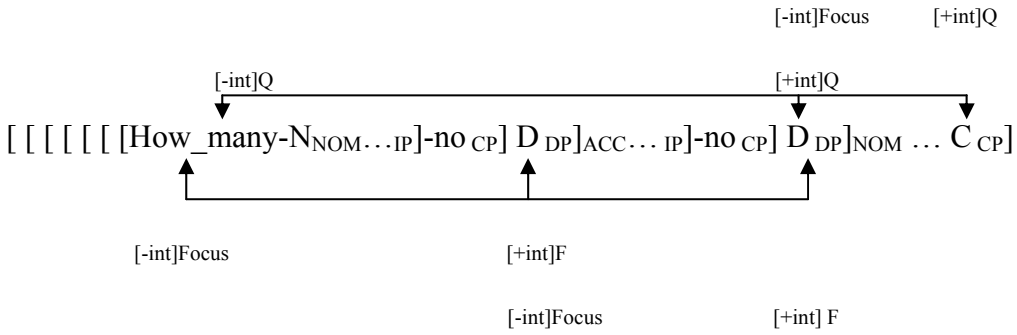
'How many cakes (x) had been baked, Tom put them on the table, and they have been

stolen?'

b. The uniformed derivation



c. The independent derivations



Now, we should consider the contrast between (31b) and (32b). The uniformed derivation in (31b), in which the internal relation of HIRC-formation between [-int] Focus in the internal head and [+int] Q belonging to the D-head of the HIRC-DP is incorporated into the recursive internal relation of wh-in-situ, is not available. This is because there is no interpretation in which both the wh-argument and the external head of the complex NP are identified as the internal heads of the HIRC.

On the other hand, in (32a), the wh-argument is interpreted as the internal head of the two HIRCs. As schematically illustrated in (32b), the internal head is assumed to undergo the iterated feature checking operation. This recursive internal relation for the two HIRCs can be also used as the internal relation of wh-in-situ here. [-Int] Focus in the higher D can be checked by [+int] Q in the matrix C for pied-piping of the two HIRCs by wh-in-situ.

The contrast between (31b) and (32b) suggests that incorporation of the internal relation for HIRC-formation into that for wh-in-situ (or vice versa) is available in the case of the

double HIRC construction but not in the case of the complex NP island (HERC). In other words, the uniformed derivation is in fact available in (32), contrary to (31).

The independent checking relations for (32a) are illustrated in (32c), in which the internal relation for wh-in-situ between [-int] Q in the wh-internal head and [+int] Q in the D head of the higher HIRC-DP is long-distance. Contrary to (30b), I assume that it is not necessary for the D-head of the lower HIRC-DP to join in the internal relation for wh-in-situ in (32c), because there is no boundary of complex NP in this well-formed case of the double HIRC construction. On the other hand, the internal relation for the HIRC should operate recursively since both the lower HIRC and the higher HIRC have to identify the wh-argument as the internal head. The independent derivations in (32c) are syntactically well-formed, but the derivation of wh-in-situ is semantically problematic. This is because the lower HIRC-DP has to be interpreted as a wh-expression.

Moreover, in (32c), it is not clear why [+int] Q in the D of the higher HIRC-DP cannot check [-int] Focus in the D of the lower HIRC-DP. Watanabe's assumption that [-int] Focus is checked by [+int] Q in the external relation for wh-in-situ indicates that [-int] Focus in the lower D can be checked by [+int] Q in the higher D for the HIRC. However, we have seen in the previous section that [+int] Q in *ka* or *kadooka* does not check [-int] Focus in the HIRC's internal head as an intervener. So, the independent checking relations always give us a puzzle: what is [+int] F in the D of the HIRC-DP, if it is not a [+int] Q feature?

To sum up, for the case of (32a), both the two types of derivations are syntactically possible, but the independent derivations have a semantic problem and present a contradiction of feature checking for HIRC-formation.

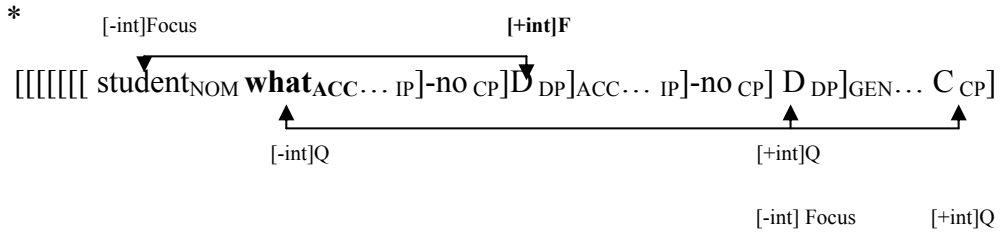
As introduced in the second section, Watanabe (2004) argues that an HIRC itself can be a complex NP island, in case each of the two HIRCs indentifies a different argument as its internal head, contrary to (32a). I have converted Watanabe's original example (2004: 64) to a wh-question sentence in (33).

(33) a. *[[[John-ga [MIT-no gakusei-ga **nani-o** kaita]-no]-o posuto-doku-toshite saiyoushite-ita]-no]-no shuppan-ga okureta-no-desu-ka?

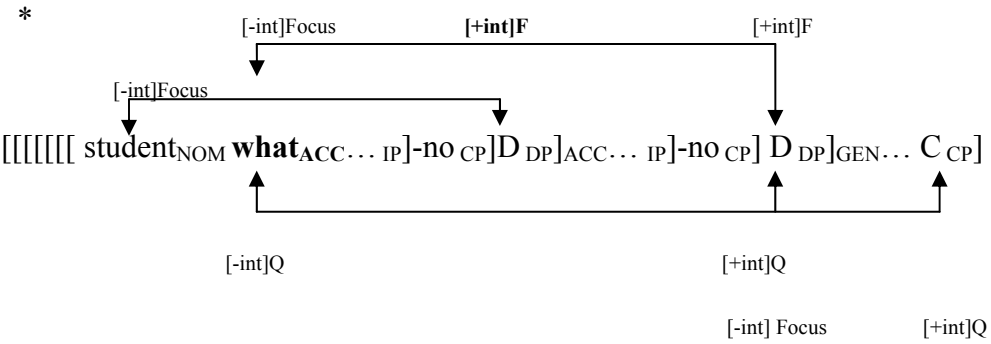
[[[John$_{NOM}$ [MIT$_{GEN}$ student$_{NOM}$ what$_{ACC}$ wrote]-no]$_{ACC}$ post-doc-as adopted-had]-no]$_{GEN}$ publication$_{NOM}$ was_delayed-Q

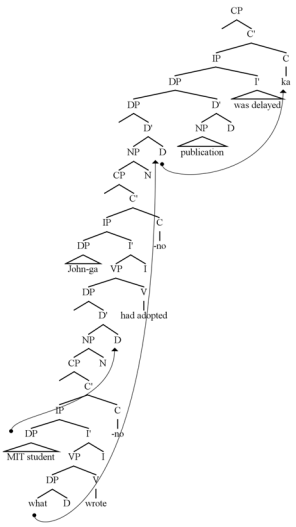
'For which x, x a thing, publication of x that John had hired as a post-doc an MIT student who wrote (it) was delayed.'

b. The uniformed derivation



c. The independent derivations





In (33a), the intended internal head of the inner HIRC is *MIT-no gakusei* 'MIT$_{GEN}$ student', while that of the outer HIRC is the wh-object. As schematically shown in (33b), the uniformed derivation predicts the ill-formedness of (33a). The internal relation between [-int] Q in the wh-head and [+int] Q in the D head of the outer HIRC-DPis blocked by [+int] (Q) in the D head of the inner HIRC-DP. At the same time, large scale pied-piping of the two HIRCs by wh-in-situ also fails. The unacceptability of (33a) indicates that the long distance internal relation between the wh-head and the outer D has to be successively cyclic (via the inner D).

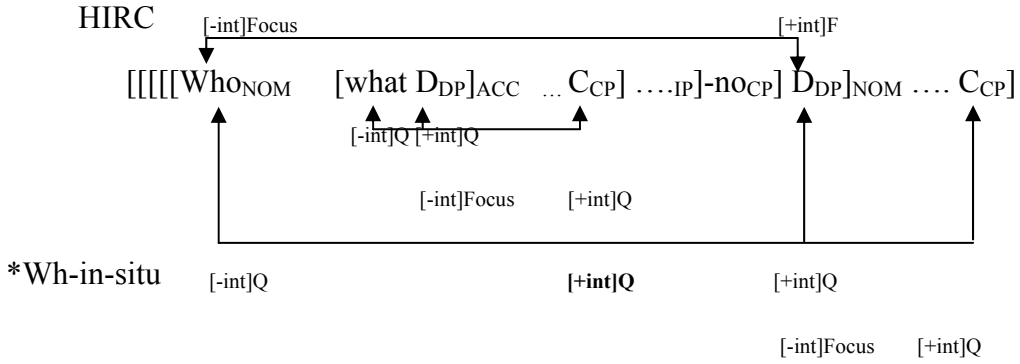
On the other hand, as illustrated in (33c), the independent derivations also predict the ill-formedness of (33a). The internal relation of the HIRC between [-int] Focus in the wh-argument and [+int] F in the higher D is blocked by [+int] F in the lower D, which checks [-int] Focus in the embedded subject. As a result, the HIRC-formation fails, and then the sentence is not acceptable.

This subsection has shown that the uniformed checking relation fails, due to the difference between HIRCs and wh-in-situ in their sensitivity to complex NP islands, like in the case of wh-islands. On the other hand, we have also found that the uniformed derivation is possible in the case of double HIRC constructions in (32). However, the independent derivations correctly account for all the examples, so that the "independent" theory wins the "uniformed" theory in the case of complex NP islands.

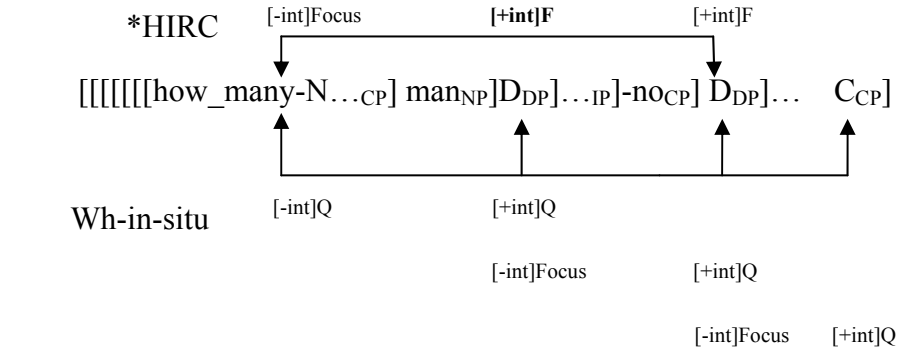
3.4.3. Summary

To summarize, I list the checking relations of wh-HIRCs below.

(34) a. Wh-island (the independent derivations)

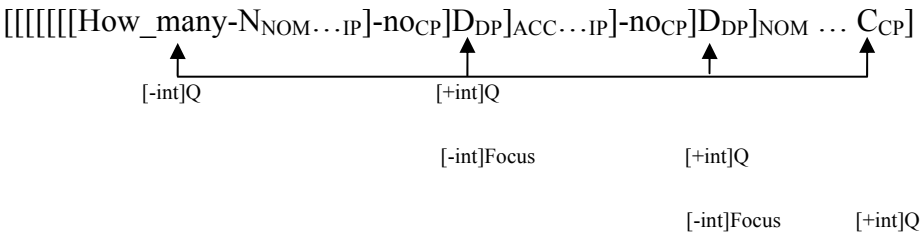


b. Complex NP island (the independent derivations)

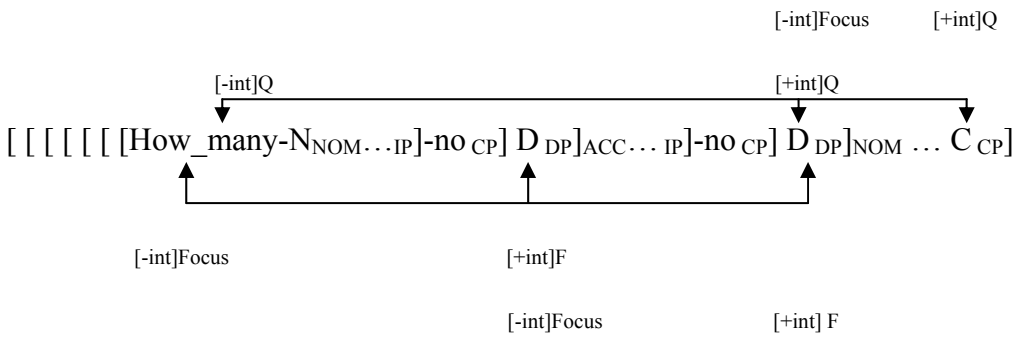


c. The double HIRC construction

(The uniformed derivation)



(The independent derivations)



As shown in (34), the checking relations for HIRCs and wh-in-situ can be uniformed only if the wh-internal head of one HIRC is embedded in another HIRC in (c). On the other hand, the checking relation for HIRC-formation is distinct from that for wh-in-situ in the other contexts, as given in (a) and (b). In addition, the case of (34c) can also be accounted for by the independent derivations. In the case of wh-islands, the long distance internal relation for wh-in-situ is blocked by a [+int] Q feature in the embedded C, whereas a [+int] F feature in a complex NP island intervenes in the internal relation for HIRC-formation. Because of the difference between wh-in-situ and HIRCs in their island-sensitivity, it is hard to unify their derivations; however, we cannot ignore the well-formedness of (34c). This is because the possibility of the uniformed derivation in (34c) would support Watanabe's main proposal that the syntactic configurations of wh-in-situ and HIRCs are correlated.

Consider the paralleled derivations of (30) and (32). The recursive checking relation of large scale pied-piping of complex NPs by wh-in-situ in (30) and that of the internal head identification in the two HIRCs in (32) demonstrates a syntactic correlation between wh-in-situ and HIRCs, so that Watanabe's (2004) idea is on the right track in this respect.

However, unfortunately, the "uniformed" theory only accounts for the case of the double HIRC construction but not for the other cases of wh-HIRCs. On the other hand, the "independent" theory correctly explains all the cases we have dealt with. Therefore, Watanabe's (2004) Agree-based analysis can account for wh-HIRCs, if he adopts the "independent" theory, which is one of the versions of his theory that might be used to explain

wh-HIRCs.

However, we have seen that the "independent" theory presents a real problem for Watanabe (2004). The puzzle is what [+int] F is. Watanabe's original checking relation for wh-in-situ (see (21a)) suggests that [-int] Focus is checked by [+int] Q. In the independent checking relations, as shown in (21c), there are two [-int] Focus features: one belongs to the HIRC's internal head (QP) for the internal relation of HIRC-formation, whereas the other sits in the D head of the HIRC-DP for the external relation of wh-in-situ. It is puzzling why the internal relation for an HIRC between [-int] Focus and [+int] F is intervened only by [+int] F in the D head of a complex NP island but not by [+int] Q in a wh-island (C), although the external relation for wh-in-situ between [-int] Focus and [+int] Q is blocked by [+int] Q. This entails that [+int] F must not be a [+int] Q feature. So, what is [+int] F, then? Even though Watanabe's approach explains the island-sensitivity of wh-HIRCs under the "independent" theory, his analysis must face this puzzle.

The next section will provide an overview of what we have found through the island tests on the three types of HIRCs.

3.5. Conclusion

To sum up, wh-internal heads differ from non-wh-internal heads including indefinites and quantifiers in their island-sensitivity to the two types of islands. The results are presented in the table in (35).

(35)

	Wh-island	complex NP	HIRC[1]
Wh-in-situ	*	ok	ok
non-wh-head	ok/?	*	ok
wh-head	*	*	ok

Based on these results, we have discussed some complications for Watanabe's (2004) Agree theory. First, the island sensitivity of HIRCs headed by indefinites and that of HIRCs headed by quantifiers are almost identical. In order to deal uniformly with these two types of non-wh-headed HIRCs, it would be appropriate to assume that the internal head of an HIRC is consistently a DP rather than a QP. Although among the three types the internal head of a wh-HIRC is the most properly defined as a QP, in order to give a uniform analysis of all the three types of HIRCs, it is convenient to also deal with it as a DP.

Moreover, quantificational particles (*ka* and *mo*) that intervene in the internal relation for HIRCs do not give any effect on HIRC-formation. This weakens the view that the indeterminate mechanism is relevant to HIRC-formation. On the other hand, the fact that a complex NP island strongly restricts HIRC formation indicates that the correlation between HIRCs and the Japanese DP structure is genuine, although HIRCs do not directly make use of the indeterminate system.

