

AGAINST LF PIED-PIPING*

The arguments for LF Pied-Piping given by Nishigauchi and others are represented. It is shown that Nishigauchi's semantics for pied-piped phrases gives the wrong meaning for interrogatives. We argue that none of the arguments for LF Pied-Piping is tenable and most of the arguments against the traditional approach (unbounded *wh*-movement at LF) do not stand up to scrutiny. However, some data turn out to be problematic for the traditional account. The alternative considered here involves pied-piping at an intermediate level between S-structure and LF. It is called *WH-structure* and is followed by reconstruction at LF. This proposal will combine the essential insights of Nishigauchi's idea and have all its advantages over the traditional view, without running into the problems of his approach.

1. INTRODUCTION

In his inspiring book *Quantification in the Theory of Grammar* (Nishigauchi 1990), Nishigauchi argues that Japanese interrogatives can only be adequately analyzed if we assume pied-piping for *wh*-phrases in Logical Form (henceforth called LF Pied-Piping). The idea has since become fashionable. Among others, Hasegawa (1986), Choe (1987), Bayer (1990), and Watanabe (1992) assume LF Pied-Piping.

In this paper I will argue that there is no pied-piping at the level of "transparent LF," by which term I understand that level of representation which determines the interpretation (modulo context dependency). An adequate LF requires either unbounded LF movement or reconstruction

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of the pied-piped material or an equivalent method. It is not possible to interpret the pied-piped material in SpecC.¹

The organization of the representation is as follows. First I will enumerate the arguments for LF Pied-Piping given by Nishigauchi and others. Then I will show that the semantics Nishigauchi assumes for the pied-piped phrases gives the wrong meanings for interrogatives. I will show further that none of the arguments for LF Pied-Piping is tenable and that most arguments against the traditional approach (unbounded *wh*-movement at LF) do not stand up to scrutiny. However, some data turn out to be problematic for the traditional approach. Finally I will consider an alternative that involves pied-piping at an intermediate level between S-structure and LF. It is called *WH-structure* and is followed by reconstruction at LF. This proposal will combine the essential insights of Nishigauchi's idea and have all its advantages over the traditional view, without running into the problems noted above.

2. ARGUMENTS FOR NISHIGAUCHI (1990)

I start by giving the essentials of Nishigauchi's analysis. Then I list the arguments which speak in favor of his approach. Nishigauchi's standard example is this (Nishigauchi 1990: 48, ex. (57)):

(1) a. *S-structure*:

Kimi-wa [_{PP} [_{CP} dare-ga kai-ta] hon-o]
 you-TOP who-NOM wrote book-ACC
 yomi-masi-ta-ka?²
 read Q

b. *Logical Form*:

[_{CP} [_{PP} [_{CP} dare-ga_i kai-ta] hon-o]_i] [_{C'} Kimi-wa t_i yomi-masi-ta
 [+WH]
 [_C-ka_{ij}]]]

c. *Interpretation*:

'For which x,y, x a book, y a person that wrote x, did you read x?'

¹ A theory of *wh*-movement like that of Chomsky (1992), which leaves full copies as traces, is not incompatible with this claim. At the level of the transparent LF, the pied-piped material is deleted. The result will be something equivalent to an LF obtained by means of reconstruction. I will comment on this alternative in Appendix III.

² I analyze Japanese cases uniformly as postpositions. Hence an NP + Case is represented as a PP. Nishigauchi regards dative NPs as PPs, whereas nominative and accusative NPs seem to be NPs for him.

The question marker *ka* is analyzed as the head of a CP. If there is no *wh*-phrase in the sentence, the construction is interpreted as a yes/no-question. If there is one, then it has to be moved at LF to SpecC. In that case the sentence expresses a categorial question. According to Nishigauchi, *ka* is an “unselective” binder in the sense of Heim (1982), which binds the free *wh*-variables in SpecC and the “referential” (or “external”) argument of the entire phrase in SpecC. Thus, the phrase [_{PP} [_{CP} *dare-ga kai-ta*] *hon-o*] ‘book that who wrote’ is regarded as a *wh*-phrase. The *wh*-phrase proper is *dare-ga* ‘who’. The rest of the term is pied-piped material.

The rationale for this kind of “large scale pied-piping” is that, according to Nishigauchi, LF movement is supposed to be constrained by Subjacency in Japanese. Movement of *dare-ga* to SpecC out of a relative clause would certainly violate this constraint. Pied-piping makes it possible to circumvent the restriction. On the other hand, the standard theory holds that LF movement is not constrained by Subjacency.³ Thus, Subjacency and LF Pied-Piping are two sides of the same coin. To be sure, Nishigauchi does not claim that *wh*-movement at LF is constrained by Subjacency for English as well. His system is parameterized. I will not take up the question of how this is done (cf. Nishigauchi, ch. 3, sec. 6). The reader should keep in mind that the following claims are restricted to Japanese, though they might apply to Korean and other structurally similar languages as well.

The first argument in favor of Nishigauchi’s theory concerns Subjacency at LF.

First argument: The existence of *wh*-islands in Japanese requires that LF movement is constrained by Subjacency. (Nishigauchi, p. 28 ff.)

The claim is illustrated by the following data (Nishigauchi’s (32)):

(2) a. *S-structure:*

Tanaka-kun-wa	[_{CP}	<i>dare-ga</i>	<i>nani-o</i>	<i>tabe-ta-ka</i>]	
Tanaka		who	what	ate	Q
<i>o-boe-te-i-masu-ka?</i>					
knows		Q			

b. *Interpretations:*

b₁. Does Tanaka know: for which x,y, x a person, y a thing,
x ate y?

³ Cf. Chomsky 1981 and Huang 1982, among others.

- b₂. *For which x, x a person, Tanaka knows what x ate?
 b₃. *For which y, y a thing, Tanaka knows who ate y?
 b₄. *For which x,y, x a person, y a thing, Tanaka knows whether
 x ate y?

c. *LF for (b₁):*

Tanaka-kun-wa [_{CP} dare-ga_i nani-o_j [<sub>t_i t_j tabe-ta]-ka_{ij}] oboe-te-i-
 masu-ka</sub>

According to Nishigauchi, the readings (b₂) and (b₃) are not possible in Japanese – under normal conditions.⁴ (I have added the reading (b₄), which is not discussed by Nishigauchi on this occasion. This reading is not available either.) In a conventional theory of the sort advocated by Huang (1982), the non-existing interpretations are not ruled out, because LF movement is not constrained by Subjacency. For instance, reading (b₂) is expressed by an LF with ‘which person’ in SpecC of the matrix and ‘what’ in SpecC of the embedded sentence. Here, the LF movement of ‘which person’ violates Subjacency. If we assume Subjacency for LF movement, the only possible LF is (c), which determines reading (b₁).

Second argument: Only LF Pied-Piping can correctly account for what is a legitimate short answer to a *wh*-question. (Nishigauchi, sec. 4.2.1)

Reconsider the question in (1), ‘A book that who wrote did you read?’. It has the short answers A and B (Nishigauchi, p. 51).

- (3) A. Austen desu
 ‘It’s Austen.’
 B. Austen-ga kai-ta hon desu
 ‘It’s a book that Austen wrote.’

Nishigauchi assumes that LF must be able to account for the form of short answers. He argues that a classical LF, in which the *wh*-phrase is moved to SpecC, would predict that (A) is the only possible short answer. On

⁴ *Wh*-phrases can escape islands at LF if they are heavily stressed or D-linked. Nishigauchi assumes that the former NPs are focused, and phrases with the focus feature are supposed not to be island sensitive according to the theory of focus found in Rooth (1985) (cf. Nishigauchi, sec. 3.2.1). D-linked *wh*-phrases do not move at LF, according to Pesetsky (1987) (cf. Nishigauchi, sec. 3.2.2). I do not want to discuss these assumptions. Let me remark only that Rooth (1985) does not consider focused *wh*-phrases, and Pesetsky (1987) does not offer a semantics for his D-linked *wh*-phrases. Reference to Heim (1982) does not help: Heim’s indefinite terms do not remain *in situ* at LF but are scoped, contrary to what Pesetsky (1987) seems to assume.

the other hand, an LF like (1b), which pied-pipes the complex NP ‘book that who wrote’, is claimed to account for the possibility of (B).

Third argument: Certain crossover facts follow from Nishigauchi’s theory, but not from a theory assuming unbounded *wh*-movement at LF. (Choe 1987; Nishigauchi, sec. 4.2.3)

The observations underlying the claim are due to Choe (1987), who is reported to have developed an analysis which is basically the same as Nishigauchi’s (Nishigauchi, p. 63, fn. 32). The following data illustrate the argument:

- (4) a. John-wa [Mary-ga pro_i kau mae ni]
 John-TOP Mary-NOM pro_i bought before
 [Mishima-san-ga kaita hon-o]_i yonda
 [Mishima -NOM wrote book-ACC]_i read
 ‘John read a/the book that Mishima wrote before Mary bought it.’

- b.*John-wa [Mary-ga pro_i kau mae ni] [dare-ga kaita hon-o]_i
 who-NOM
 yonda no
 Q

‘John read a/the book that who wrote before Mary bought it?’

Nishigauchi explains the contrast by the requirement that the *wh*-phrase [*dare-ga kaita hon-o*]_i ‘book that who wrote’ be moved to SpecC at LF. The result is the Weak Crossover configuration in (5b).

- (5) a. Dare-ga_j [_C John-wa [Mary-ga pro_i kau mae ni]
 who_j John Mary (pro_i) bought before
 [t_j kaita hon-o]_i yonda no]
 t_j wrote book read Q
- b.*[Dare-ga_j kaita hon-o]_i [_C John-wa [Mary-ga pro_i kau mae ni]
 t_i yonda no_{ij}]

The standard LF in (5a) with long LF movement of *dare-ga* to SpecC cannot explain the ungrammaticality of (4b). Nishigauchi’s LF (5b), however, exhibits a violation of the Bijection Principle, because both pro_i and t_i are locally A’-bound.