Second, I argue that the [-int] Focus feature of the internal head should be replaced by something else, because of the following two reasons: (i) [+int] Q in C can check [-int] Focus in D in the external relation for wh-in-situ, whereas the results of the wh-island tests for non-wh-HIRCs suggest that [+int] Q in C seems not to check [-int] Focus in the internal head in the case of the HIRC formation; (ii) [-int] Focus in a QP would not be checked by adjacently associating *mo* in D, which is however used for focus morphology and is assumed to contain some focus semantics. Especially, the first one is a real puzzle. In the case of

[1] In case the same argument is identified as the internal head of the two HIRCs.

wh-headed HIRCs, Watanabe's (2004) analysis accounts for the island-sensitivity of wh-HIRCs under the "independent" theory in (21c), but his approach must face this problem of feature-blocking. For example, as shown in (24), [-int] Focus in the D is checked by [+int] Q in the embedded C but not by [+int] Q in the matrix *ka* in the external relation for wh-in-situ. However, the acceptability of (22) suggests that the internal relation for the HIRC between [-int] Focus in the internal head and [+int] F in the D of the HIRC-DP is not blocked by [+int] Q in the embedded C. This entails that [+int] F must not be a [+int] Q feature. This would be why Watanabe (2004) leaves [+int] F unspecified. Watanabe's Agree-based theory always suffers from this big problem.

Finally, the double HIRC construction, well-formed cases of which are not discussed by Watanabe (2004), requires a recursive checking operation. This construction is parallel to large scale pied-piping of more than one complex NP by wh-in-situ, in that both of them make use of the Japanese DP structure and require recursive operations. This recursive operation for the wh-headed double HIRC construction and its parallelism to the derivation of large scale pied-piping of more than one complex NP are explained under the "uniformed" theory, as illustrated in (30b) and (32b). Unfortunately, however, we have seen that the "uniformed" theory loses the "independent" theory, which would not demonstrate this beautiful parallelism between the derivation of large-scale pied-piping for wh-in-situ and that of the double HIRC construction better than the "uniformed" one does. I argue that a movement-based theory would be more suitable to explain the recursiveness of these derivations as well as to deal with the derivations of wh-in-situ and HIRCs, which are involved in wh-HIRC formation, uniformly than Watanabe's Agree-based theory.

In order to remove these complications, I will depart from Watanabe's (2004) theory in the following respects:

(36) a. The internal head is a DP rather than a QP.

b. The internal head of an HIRC is endowed with some other feature rather than a [-int] Focus feature.

c. A movement operation is preferable to Agree.

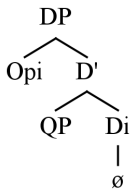
In Chapter 4, I will propose an alternative theory that partly makes use of the operator movement theory of Watanabe (1992) and I will demonstrate how this new theory explains HIRC-formation and its island-sensitivity better than Watanabe's (2004) analysis.

Chapter 4: A movement-based theory of HIRC-formation

4.1. Watanabe's (1992) original proposal

First of all, I would like to briefly review Watanabe's (1992) original theory. As explained in Chapter 2, Watanabe (1992) assumes two levels of movement for wh-in-situ; wh-operator movement in overt syntax (S-structure), which is subject to subjacency, and LF raising of the residue of the wh-phrase to adjoin to the moved operator in Spec CP. In overt syntax, a phonologically null operator is assumed to be generated in Spec DP, and an empty D-head selects it as a pure wh-operator.

(1)



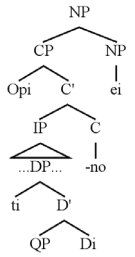
The wh-operator, which is co-indexed with the D-head through Spec-Head agreement, undergoes movement to Spec CP to satisfy the Spec-Head agreement requirement of a [+wh] C-head.

After the operator movement, the residue of the wh-phrase (the indeterminate) is assumed to undergo raising to adjoin to the moved wh-operator at LF, in order for the two to function together and be interpreted as a wh-phrase.

For HIRCs, which also exhibit island-sensitivity, Watanabe (1992) also assumes operator movement from Spec DP of the internal head to Spec CP of the HIRC in overt syntax. Watanabe follows Cole (1987) with respect to the assumption that HIRCs are headed by

empty external heads. The moved operator is co-indexed with the empty external head in its landing site as illustrated below.

(2)



Afterwards, at LF, the residue of the internal head is assumed to be raised to Spec CP rather than to the external head position, in contrast to Cole (1987) (and Ito 1986 for Japanese). In fact, Shimoyama's (1999) study reveals that the LF structure of the HIRC must differ from that of the HERC, since the internal head cannot extend its scope to the matrix clause (see Chapter 1); therefore, Watanabe's (1992) analysis, which suggests that the internal head stays within the relative clause at LF, seems to be on the right track.

The following sections will discuss what kind of amendments Watanabe's (1992) original theory requires, in order to account for the island data in Chapter 3.

4.2. Non-wh-headed HIRC construction in overt syntax

4.2.1. Minimalist account for the syntax of HIRCs

In this section, amending Watanabe (1992), I will propose a theory to account for the syntactic structure of HIRCs in a minimalist way.

We adopt Watanabe's (1992) main assumption that the internal head of the HIRC has a

phonologically null operator in Spec DP and the operator undergoes movement to Spec CP. However, since Watanabe's original analysis is formulated in the GB framework, it is necessary to reformulate it in a minimalist style. In fact, Watanabe (2004) abandons operator movement theory and proposes a new analysis based on Agree, but we have seen some complications of his analysis, as summarized at the end of the last chapter. The aim of this chapter is to demonstrate that operator movement with feature-checking can explain both non-wh and wh-HIRCs in a unified way more easily than Watanabe's (2004) Agree analysis.

We will make use of the following definitions for our analysis.

(3) a. *Last Resort*

A movement operation is licensed only if it allows the elimination of [-interpretable] formal features.

(Chomsky 1995)

b. *Theta-role assignment*

A thematic-role can only be assigned to an argument in a position where it is firstly merged.

(Chomsky 1995)

c. *Phase Impenetrability Condition (PIC)*

In a phase α with head H, the domain of H is not accessible to operations outside α; only H and its edge are accessible to such operations.

(Chomsky 2001)

(3a) is the minimalist movement condition that excludes optional movement operations, unlike Move α in GB theory. This definition suggests that operator movement has to take place in order to provide interpretable output to the interfaces (technically for feature-checking) at the landing site. (3b) is the rule for θ-role assignment. Finally, (3c) is one of the minimalist locality conditions. The reader will see below how these definitions support the operator movement theory.

I would like to introduce my amended operator movement theory on the basis of the sentence in (4).

(4) [[Tom-ga **amedama-o** kakushiteoita $_{IP}$]-no $_{CP}$]-ga toriagerareta.
[[Tom$_{NOM}$ candy$_{ACC}$ had_hidden]-no]$_{NOM}$ was_taken_away
'Candy, Tom had hidden, was taken away.'

Let us start at the point when the nominalizer *-no* (C) is merged and the CP clause is formed. I initially hypothesize that an operator is generated in Spec DP of the internal head by selecting by D and inherits an uninterpretable Relative (Rel) feature from the D-head[1]. The operator with [-int] Rel is attracted by [+int] Rel of C (*-no*) and then undergoes movement from Spec DP of the internal head to Spec CP for the feature checking operation.

(5) [Op$_{\text{~~[-int]Rel~~}}$ [… [t [N$_{NP}$]D $_{DP}$] V$_{IP}$]-no$_{[+int]Rel\ CP}$]

Contrary to GB theory, the Minimalist Program assumes that movement operations are last resort operations as in (3a) and not optional operations (Chomsky 1993). According to Rizzi (2006), a movement operation is assumed to be triggered by a head that contains a relevant feature. The head attracts an expression that bears the same feature to its specifier position. Through Spec-Head agreement, feature-checking is done in the landing site of the moved element, and thus it becomes semantically interpretable (eg. Topic, Focus, question, relatives, etc.). Rizzi (2006) calls this landing site the 'criterial position'. In (5), the operator's [-int] Rel feature is checked by [+int] Rel on C in the criterial position. Due to this feature checking operation, I assume that the accusative object DP becomes interpretable as the

[1] Contrary to Watanabe (1992), I argue that the HIRC construction is connected to the Japanese DP structure but does not directly make use of the indeterminate system for its formation. Watanabe argues that a phonologically null D in the internal head selects a phonologically null operator in Spec DP, but in Chapter 3 we have discussed that this is problematic in case the internal head is an indeterminate quantifier whose D is occupied by an overt particle. I claim that either covert or overt D of the internal head can select an operator.

internal head of the HIRC.

After the operator movement in (5), the HIRC-CP is merged with a phonologically null D and forms a DP structure. Unlike Cole (1987) and Watanabe (1992), I hypothesize that the HIRC-DP does not contain a null NP, but that the phonologically null D-head takes the CP as its complement. This hypothesis is equivalent to Watanabe's (2004) structure and partly follows Kayne (1994) and Bianchi's (2000) analysis for HERCs in the respect that CP is assumed to be a complement of D. The syntactic structure of the HIRC in (4) is schematically illustrated in (6).

(6) $[[Op_{\text{~~[int]Rel~~}} [\ldots [t [N_{NP}]D_{DP}] V_{IP}]\text{-no}_{[+int]\ Rel\ CP}] D_{DP}]$

Once we move from the structure in (6) to the next Merge, one problem arises. The HIRC-DP is assumed to be merged with V since the complement position of V is the s-selectional position for the DP, where it obtains a thematic role. However, contrary to HERC-DPs, we assume that HIRC-DPs lack NP projections. Because the D-head directly takes CP as its complement, HIRC-DPs are structurally irregular as compared to normal DPs. I hypothesize that a nominaliser *–no* (C) nominalises the HIRC-CP and makes it to look like a NP; as a result, the head D can be merged with the CP. Therefore, I assume that an HIRC-CP is a 'pseudo NP' in some sense, so that the HIRC-DP is assumed to receive a thematic role structurally by Merge in its s-selectional position, but not semantically. In other words, the HIRC-DP is defective in that it lacks 'semantic' argument status.

The manner in which theta-roles are assigned in Japanese HIRCs has been discussed in Kuroda (1999). Kuroda assumed that HIRC-DPs do not have empty NPs like our hypothesis but unlike Cole (1987) and Watanabe (1992), and that a thematic role is directly assigned by the matrix verb to the internal head rather than to the HIRC-NP itself. Kuroda argued that the S-boundary is transparent for theta-role assignment in (7).

(7) $\ldots[[\ldots NP\ldots\text{-no}_{S}]_{N}]\ldots$ (Kuroda 1999: 49)

This analysis cannot be directly applied within the Minimalist framework. Due to the Minimalist definition of theta-role assignment in (3b), Kuroda's long-distance thematic role assignment is not allowed in this framework. In fact, our analysis, which assumes that the DP structure lacks a phonologically null external head NP, faces the same problem as Kuroda.

In order for the HIRC-DP to be 'semantically' assigned a thematic role that is syntactically obtained by merger with the matrix predicate, it needs to gain 'semantic' argument status. I hypothesize that the semantic import of the operator movement is to provide this semantic argument status to the semantically defective HIRC-DP. Technically, I assume that, in addition to [-int] Rel, an operator that is also endowed with a [+interpretable] Argument feature (Arg), which it inherits from the D-head of the internal head through Spec-Head agreement, moves to Spec CP to check [-int] Arg on the nominalizer (*-no*) C. As a result of this operation, the HIRC-DP becomes interpretable as an argument semantically, and it semantically links to the internal head. In other words, this operation makes the internal head look like the semantic assignee of the thematic role assigned by the matrix predicate due to the semantic link forged by [-int] Arg checking, so that the internal head is interpreted as the matrix argument as well. The definition of [-int] Arg checking as well as [-int] Rel checking and the process of HIRC formation are summarized in (8).

(8) *Argument feature, Relative feature, and HIRC formation*

a. A phonologically null operator inherits [+int] Arg and [-int] Rel features from D of the internal head through Spec-Head agreement.

b. A nominalizer (*-no*) in C (probe) is endowed with [-int] Arg and detects the operator bearing [+int] Arg as its goal.

c. The goal (the operator) is active for a purpose of Agree since it also bears [-int] Rel, which can be checked by [+int] Rel belonging to the nominalizer in C.

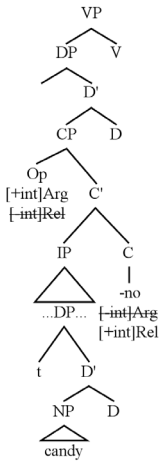
d. By operator movement to Spec CP (by Attract), [-int] Arg in C is checked by [+int] Arg in the moved operator; as a result, the HIRC-DP obtains 'semantic' argument

status. At the same time, [-int] Rel in the moved operator is checked by [+int] Rel in the C.

e. What the θ-role from the matrix predicate is structurally assigned to is the HIRC-DP (by Merge), and this DP is semantically co-indexed with the internal head through the semantic link made by Arg feature-checking.

Let us now consider the complete version of the HIRC structure of (4). The structure is as drawn in (9).

(9)



To sum up, the HIRC-DP is structurally assigned a thematic role by the Merge operation as defined in (3b), whereas semantic assignment is postponed until LF-interface. This movement operation gives a semantic argument status to the semantically defective HIRC-DP (the output to the interface: satisfaction of last resort (3a)). Due to the semantic link that is made through [-int] Arg checking by [+int] Arg in the operator, the HIRC-DP is semantically co-indexed with the internal head, as indicated by co-indexation of D-heads. Therefore, the internal head is interpreted as the semantic assignee of the θ-role from the

matrix predicate.

Finally, the way to build an HIRC headed by a non-wh-argument is summarized as follows.

(10) a. The D-head of the internal head bears [-int] Rel and [+int] Arg, and a phonologically null operator is generated in Spec DP.

[Op [N $_{NP}$] D $_{[-int]Rel, [+int]Arg\ DP}$]

b. The operator inherits [-int] Rel and [+int] Arg from the D-head.

[Op $_{[-int]Rel, [+int]Arg}$ [N $_{NP}$] D $_{DP}$]

c. C (nominalizer *–no*) attracts the operator to Spec CP.

[Op$_{[-int]Rel, [+int]Arg}$ […[t [N$_{NP}$] D$_{DP}$]…$_{IP}$] C $_{[+int]Rel, [-int]Arg\ CP}$]

d. The [-int] Arg feature on C is checked by the [+int] Arg feature on the operator, whereas the [-int] Rel feature of the operator is checked by the [+int] Rel feature on C.

[Op ~~[-int]Rel~~, [+int]Arg […[t [N$_{NP}$] D $_{DP}$]…$_{IP}$] C $_{[+int]\ Rel,}$ ~~[-int]Arg~~ $_{CP}$]

e. The CP is merged with a phonologically null D, and then the HIRC-DP is formed.

[[Op ~~[-int]Rel~~, [+int]Arg […[t [N$_{NP}$] D $_{DP}$]…$_{IP}$] C $_{[+int]\ Rel,}$ ~~[-int]Arg~~ $_{CP}$] D $_{DP}$]

f. The DP is merged with V, and then a theta-role is structurally assigned to the DP by Merge. The D-head of the HIRC-DP is semantically co-indexed with D of the internal head through the [-int] Arg checking operation. As a result, the internal head is interpreted as if it is the semantic assignee of the thematic role from the V.

[[[Op ~~[-int]Rel~~,[+int]Arg […[t [N$_{NP}$] D $_{DP}$]…$_{IP}$] C $_{[+int]Rel,}$ ~~[-int]Arg~~ $_{CP}$] D $_{DP}$] V$_{VP}$]

Note that, contrary to Watanabe (1992), I assume that the internal head is a DP rather than a QP, and that either the overt or covert D-head can assign [+int] Arg to its operator in Spec DP. For example, I replace the general DP internal head with the indeterminate quantifier one in (4).

(11) [[Tom-ga **nani-ka-o** kakushiteita $_{IP}$]-no $_{CP}$]-ga toriagerareta.
[[Tom$_{NOM}$ something$_{ACC}$ had_hidden]-no]$_{NOM}$ was_taken_away
'Something, Tom had hidden, was taken away.'

In this case, the existential particle *ka* occupies D of the quantifier. In contrast with Watanabe (1992), in which it is assumed that a covert particle in D selects a phonologically null operator in Spec DP for operator movement for HIRC formation because he assumes that the indeterminate DP system is used for HIRC-formation, I argue that this overt D also may select and assign [+int] Arg to its operator, since the quantifier in (11) is indifferent from the normal DP internal head in (4) in the respect that it is also an argument DP. In other words, our analysis makes use of Japanese DP structure but not the indeterminate system to capture HIRC constructions. Therefore, dealing with an HIRC whose head is an indeterminate quantifier is not problematic for our analysis.

Since Chapter 3 demonstrates that HIRCs whose head is an indeterminate quantifier do not differ from those headed by general DPs with respects to the island-sensitiveness, I put the two types into the same category 'non-wh-HIRCs' for further discussion.

4.2.2. Island effects

Let us now go through how our hypothesis accounts for why HIRCs are sensitive to complex NP islands but not to wh-islands. Firstly, in the case of complex NP islands, the intended internal head within the complex NP cannot be interpreted as the head of the HIRC, but the external head of the complex NP is more likely to be interpreted as such.

(12) a. */??[[John-ga [[**subarashii rombun-o** kaita] hito]-o homete-ita]-no]-ga shuppan-sareta.

[[John$_{NOM}$ [[excellent paper$_{ACC}$ wrote] person]$_{ACC}$ praised-had]-no]$_{NOM}$ was published

'(Intended) An excellent paper which John had praised the person who wrote (it) was published.' (Watanabe 1992: 10)

b. [[[John-ga [[[[[excellent paper$_{NP}$] D$_{DP}$]$_{ACC}$ …$_{CP}$] person$_{NP}$]D$_{DP}$]$_{ACC}$… $_{IP}$]-no $_{CP}$]D$_{DP}$]

The problem in (12a) is that C (*-no*), endowed with [-int] Arg, has a closer argument DP (i.e., the external head of the HERC) that involves [+int] Arg than the embedded accusative argument.

Consider the locality of operator movement operations. At the beginning of this chapter, I introduced the PIC in (3c) as one of the Minimalist locality conditions. Assuming that CP and DP are phases, let us examine the operator movement starting from the intended internal head in (13).

(13)

(Phase 1)

a. [[John-ga [[Op$_{[-int]Rel,[+int]Arg}$[excellent paper$_{NP}$] D$_{DP}$]$_{ACC}$ wrote$_{IP}$] C $_{CP}$]

(Merge with C of the HERC)

b. [Op$_{i\ [-int]\ Rel,\ [+int]Arg}$ [John-ga [t$_i$[excellent paper$_{NP}$] D $_{DP}$]$_{ACC}$ wrote$_{IP}$] C $_{CP}$]

(Operator movement to the edge: Spec CP)

(Phase 2)

c. [[[Op$_{i[-int]Rel,\ [+int]Arg}$ [John-ga [t$_i$ [excellent paper$_{NP}$] D $_{DP}$]$_{ACC}$ wrote$_{IP}$] C $_{CP}$]person$_{NP}$]D$_{DP}$]

(Merge with NP and D)

d. [Op $_{[-int]\ Rel,[+int]Arg}$[[Op$_{i\ [-int]Rel,\ [+int]Arg}$ [John-ga [t$_i$ [excellent paper$_{NP}$] D $_{DP}$]$_{ACC}$ wrote$_{IP}$] C

$_{CP}$] person$_{NP}$]D$_{DP}$]

(Operator generation in Spec of the HERC-DP)

(Phase 3)

e. [[[[[Op$_{[-int]Rel,[+int]Arg}$[[Op$_{i\ [-int]Rel,\ [+int]Arg}$ [John-ga [t$_i$ [excellent paper$_{NP}$] D $_{DP}$]$_{ACC}$ wrote$_{IP}$] C $_{CP}$] person$_{NP}$]D$_{jDP}$]$_{ACC}$ had-praised $_{IP}$]-no$_{[+int]Rel,[-int]\ Arg\ CP}$]

(Merge with V, I, and C (*-no*))

f. [Op$_{j\ \sout{[-int]Rel}\ [+int]Arg}$ [[[[t$_j$ [[Op$_{i\ [-int]Rel,[+int]Arg}$ [John-ga [t$_i$[excellent paper$_{NP}$] D $_{DP}$]$_{ACC}$ wrote$_{IP}$] C $_{CP}$] person$_{NP}$]D$_{DP}$]$_{ACC}$ had-praised $_{IP}$]-no$_{[+int]Rel\ \sout{[-int]\ Arg}\ CP}$]

(The higher operator is attracted to Spec CP)

(Phase 4)

g. [[Op$_{j\ [+int]Arg,\ \sout{[-int]Rel}}$ [[[[t$_j$ [[Op$_{i\ [-int]Rel\ [+int]Arg}$ [John-ga [t$_i$ [excellent paper$_{NP}$] D $_{DP}$]$_{ACC}$ wrote$_{IP}$] C $_{CP}$] person$_{NP}$]D$_{DP}$]$_{ACC}$ ….$_{IP}$]-no$_{\sout{[-int]\ Arg}\ [+int]\ Rel\ CP}$] D $_{DP}$]

(Merged with D, and the HIRC-DP is semantically co-indexed with the external head of the complex NP island through the higher operator)

In the first phase, the operator of the internal head moves to the edge (Spec CP) in order for it to be accessible from the next phase, as shown in (13b). In the second phase, however, a new operator is generated in Spec DP of the HERC-DP, the lower operator cannot make use of Spec DP as an escape hatch this time, as shown in (13d). Note that [+int] Arg in the higher operator represents the semantic argument status of the external head. In other words, there is no [+int] Arg percolation from the lower operator to the higher operator.

In the third phase, a nominalizer *–no* (C), which is endowed with [-int] Arg and [+int] Rel, is merged with the structure, this C attracts the higher operator (Op$_j$) to Spec CP for checking of the uninterpretable feature as in (13f). Note that the lower operator (Op$_i$) is not accessible to operations in this phase, due to the PIC. In the fourth phase (merger with D), the HIRC is formed. The higher operator that checked [-int] Arg in C with its [+int] Arg is

co-indexed with D of the HIRC-DP to form the semantic link to the internal head, for the later thematic role assignment to the HIRC-DP. As a result, syntax only allows the external head of the HIRC-DP to be the internal head, not the embedded accusative argument. As this result is semantically unacceptable in (13a), the sentence is degraded.

I assume that operators are allowed to move to Spec CP but not to Spec DP. For example, in the second phase in (13), if the lower operator moves to Spec DP of the complex NP and there is no operator generation, it becomes accessible from the next phase. As a result, this operator would be attracted to Spec CP of the HIRC for the feature checking operations, and the HIRC-DP would be semantically linked to the embedded internal head. However, we know that this is not true in (12). Because Spec DP of HERCs is not a movement target, complex NP islands restrict HIRC-formation.

Thus, the complex NP island restriction on HIRC-formation can be accounted for by operator movement, argument feature checking, and the PIC (3c).

We have also discussed the case in which the complex NP is another HIRC. In this case, if the two HIRCs identify the same DP as their internal heads, there is no problem to interpreting the intended head within the inner HIRC as the internal head of both the outer and the inner HIRC, as shown in (14a). On the other hand, as demonstrated by Watanabe (2004), if the inner HIRC identifies one DP as its internal head, another DP within the inner HIRC cannot be the internal head of the outer HIRC, as presented again in (14b).

(14) a.[[**koneko**-ga zutto nemutteiteiru]-no]-ni John-ga kisushiteita]-no]-ga totsuzen saru-ni sarawareteshimatta.

[[kitty$_{NOM}$ for_long_time was_sleeping]-no]$_{DAT}$ John$_{NOM}$ had_kisses]-no]$_{NOM}$ suddenly monkey-by carried_off

'A kitty, which was sleeping for a long time and John had kissed, was suddenly carried off by a monkey.'

b. *[John-ga [MIT-no gakusei-ga **subarashii rombun-o** kaita]-no]-o posuto-doku-toshite saiyoushite-ita]-no]-no shuppan-ga okureta.

[John$_{NOM}$ [MIT$_{GEN}$ student$_{NOM}$ excellent paper$_{ACC}$ wrote]-no]$_{ACC}$ post-doc-as adopted-had]-no]$_{GEN}$ publication$_{NOM}$ was-delayed

'Publication of an excellent paper which John had hired as a post-doc an MIT student who wrote (it) was delayed.'

(Watanabe 2004: 64)

Consider the derivation of (14a) in (15).

(15) a. [[[Op [+int]Arg ~~[-int]Rel~~ [[t [kitty$_{NP}$] D $_{DP}$]$_{DAT}$ ….$_{IP}$]-no ~~[-int] Arg~~ [+int]Rel CP]

(Phase 1: the operator moves to Spec CP to check [-int] Arg and [-int] Rel)

b. [Op$_{[+int]Arg\ [-int]Rel}$ [[Op$_{~~[-int]Rel~~}$ [[t [kitty$_{NP}$] D $_{DP}$]$_{DAT}$ ….$_{IP}$]-no ~~[-int] Arg~~ [+int]Rel CP]D $_{DP}$]

(Phase 2: due to the semantic co-indexation between the internal head and the HIRC-DP, the [+int] Arg feature is percolated to the D-head of the HIRC-DP. A new operator is generated in Spec DP and inherits a [-int] Rel feature and the percolated [+int] Arg feature from the D-head.)

c. [Op$_{[+int]Arg,\ ~~[-int]Rel~~}$ [[t[[Op ~~[-int]Rel~~ [[t [kitty$_{NP}$] D $_{DP}$]$_{DAT}$ ….$_{IP}$]-no [+int] Rel ~~[-int] Arg~~ CP]D $_{DP}$]$_{NOM}$ …$_{IP}$]-no$_{~~[-int] Arg~~}$ [+int]Rel CP]

(Phase 3: The higher operator moves to Spec CP.)

d. [[Op$_{[+int]Arg}$ ~~[-int]Rel~~ [[t [[Op$_{~~[-int]Rel~~}$ [[t [kitty$_{NP}$] D $_{DP}$]$_{DAT}$ ….$_{IP}$]-no [+int]Rel ~~[-int] Arg~~ CP]D $_{DP}$]$_{NOM}$ …$_{IP}$]-no$_{~~[-int] Arg~~}$ [+int] Rel CP]D $_{DP}$]

(Phase 4: semantic co-indexation between the internal head and the higher HIRC-DP)

In (15b), I have made use of a new rule stated in (16).

(16) *[+int] Arg percolation*

The D-head of the HIRC-DP inherits the [+int] Arg feature of the semantically co-indexed internal head through the moved operator in Spec CP.

I hypothesize that an HIRC-DP, whose D-head takes a CP as its complement, becomes a semantically normal DP through operator movement from Spec DP of the internal head to Spec CP, the [-int] Arg feature checking operation, and the [+int] Arg percolation in (16). As a result, the HIRC-DP is allowed to be assigned a thematic-role by the predicate by Merge.

Due to (16), a new operator that is generated in Spec DP of the HIRC-DP inherits [+int] Arg, which originally comes from the internal head, from the D-head of the HIRC-DP. At the same time, the operator is also semantically co-indexed with the D of the HIRC-DP as well as with the D of the internal head.

In (15c) and (d), the higher operator moves to Spec CP to check [-int] Arg, and then the D of the higher HIRC-DP is also co-indexed with the D of the internal head through the moved operator. As a result of the semantic co-indexation among Ds of the internal head, the lower HIRC and the higher HIRC, which have been formed by feature checking by the [+int] Arg feature of the internal head, the same DP is interpreted as the internal head of the two HIRCs in (14a).

The derivation for (14b) up until the second phase is demonstrated in (17).

(17) a.$[Op_{i[+int]Arg,\sout{[-int]Rel}}[t_i[student_{NP}]D_{DP}]_{NOM}[Op_{j[+int]Arg,[-int]Rel}$
$[paper_{NP}]D_{jDP}]_{ACC\ldots IP}]$-$no_{\sout{[-int]Arg}\ [+int]Rel\ CP}]$

(Phase 1: Operator movement to Spec CP to check [-int] Arg on C.)

b.

$[Op_{i[+int]Arg,[-int]Rel}[Op_{i\sout{[-int]Rel}}[t_i[student_{NP}]D_{iDP}]_{NOM}[Op_{j[+int]Arg}[paper_{NP}]D_{jDP}]_{ACC\ldots IP}]$-no
$_{\sout{[-int]Arg},\ [+int]Rel\ CP}]D_{i\ DP}]$

(Phase 2: operator generation in Spec of the HIRC-DP, semantic co-indexation with the D-head and [+int] Arg percolation to the D-head. The operator inherits a [-int] Rel

feature and the percolated [+int] Arg feature.)

In the first phase (CP), in (17a), there are two potential operators with [+int] Arg that [-int] Arg on C may attract. As explained in Chapter 1, one of the characteristics of Japanese HIRCs is that the determination of the internal head often depends on semantics and pragmatics. I assume that the syntactic computational system has no preference as to which argument should be the internal head at this stage. Let us choose the operator of the embedded subject as an atractee of [-int] Arg on C, as Watanabe (2004) intended for (14b). In the second phase (DP), the D-head of the HIRC-DP is co-indexed with Op_i and receives [+int] Arg from it by percolation. A new operator is generated in Spec DP and inherits the [+int] Arg feature and a [-int] Rel feature. On the other hand, Op_j, which did not move to Spec CP in the first phase, cannot be accessible from this phase; as a result, it is not possible for this operator to check [-int] Arg in C in the higher HIRC in the later phase. This is why the intended interpretation of (14b) is blocked, and it ends up as semantically ill-formed.

However, one might argue that Spec of the lower HIRC-CP in the first phase may also host Op_j in its edge (I assume that a CP allows multiple specifiers. See below in (19a)) . If so, Op_j is still accessible from the second phase. Even in this case, it would not possible for Op_j to access the third phase. Because what checked [-int] Arg and is co-indexed with the D-head of the HIRC-DP is Op_i, a new operator is automatically co-indexed with Op_i through the D-head. It follows from the PIC that only this new operator is allowed to access the third phase for [-int] Arg checking on C.

In summary, in our analysis CNPC effects for non-wh-HIRCs can be accounted for by (i) the PIC, (ii) operator movement, and (iii) [-int] Arg feature checking. In case a complex NP is an HIRC, [+int] Arg percolation is also required. In terms of CNPC effects, we cannot claim with certainty that this analysis is better than Watanabe (2004). However, we will see why an Argument feature is more likely to be involved in HIRC constructions than a Focus feature, once we consider the case of wh-islands.

In contrast to complex NP islands, wh-islands do not strictly restrict HIRCs. (18) is a

sentence with a wh-island.

(18) (?) [[**Kodomo-ga** doko-de yuukaisareta ka] Tom-ga soosashiteita]-no]-ga yokujitsu-ni hakkensareta.

[[Child$_{NOM}$ where-in was_kidnapped Q] Tom$_{NOM}$ was investigating]-no]$_{NOM}$ next_day-in was found

'A child, who Tom was investigating where (she) had been kidnapped, was found the next day.'

For the wh-island case, I assume that an interrogative C *ka* is endowed with a [-int] wh feature and a [+int] Q-feature, in case there is any wh-phrase in its c-command domain. If not, the interrogative C is endowed with only the [+int] Q-feature and is interpreted as a yes-no question marker. On the other hand, wh-phrases are endowed with [-int] Q and [+int] wh-features. I do not adopt Watanabe's (2004) assumption that *ka* in C (probe) is endowed with [+int] Q and that a wh-phrase (goal) bears [-int] Q, because this does not follow the standard Minimalist definition of Agree. Agree should be operated between a [-int] feature in a probe and a [+int] feature in its goal, which also bears a [-int] feature to be active. My hypothesis follows this standard definition of Agree but Watanabe's assumption does not.

Consider the derivation of (18) in (19)[2].

(19) a. [Op$_i$ [+int]Arg [-int]Rel, Op$_j$~~[-int]Q~~, [+int]wh [[t$_i$ [N$_{NP}$]D $_{DP}$]$_{NOM}$ where$_j$ V $_{IP}$] ka$_{[+int]Q}$ ~~[-int]wh~~ $_{CP}$]

(Phase 1)

b. [Op$_i$ [+int]Arg ~~[-int]Rel~~[[t$_i$, Op$_j$~~[-int]Q~~, [+int]wh [[t$_i$ [N$_{NP}$]D $_{DP}$]$_{NOM}$ where$_j$ V $_{IP}$] ka$_{[+int]Q}$ ~~[-int]wh~~$_{CP}$] … I $_{IP}$]-no~~[-int]Arg~~ [+int]Rel CP]

(Phase 2)

[2] In (19), I assume that the wh-adjunct *doko-de* 'where-in' induces a wh-operator. This is because the formation of this adjunct also makes use of the indeterminate DP system in Japanese. For example, *doko-ka-de* 'where-ka-in' means '(in) somewhere', whereas *doko-mo* 'where-mo' means 'everywhere'. So, the PP-adjunct *doko-de* is assumed to contain a DP, whose phonologically null D takes the QP *doko* as its complement.