Fourth argument: Certain scope interactions between quantifiers and *wh*-words in islands follow from Nishigauchi's account, but not from a theory that allows unbounded *wh*-movement. (Hasegawa 1986)

Sentence (6a) has the readings (6b) and (6c):

- (6) a. Daremo-o_i [LGB-o yonda hito-ga] t_i syootai-sita
 everyone-ACC LGB-ACC read person-NOM t_i invited
 'A person who read LGB invited everyone.'
- b. For everyone *y*, there is a person *x* who read LGB such that *x* invited *y*.
- c. There is a person *x* who read LGB such that for everyone *y*, *x* invited *y*.

Usually, it is assumed that scrambling in Japanese can be undone at LF. On the other hand, the scope of quantifiers in situ is determined via *c*-command from their surface position. Thus, if *daremo-o* were not scrambled, it would have narrow scope with respect to the subject. This explains the two readings for (6a).

If we replace 'LGB' by 'what', the reading where 'a person' has narrow scope with respect to 'everyone' (7b) disappears. The only possible reading is (7c).

- (7) a. Daremo-o_i [nani-o yonda hito-ga] t_i syootai-sita no
 everyone-ACC what-ACC read person-NOM invited Q
- b.*For which *x*: For every person *y*, there is a person *z* that read *x* such that *z* invited *y*?
- c. For which *x*: There is a person *z* that read *x* such that for every person *y*, *z* invited *y*?

The non-availability of reading (7b) is hard to explain under standard assumptions. In fact, the LF expressing it, viz. (8a), seems entirely well-formed. According to Hasegawa, the facts follow from Nishigauchi's theory, because the only possible LF for (7a) is the pied-piped structure (8c), and there, 'a person' has wide scope with respect to 'everyone'.

- (8) a. Standard LF for (7b):
 * what_k [C' [CP everyone_j [IP [a person that read t_k]_i [IP t_i invited t_j]]] Q]
- b. Standard LF for (7c):
 what_k [C' [IP [a person that read t_k]_i [IP everyone_j [IP t_i invited t_j]]] Q]

c. LF Pied-Piping:

[a person that read what_k]_i [_{C'} [_{IP} everyone_j [_{IP} t_i invited t_j]] Q_{kj}]

A variant of the same argument is found on p. 58 of Nishigauchi's book. For the sake of discussion I give it a new number, though it might be subsumed under the previous argument.

Fifth argument: Long extraction of *wh*-phrases at LF arguably yields non-existing readings.

- (9) a. ^{??}[[Nan-ka-koku kara ki-ta] daihyoo]-ga
 how-many-countries from came representatives
 atumari-masi-ta-ka
 gathered Q
 'Representatives who came from how many countries gathered
 (at the summit meeting)?' (= Nishigauchi's (89))

- b. Nan-ka-koku-kara diahyoo-ga atumari-masi-ta-ka
 how many countries-from reps-NOM gather -P -Q
 'Representatives gathered from how many countries?'
 (= Nishigauchi's (90))

(These examples and their paraphrases are quoted from the book. Thus, I am not responsible for the somewhat confusing presentation.)

Example (9a) only has the absurd reading where we ask for the number of countries such that representatives who represent them simultaneously gathered. In (9b) we ask for the number of countries from which representatives, say one for each, came to the meeting. A note on the syntax may be in order: in (9a) 'how many' is situated in the relative clause, which precedes and modifies 'representatives'. In (9b), 'from how many countries' is an adverbial which does not necessarily belong to the projection of 'representatives'. A more perspicuous paraphrase would have been 'From how many countries did representatives gather?'. The paraphrase above is Nishigauchi's own.

According to Nishigauchi, the standard theory cannot explain the absurd reading, because after long extraction of 'how many countries', we have the LF given in (10) – Nishigauchi's (92) – which has the reasonable meaning expressed by the English gloss.

- (10) [how many countries_x [[from x came] reps]_y [y gathered]
 'For how many countries x, there are representatives coming
 from x who gathered?'

On the other hand, his LF Pied-Piping approach is claimed to explain the oddness of the sentence, because it yields the LF in (11) – Nishigauchi's (93) with 'Q_{x,y}' added:

- (11) [[[how-many-countries]_x [from x came]] representatives]_y Q_{x,y} [y gathered]
 'For which y, y representatives that came from how many countries, y gathered?'

On page 60, we find a comment comparing (10) and (11):

The crucial difference between (92) [= (10)] and (93) [= (11)] is that, in (92) WH-Movement has taken place in such a way that the WH-quantifier 'how many countries' has been moved out of the complex NP, while in (93) the same WH-quantifier has been moved *within* the complex NP. As a result, we predict that the scope of the WH-expression in (90) [Sic! Replace (90) by (89). A.v.S.] would be narrower than the quantifier expression that corresponds to the complex NP that contains it.

I have tried to capture the interpretation which Nishigauchi seems to have in mind for (11) by the paraphrase listed under the construction, which sounds odd indeed.

Watanabe (1992: p. 11, fn. 9) attributes a further scope argument to Saito:

Sixth argument: WH-phrases contained in the same relative clause have the same scope. This follows from a theory which pied-pipes the relative clause and the head noun together with a moved *wh*-phrase. The generalization does not follow from the standard approach.

These are the relevant examples:

- (12) a. John-wa [Mary-ga [[nani-o doko-de katta]
 TOP NOM what-ACC where-LOC bought
 hito]-o sagashiteiru ka] sirigatteiru no?
 person-ACC looking for Q know want Q
 'Does John want to know: Is Mary looking for a person who bought what where?'
- b. Does John want to know [for which x, x a thing, for which y, y a place, Mary is looking for the person who bought x at y]
- c. For which x, x a thing, for which y, y a place, John wants to know [whether Mary is looking for the person who bought x at y]

- d.*For which x , x a thing, John wants to know for which y , y a place, [Mary is looking for the person who bought x at y]
- e.*For which y , y a place, John wants to know for which x , x a thing, [Mary is looking for the person who bought x at y]

There is no obvious way to block the ‘mixed’ readings under standard assumptions, whereas the data seem to follow directly from LF Pied-Piping: if we move the *wh*-phrase *[[nani-o doko-de katta] hito]-o* ‘person who bought what where’ to the lower Comp, we obtain reading (12b). On the other hand, we obtain reading (12c) if we move it to the higher Comp.

Seventh argument: *Mo*-phrases behave analogously to *ka*-phrases. *Mo* is an unselective universal quantifier which binds both the *wh*-phrases free in its scope and the implicit subject variable of the phrase modified by it. (Nishigauchi)

The point of this statement is that the analysis of *ka* is not *ad hoc*. Unselective binding is a general strategy of interpretation in Japanese. The analysis of *mo* is illustrated by the following example:⁵

- (13) [Dare-ga_i kaita hon]_j-mo_{ij} omosiroi-desu
 who wrote book-ever interesting is
 ‘For each x, y , x a person, y a book which x wrote, y is interesting.’

As far as I know, these are the most important arguments for Nishigauchi’s analysis. Since my discussion and critique of the arguments will mainly be based on semantic considerations, I first have to say how interrogatives are interpreted.

3. LOGICAL FORM AND SEMANTICS OF INTERROGATIVES

The analysis of interrogatives assumed here is a blend of Hamblin 1976 and Karttunen 1977. The approach is more in the spirit of Hamblin insofar as

⁵ Nishigauchi (p. 126) gives a slightly different example:

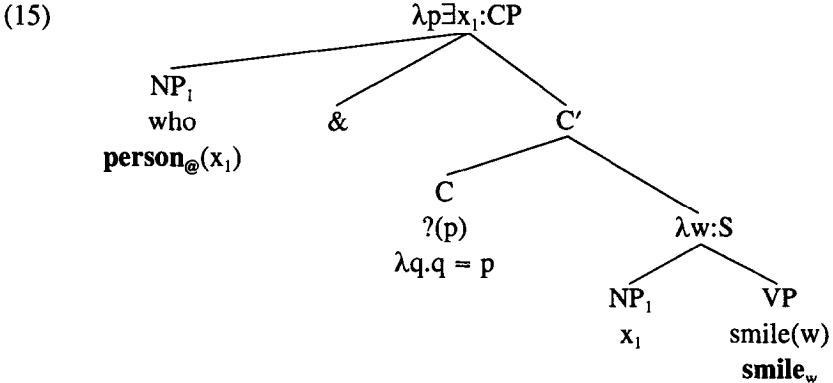
- (i) [[Dare-ga kai-ta] tegami] ni mo onazi koto-ga kai-te-at-ta
 who-N wrote letter in ever same thing-N written-be-PAST
 ‘For all x, y , x a person, y a letter x wrote, the same thing was written in y .’

If I do not discuss this construction, then for the reason that it is not obvious to me where the information ‘the same thing was written in y ’ is located in the syntax. Be that as it may, this is a separate issue, which is not important for the discussion.

interrogatives will simply denote alternatives and not “true answers” as in Karttunen’s theory.

Let us consider categorical questions first. For convenience, we start with LFs for English. The approach will be carried over to Japanese in section 7. The LF assumed for the interrogative in (14) is the tree in (15).

(14) Who smiled?



The interpretation is expressed by the formula in (16).

$$(16) \quad \lambda p \exists x_1 [\mathbf{person}_{@}(x_1) \ \& \ \lambda q.p = q (\lambda w.\mathbf{smile}_w(x_1))] \\ = \lambda p \exists x [\mathbf{person}_{@}(x) \ \& \ p = \lambda w.\mathbf{smile}_w(x)]$$

In this formula, ‘@’ refers to the actual world. For convenience, I will use the following terminology. The subject variable of a *wh*-term will be called its *wh*-variable. The predicate expressed by the *wh*-phrase is called the *restriction* of the question. ‘?(p)’ is called the *interrogativizer*, a term borrowed from Heim (1989). The part embedded under the interrogativizer is called the *nucleus* of the question.

It should be obvious that the formula can be read off directly from the LF. A few comments concerning the notation are in order. The logical language used to express the truth conditions is an extensional typed language in the style of Gallin’s (1975) language Ty2. I am adopting the same conventions as Zimmermann (1992); that is, I write implicit arguments like world and time as subscripts. Time dependence will mostly be ignored. The language is interpreted in the standard way, for example, as Montague’s (1974) Intensional Logic.