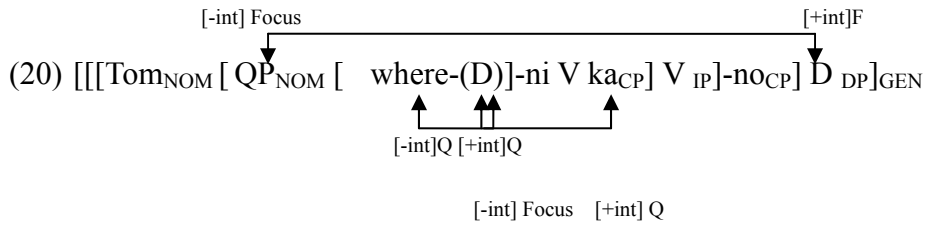
c. [[Op_{i}~~[-int]Rel~~[[$t_{i,}$ Op_{j}~~[-int]Q~~, [+int]wh [[t_{i} [N_{NP}]D_{DP}]$_{NOM}$ $where_{j}$ V $_{IP}$] $ka_{[+int]Q,}$~~[-int]wh~~ $_{CP}$] … I $_{IP}$]-$no_{}$~~[-int]Arg~~ [+int]Rel CP]D [+int]Arg DP]

(Phase 3)

In the first phase, the Op_{j} of 'where' moves to Spec CP for [-int] Q and [-int] wh checking. Op_{i} of the internal head has no interrogative feature, but it is attracted by an edge feature. I assume that [+int] Arg and [-int] Rel of Op_{i} does not crash with [+int] Q and [-int] wh in C, so that making use of this position as a landing site would not be problematic. In the second phase, Op_{i} undergoes further movement to Spec CP to check [-int] Arg on C (*-no*). Finally, in the third phase, Op_{i} is co-indexed with D of the HIRC-DP, and its [+int] Arg is percolated to the D-head.

Thus, as the acceptability of (18) indicates, the derivation in (19) encounters no problems since the wh-island differs from complex NP islands in that it is not itself a DP with a [+int] Arg feature that is closer to the attractor C (*-no*) than the embedded head. In order to capture the contrast between DP and CP islands and how they restrict HIRCs, the Argument feature is thought to be more suitable to explain the island-sensitivity than a Focus feature, the use of which is not so motivated in Watanabe (2004).

Recall that one of Watanabe's (2004) problems is the case of wh-islands. The checking relation he may assume for (18) is repeated below. Contrary to my assumption, he assumes that the interrogative C (*ka*) is endowed only with [+int] Q.



The most serious problem for Watanabe (2004) is that his theory does not explain why the [-int] Focus feature can be checked by [+int] Q in the interrogative C for wh-in-situ but not

for the HIRC, although the checking relation of the HIRC is intervened by the interrogative C with [+int] Q, as shown in (20). This entails that [+int] F in the D-head of the HIRC-DP, which checks [-int] Focus in the internal head, must not be a [+int] Q feature. If it is not a [+int] Q feature, what is [+int] F? In contrast to (20), our analysis with an Argument feature does not have such a puzzle, as demonstrated in (19).

Finally, before turning to wh-in-situ and wh-HIRCs, consider the wh-island case in which the island is formed by *ka* and a wh-argument, as repeated from Chapter 3 in (21). Contrary to (18), the wh-element is an argument that bears [+int] Arg here.

(21) ?[[[Dare-ga **sotsuron-o** sude-ni kakioeta ka] Eric-ga shiritagatteiru]-no]-no simekiri-wa hachigatsu-chuujun-da.
[[[who$_{NOM}$ thesis$_{ACC}$ already had_finished_writing C] Eric$_{NOM}$ wonders]-no]$_{GEN}$ deadline$_{TOP}$ August-mid-is.
'The deadline of a thesis, which Eric wonders for which x, x a person, x has already finished writing (it), is by mid-August.'

Note that in (21) it is syntactically possible for the wh-argument to be the internal head, but this option yields a marked interpretation. Assuming that our intended internal head is the accusative argument, let us go through the derivation for this sentence.

(22) a. [Op$_{i}$[~~-int~~]Q, [+int]wh, [+int] Arg Op$_{j}$ [+int] Arg [-int] Rel[[[t$_{i}$[who$_{QP}$]D$_{DP}$]$_{NOM}$ [t$_{j}$[thesis$_{NP}$]D$_{DP}$] … $_{IP}$] ka$_{[+int]\ Q,\ [\sim\sim -int\sim\sim]\ wh\ CP}$]

(Phase 1)

b. [Op$_{j[+int]Arg\ [\sim\sim -int\sim\sim]\ Rel}$ [[Op$_{i}$[~~-int~~]Q, [+int]wh, [+int] Arg, t$_{j}$ [[[t$_{i}$[who$_{QP}$]D$_{DP}$]$_{NOM}$ [t$_{j}$[thesis$_{NP}$]D$_{DP}$] … $_{IP}$] ka$_{[+int]\ Q\ [\sim\sim -int\sim\sim]\ wh\ CP}$]…$_{IP}$]-no$_{[\sim\sim -int\sim\sim]Arg\ [+int]Rel\ CP}$]

(Phase 2)

c. [[Op$_{j}$ [[Op$_{i}$[~~-int~~]Q, [+int]wh, [+int] Arg, t$_{j}$ [[[t$_{i}$[who$_{QP}$]D$_{DP}$]$_{NOM}$ [t$_{j}$[thesis$_{NP}$]D$_{DP}$] … $_{IP}$] ka$_{[+int]\ Q\ [\sim\sim -int\sim\sim]\ wh\ CP}$]…$_{IP}$]-no$_{[\sim\sim -int\sim\sim]Arg\ [+int]Rel\ CP}$]D$_{[+int]Arg\ DP}$]

(Phase 3)

Contrary to the wh-adjunct in (18), the wh-argument is assumed to be endowed with [+int] Arg as well as [-int] Q & [+int] wh in (21) but not with [-int] Rel, since it is not the intended internal head. As shown in (22a), in the first phase, both the two operators move to Spec CP, but only the wh-operator does [-int] Q & [-int] wh checking in this landing site. In the second phase, (22b), the computational system does not care which operator is attracted by C with [-int] Arg, since both the two operators have [+int] Arg. However, because of the [-int] Rel feature belonging to the non-wh operator, the non-wh operator is attracted to C (*-no*) to check the [-int] Arg feature in the C as well as the [-int] Rel feature in the operator. As a result, the D of the HIRC-DP is co-indexed with the intended internal head in the third phase in (22c).

Contrary to a [+int] Arg feature, a [-int] Rel feature is assumed to be contained only in the intended internal head. For example, if the wh-operator also has [-int] Rel in (22), the derivation would be crashed because of its unchecked [-int] Rel feature.

Watanabe (2004) faces the same contradiction about the [-int] Focus feature in this example as in (18). I do not repeat the discussion here.

If the wh-argument becomes the internal head in (21), this is the case of wh-HIRCs, for which Watanabe (2004)'s analysis requires a complicated explanation. We will turn to this topic, after briefly going through the general case of wh-in-situ in the next section.

4.3. Wh-in-situ

Following Watanabe (1992), I assume that a phonologically null operator is generated in Spec DP of a wh-argument. Contrary to the case of HIRCs, what the operator inherits from the head-D are a [-int] Q feature and a [+int] wh-feature, as used in the wh-island cases in the last section.

For example, in (23), the wh-operator is attracted to Spec CP, where [-int] Q of the operator is checked by [+int] Q in C (*ka*) and [-int] wh in *ka* is checked by [+int] wh. This

wh-operator movement renders the indeterminate pronoun *nani* interpretable as an interrogative pronoun by association with the matrix *ka*; therefore, last resort (3a) is satisfied because the movement is needed to eliminate [-int] Q and [-int] wh.

(23) a. John-ga nani-o tabeta-no-desu-ka?

John$_{NOM}$ what$_{ACC}$ ate-Q

'What did John eat?'

b. [Op$_{\text{~~[-int]Q~~}}$ [+int]wh […[t[what$_{QP}$] D $_{DP}$]…V $_{IP}$] ka$_{[+int]Q}$ $_{\text{~~[-int]wh~~}}$ $_{CP}$]

Note that if the wh-argument is replaced by a non-wh-argument *ringo-o* 'apple$_{ACC}$' in (23a), the sentence is interpreted as a yes-no question 'did John eat an apple?'. As mentioned before, because there is no wh-phrase in the c-command domain of *ka* in this case, *ka* only bears a [+int] Q feature.

Originally, Watanabe (1992) tries to correlate wh-in-situ and HIRCs in Japanese with respect to their island sensitivity. Contrary to HIRCs, however, wh-in-situ exhibits a sensitivity to wh-island but not to complex NP islands.

First of all, consider (24), which is a sentence with a wh-island, as demonstrated again below.

(24) Tanaka-wa [dare-ga nani-o tabeta ka $_{CP}$] oboeteiru-no-desu-ka?

Tanaka$_{TOP}$ [who$_{NOM}$ what$_{ACC}$ ate Q] remember Q

i. 'Does Tanaka know who ate what?'

ii. ?? 'For which x, x a person, does Tanaka remember what x ate'

iii. * 'For which y, y a thing, does Tanaka remember who ate y?'

iv. ?? 'For which x, x a person, and which y, y a thing, does Tanaka remember whether x ate y?'

(Watanabe 2003: 521)

As explained in Chapter 3, the well-formed interpretation (i) suggests that both the wh-arguments take scope within the wh-island, whereas the degraded interpretations (ii), (iii), and (iv) indicate that either of them is difficult to take the matrix scope. Let us now examine the derivation of (24). Note that there is more than one *ka* in (24), contrary to (23). In this case, I assume that an interrogative C (*ka*) that c-commands wh-phrases in the most local domain is endowed with a [-int] wh-feature as well as a [+int] Q feature, but the other *ka* bears only [+int] Q. In (25), the embedded *ka* bears [-int] wh and [+int] Q, whereas the matrix *ka* is endowed with [+int] Q but not with [-int] wh.

(25) a. $[Op_{i[+int]wh\ \sout{[-int]Q}}, Op_{j[+int]wh\ \sout{[-int]Q}}[[t_i[who_{QP}]\ D]_{NOM}\ [t_j[what_{QP}]\ D_{NOM}]_{ACC}\ ate_{IP}]\ ka_{\sout{[-int]wh}, [+int]Q\ CP}]$

(Phase 1)

b. $[[[Op_{i[+int]wh,\sout{[-int]Q}}, Op_{j\ [+int]wh,\sout{[-int]Q}}[[t_i[who_{QP}]\ D]_{NOM}\ [t_j[what_{QP}]\ D_{NOM}]_{ACC}\ ate_{IP}]\ ka_{\sout{[-int]wh}, [+int]Q\ CP}]\ remember_{IP}]\ ka_{[+int]Q\ CP}]$

(Phase 2)

As shown in (25a), in the first phase, both the wh-operators undergo movement to Spec CP of the embedded clause. As mentioned before, I assume that CPs allow multiple specifiers. At the langing site, [-int] Q features of both the two operators are checked by [+int] Q on C (*ka*), whereas I assume that [+int] wh-features of the operators are absorbed and check [-int] wh on *ka* together. This absorbtion takes place only if the same [+int] Q-feature on *ka* checks [-int] Q-features of the moved operators at the landing site like in (25a). Next, in the second phase in (25b), because their [-int] Q-features have been eliminated, the operators are inactive for further feature checking, so that it is reasonable to assume that the matrix *ka* is not endowed with [-int] wh.

I hypothesize that an interrogative C (*ka*) works as an unselective binder at the post-LF stage (semantics), only if it bears with a [-int] wh-feature, which is checked and deleted by a

[+int] wh-feature belonging to a wh-operator. Like Nishigauchi (1990), who accounts for wh-interpretations by unselective binding, I assume that the reason why only the interpretation (i) is available in (24) is explained by unselective binding, in addition to feature-checking operations.

In (24), only the lower *ka* works as an unselective binder in semantics, since [+int] Q in the higher *ka* does not check the [-int] Q features in the operators, as demonstrated in (25). So, the lower *ka* unselectively binds the wh-arguments, once the first phase goes to semantics. As a result, the wh-arguments take scope within the wh-island, and the higher *ka*, which does not work as an unselective binder, is interpreted as a yes-no question marker in (24).

The rules of unselective binding are stated below.

(26) *Unselective binding for wh-in-situ*

a. An interrogative complementizer *ka* works as an unselective binder in semantics, only if (i) its [-int] wh-feature is checked by a [+int] wh-feature in the moved operator; and (ii) its [+int] Q feature checks a [-int] Q feature in the operator.

b. In case [+int] Q in the same interrogative C (*ka*) checks [-int] Q of more than one wh-operators in Spec CP, [+int] wh-features belonging to the operators are absorbed and check [-int] wh in *ka* together.

c. *Ka*, which does not work as an unselective binder in semantics, is interpreted as a yes-no question marker.

Let us now consider (27), which is a sentence that involves a wh-island formed by *kadooka* 'whether'.

(27) a. ??[John-ga dare-o koroshita kadooka] shitteimasu-ka?

[John$_{NOM}$ who$_{ACC}$ killed whether] know-Q

'For which x, x a person, you know whether John killed x.'

Contrary to *ka*, I assume that *kadooka* is endowed with [+int] Q but not with [-int] wh, because *kadooka* does not form a wh-interpretation by associating with an indeterminate pronoun. In other words, *kadooka* does not work as an unselective binder in semantics. The derivation for (27) is as illustrated in (28).

(28) a. $[Op_{\text{[-int]Q}, [+int]wh}[John_{NOM}\ [t[who_{QP}]D_{DP}]_{ACC}$ killed $_{IP}]whether_{[+int]Q\ CP}]$

(Phase 1)

b. $[[[Op_{[+int]wh, \text{[-int]Q}}\ [John_{NOM}\ [t[who_{QP}]D_{DP}]_{ACC}$ killed $_{IP}]whether_{[+int]Q\ CP}]$
$know_{IP}]ka_{[+int]\ Q,\ [-int]\ wh\ CP}]$

(Phase 2)

In the first phase, as shown in (28a), the operator moves to Spec CP of the embedded clause in order to make use of the landing site as an escape hatch, since *kadooka*, which does not have any active ([-int]) feature, does not attract the operator. On the other hand, [-int] Q of the operator is checked by [+int] Q in *kadooka* at the landing site. In the second phase in (28b), because the [-int] Q feature in the wh-operator has been checked and eliminated in the previous phase, the operator only with [+int] wh is inactive to move to Spec CP in the matrix clause for checking [-int] wh of *ka*. As a result, the derivation crashes, because of the unchecked [-int] wh-feature in the matrix C.

Let us now turn to the complex NP island case, which does not restrict wh-in-situ in Japanese. In Watanabe's (1992) original analysis, a wh-operator belonging to the complex NP that contains a wh-phrase is assumed to move from Spec DP to Spec CP, since movement of the wh-operator of the wh-phrase is restricted by the CNPC. He explains that this is the mechanism behind large scale pied-piping. Following Watanabe (1992), I also assume that this phenomenon can be accounted for by operator movement. On the other hand, contrary to Watanabe, I argue that an operator belonging to the wh-argument also undergoes internal movement to Spec CP of the complex NP, in addition to the movement of the operator of the complex NP. Watanabe's and my analysis are demonstrated in (29b) and (29c), respectively.

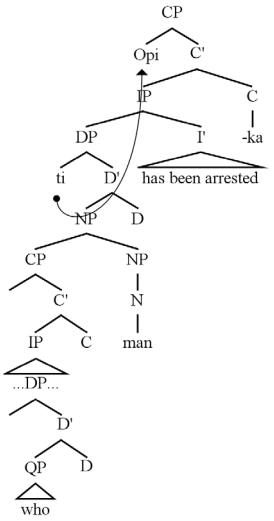
(29) a. [[Dare-o koroshita]otoko]-ga taihosareta-no-desu-ka?

[[Who$_{ACC}$ killed] man]$_{NOM}$ has_been_arrested-Q

'A man that killed whom has been arrested?'

'For which x, y, x is a person, y is a man, y that killed x has been arrested.'

b.