Usually, *wh*-phrases are analyzed as existential quantifiers; that is, the standard analysis of ‘who’ is $\lambda P \exists x [\mathbf{person}_{@}(x) \ \& \ P(x)]$. If I have departed from that practice in analyzing ‘who,’ simply as $\mathbf{person}_{@}(x_i)$, then for the reason that I want to try to be compatible with Nishigauchi, who assumes

that Japanese “*wh*-phrases” can be unselectively bound by *ka* or *mo* as well. So *wh*-phrases are regarded as indefinites and interpreted as open propositions following Heim (1982).

This requires the following steps for the interpretation of *wh*-movement: 1. The trace is interpreted as an individual variable. 2. The open proposition expressed by the *wh*-phrase is interpreted as a conjunct to the *C'*-meaning. This is expressed by the $\&$ -node between Spec*C* and *C'*. 3. The free subject variable of the *wh*-phrase (“*wh*-variable”) is existentially bound. If several *wh*-phrases are in Spec*C*, the existential binding is “unselective” at the CP-node. This convention somehow reminds one of Nishigauchi’s view that *ka* is an unselective binder.

The logical operations needed for composition are always annotated with the nodes. I think the notation is self-explanatory. It will be obvious that one node can be associated with different semantic operations. A framework which interprets syntactic rules like Montague’s PTQ would have to assume several syntactic rules in such a case.

As usual, a *whether*-interrogative like *whether it is raining* is analyzed as *whether it is raining or not raining* and is represented by the following formula:

$$(17) \quad \lambda p.p = \mathbf{rain} \vee p = \lambda w[\neg\mathbf{rain}_w]$$

In English, *whether* might be thought to be located in Spec*C* to make the clause an island for movement.

A last clarification on LF movement: in the transparent LF, a term occupies the position where it is interpreted. Consider this to be the essential principle of transparent LF. For instance, if an object has wide scope with respect to a subject, it has been moved over the subject. So even if we did indicate the wide scope of *someone* in (18) by a scope marker – as Cooper and Parsons (1976) and many others following them do – this means for me that the object has been scoped at LF. In other words, I regard (18a) as a notational variant of (18b):

$$(18) \quad \begin{array}{l} \text{a. } {}^i[\text{everyone loves } [\text{someone}]_i] \\ \text{b. } [\text{someone}]_i [\text{everyone loves } t_i] \end{array}$$

Here, the superscript ‘*i*’ is the scope marker.

The reason for identifying the two notations is rooted in the semantic operation needed for computing the meaning of the LF: we must apply the quantifier *someone* to the λ -abstract ‘ $\lambda i[\text{everyone loves } i]$ ’. The QR-version (18b) represents the two bits of information brought together by functional application in a transparent manner; that is, we could represent the LF in a more perspicuous way as follows:

(19) everyone λi [everyone loves i]

The only empirical motivation for QR I am aware of is to generate these two pieces of information needed for the computation: no doubt, the Cooper mechanism performs exactly the same computation. Therefore it is QR, and (18a) indicates that *someone* has moved at LF to the scope marker i leaving the trace i .

Similarly, I do not allow ambiguous notations such as those advocated by May (1985). May says that a term in an adjunct position can have wide scope over the next higher maximal projection which properly contains it. May invented his convention in order to evade certain ECP violations. In the transparent LF, we have them again, since the term is moved to the position where it is interpreted:

(20) a. $what_i$ did [everyone $_j$ [t_j buy t_i for Max]]
 b. everyone $_j$ [$what_i$ did [t_j buy t_i for Max]]

The LF (20b) expresses the distributive reading but violates the ECP. May says that (20a) expresses the same reading, since *everyone* may extend its scope over CP because it is adjoined to IP and CP is the first maximal projection properly containing it. My transparent LF for the distributive reading is something like (20b), and I therefore must accept an ECP violation for it. It follows that the checking condition for the ECP has to be revised appropriately.

The same considerations hold for the representation of *wh*-movement. Watanabe (1992) represents the relation between a WH-Comp and a *wh*-phrase as a relation between an empty operator Op and a *wh*-phrase at Japanese S-structure, because there is no overt *wh*-movement in Japanese. Thus, his representation for the Japanese S-counterpart of (20a) would be something like (20a'):

(20) a'. Op_i did [everyone buy $what_i$ for Max]

One could claim that this (plus QR-ing the subject) is the Japanese LF, given that there is no *wh*-movement in Japanese at all. But (20a') is interpreted as if $what_i$ were at the place of Op_i . According to my terminology, (20a') is a notational variant of the transparent LF (20a) and $what$ is moved to Op . This is what Watanabe actually does. Therefore, he gets this example right and he *could* treat Nishigauchi's examples correctly as well. His treatment is, however, subject to the same criticism that will be raised against Nishigauchi's (see Appendix II).

4. THE MAIN OBJECTION

Let me formulate my main objection against the approach: the interpretation (21c), which Nishigauchi gives for sentence (1), repeated here as (21a), is demonstrably wrong and cannot be repaired while keeping the spirit of his proposal, namely LF Pied-Piping. The crucial error is the assumption that *ka* is an unselective binder which binds both the *wh*-variable *x* of ‘book’ and the implicit referential variable *y* of ‘person’. As we will see later, *ka* can only unselectively bind *wh*-variables in its scope.

- (21) a. Kimi-wa [_{PP} [_{CP} dare-ga kai-ta] hon-o] yomi-masi-ta-ka
 you-TOP who-NOM wrote book-ACC read Q
- b. [_{CP} [_{PP} [_{CP} dare-ga_j kai-ta] hon-o]_i] [_C Kimi-wa t_i yomi-masi-ta
 [+WH]
 [_C-ka_{ij}]]]
- c. For which *x*,*y*, *x* a book, *y* a person that wrote *x*, did you read *x*?⁶

The translation of the paraphrase (21c) into the semantics for questions is:

- (22) $\lambda p \exists x \exists y [\text{book}_{@}(x) \ \& \ \text{person}_{@}(y) \ \& \ \text{write}_{@}(y,x) \ \& \ p =$
 $\lambda w.\text{read}_w(\text{you}, x)]$

A crucial feature of this analysis is that the variable in the nucleus varies over books. And this is wrong. It should vary over persons. To see this, assume that the only books you read in the actual world @ are “The Blue Chamber Lord” and “The Children of Darkness”, both written by Wolf von Niebelschütz. Given this scenario, Nishigauchi predicts that the true answers to (21a) in @ are ‘I read “The Blue Chamber Lord”’ and ‘I read “The Children of Darkness”’.

⁶ A closer look at this analysis reveals two syntactic problems. The first is that, to my mind, it is an illusion that a transparent LF building on Nishigauchi’s analysis could avoid a Subjacency violation: I take it that (21c) is Nishigauchi’s “transparent LF,” i.e., the paraphrase determining the interpretation. But here ‘which person’ has been moved out of the relative clause! The second problem is Nishigauchi’s mechanism of WH-percolation. He assumes that, at LF, the *wh*-phrase *dare-ga* moves to the SpecC of the relative clause. From that position, CP can inherit the WH-feature via specifier-head agreement. The noun ‘book’ inherits the feature by feature agreement with its relative clause. Among other things, this analysis faces the problem of where the relative pronoun is. Standard analyses would assume that it must be an empty operator in SpecC. But then SpecC would be occupied and could not be filled with a *wh*-phrase at LF. As far as I know, Nishigauchi does not discuss this problem.

- (23) $\{\lambda w.\text{read}_w(\text{you}, \text{"The Blue Chamber Lord"}),$
 $\lambda w.\text{read}_w(\text{you}, \text{"The Children of Darkness"})\}$ ⁷

Clearly, this prediction is inadequate. An appropriate answer to (21a) under the circumstances depicted would be a proposition like 'I read the books which Wolf von Niebelschütz wrote'. This answer is represented as:

- (24) $\lambda w.\text{read}_w(\text{you}, \Sigma y[\text{books}_w(y) \ \& \ \text{write}_w(\text{Wolf von Niebelschütz}, y)])$

$\Sigma y [\dots y \dots]$ is the largest group y satisfying condition $[\dots y \dots]$ (see Link 1991). This answer can only be obtained if question (21a) has the following denotation:

- (25) $\lambda p \exists x [\text{person}_@ (x) \ \& \ p = \lambda w \text{read}_w(\text{you}, \Sigma y [\text{books}_w(y) \ \& \ \text{write}_w(x, y)])]$.⁸

In this formula, the pied-piped material 'books which x wrote' is located in the nucleus. Therefore we have to work with reconstruction if we accept Nishigauchi's account. This, however, means that Nishigauchi's LF (21b) can't be the transparent LF for sentence (21a).

To make the argument complete, we have to say what a (true) answer to a question is. The definition follows Lahiri (1991).

Answers:

- a. p is a (true) answer to question Q in the world w
 iff $\exists X [X \subseteq Q \ \& \ p = \cap X \ \& \ p(w) = 1]$.
- b. $\mathbb{A}_w(Q)$ is the set of all true answers to Q in w .

The criticism made here has been anticipated by Barbara Partee. In footnote 24, ch. 2, Nishigauchi writes:

⁷ An appropriate analysis should include context dependency in order to get the denotation of personal pronouns right. For the sake of discussion I treat *you* as if it were a name denoting a particular person.

⁸ A more careful analysis should distinguish between several kinds of plural readings. The formula represents the collective reading. The distributive reading is expressed by the following formula:

- (i) $\lambda p \exists x [\text{person}_@ (x) \ \& \ p = \lambda w * (\lambda y.\text{read}_w(\text{you}, y)) (\Sigma y [\text{books}_w(y) \ \& \ \text{write}_w(x, y)])]$

where $*$ is Link's (1991) star operator, which is defined as

- (ii) $*P(x) = \forall y [y \cdot \Pi x \rightarrow P(y)]$.

The expression $y \cdot \Pi x$ means 'y is an atomic part of x'. So formula (i) is equivalent to (iii):

- (iii) $\lambda p \exists x [\text{person}(x) \ \& \ p = \lambda w \forall y [y \cdot \Pi \Sigma y [\text{books}_w(y) \ \& \ \text{write}_w(x, y)] \rightarrow \text{read}_w(\text{you}, y)]]$.

Barbara Partee (pers. comm.) warns me that what question (57) [= (1)/(21a)] is after is not primarily the identity of books: otherwise, one might wrongly predict that answers like (i) may also be possible.

- (i) *Pride and Prejudice* desu.

The fact is that (i) is not an appropriate answer to (57).

The footnote is a comment on the following remark by Nishigauchi: “What question (57) is after is the identity of *books* making crucial use of the identity of the person who wrote them.” It is exactly the other way round: the question is after the identity of persons. Which particular books these persons have written is not asked at all. The books need not be mentioned in the answer. Nishigauchi doesn’t seem to be aware of the fact that Partee’s observation is fatal for his theory.

The objection applies to embedded interrogatives as well, as the following example will reveal.⁹

- (26) Tanaka-kun-wa [kimi-wa [_{NP} [_{CP} dare-ga kai-ta] hon-o]
 Tanaka-TOP you-NOM who-NOM wrote book-ACC
 yomi-masi-ta-ka] oboe-te-i-masu
 read Q remember is
 ‘Tanaka remembers you read books that who wrote.’

Nishigauchi’s LF is roughly ‘Tanaka remembers [books that who_i wrote]_j, Q_{ij} you read t_j’. This is interpreted as ‘Tanaka remembers for which x,y, x books, y a person that wrote x, you read x’. Suppose (26) is true under the scenario described above. The theory predicts then that Tanaka remembers that you read “The Blue Chamber Lord” and “The Children of Darkness”. Tanaka can remember this without knowing the author of the two books, because you told him the titles of the books you read but you didn’t tell him the name of the author. We cannot use (26) under these circumstances. The content of Tanaka’s memory described by (26) is something different, namely “You read books written by Wolf von Niebelschütz.”

To be precise, the meaning attributed to (26) by Nishigauchi’s theory is (27a). The actual meaning which (26) has is (27b).

- (27) a. **remember**_@(Tanaka, $\lambda p[\exists x\exists y(\text{book}_{@}(x) \ \& \ \text{person}_{@}(y) \ \& \ \text{write}_{@}(x,y) \ \& \ p = \lambda w.\text{read}_w(\text{you},x))]$)
 b. **remember**_@(Tanaka, $\lambda p\exists x[\text{person}_{@}(x) \ \& \ p = \lambda w \text{read}_w(\text{you}, \Sigma y(\text{books}_w(y) \ \& \ \text{write}_w(x,y)))]$)

⁹ The example is shaped after Nishigauchi’s example (33A1) on page 29.

For the sake of concreteness, let us indicate a meaning rule for the relation **remember**:

- (28) $F(\mathbf{remember})(a, Q, w) = 1$ iff a remembers in w every answer to Q in w , i.e., every p in $\mathbb{A}_w(Q)$, where Q is the denotation of the embedded interrogative.

By our semantics, the propositions reported under Nishigauchi's interpretation are those in (23), whereas the interpretation (27b) predicts that the reported proposition is (24). The latter is correct.

It is worthwhile to investigate in some detail the question of why Nishigauchi's analysis has to fail in a semantics for interrogatives in the style of Hamblin and Karttunen. To simplify the discussion, consider the English transliteration of Nishigauchi's standard example given in (1)/(21a):

- (29) a. '(A) book that which person wrote did you read?'
 b. For which x, y , x a book, y a person that wrote x , did you read x ?
 c. $\lambda p \exists x \exists y [\mathbf{book}_@(x) \ \& \ \mathbf{person}_@(y) \ \& \ \mathbf{write}_@(y, x) \ \& \ p = \lambda w. \mathbf{read}_w(\mathbf{you}, x)]$
 d. For which x , x a book that some person wrote, did you read x ?

(29b) is Nishigauchi's paraphrase for the semantics, and (29c) is an LF which corresponds piece by piece to the paraphrase. A crucial property of both (29b) and (29c) is that the "person" variable y does not occur in the nucleus. The effect is that it has no influence on the range of possible answers. (29b) and (29c) are equivalent to the paraphrase (29d). The problem is that a *wh*-phrase which is contained in a *wh*-phrase which has undergone *wh*-movement cannot bind a variable in the nucleus. Engdahl (1986: 231 ff.), who discusses the problem, speaks of "vacuous WH quantification" in this regard. Thus, the Hamblin/Karttunen semantics predicts that Nishigauchi's question cannot be a multiple question, despite a first impression to the contrary.

A further objection is due to Shin-Sook Kim (pers. comm.). We retranslate Nishigauchi's logical paraphrase (29b) into Japanese and create a head noun with an open *wh*-determiner, viz. *dono*:

- (30) Kimi-wa [_{PP} [_{CP} *dare-ga* kai-ta] *dono* hon-o]
 you who wrote which book
 yomi-masi-ta-ka
 read Q
 'Which book that which person wrote did you read?'

Since *ka* is an unselective binder which binds every *wh*-word in its scope, the theory predicts this question to mean exactly the same as (1)/(21a). This, however, is not so. The informants I have asked all agree on the fact that the question cannot be answered by “It’s Wolf von Niebelschütz” or “A book written by Wolf von Niebelschütz.” If people accept the question at all they answer it by something like “ ‘The Children of Darkness’ by Wolf von Niebelschütz.” Hence, (30) means something different from (1)/(21a), whereas it should mean the same if the theory were correct.

Data of the kind in (30) call for deeper investigation. I have asked just a few people and I am not sure of the grammatical status of the example. If the Hamblin/Karttunen approach to the semantics of questions is correct – and this is assumed in Nishigauchi’s book on several occasions – then (30) cannot be a multiple question, as we know from the discussion of (29). This would explain why people are puzzled when they hear (30). My guess is that the situation is similar to a scenario in which we are forced to answer a question like (31):

(31) Which mountain in which country did you climb?

I would answer this by “The Dom, which is in Switzerland.” Such an answer does not presuppose that the question is a multiple one, because the relative clause in the answer is an apposition to the head NP. One would have to say more about the interpretation of such questions, of course, but this is not the topic of this paper.

There is one genuine alternative to the Hamblin/Karttunen semantics, viz. the theory developed in Groenendijk and Stokhof 1982. In this approach, there is a way to analyze Nishigauchi’s sentence as a multiple question. One candidate for representing the meaning is the following formula, which expresses a so-called *de dicto* reading (see Groenendijk and Stokhof 1982: 203):

(32) $\lambda w[\lambda x\lambda y[\mathbf{book}_@ (x) \ \& \ \mathbf{person}_@ (y) \ \& \ \mathbf{write}_@ (y,x) \ \& \ \mathbf{read}_@ (you,x)]] = \lambda x\lambda y[\mathbf{book}_w (x) \ \& \ \mathbf{person}_w (y) \ \& \ \mathbf{write}_w (y,x) \ \& \ \mathbf{read}_w (you,x)]]$

The things asked for can be read off from the bound variables of the equated λ -terms, here books and persons. The formula representing a correct reading is this:

(33) $\lambda w[\lambda y\exists x[\mathbf{book}_@ (x) \ \& \ \mathbf{person}_@ (y) \ \& \ \mathbf{write}_@ (y,x) \ \& \ \mathbf{read}_@ (you,x)]] = \lambda y\exists x[\mathbf{book}_w (x) \ \& \ \mathbf{person}_w (y) \ \& \ \mathbf{write}_w (y,x) \ \& \ \mathbf{read}_w (you,x)]]$

This analysis obviously doesn’t involve pied-piping at all, and it is worth

further investigation as a candidate for an LF which assumes *wh*-phrases in situ. If one did pursue this line, then a pied-piping approach would lose any plausibility. Everything would speak for *wh*-in-situ LFs and the problem would rather be why we do have *wh*-movement for languages like English or German. There is, of course, nothing in Nishigauchi's book which suggests that he could have such an approach in mind. Groenendijk and Stokhof (1982) are not cited, whereas Nishigauchi relies on Karttunen (1977) on several occasions. Finally, Groenendijk and Stokhof's theory requires an approach to the syntax/semantics interface entirely different from the standard approach and from that which Nishigauchi seems to have in mind. For these reasons, I will assume the Hamblin/Karttunen semantics for questions. With respect to that framework, the criticism made here is valid. With respect to Groenendijk and Stokhof's theory, there is no semantic reason for Nishigauchi's theory at all.

5. REVIEWING THE ARGUMENTS

The preceding section may be regarded as a refutation of Nishigauchi's theory as it stands. Our next task will be to review the arguments which motivate his approach. Some of them seem to be genuine problems for the standard approach. If these arguments are basically sound, then some modification of the classical approach is required.

Ad 1. The first argument was that the existence of *wh*-islands requires that *wh*-movement at LF must be constrained by Subjacency. This seems a reasonable conclusion if the facts are as assumed by Nishigauchi.¹⁰

Ad 2. The second argument was that only a theory which assumes LF Pied-Piping can account for what is a legitimate short answer to a *wh*-question. The relevant example was (3), here repeated as (34).

(34) A. Austen desu
 'It's Austen.'

¹⁰ James Huang has informed me that this is doubtful: there are Japanese speakers who can understand a question of type (i) as (ii):

(i) Q: Tanaka knows Q: Mishima bought what

(ii) For which thing *x*, does Tanaka know whether Mishima bought *x*?

(i) is simpler than Nishigauchi's example given in (2), because it contains only one *wh*-word in the embedded interrogative.

- B. Austen-ga kaita hon desu
'It's a book that Austen wrote.'

In order to be convincing, the argument needs further elaboration. Note first that Nishigauchi has to say (and he does) that (A) is an elliptical answer for (B). If this elliptical answer is possible, we face the problem of why question (35Q) (Nishigauchi's (80), p. 53) can only be answered by (35B), and not by (35A).

- (35) Q. [Dare-ga dare-ni kai-ta] tegami]-ga mitukari-masi-ta-ka?
who-N who-D wrote letter-N found-was-Q
'(A) letter that who wrote to who was found?'