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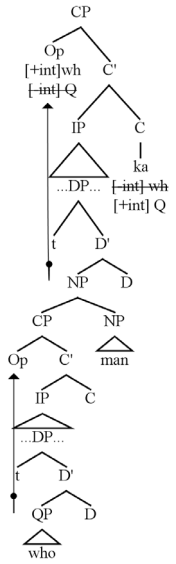


In (29c), in the first phase, the operator with [+int] wh and [-int] Q moves to the edge (Spec CP). In the next phase, once the HERC has been formed, the features belonging to the moved operator are percolated to the D-head, like Nishigauchi's (1990) proposal. The syntactic purpose of this operation is for pied-piping and the semantic purpose is for transferring wh-interpretation to the external head. After this operation, the operator becomes inactive. Because the D-head of the complex NP bears [+int] wh and [-int] Q, a new operator is generated in Spec DP of the complex NP, and it inherits these features from the D-head. C attracts this higher operator to Spec CP, and [-int] Q belonging to the operator and [-int] wh on the C are checked. In semantics, due to (26a), *ka* unselectively binds the embedded wh-argument.

The definition of wh & Q feature percolation is stated as follows.

(30) *Wh & Q-feature percolation*

a. [+int] wh and [-int] Q features of the moved operator in Spec CP are percolated to the D head of the HERC- or the HIRC-DP for pied-piping.

b. After the percolation, the [+int] wh and [-int] Q features that the operator has possessed are deleted.

On our analysis, wh-operator movement to Spec CP[3] and wh & Q-feature percolation implement pied-piping of complex NP by wh-in-situ.

Since Watanabe (1992) does not assume the internal operator movement within the complex NP, it is hard to explain why the sentence becomes ill-formed if the complex NP also contains a wh-island as in (31a). As shown in (31b), our analysis can explain why (31a) is out. Nishigauchi (1990) and Richards (2000) also argue for the internal operator movement in a pied-piped complex NP.

(31) a. ??[[Tom-ga dare-o koroshita kadooka] tazuneta] otoko]-ga taihosareta-no-desu-ka?

[[Tom_{NOM} who_{ACC} killed whether] asked] man]$_{\text{NOM}}$ has_been_arrested-Q

'A person who asked whether Tom killed whom has been arrested?'

b. [$\text{Op}_{\text{[int]Q}}$ [+int]wh [Tom_{NOM} [t[who_{QP}]D_{DP}]$_{\text{ACC}}$ $\text{killed}_{\text{IP}}$]$\text{whether}_{\text{[+int] Q CP}}$]

(Phase 1)

In (31b), before the operator is pied-piped to the complex NP, its [-int] Q feature is checked by [+int] Q in *kadooka*. As a result, the operator becomes inactive and does not undergo further movement for checking [-int] wh in *ka* in the matrix C. Due to the unchecked

[3] I assume that operator movement to Spec CP is motivated for by pied-piping, and that it may check any [-int] feature there (eg. an edge feature). However, I will not discuss this feature-checking in detail in this thesis.

[-int] wh-feature in *ka*, the derivation crashes, and thus (31a) is ill-formed.

If Watanabe's (1992) analysis were right, (31a) should be well-formed since no operator movement from Spec DP would need to cross the lower wh-island. This example suggests that internal movement is required for pied-piping; therefore, the operator movement in (29c) is not an optional movement, which would be excluded by our Minimalist assumption. Watanabe (2004) attributes the ill-formedness of (31a) to the intervening [-int] Q in the interrogative C *kadooka*, which blocks the internal relation for wh-in-situ (between [-int] Q on the wh-argument and [+int] Q on D of the complex NP).

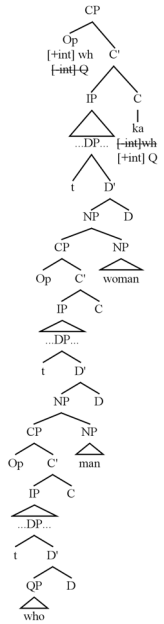
One of the reasons why I am developing a theory by building on Watanabe (1992) is that I agree with his main argument that wh-in-situ and HIRCs formation are correlated. This is because the iterated movement operations that the next example shows are similar to what happens in the HIRCs in (14a). In (32), the wh-in-situ is embedded in two complex NPs.

(32) a. [[[[Dare-o koroshita] otoko]-o tasuketa]onna]-ga taihosareta-no-desu-ka?

[[[[Who$_{ACC}$ killed] man]$_{ACC}$ helped] woman]$_{NOM}$ has_been_arrested-Q

'A woman that helped a man that killed whom has been arrested?'

b.



As illustrated in (32b), [-int] Q and [+int] wh features on wh-in-situ are carried to the matrix Spec CP by operator movements for pied-piping, and by feature percolation from Spec CP of the complex NPs to the D-heads. I argue that this analysis is better than Watanabe (1992) in the following respects; that (i) my approach can deal with the recursiveness of HIRC formation in (14a) and the pied-piping of wh-in-situ (32b) in a unified way (by operator movement and feature percolation), and that (ii) it accounts for why pied-piping fails if a complex NP contains a wh-island, as shown in (31).

The derivations for (14a) and (32a) are, according to Watanabe (2004), schematically illustrated in (33a) and (b), respectively.

(33) a. $[[[[[[[QP\ D_{DP}]_{DAT}\ldots_{IP}]\text{-no}_{CP}]\ D_{DP}]_{NOM}\ \ldots\ _{IP}]\text{-no}_{CP}]\ D_{DP}]_{NOM}$

[-int] Focus [+int]F

[-int] Focus [+int] F

b.

$[[[[[[who_{QP}]\ D_{DP}]\ \ldots\ _{CP}]\ N_{NP}]D_{DP}]_{ACC}\ \ldots_{CP}]N_{\ NP}]D_{DP}]_{NOM}\ \ldots_{IP}]\ ka_{CP}]$

[-int]Q [+int]Q

[-int] Focus [+int] Q

[-int] Focus [+int] Q

Although Watanabe's (2004) approach also shows recursive derivations of the sentences in (14a) and (32a), as illustrated in (33), he does not specify what kind of [+int] F is involved in D of the HIRC-DP in (33a). A [-int] Focus feature in the internal head (QP) is checked by an unspecified [+int] F feature on the D of the lower HIRC-DP, and then a [-int] Focus feature on the D-head is checked by [+int] F on the D of the higher HIRC-DP in (33a). On the other hand, in (33b), [-int] Q belonging to the wh-argument is checked by [+int] Q in the D head of the lower complex NP, and a [-int] Focus feature in the D-head is checked by [+int] Q in the D head of the higher complex NP. Finally, [-int] Focus in the D-head of the higher HERC is

checked by [+int] Q on *ka*. If we were to recruit [+int] Q and [-int] Focus in D from (33b), which he makes use of to account for wh-in-situ, and postulate that these features are in D of the HIRC-DP in (33a), it would be problematic. In case the [-int] Focus feature in the internal head is checked by [+int] Q in the D head of the HIRC-DP in (33a), this contradicts the derivation in (20) in which [+int] Q belonging to the interrogative C does not intervene in the checking relation for the HIRC. Thus, I argue that making use of an Argument feature may account for the island-sensitivity of HIRCs more easily than Watanabe's (2004) Focus feature does, without any contradiction.

The similarity between HIRCs and wh-in-situ as to their recursive syntactic operations supports Watanabe (1992, 2004) and our belief in the correlation between the two syntactic derivations in Japanese. In the next section, we will go through wh-headed HIRCs.

4.4. Wh-headed HIRCs

4.4.1. Basic derivation

Let us discuss how the operator movement theory accounts for wh-headed HIRCs, which Watanabe (1992) and (2004) do not discuss. (34) is a sentence containing a wh-headed HIRC without any island.

(34) [[**Dare-ga** kooen-de asondeita]-no]-ga yuukaisareta-no-desu-ka?
[[Who$_{NOM}$ park-in had_been_playing]-no]$_{NOM}$ was_kidnapped-Q
'For which x, x a person, x had been playing in the park, and x was kidnapped.'

First of all, consider what kind of feature checking would be involved in the derivation of (34). The embedded wh-argument is the internal head of the HIRC, so I assume that its operator is endowed with [-int] Rel and [+int] Arg features. In addition to these features that are necessary for HIRC formation, we need to hypothesize that the operator is also endowed

with [-int] Q and [+int] wh features, as discussed in the last section.

Let us go through the derivation of (34), as schematically shown in (35).

(35) a. [Op ~~[-int]Rel~~,[+int] Arg, [-int]Q, [+int]wh [[t [who QP] D DP]NOM…V IP]-no [+int] Rel, ~~[-int]Arg~~ CP]

(Phase 1)

b. [Op [+int] Arg, [-int] Q, [+int]wh[Op~~[-int]Rel~~ [[t [who QP] D DP]NOM…V IP]-no[+int] Rel,~~[-int]Arg~~ CP]D DP]NOM

(Phase 2)

c. [Op [+int]Arg, ~~[-int]Q~~, [+int]wh [[t [Op~~[-int]Rel~~ [[t [who QP] D DP]NOM…V IP]-no[+int] Rel ~~[-int]Arg~~ CP]D DP]NOM … IP]ka[+int]Q ~~[-int]wh~~ CP]

(Phase 3)

In the first phase in (35a), once C (*-no*) has been merged, the operator that inherits [-int] Q, [+int] wh, [-int] Rel and [+int] Arg from D moves to Spec CP. The [-int] Rel feature of the operator and the [-int] Arg feature of *–no* are checked here. In the second phase in (35b), the HIRC-DP is formed. Since I assume that Spec DP cannot be a target of operator movement, as mentioned before, a new operator is generated in Spec of the HIRC-DP. The three features ([+int] Arg, [-int] Q, and [+int] wh) belonging to the lower operator are percolated to the higher operator in Spec DP (via the D-head of the HIRC-DP), due to (16) and (30). In the third phase in (35c), the operator moves to Spec CP in the matrix clause, and the [-int] Q feature in the moved operator and the [-int] wh feature in the interrogative C are checked. As a result, due to (26), *ka* can unselectively bind the wh-internal head in semantics. Thus, both the HIRC-formation and wh-in-situ derivation are successful in (34).

As demonstrated in (35), the feature percolation operation in the second phase is crucial for our analysis to account for the semantic link between the internal head and the HIRC-DP as well as the [-int] Q and [+int] wh checking operations for wh-in-situ, both of which are involved in the derivation of wh-HIRCs. In other words, we need to make use of two types of feature percolation in (16) and (30) to explain wh-HIRCs.

Now, let us consider the island cases that are discussed in Chapter 3 and how our analysis accounts for them.

4.4.2. Wh-island

Firstly, as shown in Chapter 3, the feature checking operations for wh-in-situ and HIRCs cannot be uniformed but must be independent under Watanabe's (2004) analysis in (36a), the Agree relations of which are demonstrated again in (36b) and (36c)

(36) a. [[[**Dare-ga** Tom-o koroshita ka] Mary-ga shiritaggatteita]-no]-ga tsuini keisatsu-ni taihosareta-no-desu-ka?

[[who$_{NOM}$ Tom$_{ACC}$ had_killed Q] Mary$_{NOM}$ wanted_to_know]-no]$_{NOM}$ finally police-by was_arrested-Q

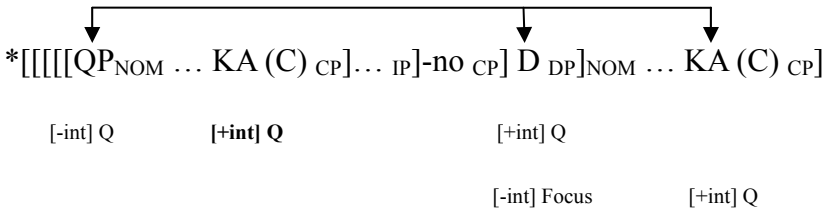
(i) 'Mary wanted to know [for which x, x a person, x had killed Tom], and was the person x arrested by police finally?'

(The wh-phrase associates with the embedded *ka*, and the matrix *ka* is interpreted as a yes-no question marker.)

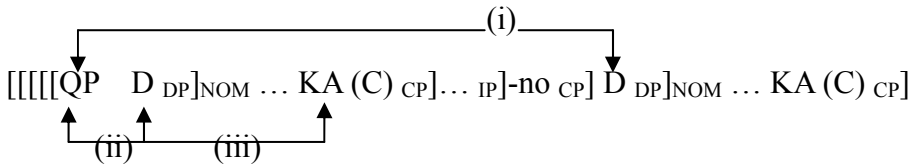
(ii) ?? 'For which x, x a person, Mary wanted to know whether x had killed Tom, and the person x was arrested finally by police'

(The wh-phrase associates with the matrix *ka*, and the embedded *ka* is interpreted as *whether*)

b. (The uniformed derivation)



c. (Independent derivation)



(i) HIRC: internal relation

DP [-int] Focus --- D [+int] F

(ii) Wh-in-situ: internal relation

QP [-int]Q --- D [+int] Q

(iii) Wh-in-situ: external relation

D [-int] Focus --- C (Q) [+int] Q

(36c) accounts for the possible interpretation in (36a) but (36b) does not, because (36b) incorrectly predicts that the HIRC-formation would also fail. However, the contrast between (i) and (iii) in (36c) is still puzzling, since [-int] Focus checking is insensitive to the wh-island ([+int] Q in C) in the HIRC derivation but sensitive in the wh-in-situ derivation. This entails that [+int] F in the D of the HIRC-DP must not be a [+int] Q feature. So, what is [+int] F?

On the other hand, the derivation for (36a) on our analysis is schematically illustrated in (37).

(37) a. [Op~~[-int]Q~~,[+int]wh, [-int]Rel,[+int]Arg [t [who$_{QP}$] D DP]$_{NOM}$ … ka$_{[+int]Q}$ ~~[-int]wh~~ CP]

(Phase 1)

b.[Op~~[-int]Rel~~,[+int]Arg [+int]wh [[t~~[-int]Q~~ [t [who$_{QP}$] D DP]$_{NOM}$ … ka$_{[+int]Q}$ ~~[-int]wh~~ CP]… IP]-no$_{[+int]Rel,}$~~[-int]Arg~~ CP]

(Phase 2)

c. [[Op~~[-int]Rel~~, [+int]wh [[t~~[-int]Q~~ [t [who$_{QP}$] D DP]$_{NOM}$ … ka$_{[+int]Q}$ ~~[-int]wh~~ CP]… IP]-no$_{[+int]Rel}$ ~~[-int]Arg~~ CP]D$_{[+int]Arg}$ DP]

(Phase 3)

d. [[[[Op~~[-int]Rel~~, [+int]wh [[t~~[-int]Q~~ [t[who$_{QP}$] D $_{DP}$]$_{NOM}$ … ka$_{[+int]Q}$~~[-int]wh~~ $_{CP}$]… $_{IP}$]-no$_{[+int]Rel}$~~[-int]Arg~~ $_{CP}$]D$_{[+int]Arg}$ $_{DP}$]$_{NOM}$ ……$_{IP}$] ka$_{[+int]\ Q\ CP}$]

(Phase 4)

As shown in (37a), in the first phase, the operator of the internal head moves to Spec of the wh-island for [-int] Q and [-int] wh checking. At the landing site, the checked [-int] Q feature becomes inactive, but the operator with [+int] Arg, [-int] Rel and [+int] wh is still active and moves to the next Spec CP, where the [-int] Rel feature of the operator and the [-int] Arg feature of C (*-no*) are checked, as presented in (37b).

Once the HIRC-DP has been formed in the third phase in (37c), [+int] Arg is percolated to the D-head, which becomes semantically co-indexed with the internal head. Here, no operator generation takes place in Spec of the HIRC-DP, since both [-int] Q and [-int] Rel in the moved operator have been already checked and deleted. Finally, in the fourth phase in (37d), the matrix CP is formed. The matrix C (*ka*) is assumed to bear a [+int] Q feature but not a [-int] wh-feature, so no further operator movement is required.

Because of (26), the lower interrogative C (*ka*) can work as an unselective binder for the wh-argument in semantics, whereas the higher interrogative C is interpreted as a yes-no question marker. This is the reason why the interpretation (i) is available but (ii) is not in (36).

Thus, our analysis can account for why (i) is available but (ii) is not in (36) by the unified syntactic derivation (i.e. operator movement) without facing Watanabe's (2004) contradiction of [-int] Focus checking.

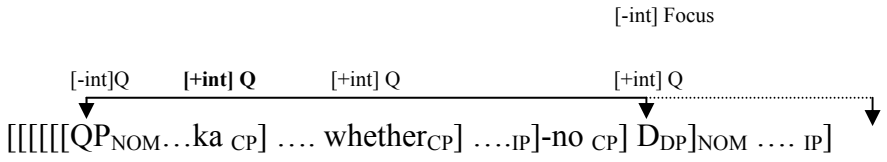
Let us consider again the contrast between (38) and (39). In both the sentences, the wh-internal head is contained in two wh-islands. The inner wh-island is formed by *ka*, whereas the outer one is formed by *kadooka* 'whether' in (38); on the other hand, vice versa in (39). The acceptability of (39) is worse than that of (38). Under Watanabe's (2004) analysis, (38a) suggests that the two derivations should be independent as illustrated in (38c), whereas (39a)'s ill-formedness can be accounted for by either the uniformed derivation or the independent derivations, as shown in (39b) and (39c).

(38) a.?[[Dare-ga Tom-o koroshita ka] Mary-ga shitteiru kadooka] Peter-ga tazuneru-tsumoridatta]-no]-ga kesa taihosareta.

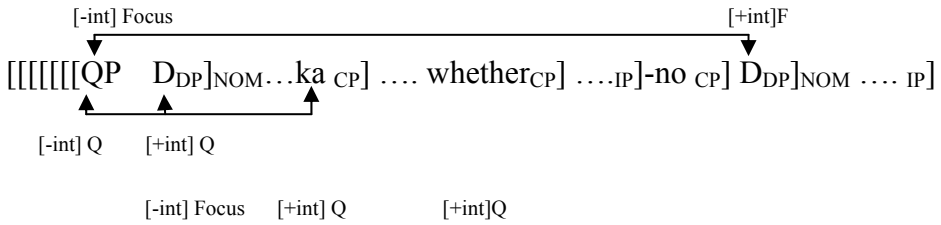
[[Who$_{NOM}$ Tom$_{ACC}$ killed Q] Mary$_{NOM}$ knows whether] Peter$_{NOM}$ ask-intended]-no]$_{NOM}$ this_morning was_arrested

'Peter intended to ask Mary whether she knows [for which x, x a person, x killed Tom], and the person x was arrested this morning.'

b. *(The uniformed derivation)



c. (The independent derivations)



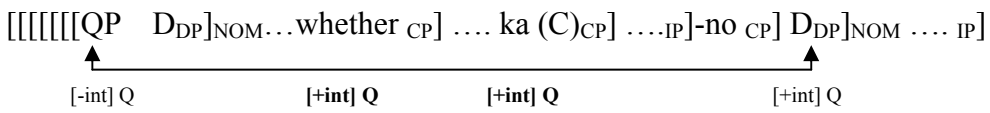
(39) a.*[[Dare-ga Tom-o koroshita kadooka] Mary-ga shitteiru ka] Peter-ga tazuneru-tsumoridatta]-no]-ga kesa taihosareta.

[[Who$_{NOM}$ Tom$_{ACC}$ killed whether] Mary$_{NOM}$ knows Q] Peter$_{NOM}$ ask-intended]-no]$_{NOM}$ this_morning was_arrested

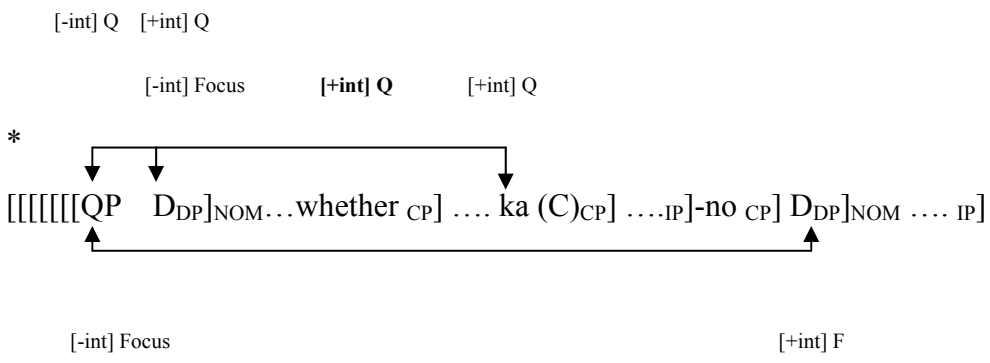
'Peter intended to ask Mary [for which x, x a person, she knows whether x killed Tom] and the person x was arrested this morning.'

b. (The uniformed derivation)

*



c. (The independent derivations)



Watanabe's (2004) approach accounts for both the acceptability of (38) and the unacceptability of (39) under the "independent" theory, but the puzzle of feature-blocking arises here again. In (38c), it is not clear why the internal relation of the HIRC between [-int] Focus in the internal head and [+int] F in the D of the HIRC-DP is not blocked by [+int] Q in *ka* and *kadooka*, although [-int] Focus is checked by [+int] Q in the external relation of wh-in-situ.

On the other hand, our operator movement theory demonstrates the derivations for (38) and (39) as follows.

(40) (for 38)

[[[Op$_{\sout{[-int]Rel}}$, [+int]wh [[t[t$_{\sout{[-int]Q}}$ [t[who$_{QP}$]D$_{DP}$]$_{NOM}$…ka$_{[+int]Q\sout{[-int]wh}}$ $_{CP}$]….whether$_{[+int]Q\ CP}$] ….$_{IP}$]-no$_{\sout{[-int]Arg,}[+int]Rel\ CP}$] D $_{[+int]Arg\ DP}$]$_{NOM}$ …. $_{IP}$]

(From Phase 1 to 5)

(41) (for 39)

a.[Op$_{\sout{[-int]Q}}$,[+int]wh, [+int] Arg [-int]Rel [[t [who$_{QP}$]D$_{DP}$]$_{NOM}$…$_{IP}$]whether$_{[+int]Q\ CP}$]

(Phase 1)

b.[Op$_{[+int]Arg,[+int]wh,[-int]Rel}$[$t_{\sout{[-int]Q}}$[[t[who$_{QP}$]D$_{DP}$]$_{NOM\ldots IP}$]whether$_{[+int]Q\ CP}$]….ka$_{[+int]Q\sout{[-int]wh}\ CP}$]

(Phase 2)

c.[Op$_{[+int]Arg,[+int]wh,\sout{[-int]Rel}}$[[t[$t_{\sout{[-int]Q}}$[[t[who$_{QP}$]D$_{DP}$]$_{NOM\ldots IP}$]whether$_{[+int]Q\ CP}$]….ka$_{[+int]Q\sout{[-int]wh}\ CP}$]$_{IP}$]-no$_{\sout{[-int]Arg}, [+int]\ Rel\ CP}$]

(Phase 3)

Recall that *kadooka* is endowed only with [+int] Q, whereas *ka* is endowed with [+int] Q as well as [-int] wh if it is the closest *ka* for the wh-phrase. As shown in (40), (38) is not problematic since [-int] Q in the operator is checked by [+int] Q in the lower interrogative C (*ka*), whose [-int] wh is also checked by [+int] wh of the operator, at the first landing site. This suggests that *ka* can unselectively bind the wh-internal head in semantics. After the [-int] Q and [-int] wh checking operations, [-int] Rel in the operator and [-int] Arg in C (*-no*) are properly checked in the third landing site (Spec CP of the HIRC). Afterwards, the D-head of the HIRC-DP inherits [+int] Arg from the moved operator in order to obtain a semantic argument status.

Let us now consider (41). Contrary to (40), [-int] Q in the operator is checked by [+int] Q belonging to *kadooka* in the first phase, as presented in (41a). As a result, in the second phase in (41b), [-int] wh in the higher interrogative C (*ka*) is checked by [+int] wh in the operator, but the operator does not have any active [-int] Q feature that [+int] Q belonging to *ka* can check. Afterwards, [-int] Rel in the operator and [-int] Arg in the nominalizer C are checked in the third phase in (41c), so that the derivation in (41) is not problematic syntactically.

However, due to (26), this derivation causes the semantic ill-formedness of (39a). Because the [+int] Q feature on *ka* has not checked [-int] Q belonging to the operator in (41b), there is no unselective binder that can bind the wh-argument in semantics. In case the

wh-argument is not unselectively bound by *ka* here, it would be regarded as an indeterminate pronoun that cannot have full semantics without associating with a quantificational particle including *ka*. In other words, in (39a), the internal head itself cannot be interpretable. Therefore, I assume that the reason why (39a) is unacceptable is that the internal head is just an indeterminate pronoun that does not have its own interpretation, because it cannot be unselectively bound by *ka* in semantics.

Contrary to Watanabe's (2004) analysis, under my theory, an uninterpretable feature is always checked by its interpretable counterpart (eg. [-int] Rel is checked by [+int] Rel). So, this movement theory accounts for (38) and (39) without a contradiction about feature-blocking, which the "independent" theory has. In addition, the syntactic derivations of wh-in-situ and HIRC-formation can be explained in the uniformed way (operator movement) by my analysis.

4.4.3. Complex NP islands

Let us now turn to the complex NP island case. As demonstrated in Chapter 3, wh-HIRC-formation is sensitive to complex NP islands but not to HIRCs. For example, in (42a), wh-in-situ can be formed by making use of pied-piping, whereas the wh-argument is difficult to be interpreted as the internal head as in reading (i) but the external head of the complex NP can be as in reading (ii). Watanabe's (2004) analysis accounts for the availability of reading (ii) and the unavailability of reading (i), under the "independent" theory, as illustrated in (42b).

(42) a. Jan-wa [[**nannin-no-seijika-o** jyuugekishita] otoko]-ga byooin-ni nyuuinshiteita]-no]-ni shuzaishita-no-desu-ka?

Jan$_{TOP}$ [[how_many$_{GEN}$-politician$_{ACC}$ had_shot] man]$_{NOM}$ hospital-in was]-no]$_{DAT}$ interviewed-Q

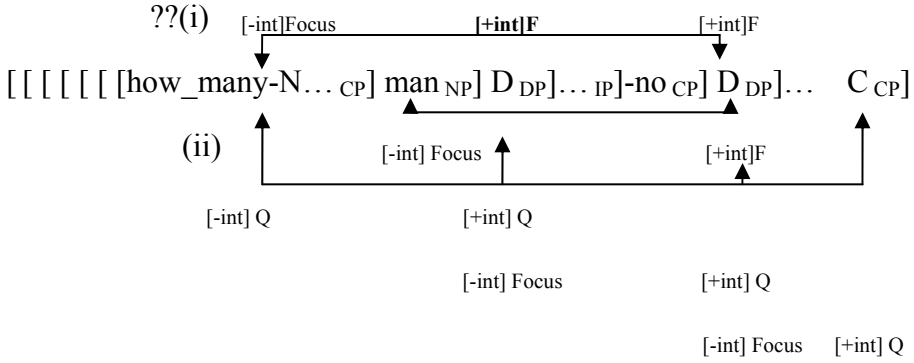
(i)?? 'Jan interviewed how many politicians that the man had shot and that were in

hospital?'

(ii) 'Jan interviewed a man that had shot how many politicians and was in hospital?

(Internal head= *otoko* 'man')

b.



Under our analysis, the derivation of (42) is illustrated in (43), where the intended internal head is the embedded wh-argument.

(43) a. $[Op_{i[-int]Q, [+int]wh, [-int] Rel, [+int]Arg} [t_i [how\ many\ politicians_{QP}] D_{DP}] \ldots_{CP}]$

(Phase 1)

b. $[Op_{[-int]Q, [+int]wh, [+int]\ Arg, [-int]Rel} [[Op_{i\ [+int]Arg, [-int]Rel} [t_i [how\ many\ politicians_{QP}] D_{DP}] \ldots_{CP}] man_{NP}] D_{DP}]$

(Phase 2)

c. $[Op_{j[-int]Q, [+int]wh, [+int]Arg, \sout{[-int] Rel}} [[t_j [[Op_{i\ [+int]Arg, [-int]Rel} [t_i [how\ many\ politicians_{QP}] D_{DP}] \ldots_{CP}] man_{NP}] D_{DP}]_{NOM} \ldots_{IP}]\text{-}no_{\sout{[-int]Arg}, [+int]Rel\ CP}]$

(Phase 3)

In the first phase in (43a), I assume that the operator of the wh-argument moves to the edge (Spec CP of the complex NP) with [-int] Rel, [+int] Arg, [-int] Q, and [+int] wh. In the second phase in (43b), however, once the complex NP island has been formed, a new operator is generated in Spec of the DP. As explained before, I assume that Spec DP is not a target of

operator movement. Here, [+int] Arg percolation from the lower operator to the higher operator is not possible, because this operation is available only if [+int] Arg in the operator checks [-int] Arg in C of the HIRC. In other words, the D-head of the HIRC can inherit [+int] Arg from the moved operator, as defined in (16), but the D-head of the HERC cannot. On the other hand, [-int] Q and [+int] wh can be percolated from the lower operator to the higher operator through the D-head, due to (30).

In the third phase in (43c), the higher operator with the percolated interrogative features as well as the [-int] Rel and [+int] Arg features from the complex NP moves to Spec CP of the HIRC for [-int] Rel and [+int] Arg checking. The problem of this derivation is that the [-int] Rel feature in the lower operator cannot be checked, so that the derivation is crashed. This suggests that the embedded wh-argument cannot be the internal head of the HIRC, and this is why the interpretation (i) is very difficult in (42).

On the other hand, let us examine the derivation for (42a ii), where the external head of the complex NP is the intended internal head.

(44)

a. $[Op_{i\ [+int]wh,\ [-int]Q}\ [t_i$ [how many politicians$_{QP}$] $D_{DP}]$ …. $_{CP}]$

(Phase 1)

b. $[Op_{[-int]\ Rel,\ [+int]\ Arg,\ [+int]wh,\ [-int]Q}$ $[[Op_i\ [t_i$ [how many politicians$_{QP}$] $D_{DP}]$ …. $_{CP}]man_{NP}]D_{DP}]$

(Phase 2)

c. $[Op_{j\sout{[-int]Q},\ [+int]wh,\ [+int]Arg}\ [t_j[Op_{j\sout{[-int]Rel}}\ [[t_j\ [[Op_{i\ [+int]Arg}\ [t_i$ [how many politicians$_{QP}$] $D_{DP}]$ …. $_{CP}]man_{NP}]$ $D_{DP}]_{NOM}$ ….$_{IP}]$-$no_{\sout{[-int]Arg}\ [+int]Rel\ CP}]D_{DP}]_{DAT}$ …. $ka_{[+int]Q,\ \sout{[-int]wh}\ CP}]$

(Phase 3-5)

As shown in (44a), the lower operator moves to Spec CP of the complex NP just for pied-piping of wh-in-situ. Because the wh-argument is not the intended internal head here, I assume that the operator does not bear [-int] Rel. In the second phase in (44b), the second

operator that is generated in Spec DP of the complex NP in endowed with the percolated [-int] Q and [+int] wh features as well as [-int] Rel and [+int] Arg from the D-head of the complex NP. Afterwards, the second operator moves to Spec CP of the HIRC for [-int] Arg and [-int] Rel checking in the third phase. In the fourth phase, a newly generated operator in Spec DP of the HIRC-DP inherits the percolated interrogative features and the [+int] Arg feature from the second operator via the D-head. Finally, the highest operator moves to Spec CP in the matrix clause for [-int] wh and [-int] Q feature checking. As a result, *ka* works as an unselective binder for the embedded wh-argument in semantics, and thus wh-in-situ is successfully formed. The HIRC-formation is also successful if the external head is the intended internal head, and thus the interpretation in (42ii) is available.

Let us turn to the cases of the double HIRC construction in (45) and (46), which can be accounted for by Watanabe (2004) under either the "uniformed" theory or the "independent" theory. As mentioned in Chapter 3, however, the "independent" theory has two problems. First, as shown in (45c), the D head of the lower HIRC-DP does not need to be involved in the checking relation for wh-in-situ. This causes a semantic problem because the lower HIRC-DP would not have an interrogative interpretation. Second, it is not clear why [+int] Q in the D of the higher HIRC-DP (rather than [+int] F in this D-head) cannot check [-int] Focus in the D of the lower HIRC-DP for HIRC-formation. The case of wh-islands suggests that [+int] Q checks [-int] Focus in the external relation of wh-in-situ but not in the internal relation of HIRC-formation. Then, [+int] F must not be a [+int] Q feature. It is puzzling what [+int] F is. On the other hand, the uniformed derivation explains the case of the double HIRC construction, but we have seen that it does not account for the other cases.