- A. *Tanaka-san-ga Nakasone-san-ni desu¹¹
-N -D

- B. [[Tanaka-san-ga Nakasone-san-ni kai-ta] tegami] desu

Thus, we need a theory of ellipsis. It remains to be shown that an LF with pied-piping can explain the admissible short answers better than a theory which assumes classical LFs. I do not deny, however, that a representation that assumes pied-piping at some level of representation might be useful for that purpose.

Ad 3. Next, consider argument 3, the crossover argument. This argument is one of the most impressive. Nevertheless it will turn out to be wrong, as we will show in detail. Recall that the contrast to be explained is this (cf. (4) above):

- (36) John-wa [Mary-ga pro_i kau mae ni]
John-TOP Mary-NOM pro_i bought before
[Mishima-san-ga/*dare-ga kaita hon-o]_i yonda
Mishima-NOM/*who-NOM wrote book-ACC read
'John read a/the book that *Mishima*/*who wrote before Mary bought *it*.'

¹¹ Short answers of this type are not generally inadmissible. On page 50, we find the following question-answer sequence (Nishigauchi's (74)/(75)):

- (i) Dare-ga doko-e iki-masi-ta-ka?
who-N where-to go-Past-Q
'Who went where?'
- (ii) John-ga Boston-e, Bill-ga Amherst-e desu
'John, to Boston; Bill, to Amherst.'

For the grammatical variant, Choe and Nishigauchi assume an LF of the following sort:

- (37) before Mary bought pro_i , John read [a/the book that Mishima wrote] $_i$

I guess that we have to interpret coindexing as coreference in the sense that coindexed terms are constants denoting the same object, here the book that Mishima wrote. Now, according to Choe/Nishigauchi, the ungrammatical variant has the following standard LF:

- (38) dare-ga $_k$ [$_C$ John-wa [Mary-ga e_i kau mae ni]
 who $_k$ John Mary (it) $_i$ bought before
 [t_k kaita hon-o] $_i$ yonda no]?
 [t_k wrote book] $_i$ read Q
 ‘For which person k , John read [a/the book that k wrote] $_i$ before Mary bought it $_i$?’

This LF seems to be well-formed. Hence the standard approach cannot explain the deviance of (36). The flaw in the argument is that (38) is not interpretable and therefore cannot be an LF for (36). Reversing the argument, one could even maintain that the uninterpretability of the *dare-ga* variant is an argument for the standard approach, because it explains the said deviance. To understand the criticism, consider a semi-formal representation of the LF:

- (39) $*\lambda p\exists k[\text{person}(k) \ \& \ p = \text{before Mary bought it}_i, \text{ John read [a/the book that } k \text{ wrote]}_i]$

If we try to interpret it_i and [a/the book that k wrote] $_i$ as coreferential, we discover that this is not possible, for the latter term contains a bound variable. So this term couldn’t be a constant referring to something particular.

In order to interpret sentence (36), we therefore have to consider the (invisible) pronoun it_i as a bound variable. The term binding it must be [a/the book that k wrote] $_i$. It follows that we have to scope that term by means of QR into a position in front of the pronoun. But then we obtain a Weak Crossover configuration, as the following representation shows:

- (40) a. dare-ga $_k$ [$_C$ [t_k kaita
 hon-o] $_i$ [John-wa [Mary-ga pro_i kau mae ni] t_i yonda no]]?
 ▲─────────────────────────────────── QR
- b. $\lambda p\exists k[\text{person}(k) \ \& \ p = \text{[a/the book that } k \text{ wrote]}_i[\lambda i[\text{before Mary bought } i, \text{ John read } i]])]$

The LF in (40a) is interpretable as (40b), but it is excluded by the Bijection Principle since both pro_i and t_i are locally A'-bound by $[t_k \textit{kaita hon-o}]_i$. Therefore, the crossover facts follow under standard assumptions.

The objection rests on the assumption that a pronoun cannot be co-referential with a term which contains a bound variable. There is more to say about that. Since the discussion is rather subtle, I have postponed it to Appendix I. The discussion will not weaken the objection made here. I therefore take it that the third argument is refuted.

Ad 4. Let us take up Hasegawa's (1986) argument pro Nishigauchi, that is, argument 4. The relevant observation was that (7a), here repeated as (41a), doesn't have the reading (41b), but only (41c). According to Hasegawa, this is predicted by Nishigauchi's theory, because in his LF, viz. (41d), 'a person' has wide scope with respect to 'everyone'.

- (41) a. $daremo-o_i$ [nani-o yonda hito-ga] t_i syootai-sita no
 everyone-ACC [what-ACC read person-NOM] t_i invited Q
- b.*For which x: For every person y, there is a person z that read x such that z invited y?
- c. For which x: There is a person z that read x such that for every person y, z invited y?
- d. $[nani-o_n \textit{yonda hito-ga}]_k \textit{daremo-o}_i \textit{t}_k \textit{t}_i \textit{syootai-sita no}_{n,k}$
 '[A person that read what_n]_k is such that everyone invited him?_{n,k}'

As it stands, the argument is not valid, because (41c) is not the interpretation for Nishigauchi's LF (41d). In his theory, (41d) means something quite different, namely (42):

- (42) For which n,k, k a person, n a thing that was read by k, k invited everyone?

(42) asks for persons, as can be seen by inspection of the variable k in the nucleus. (41c), however, asks for books. For the reasons given in section 4, Hasegawa's paraphrase (41c) is exactly correct. Thus, a closer inspection shows that Hasegawa's argument is rather an argument against Nishigauchi. If we generate a syntactic form with pied-piped material, then this material must be reconstructed at LF in order to obtain the correct interpretation.

Still, it is a problem for the standard approach that reading (41b) doesn't exist. The anonymous referee #1 comments on this:

Hasegawa's judgement on the crucial contrast in (41) is not shared by everyone. Many speakers find (41b) possible for (41a). [I have changed the reference numbers, which referred to the first draft of the paper. A.v.S.]

Thus the data are not undisputed,¹² but since some speakers accept them, I will continue to regard them as real.

Ad 5. Next, let us consider Nishigauchi's scope argument, which we have called the fifth argument. Recall that sentence (9a), repeated here as (43a), has the pragmatically absurd reading where each representative represents a certain plurality of countries. According to Nishigauchi, (43b) is the standard LF, which expresses the non-observed reasonable reading where each representative comes from a different country. (43c) is Nishigauchi's LF and is supposed to capture the odd reading.

- (43) a. ?? [[Nan-ka-koku kara ki-ta] daihyoo]-ga
 how-many-countries from came representatives
 atumari-masi-ta-ka
 gathered Q
 'Representatives who came from how many countries gathered
 (at the summit meeting)?' (= Nishigauchi's (89))
- b. [how many countries]_x [[from x came] reps]_y [y gathered]
 'For how many countries x, there are representatives coming
 from x who gathered?' (= Nishigauchi's (92))
- c. [[how-many-countries]_x [from x came]] representatives, Q_{y,z}
 [y gathered]
 'For which y,z, z a number, y representatives that came from
 z many countries, y gathered?'
 (= Nishigauchi's (93) with 'Q_{y,z}' added)

Let us check this argument. First consider (43b), the supposed standard LF. The variable x is created by *wh*-movement, whereas y is the movement index of QR. A closer inspection reveals, however, that we have to scope the *wh*-phrase *how many* which is contained in *how many countries*. Otherwise, we could not interpret the LF at all. Thus, a more elaborate version of (43b) is (43b')

¹² My Korean informants get the missing reading as well.

- (43) b'. [how-many]_z [z countries]_x? [representatives [that came from x]]_y [y gathered]
 'For which z,x, z a number, x countries, representatives from x came?'

Since the number variable *z* doesn't occur in the nucleus, the LF means: 'For which countries *x*, representatives that came from *x* gathered?' This is a perfectly reasonable reading. Therefore, it cannot explain the oddness of sentence (43a). Thus, Nishigauchi would be (partially) right if the standard approach did assign this LF to (43a). But, of course, there is no reason to assume so. Arguably, *how many countries* is a pied-piped form with *how many* as pied-piper and *countries* as the pied-piped material. An LF without pied-piping must therefore be something like (43b'):

- (43) b''. [how-many]_z? [representatives [that came from z countries]]_y [y gathered]
 'For which number *n*, representatives that came from *n* countries gathered?'

This is exactly the odd reading Nishigauchi wants to capture. Thus, (43a) is not a problem for the standard account but rather supports it.

Compare Nishigauchi's pied-piping analysis (43c) to this. In order to be able to interpret the LF, we have to scope *how many* in addition.¹³ Thereby we obtain:

- (43) c'. [[how-many]_z [[z countries]_x [from x came]]] representatives]_{Q_{y,z}} [y gathered]
 'For which y,z, z a number, y representatives that came from z many countries, y gathered?'

By familiar reasoning, we discover that this means the same as 'For which y, y representatives of countries, y gathered?' Contrary to what Nishigauchi claims, there is nothing odd in this meaning. And, of course, sentence (43a) does not have this reading.

Let us summarize the discussion of the fifth argument. The situation has been reversed: what seemed to be an argument against the standard approach and in favor of Nishigauchi's system has turned out to be an argument for the standard approach and against his system.

¹³ I guess that Nishigauchi intends *how many countries* to be in SpecC and *how many* to be adjoined to that NP. In footnote 6, I have expressed my objections to this kind of LF movement.

Ad 6. Now comes argument number six, attributed to Saito by Watanabe (1992): *wh*-phrases located within the same relative clause always have the same scope with respect to a *wh*-Comp. This is supposed to follow from the pied-piping analysis because the *wh*-words travel to Comp together with the NP containing the relative clause. The relevant example from (12) is repeated as (44):

- (44) a. John-wa [Mary-ga [[nani-o doko-de katta]
 TOP NOM what-ACC where-LOC bought
 hito]-o sagashiteiru ka] sirigatteiru no?
 person-ACC looking for Q know want Q
 ‘Does John want to know: Is Mary looking for a person who bought what where?’
- b. Does John want to know [for which *x*, *x* a thing, for which *y*, *y* a place, Mary is looking for the person who bought *x* at *y*]
- c. For which *x*, *x* a thing, for which *y*, *y* a place, John wants to know [whether Mary is looking for the person who bought *x* at *y*]
- d.*For which *x*, *x* a thing, John wants to know for which *y*, *y* a place, [Mary is looking for the person who bought *x* at *y*]
- e.*For which *y*, *y* a place, John wants to know for which *x*, *x* a thing, [Mary is looking for the person who bought *x* at *y*]

Note first that Watanabe’s paraphrases (44b) and (44c) are not compatible with Nishigauchi’s theory, because the *wh*-words are extracted from the complex NP, which itself is left in situ. Nishigauchi’s LFs must rather be (44b’) and (44c’):

- (44) b’. Does John want to know [for which *x,y,z*, *x* a thing, *y* a place, *z* a person who bought *x* at *y*, Mary is looking for *z*]?
- c’. For which *x,y,z*, *x* a thing, *y* a place, *z* a person who bought *x* at *y*, John wants to know [whether Mary is looking for *z*]?