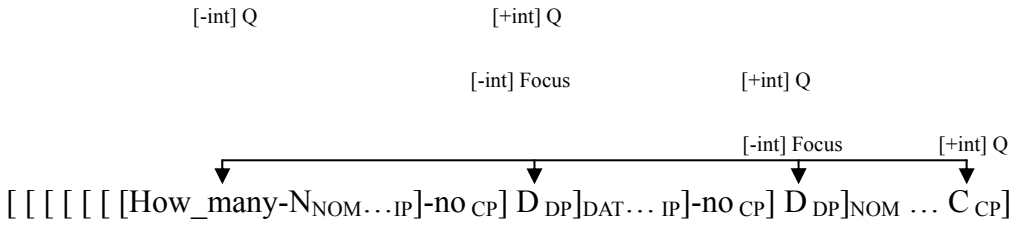
(45) a.[[[[**Nanko-no-keeki-ga** yakiagatteita]-no]-o Tom-ga tsukue-no ue-ni oiteoita]-no]-ga nusumareteshimatta -no-desu-ka?

[[How_many-cake$_{NOM}$ had_been_baked]-no]$_{ACC}$ Tom$_{NOM}$ table$_{GEN}$ on$_{LOC}$ put]-no]$_{NOM}$ have-been stolen-Q

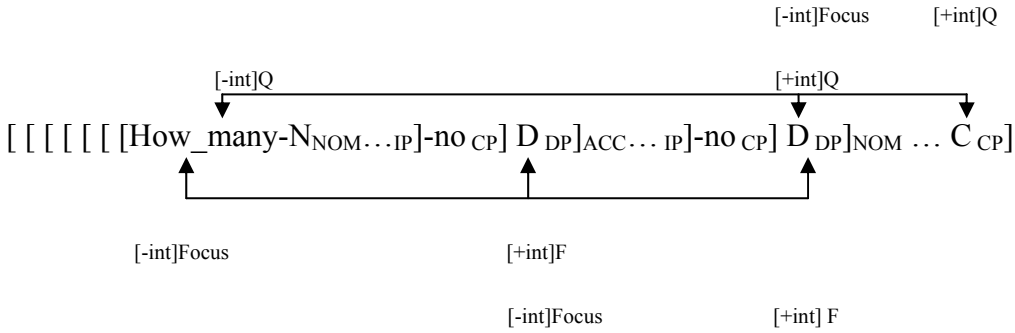
'How many cakes (x) had been baked, Tom put them on the table, and they have been

stolen?'

b. The uniformed derivation



c. The independent derivations

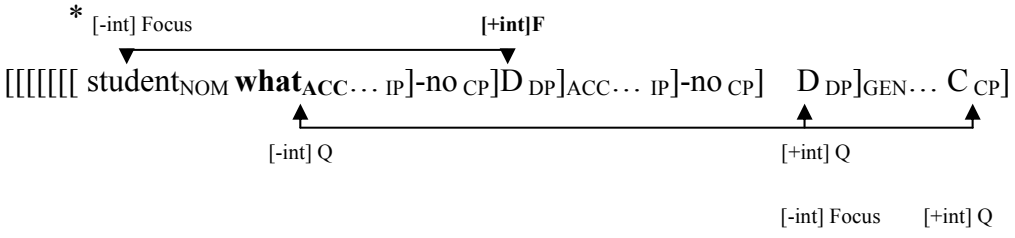


(46) a. *[[[John-ga [MIT-no gakusei-ga **nani-o** kaita]-no]-o posuto-doku-toshite saiyoushite-ita]-no]-no shuppan-ga okureta-no-desu-ka?

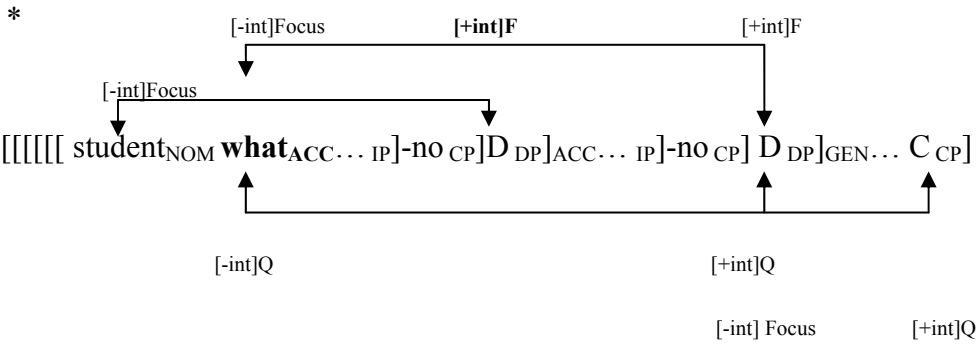
[[[John$_{NOM}$ [MIT$_{GEN}$ student$_{NOM}$ what$_{ACC}$ wrote]-no]$_{ACC}$ post-doc-as adopted-had]-no]$_{GEN}$ publication$_{NOM}$ was_delayed-Q

'Lit: For which x, x a thing, publication of x that John had hired as a post-doc an MIT student who wrote (it) was delayed?'

b. The uniformed derivation



c. The independent derivations



Consider how our analysis accounts for each of (45) and (46), as schematically illustrated in (47) and (48), respectively.

(47) (For 45)

[$Op_{\text{~~[-int]Q~~},[+int]wh,\ [+int]Arg}$[t[$Op_{\text{~~[-int]Rel~~}}$ [t[$Op_{\text{~~[-int]Rel~~}}$[[t [How_many-cakes$_{QP}$] D_{DP}]$_{NOM}$ … IP]-no$_{[+int]\ Rel,\ \text{~~[-int]Arg~~}\ CP}$] D_{DP}]$_{ACC}$ … IP]-no$_{[+int]Rel,\text{~~[-int]Arg~~}\ CP}$] D_{DP}]$_{NOM}$ … ka$_{[+int]Q,\ \text{~~[-int]-wh-~~}\ CP}$]

Firstly, (45) is well-formed since the recursive operator movement operation and the feature percolation operations are successful as illustrated in (47). As a result, the two HIRCs as well as wh-in-situ are successfully formed.

On the other hand, (46) is ill-formed due to the fact that the wh-argument cannot be interpreted as the internal head of the higher HIRC.

(48) (for 46)

[$Op_{i\ \text{~~[-int]Rel~~},[+int]Arg,[-int]Q,\ [+int]wh}$ [Op_i, $Op_{j[+int]Arg,\ [-int]Rel}$[[$t_i$[student$_{NP}$]$D_{DP}$]$_{NOM}$ [t_j[what-$_{QP}$]D_{DP}]$_{ACC}$ … IP]-no$_{\text{~~[-int]Arg~~},\ [+int]\ Rel\ CP}$]$D_{DP}$]

(From Phase 1 to 2)

As shown in (48), in the first phase, both the two operators move to Spec CP of the lower HIRC. Here, each of the operators is endowed with [-int] Rel, since it is the intended internal head for the different HIRC. Despite that [+int] Arg of Op_j is potential to check [-int] Arg in C (*-no*), [+int] Arg of Op_i checks it. Moreover, [-int] Rel of Op_i is checked by [+int] Rel in the C, but [-int] Rel of Op_j would not be checked by it, since the [-int] Rel feature of Op_j, whose owner DP is the intended internal head for the higher HIRC, has to be checked by [+int] Rel in the higher C.

In the second phase, the D-head of the HIRC-DP and a new operator in the spec is semantically co-indexed with Op_i, whose [+int] Arg feature has checked the [-int] Arg feature in the C of the lower HIRC. [-Int] Q and [+int] wh of Op_j can be percolated to the new operator through the D-head of the HIRC-DP, whereas [+int] Arg of Op_i rather than that of Op_j is percolated to it. At this point, Op_j and its [+int] Arg cannot be accessible to the next phase anymore, since it is not in the edge (Spec DP). Moreover, the unchecked [-int] Rel feature of Op_j is left. Therefore, the derivation in (48) is crashed, and this is why the wh-argument cannot be the internal head of the higher HIRC in (46).

In contrast to Watanabe's (2004) analysis under the "independent" theory, our analysis does not have the semantic problem (the D of the lower HIRC-DP may not have an interrogative interpretation) in (45). Both of the HIRC-DPs are semantically co-indexed with the wh-internal head through operator movement and [+int] Arg percolation, so that they can obtain wh-interpretations. Next, our analysis does not face Watanabe's contradiction about feature-blocking. Following the standard principle of Minimalist syntax, I assume that an uninterpretable formal feature is always checked by its interpretable counterpart. Therefore, feature checking operations for wh-in-situ as well as for HIRC-formation can be explained in a clearer way under our analysis than under Watanabe's analysis. Finally, our analysis explains the derivation of wh-in-situ and that of HIRC-formation in the uniformed way (movement of operators that carries both HIRCs and wh-in-situ-related features). So, under our analysis, the question whether they are uniformed or not does not arise.

The other strength of our analysis is that we can explain why the lower HIRC prevents

the wh-argument from being the internal head of the higher HIRC in (46) by locality (Phase). On the other hand, Watanabe's (2004) checking theory could not explain this.

4.5. The LF structure

We have discussed HIRC-formations in overt syntax. However, we have not taken care of the semantics of HIRCs yet. For example, as mentioned in Kuroda (1975-76) and Kitagawa (2005), semantically, HIRCs are like appositives rather than restrictive relatives, and I agree with their argument. The overt syntax structure that we hypothesize is a restrictive one, due to Watanabe's (1992) original model, on which my analysis builds. In order for the structure to yield the correct interpretation, it is necessary to transform the restrictive structure to an appositive one. Moreover, our structure needs to accommodate E-type interpretation of HIRCs (Shimoyama 1999).

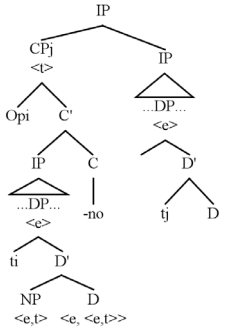
Now, we are in a dilemma. On the one hand, we need to change the overt syntactic structure into the appositive one for semantics. On the other hand, one of the strengths of our structure of HIRCs would be that it can account for the recursiveness of large scale pied-piping for wh-in-situ as well as the internal head realization in a unified way (operator movement). If we assume that the structure in overt syntax is the appositive one, the two derivations should become distinct.

Is it possible to assume that HIRCs have the restrictive structure in overt syntax but have the appositive structure at LF? For example, for appositive relatives, Kayne (1994) (see also Bianchi 2000) proposes that they have the restrictive structure in overt syntax and are transformed to the appositive structure at LF. Here, I would like to adopt his hypothesis and assume that the restrictive structure is transformed to the non-restrictive-like structure at LF. This is a solution to the dilemma.

Kayne (1994) argues that an IP undergoes LF movement to adjoin to a DP to form an appositive relative clause. On the other hand, what the semantics of appositive relatives and HIRCs have in common is that they are interpreted as separate sentences, contrary to

restrictive relative clauses (see Chapter 2, Heim & Kratzer (1998), and Shimoyama (1999)). On the basis of this semantic characteristic, Shimoyama argues that the HIRC-CP moves to an IP adjoined position, following Demirdrache's (1991) argument for non-restrictive relative clauses (but Demirdrache does not firmly determine whether the landing site is an IP or a CP adjoined position). Here, I follow Shimoyama (1999) and initially assume that the entire HIRC-CP undergoes LF movement to an IP adjoined position, as demonstrated in (49).

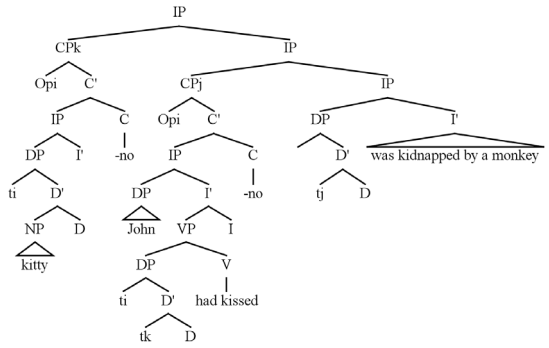
(49)



In (49), the HIRC-CP undergoes LF movement to an IP adjoined position, and only the DP remains in the matrix clause. Following Shimoyama (1999), I propose that the internal head in the HIRC is linked to the remained DP in the matrix clause through E-type anaphora (Evans 1980). In overt syntax, as explained, through [-int] Arg feature checking and [+int] Arg percolation to the D-head of the HIRC-DP, the internal head and the HIRC-DP are semantically linked or co-indexed. This link can be used as E-type anaphora relation at LF, and the remained DP works as an E-type pronoun and is interpreted as a definite description. Note that the trace of the moved IP (t_j) is considered to be semantically vacuous. I assume that the operator in Spec CP works as a topic marker at LF. Because the internal head is interpreted as a topic, both the HIRC and the matrix clause are sentences about the internal head.

Let us reconsider the LF structure of (14a), in which both the two HIRCs identify the same DP as their internal heads, as drawn in (50).

(50)

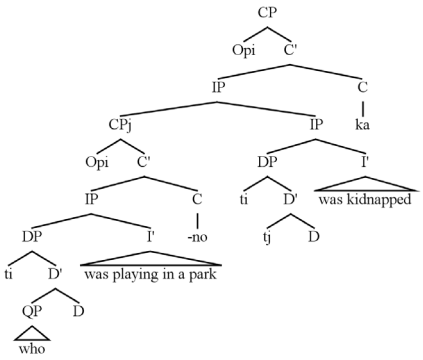


Because the sentence does not involve a wh-question in (19a), the matrix CP is empty in (50). Firstly, the outer HIRC undergoes LF movement to adjoin to CP, and then the inner HIRC also moves.

As a result of LF movement to IP-adjoined positions, the HIRCs can be interpreted as separate sentences like appositive relative clauses in (50). The internal head can be linked to the semantically linked DPs in the outer HIRC as well as the matrix clause through E-type anaphora. Moreover, the reason why the scope of the internal head cannot be extended to the matrix clause would be that the internal head (and its operator) never moves out of the HIRC.

Finally, I would like to discuss the LF structure of (34), which is a sentence containing a wh-HIRC. The reason why I assume that the HIRC-CP moves to an IP-adjoined position rather than a CP-adjoined position is that the position of an unselective binder *ka* in C should be higher than that of the wh-internal head for further unselective binding at the post-LF stage (semantics). The LF structure of (34) is illustrated in (51).

(51)



In (51), the HIRC-CP moves to the IP-adjoined position for the appositive and the E-type interpretation at LF. Afterwards, in semantics, *ka*, whose [-int] wh is checked by [+int] wh in the operator and whose [+int] Q checks [-int] Q belonging to the operator in overt syntax, unselectively binds the wh-internal head that is contained in the moved HIRC-CP, due to the rule in (26). Because the wh-internal head is c-commanded by *ka* even after the LF movement, the unselective binding is not problematic.

This section has discussed how the syntactic structure of HIRCs I hypothesize would be transformed to the LF structure that captures not only the appositive and the E-type interpretation but also unselective binding (for wh-HIRCs) at the post-LF stage.

4.6. Discussion

Let us now consider how our analysis overcomes the problems for Watanabe (2004), which were mentioned at the end of Chapter 3. The problems for Watanabe (2004) are summarized in (52).

(52) a. If the internal head is solely a QP that is c-commanded by a phonologically null D, Watanabe (2004) does not account for the case in which the internal heads are quantifiers formed by indeterminates (QP) and overt particles (D).

b. The weak sensitivity of non-wh-HIRCs to wh-islands suggests that [-int] Focus in the internal head may not be checked by [+int] Q on intervening interrogative C (wh-islands) in the internal relation for HIRC-formation. On the other hand, Watanabe (2004) argues that [-int] Focus on D is checked by [+int] Q on C in the external relation for wh-in-situ. Then, [+int] F in the D head of the HIRC-DP must not be a [+int] Q feature. So, what is [+int] F?

Firstly, in order to solve the problem in (52a), I argue that the internal head should be a DP rather than a QP, contrary to Watanabe (2004). In our analysis, either covert D (of wh-arguments and general DPs) or overt D (of indeterminate quantifiers) is assumed to select an operator in Spec DP and assign [+int] Arg to it, since all the three types of the internal head are DPs that are genuine arguments. In other words, our analysis requires the Japanese indeterminate system only for wh-HIRCs or wh-in-situ, where a covert D is assumed to assign [+int] wh and [-int] Q to an operator on the basis of Watanabe's (1992) original analysis. On the other hand, for non-wh-headed HIRCs, we do not make use of the indeterminate system, since the similarity between HIRCs headed by normal DP and HIRCs headed by indeterminate quantifiers in their island sensitivity suggests that HIRC-formation would not make use of the indeterminate system.

This amendment, which treats all the types of the internal head as DPs rather than QPs, allows us to deal with indeterminate quantifier internal head without any contradiction, contrary to Watanabe (2004).