These, however, mean something quite different from what Watanabe’s paraphrases suggest, namely (44b’’) and (44c’’) respectively:

- (44) b’’. Does John want to know for which person who bought something somewhere Mary is looking?
- c’’. For which person who bought something somewhere does John want to know whether Mary is looking for that person?

Thus, if the Japanese data are as Watanabe claims,¹⁴ Nishigauchi's theory certainly cannot account for them. A further problem is that Watanabe's paraphrase in (44c) is not compatible with Nishigauchi's claim that LF movement is restricted by *wh*-islands in Japanese. The point that remains to be explained is that the *wh*-words in the same relative clause always have the same scope.

Ad 7. Finally, let us look at Japanese *mo*-phrases, which have an analogous interpretation as complex *wh*-phrases and therefore suggest that Nishigauchi's account has some generality in the syntax of Japanese. The refutation of this analysis is due to Ohno (1991).¹⁵ Ohno considers the following Korean example (his (5)):

- (45) I *kake-nun* [[*onu nala eso culphantoenun*] *caek ina*] *panta*
 this store [[*which* country in is published] book *ever*] sells
 'This store sells books published in every country.'

As the paraphrase shows, *onu* corresponds to Japanese *dono* and *ina* is the equivalent of *mo*. Ohno comments on this:

Nishigauchi and Kang would predict that we have universal quantification both over the domain of countries and the domain of books. But this is ridiculous. The bookstore in question need not be so well-stocked. To make (5) [= (45)] true, every country must be represented in the store, but a few books from each country would be good enough.

To make the argument precise, consider Nishigauchi's LF for the sentence, which is something like this:

- (46) [[*which* country_y in is published] book_x *ever*_{x,y}] this store *x* sells
 'For every *x,y*, *y* a country, *x* a book published in *y*, this store sells *x*.'

This means that this store sells every book published in one country or another, indeed. So the analysis cannot be right.

Another argument showing that the "referential" argument of the large NP is not bound by *ina/mo* is the fact that it can be quantified by a floating quantifier. This is shown by Ohno's examples (6), here (47):

¹⁴ My Japanese informant does not accept this pattern of grammaticality. He has difficulties in obtaining the reading (44c). If he gets it by a tour de force, he also obtains the mixed reading (44b) and other mixed readings. So there should be room for parametric variation among speakers. But mixed readings are not compatible with the pied-piping approach.

¹⁵ In the first draft of this article, I had formulated similar counterarguments myself. The anonymous referee #1 pointed out to me that these arguments are found in Ohno (1991).

- (47) a. Yuhaksaeng-i *tumyong* wassta
 foreign student-NOM *two* came
 ‘Two foreign students came.’
- b. **Onu* yuhaksaeng *ina tumyong* wassta
which foreign student *ever two* came
- c. *Onu* nala-uy yuhaksaeng *ina tumyong* wassta
which country-GEN foreign student *ever two* came
 ‘Two students from each country came.’

If *inalmo* were an unselective quantifier binding the *wh*-phrase and the subject variable of ‘student’, the contrast between (47b) and (47c) would be totally mysterious. The first presumably has the nonsensical interpretation: ‘For every foreign student *x*, two of *x* came’. Therefore, (47c) should express the equally absurd statement: ‘For every country *x*, every foreign student *y* of *x*, two of *y* came’. This, however, is not so: the English paraphrase for (47c) shows that it must be a sort of “inverse linking” construction meaning something like this:

- (47) c’. For every *x*, *x* a country, there is a *y*, *y* a group of foreign students from *x*, two people of *y* came.

This paraphrase shows two things: (1) *inalmo* binds the *wh*-phrase, but not the subject variable of the complex noun; the latter is a bare NP and is interpreted independently. (2) ‘which country’ undergoes long movement at LF, since it has wide scope with respect to the head noun ‘students’. The situation is familiar to us from all the previous examples. Ohno brings further examples, but I find these few sufficient to refute Nishigauchi’s analysis.

The following chart contains a summary of the discussion:

- | | | |
|------|---------------------------------------|--|
| (48) | 1. <i>Wh</i> -islands | suggestive |
| | 2. Short answers | without much force |
| | 3. Weak Crossover | invalid, supports standard approach |
| | 4. Scope interaction with quantifiers | no argument for LF Pied-Piping, but data problematic for standard approach |
| | 5. Nishigauchi’s scope | invalid, supports standard approach argument |

- | | |
|---|--|
| 6. Saito and Watanabe's scope argument | invalid and in conflict with argument 1, but (possibly) important data |
| 7. <i>molina</i> as unselective quantifiers | misanalyzed |

As the survey shows, not one argument for LF Pied-Piping has survived. The conclusion is that *wh*-movement at LF is not restricted by Subjacency in general. We notice “(a) the presence of *wh*-island effects and (b) the absence of the CNP effects” (a formulation of referee #1) if we disregard Saito and Watanabe's data underlying argument 6. These two facts might be sufficient to motivate Nishigauchi's pied-piping approach, because the absence of the CNP effects is explained by the assumption that *wh*-phrases are not extracted from the CNP at LF, whereas *wh*-movement of the CNP itself respects Subjacency. We have seen that this attractive analysis is not tenable, because there can't be LF Pied-Piping.

Now, the existence of *wh*-islands in Japanese, which virtually no one seems to dispute, is a problem for the standard analysis, i.e., for unbounded *wh*-movement at LF. Thus, pied-piping is still attractive. We have seen that LF Pied-Piping is not possible. Let us therefore assume that there is pied-piping at some intermediate level between S-structure and LF.

6. PIED-PIPING AND RECONSTRUCTION IN JAPANESE

Taking up suggestions by the anonymous referee #1, I formulate my proposal in a derivational approach, much in the spirit of Chomsky (1992), but differing in technical detail and sticking closely to the GB-terminology.

As widely assumed, we conceive of Japanese S-structure as D-structure plus NP-movement, head movement, and scrambling. S-structure is the branching point between derivations that lead to PF or LF.

An LF is a structure meeting the principle of full interpretation. In my understanding this means that the lexical material is at the position in the tree where it can be compositionally interpreted. Furthermore, any index of the structure is interpretable by general semantic rules, e.g., variable binding. As noted earlier, no ambiguity is allowed. This is what I mean by *transparent LF*, a term henceforth used synonymously with LF. The rules operating between S-structure and LF may be called LF-rules, but the intermediate structures are not LFs.

Let us call one of these intermediate levels *WH-structure*. The term is chosen because at this level, Japanese structures are very similar to English

or German structures after *wh*-movement, that is, to S-structures. The distinction between S- and WH-structure is very much like Riemsdijk and Williams's (1981) distinction between English NP-structure (= Japanese S-structure) and English S-structure (= Japanese WH-structure).¹⁶ An essential feature of the analysis is that it assumes reconstruction, which will be introduced below.

The next terminological distinction applies to *wh*-phrases. A *wh*-phrase without pied-piped material will be called a "genuine *wh*-phrase" or *wh*-phrase simpliciter.¹⁷ The term *WH-phrase* will denote genuine *wh*-phrases and *wh*-phrases with pied-piped material; that is, the term is more general. What counts as a WH-phrase for a particular genuine *wh*-phrase must be described syntactically, and I rely on Nishigauchi's syntactic work in this respect (cf. fn. 6). If I speak of the WH-phrase of a genuine *wh*-phrase, I always mean that the former is pied-piped by the latter.

Let us assume next that Nishigauchi's WH-phrases move to a WH-Comp at WH-structure and that this movement – *WH-movement* – is constrained by Subjacency. Thus, the WH-structure for Nishigauchi's standard example, here repeated as (49a), is something like (49b), with English morphemes for the semantic heads for convenience:

(49) a. [_{CP} [_C kimi-wa [[dare-ga kai-ta] hon-o] yomi-masi-ta-ka]]
S-Str.

b. WH-movement
[_{CP} [[who-ga write-ta] book-o]_i [_C you-wa t_i read-do-ta-ka]]
WH-str.

(49b) is a well-formed WH-structure, but not a well-formed LF. To build up a correct LF, i.e., a structure expressing something like the reading given in (25) above, we first extract the genuine *wh*-phrase from the relative clause and adjoin it to its host. I will call this step *wh-extraction from WH*.

¹⁶ In the first draft of this paper, I called the WH-structure level S-structure and got a harsh protest from referee #1. The difference between the organization of the English grammar assumed in van Riemsdijk and Williams 1981 and the organization of the Japanese grammar assumed here is this: in English, NP-structure is a level whose well-formedness conditions are checked before the "phonetically visible" level of S-structure (= WH-structure) is reached. In Japanese, WH-structure (= Engl. S-structure) is checked after the visible S-structure (= Engl. NP-structure).

¹⁷ Genuine *wh*-phrases are *wh*-phrases without pied-piped material, e.g., *which symphony* or *which symphony that Beethoven composed*, but not *in which symphony* or *in which symphony that Beethoven composed*.

- (50) *Wh*-extraction from WH
 [_{CP} who-ga_j [[_{t_j} write-ta] book-o]_i [_{C'} you-wa t_i read-do-ta-ka]]

Wh-extraction from WH cannot be restricted by Subjacency. It is an idiosyncratic device belonging to the syntax of pied-piping, which accounts for the irregularity of the construction. (*Wh*-extraction from WH is present in one form or another at many places in the literature. Higginbotham and May's (1981) Quantifier Decomposition is very similar. Chomsky (1992) assumes the rule as well, as we will see in Appendix III. I am not aware of theories which account for the subjacency violation of the rule.) (50) is not a WH-structure anymore. It is an intermediate structure on the way to LF.