Secondly, as in (52b), it is very puzzling why [-int] Focus can be checked by [+int] Q for wh-in-situ but not for the wh-island case of non-wh-HIRCs. Moreover, Watanabe's (2004) use of [-int] Focus for a feature of the internal head is not well-motivated. In Minimalist

syntax, feature checking operations of uninterpretable features technically demonstrate that semantics that is relevant with its feature becomes available due to the checking operations. However, Watanabe does not provide any clear evidence that focus semantic is involved in HIRC-formation. In addition, if the internal head QP involves a [-int] Focus feature, why is it not possible for *mo* in D, which can be used as a focus marker, to check the [-int] Focus feature, in case the internal head is a universal quantifier formed by *mo*?

In contrast to Watanabe's (2004) approach, our analysis that makes use of [+int] Arg for the internal head is semantically more motivated. We assume that the HIRC-DP is semantically defective without checking of [-int] Arg in C of the HIRC by [+int] Arg, which is carried by the operator from the internal head. In other words, the semantic output of operator movement and [-int] Arg checking is giving the HIRC-DP a semantic argument status for the further θ-role assignment by Merge. The results of the island test suggest that the reason why only complex NP islands block HIRC-formation would be that they are DPs that also have [+int] Arg, so that they work as closer interveners for [-int] Arg checking, contrary to CP islands (i.e. wh-islands) that are not arguments.

If we make use of [+int] Arg rather than [-int] Focus for the internal head, we will not need to face Watanabe's (2004) contradiction that [-int] Focus can be checked by [+int] Q for wh-in-situ but not for HIRC-formation. Moreover, it is not very beautiful to assume that [-int] Focus is checked by [+int] Q rather than by its interpretable counterpart ([+int] Focus). Our analysis simply assumes that [-int] Arg is checked by [+int] Arg, whereas [-int] Q is checked by [+int] Q.

Third, although Watanabe's (2004) analysis accounts for the case of wh-HIRCs under the "independent" theory, we have seen that it cannot avoid the same feature-blocking puzzle in (52b). Moreover, Watanabe has tried to correlate the syntax of wh-in-situ and that of HIRCs in Japanese since 1992, so that it would be ideal to provide a uniformed derivation for wh-HIRCs, where the two types of derivations are overlapped. However, we have seen that the "uniformed" theory can account only for the case of double HIRC constructions but not for the other wh-HIRC cases. Since the internal relations for HIRCs and wh-in-situ are

sensitive to different islands, we need to assume under the "independent" theory that each checking relation should be done separately in the cases of wh-islands in (36) and (38) as well as of complex NP islands in (42), if we adopt Watanabe's approach.

On the other hand, under our analysis, one single operator can carry not only [+int] Arg as well as [-int] Rel for HIRC-formation but also for [-int] Q as well as [+int] wh for wh-in-situ together, and then wh-HIRCs' derivation can be uniformly explained by successive cyclic-styled operator movement, as demonstrated in this chapter. In this respect, our analysis can explain the case of wh-HIRCs more easily and beautifully than Watanabe's (2004) Agree-based theory.

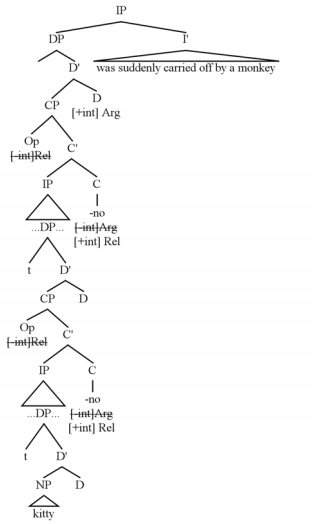
The contrast between wh-in-situ and HIRCs in terms of their island-sensitivity, from which Watanabe's (2004) approach suffers to explain wh-HIRCs, is accounted for by the difference between feature percolation of [+int] Arg in (16) and that of [-int] Q and [+int] wh in (30). Firstly, percolation of [+int] Arg is available only if it checks [-int] Arg in the nominalizer C (*-no*). In other words, [+int] Arg can be percolated to the D-head of the HIRC-DP but not to the D-head of the HERC-DP, whose formation is assumed not to involve movement and feature checking. This accounts for HIRCs' sensitivity to complex NP islands and for the allowance of the double HIRC construction. On the other hand, as defined in (30), the interrogative features ([+int] wh and [-int] Q) can be percolated to the D-heads of both HIRCs and HERCs, since wh-in-situ is insensitive to complex NP islands due to pied-piping.

Moreover, in the case of wh-islands, for example, in (36), our analysis can demonstrate how only the interrogative features are subject to wh-island constraints on the way to Spec of HIRC-CP for [-int] Arg checking. Under our approach, operator movement itself is subject to the last-resort condition (3a) and the PIC (3c) but not to each island constraint, but the features that the operator carries are restricted by different islands. Therefore, although wh-in-situ and HIRCs share the same single derivation formed by operator movement, our analysis does not need to suffer from the difference in the island-sensitivity between the two types of islands.

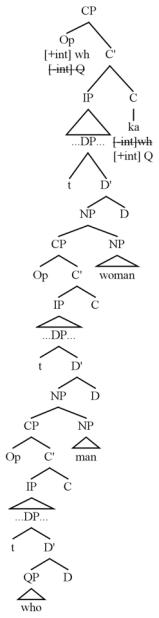
Finally, although I have argued against Watanabe (2004) with these respects above, I

agree with his main idea that HIRC-formation should be correlated with wh-in-situ, because the Japanese DP structures (but not the indeterminate mechanism) allow the parallelism in terms of recursiveness among double HIRC constructions, pied-piping of a complex NP island by wh-in-situ, and double wh-HIRC constructions, as shown respectively in (53).

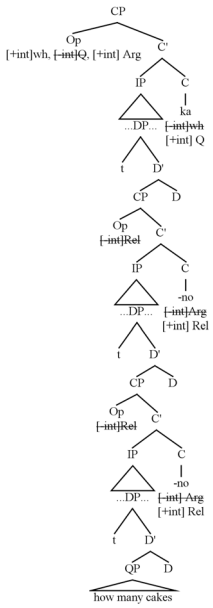
(53) a. (for 14)



b. (=32b)



c. (for 45)



Recursive syntactic operations that make use of the Japanese DP structure are not discussed by Watanabe (2004), who does not even deal with the structures in (53a) and (53c). Despite the fact that it is possible to implement Watanabe's (2004) Agree to capture this recursiveness as I tried, such recursive operations have been analysed to be as successful cyclic movement in the tradition of generative syntax. In addition to Agree's complication in the case of wh-HIRCs, I consider that movement is more suitable to capture such recursive syntactic operations than Agree in this respect.

However, the most significant issue raised here would be why Japanese DP structure allows such recursive movement operations for HIRC-formation as well as pied-piping of a complex NP island by wh-in-situ, but some other languages; for example, English, do not. In order to pursue this issue, we need to do some typological studies of HIRCs as Watanabe (2004) does. I leave this issue for further research.

Chapter 5: Conclusion

This thesis has proposed a new operator movement theory of HIRCs in Japanese, which builds on Watanabe's (1992) original theory. I have made an attempt not only to transform the GB-style movement theory to a Minimalist version, but also to enable the theory to account for non-wh-HIRCs, wh-in-situ, and wh-HIRCs in a unified way.

The definitions and rules which are crucial for my movement theory are listed below.

(1) *Minimalist definitions*

a. *Last Resort*

A movement operation is licensed only if it allows the elimination of [-interpretable] formal features. (Chomsky 1995)

b. *Theta-role assignment*

A thematic-role can only be assigned to an argument in a position where it is firstly merged. (Chomsky 1995)

c. *Phase Impenetrability Condition (PIC)*

In a phase α with head H, the domain of H is not accessible to operations outside α; only H and its edge are accessible to such operations. (Chomsky 2001)

(2) *Argument feature, Relative feature, and HIRC formation*

a. A phonologically null operator in Spec DP inherits [+int] Arg and [-int] Rel features from the D-head of the internal head through Spec-Head agreement.

b. A nominalizer (*-no*) in C is endowed with [-int] Arg (probe) and detects [+int] Arg of the operator as its goal.

c. The goal (the operator) is active for a purpose of Agree since it also bears [-int] Rel, which can be checked by [+int] Rel belonging to the nominalizer in C.

d. By operator movement to Spec CP (by Attract), [-int] Arg of C is checked by [+int] Arg in the moved operator; as a result, the HIRC-DP obtains a 'semantic' argument status. At the same time, [-int] Rel in the moved operator is checked by [+int] Rel in the C.

e. The θ-role from the matrix predicate is structurally assigned to the HIRC-DP, which is semantically co-indexed with the internal head through the semantic link forged by [-int] Arg feature checking, by Merge.

(3) *[+int] Arg percolation*

The D-head of the HIRC-DP inherits an [+int] Arg feature of the semantically co-indexed internal head from the moved operator in Spec CP.

(4) *Wh & Q-feature percolation*

a. [+Int] wh and [-int] Q features of the moved operator in Spec CP are percolated to the D-head of the HERC- or the HIRC-DP for pied-piping.

b. After the percolation, the [+int] wh and [-int] Q features that the operator had possessed are deleted.

(5) *Unselective binding for wh-in-situ*

a. An interrogative complementizer *ka* works as an unselective binder in semantics, only if (i) its [-int] wh-feature is checked by a [+int] wh-feature in the moved operator; and (ii) its [+int] Q feature checks a [-int] Q in the operator.

b. In case [+int] Q in the same interrogative C (*ka*) checks [-int] Q of more than one wh-operators in Spec CP, [+int] wh-features belonging to the operators are absorbed and check [-int] wh in *ka* together.

c. *Ka*, which does not work as an unselective binder in semantics, is interpreted as a yes-no question marker.

I assume that both HIRCs and wh-in-situ are formed by movement of a phonologically null operator from Spec DP to Spec CP, following Watanabe (1992). This movement operation satisfies the last resort condition (1a) by [-int] Rel and [-int] Arg checking for HIRC-formation and/or [+int] wh and [-int] Q checking for wh-in-situ.

[-Int] Arg feature checking is semantically meaningful for HIRC-formation. As defined by (1b), the HIRC-DP has to be structurally assigned a θ-role by Merge in its s-selectional position, but a DP that lacks a NP projection is assumed to be semantically defective without gaining a semantic argument status through [-int] Arg checking by [+int] Arg in the internal head. In other words, this feature checking operation enables the HIRC-DP to structurally and semantically receive a thematic role from the predicate.

Under our hypothesis, CPs and DPs are phases, and operator movement is subject to the PIC (1c). Spec CP is a target of operator movement but Spec DP is not. Rather, Spec DP is a position where a new operator is generated if the D-head is endowed with [+int] Arg & [-int] Rel and/or [-int] Q & [+int] wh. This hypothesis is necessary to account for complex NP island effects for HIRC-formation.

In order to explain large scale pied-piping of wh-in-situ as well as double HIRC constructions, I made use of the feature percolation operations in (3) and (4). A [+int] Arg feature can percolate only to another HIRC-DP, whereas [+int] wh and [-int] Q features are allowed to be percolated to either HERC-DPs or HIRC-DPs. This contrast is based on the fact that HIRC-formation is subject to complex NP islands but wh-in-situ is not.

Because one single operator can inherit and carry not only features for HIRC-formation but also those for wh-in-situ, it is possible to account for wh-in-situ, non-wh-HIRCs, and wh-HIRCs in a unified way under our analysis. Moreover, our hypotheses follow the Minimalist definitions in (1), as explained.

In addition to operator movement and feature percolation for HIRC-formation in overt syntax, the HIRC-CP undergoes movement to an IP-adjoined position at LF, in order to induce an appositive relative-like interpretation. The remnant HIRC-DP is interpreted as an E-type pronoun, and the semantic co-indexation between the internal head and the HIRC-DP,

which has been formed by [-int] Arg checking in overt syntax, is interpreted as E-type anaphora at LF.

Finally, the reason why wh-in-situ and wh-HIRCs are sensitive to wh-islands was accounted for by the condition on unselective binding (5) at post-LF (semantics). I assume that *ka* acts as an unselective binder for a wh-argument only if (5a) is satisfied in overt syntax. If not, *ka* is interpreted just as a yes-no question marker.

Although I have argued that this movement theory accounts for the syntax of Japanese HIRCs better than Watanabe's (2004) Agree analysis, for reasons discussed in Chapter 3 and 4, I do not intend to argue against Watanabe's proposal to correlate HIRCs with wh-in-situ. Rather, Watanabe's previous research on this topic has inspired me to pursue the same theme. Therefore, I have aimed to provide a movement theory that uniformly explains wh-in-situ and HIRCs.

I claim that HIRCs do not directly make use of the indeterminate mechanism, so that the internal head should be regarded as a DP rather than a QP, contrary to Watanabe's (2004) idea. On the other hand, as discussed, both wh-in-situ and HIRCs make use of the Japanese DP structure, which allows iterated operations. This suggests that HIRCs and wh-in-situ must have some correlation with the DP mechanism in Japanese. In this respect, my research in this thesis supports Watanabe's central idea on this topic.

In addition to the question why Japanese DP structures allow such recursive operations, I realize that there are several further issues I have had to leave open for my future research. I would like to conclude this thesis by mentioning some of them.

Firstly, this thesis mainly deals with indefinite internal head DPs, including wh-arguments, but it is controversial whether Japanese HIRCs obey a complete 'definiteness restriction' or not. Lakhota exhibits the definiteness restriction and allows only indefinites as the internal heads of HIRCs (see Williamson 1987). On the other hand, as noted by Nishigauchi (2004), it is hard to examine the definiteness restriction in Japanese HIRCs, since it depends on which structural position the HIRC-DP occupies. For example, as argued by Shimoyama (1999), it is easy for a definite DP to be the internal head, if the HIRC-DP

occupies the accusative object position. On the other hand, Nishigauchi (2004) claims that the definiteness restriction holds, in case the HIRC-DP occupies a position that can be only occupied by a nominal expression such as a complement position in a PP. This contrast would result from the availability of an adverbial clause counterpart (Mihara and Hiraiwa 2006) in the former case but not in the latter, which cannot be occupied by an adjunct.

Our operator movement theory builds on Watanabe's (1992) original analysis. One of the reasons why Watanabe proposes that an operator moves from Spec DP is that he argues that Japanese HIRCs must obey the definiteness restriction, like in Lakhota. If Japanese HIRCs allow definite DPs to be the internal heads, operators may not appear in Spec of DPs, since the specifiers would be occupied by overt definite determiners. So, the existence of the definiteness restriction in Japanese HIRCs is crucial for our and Watanabe's operator movement analysis. Detailed research on the definiteness restriction in Japanese HIRCs will be necessary in the future.

Secondly, as explained in Chapter 1, Japanese HIRCs sometimes allow more than one internal head. I did not syntactically analyse this 'split pivot' (Kuroda 1975-76) case in this thesis. Under our analysis, as shown in Chapter 4, more than one operator is allowed to land in Spec CP, but it was assumed that the one whose [-int] Rel is checked by [+int] Rel on C checks [-int] Arg on the C but the other makes use of the landing site as an escape hatch. As a result, the HIRC identifies only one internal head whose [+int] Arg feature checks the uninterpretable one. On the other hand, in case of a 'split pivot', we need to assume that two [+int] Arg operators check a single [-int] Arg feature in C; as a result, the HIRC-DP would semantically refer to the two different arguments from which the [+int] Arg features came. The 'split pivot' phenomenon thus presents our theory with a puzzle. On the other hand, this indicates that it would be interesting to pursue this topic from the aspect of syntax-semantics interface. HIRC-formation in Japanese might reveal something new of the structure of the human language faculty.

Finally, in Chapter 4, I made an attempt to analyze how the HIRC structure in overt syntax transforms into an LF structure that captures the semantics of HIRCs. In the previous

literature, as far as I know, the syntactic structure and the LF structure of HIRCs have not been often discussed together. For instance, Watanabe (2004) discusses the syntactic aspects of HIRCs, whereas Shimoyama (1999) focuses on the semantic side. However, as noted above, it is important to analyze both syntax and semantics of HIRCs. Due to the limited time and space available for this thesis, I could not write a lot about the semantics of HIRCs. Although I have adopted Shimoyama's (1999) E-type analysis of HIRCs for the LF structure at this time, I have not examined yet whether the E-type analysis fully accounts for the interpretation of Japanese HIRCs. As discussed by Ruys (1992) in detail, for example, the E-type analysis faces some problems in dealing with donkey anaphora, because the E-type analysis relies on pragmatics rather than syntax and semantics.

I hope to work on these remaining issues in the future, based on the movement theory that has been proposed in this thesis.

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