In the next step, the pied-piped material is reconstructed to an adjunction site in the nucleus where it can be interpreted.

- (51) Reconstruction
 [_{CP} who-ga_j [_{C'} [[_{t_j} write-ta] book-o]_i you-wa t_i read-do-ta-ka]]
 LF
 'For which *j*, *j* a person, did you read a book that *j* wrote?'

The basic assumption for reconstruction is a standard one:

- (52) *Reconstruction* is downward movement and leaves no trace.

The structure (51) determines the transparent LF. There is no pied-piping at this level. There is pied-piping at WH-structure instead. It is important to keep in mind that this is not a mere play with words which represents basically the same approach as Nishigauchi's. For Nishigauchi, the WH-structure (49b) is the LF, but for me the LF is (51). Nishigauchi's structure is interpretable, but not in the correct way. This means that his principles of interpretation must be wrong, viz. non-existing. Thus, there are no syntactic reasons why (49b) should not be an LF. Rather, it is our principles of interpretation which say that it is not.

Let me comment on Reconstruction. The assumption that it leaves no trace should not be controversial, because the result of the movement process satisfies the well-formedness conditions known from GB-theory. That we reconstruct the lower segment of a complex category is plausible enough, given that the process is the inverse of ordinary upward movement. For instance, we could have generated the same structure by ordinary upward movement: in the first step, we adjoin the CNP to IP, then we extract the *wh*-phrase from its WH-phrase and move it to Comp. Finally, there is Chomsky's (1992) method, which does it all with copy movement and

appropriate successive deletion. I will say more on this method in Appendix III.

We also may ask how Reconstruction is constrained. It certainly is restricted by trace theory, given that the material to be reconstructed carries an index which must bind its trace. The limit is movement down to the trace, in which case the index is lost. No trace, no movement index. For the cases of reconstruction considered here, the process is further constrained by Subjacency, because the upward movement of the host, i.e., the WH-phrase, is constrained by Subjacency. Yet, Reconstruction may violate Subjacency, as we will see in Appendix III.

Before I go on, let me summarize the essentials of the LF-rules for Japanese interrogatives.

1. At WH-structure, each SpecC of a *ka/no*-CP is filled either by a WH-phrase in the sense of Nishigauchi or by the empty operator WHETHER, which contains the semantics of *yes/no*- or *whether*-questions. This movement – WH-movement – is constrained by Subjacency. WH-movement may be pied-piping.
2. At LF, any genuine *wh*-phrase *not contained* in a WH-phrase pied-piped by it moves to the Spec of an Interrogativizer (*wh*-movement). For Nishigauchi, this movement is constrained by Subjacency. Yet, as the discussion of the data suggests, some speakers are more liberal here. Furthermore, we want some generality, because *wh*-movement at LF is not constrained by Subjacency in Chinese (cf. Huang 1982). Thus there should be room for parametric variation.
3. Any genuine *wh*-phrase *contained* in a large-scale WH-phrase pied-piped by it is adjoined to the WH-phrase (*wh*-extraction from WH). This movement is not constrained by Subjacency.
4. Pied-piped material is reconstructed to a position in the nucleus of the question where it can be interpreted. Reconstruction leaves no trace.

To illustrate the theory, let us see how the *wh*-island effect is derived. The relevant example was (2), here repeated as (53):

(53) a. *S-structure*:

Tanaka-kun-wa	[_{CP} dare-ga	nani-o	tabe-ta-ka]	
Tanaka	who	what	ate	Q
oboe-te-i-masu-ka?				
knows				Q

b. *Interpretations*:

b₁. Does Tanaka know: for which x,y, x a person, y a thing, x ate y?

- b₂. *For which x, x a person, Tanaka knows what x ate?
 b₃. *For which y, y a thing, Tanaka knows who ate y?
 b₄. *For which x,y, x a person, y a thing, Tanaka knows whether
 x ate y?

The grammatical WH-structure and LF for (53b₁), in which details are omitted, is (54):

- (54) WHETHER [Tanaka-kun-wa [_{CP} dare-ga_i nani-o_i [t_i t_i tabe-ta]-ka] oboe-te-i-masu]-ka?

In order to derive the LF for (53b₂), we have to fill the higher Comp with *dare-ga* ‘which person’ and the lower one with *nani-o* ‘what’ at WH-structure. The former movement violates Subjacency. If we fill one of the two Comps with WHETHER, we cannot derive the desired reading anymore, because WHETHER has its own semantics, which is not compatible with a *wh*-phrase in the same Comp. The reader may convince herself that the remaining two readings are not derivable either.

The approach may be used to explain Saito and Watanabe’s data (argument 6) as well. Recall that *wh*-phrases contained within the same complex NP always have the same scope. Before we reconstruct, we have to extract these *wh*-phrases. Since they are adjoined to their host, they remain in the same Comp. In the next step, we apply reconstruction. “Mixed readings” are not possible. Consider the two possible readings for (55a) (= (12a)), viz. (55b) and (55c):

- (55) a. John-wa [Mary-ga [[nani-o doko-de katta]
 TOP NOM what-ACC where-LOC bought
 hito]-o sagashiteiru ka] sirigatteiru no?
 person-ACC looking for Q know want Q
- b. For which x, x a thing, for which y, y a place,
 John wants to know [whether Mary is looking for the person who
 bought x at y]
- c. John wants to know [for which x, x a thing, for which y, y a
 place, Mary is looking for the person who bought x at y]

The derivation of these is straightforward. The S-structure for (55c) has [[*nani-o doko-de katta*] *hito*]-o in the subordinate SpecC, whereas the S-structure for (55b) has it in the matrix SpecC. The LFs corresponding to the two readings are obtained by reconstructing the pied-piped material.

It has been noticed already that the theory predicts (55b) to be ungrammatical, because WH-movement of ‘person who bought what where’ at

WH-structure crosses a WH-island and is therefore a Subjacency violation. In fact, my informants all find this construction worse than the other (cf. fn. 14). We would expect then that the “mixed readings” are still worse. James Huang thinks so (pers. comm.), but other people don’t get the contrast.

Watanabe and Saito silently assume readings where the pied-piped material is reconstructed to a position as low as possible. In the theory of reconstruction discussed here we have a range of other possibilities. For instance, an alternative to (55c) could be a reading stemming from an LF where the pied-piped material has wide scope with respect to the intensional function ‘Mary is looking for’:

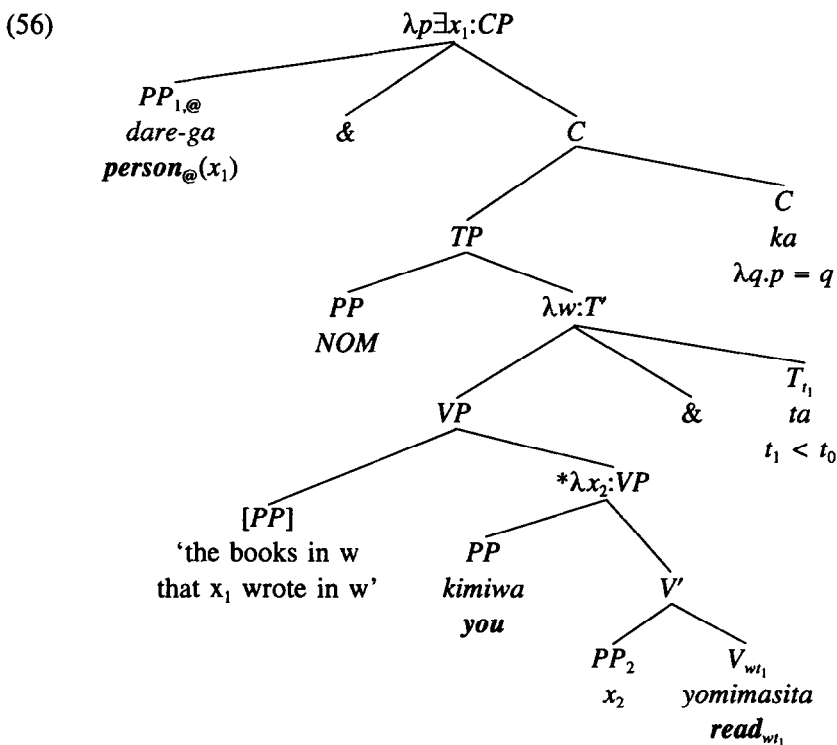
- (55) c’. John wants to know [for which x , x a thing, for which y , y a place, there is a person z who bought x at y and Mary is looking for z]

What John is asking for is quite different in the two cases. In the case of (55c), he wants to know propositions such as ‘Mary is looking for the person who bought cigars in Manila and for the person who bought Tequila in Oaxaca’. In the case of (55c’), he wants to know propositions like ‘Someone bought cigars in Manila and Mary is looking for that person, and someone bought Tequila in Oaxaca and Mary is looking for that person’. In the first case, Mary has no particular person in mind, but in the second case, she is looking for two particular persons, though John might not be interested in their identity. If the pied-piped LF is in the higher Comp at S-structure (case (55b)), we even have three further possible readings, which the reader may figure out for himself. It is a matter of empirical investigation whether all of these readings exist or only some of them.

A methodological remark is in order at the end of this section. We have been speaking of several levels. In a derivational approach of the kind assumed, the distinction between levels is a *façon de parler* because the grammar has only two final outputs, PF and LF. The requirements on S-structure and WH-structure might be thought of as constraints on some intermediate stages of the derivation (cf. fn. 16). One might object that the three rules, WH-movement, *wh*-movement, and *wh*-extraction from WH, are all instances of Move α . This may be so. The said movements behave differently, however, and the distinctions have to be drawn somewhere. Here, I have preferred a descriptive account which clearly shows what is going on. There would actually be more stipulations if we incorporated the description of what counts as a large scale WH-phrase: the syntax of “WH-percolation” is entirely neglected in this paper.

7. LFs FOR JAPANESE

To round off the article, I want to give some concrete examples of how I precisely conceive of transparent Japanese LFs after reconstruction. From the preceding remarks it should be clear that this is the really hard task. LFs in the usual style, with uninterpreted indices, are hardly more than notation. First, consider the LF for Nishigauchi's standard example, which we present in two portions:

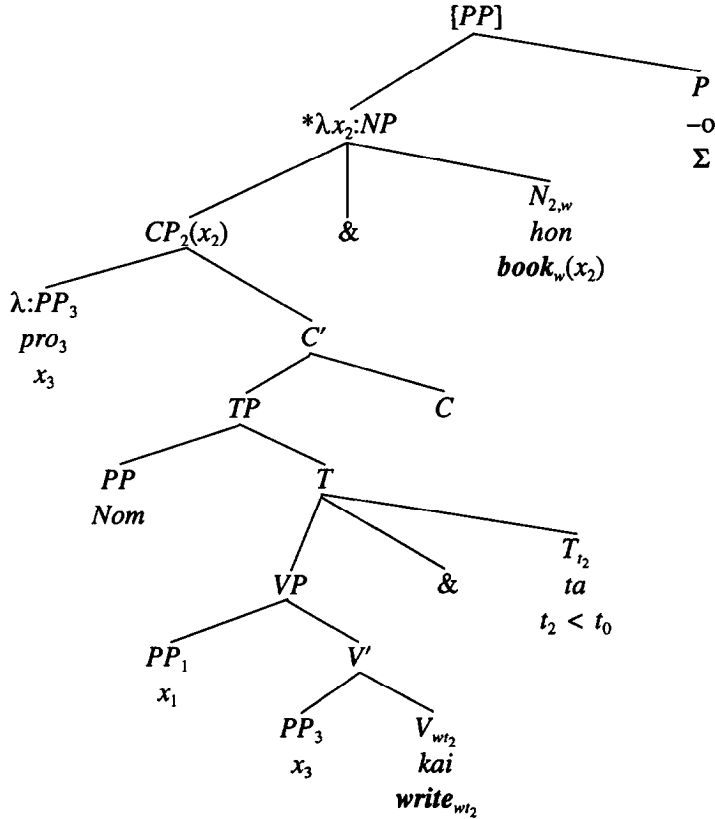


The indexing shows where the information is localized. The structure of the object node 'the books that x_1 wrote in w ' will be given in a moment. The *wh*-phrase *dare-ga* in the specifier of the interrogative is extracted out of this complex noun, which itself is reconstructed at an adjunction site of VP . I am assuming that the subject 'you' is generated in the VP and that it is moved to the nominative position at S-structure, which is SpecT. In order to avoid complications, I have reconstructed this A-movement at LF. The lower VP segment with λ -abstraction over the object variable x_2 gives us the set of books which you read in w . The combination λx_2 is created by QR-ing the object term. Application of Link's *-operator yields the property of groups true of a group iff every member

of that group has the said first-order property. The star operator is an effect of the plural semantics, invisible in Japanese. This means that you read in *w* every member of the books that x_1 wrote in *w*. If we put all this together, we have the result that the LF denotes the set of propositions ‘ $\lambda p \exists x_1 [x_1$ is a person in @ & $p = \lambda w.$ you read in *w* each of the books in *w* that x_1 wrote in *w*’].

And this is the structure of the reconstructed object ‘the books that x_1 wrote in *w*’:

(57)



As can be seen, the specifier of the relative clause is occupied by the relative pronoun ‘*pro*₃’, which is bound by the λ -operator. This is what is usually called the “*wh*-operator” in the SpecC of a relative clause. Thus, this SpecC is occupied, as standardly assumed. Compare footnote 6, where I noted that Nishigauchi is overlooking this point. After λ -abstraction over the pronoun we obtain a property, which is predicated of the referential argument x_2 of the head of the relative clause. Technically, this is achieved by assigning the referential index ‘2’ both to the relative clause and to

the head noun, where this index represents the referential argument. Application of the relative to this argument, that is, ' $\lambda x_2[x_1$ wrote x_2 in w] (x_2)', yields the open proposition ' x_1 wrote x_2 in w '. Similarly, ' $\text{book}_{2,w}$ ' is interpreted as the open proposition ' x_2 is a book in w '. The two are combined by conjunction, yielding the open proposition ' x_1 wrote x_2 in w & x_2 is a book in w '. Abstracting over the referential variable x_2 , we obtain the set ' $\lambda x_2[x_1$ wrote x_2 in w & x_2 is a book in w ']. The star operator gives us the power set of that set. The invisible definite plural article ' Σ ' yields the largest group within the set. I have located the article in the head of PP in analogy to *mo*, which is located there as well, as we will see in a moment.

The evaluation of the LF thus gives us a tensed version of the formula mentioned in footnote 8:

$$(58) \quad \lambda p \exists x_1 [\text{person}_{@}(x_1) \ \& \\ p = \lambda w * \lambda x_3 [t_1 < t_0 \ \& \ \text{read}_{w,t_1}(\text{you}, x_3)] \\ (\Sigma * \lambda x_2 [t_2 < t_0 \ \& \ \text{write}_{w,t_2}(x_1, x_2) \ \& \ \text{book}_w(x_2)])]$$

The formula expresses a definite distributive plural reading for the reconstructed phrase. From what I have seen in the literature, there can hardly be any doubt that this reading exists. The people I have asked have the intuition that the reconstructed phrase can have an indefinite reading as well. Furthermore, it can be singular. Therefore, one would expect that we have a lot of ambiguity here. Nishigauchi's sentence should express questions like the following, among others:

- (59) a. For which person, did you read books which that person wrote?
 b. For which person, did you read the book which that person wrote?
 c. For which person, did you read a book which that person wrote?

The Korean speakers I have asked think that ambiguities like these exist in their language. Hasegawa's proposed LFs in (8) obviously assumed an indefinite reading as well. It should be clear how indefiniteness could be built into the LF. Instead of the definite article, we would have to employ the invisible indefinite article.¹⁸

¹⁸ Referee #2 remarks that the facts might be more complicated. She gives the following example:

(i) kimi-wa [[dono senso de taka kaita] hito-o] sitte-ima-su-ka
 you which war in fought person know
 'You know person who fought in which war?'

Let us take up *mo*-phrases then. The idea is, of course, that they are treated analogously: *mo* embeds a WH-phrase. At LF, any *wh*-phrase pied-piping this WH-phrase moves to *mo*, possibly violating Subjacency. *Mo* has the same semantics as English *every*. We form a restriction out of the *wh*-phrases moved to *mo* and the WH-phrase by an appropriate logical operation. The result of the construction is a generalized universal quantifier.

Let us spell out the analysis in some detail. Recall example (13), here repeated as (60):

- (60) [Dare-ga_i kaita hon]_j-mo_{i,j} omosiroi-desu
 who wrote book ever interesting is
 ‘For each x,y, x a person, y a book which x wrote, y is interesting.’

The analysis is not correct, but the reading exists. To derive it, we have in mind a sort of “inverse linking” construction in the sense of May (1985), which can informally be described as follows:

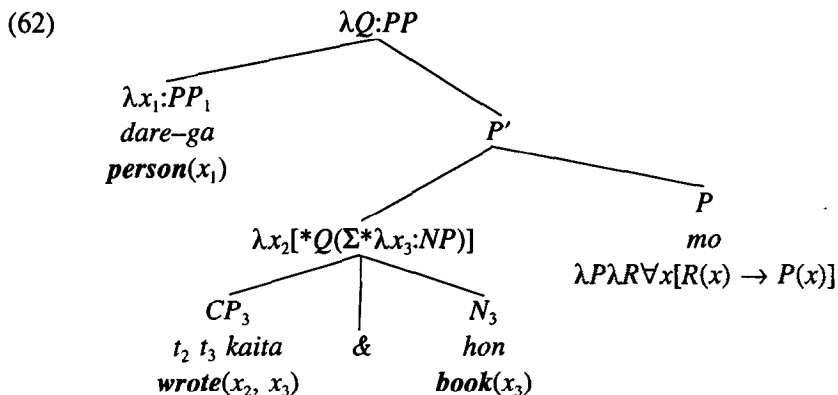
- (61) $\lambda Q_{[NP \text{ everyone } x, \text{ the books that } x \text{ wrote } Q]} \text{ (are interesting)}$
 = For everyone x, the books that x wrote are interesting

Here, Q is of the predicate type. Disregarding tense and the world index, the LF for the complex subject [*dare-ga kaita hon*]-*mo* ‘books who wrote ever’ is given by the following tree:

Her comment is this:

Two informants judged this to be extremely odd, though they could not figure out why. I think this may be because the indefinite reading is not available here. Under the definite reading you get something pragmatically implausible since you are not expected to know all the people who fought in some war.

In Korean, the corresponding sentence is grammatical for the people I have asked, which suggests that the indefinite reading is an option. Ohno (1991), who discusses the issue, concludes that the ultimate choice between the definite and indefinite interpretation is guided by pragmatic principles. I am not sure how he would explain the example of the referee, and I don’t have an answer either. I will assume that the LF I have given here is compatible with the LFs Ohno seems to have in mind.



First, the *wh*-phrase *dare-ga* is moved by *wh*-phrase extraction from ‘its’ WH to SpecP. There it is in a position in which it can be evaluated as the restriction of the universal quantifier *mo*. I am assuming that *mo* applies first to the complement, that is, the complex NP. Therefore, *mo* doesn’t express the subset relation as usually assumed for universal quantifiers. It rather expresses the superset relation. If we apply *mo* to the SpecP first, we can encode the meaning in the more standard way as the subset relation. I have no argument for preferring one alternative over the other. The logical operations written at the nodes are due to the semantics of the plural, the definite article, and the inverse linking construction. The idea underlying the analysis is contained in (61), as remarked. Thus the tree expresses the formula (63):

$$(63) \quad \lambda Q \forall x [\text{person}(x) \rightarrow *Q(\Sigma^* \lambda x_3 [\text{wrote}(x, x_3) \ \& \ \text{book}(x_3)])]$$

Let us abbreviate $\Sigma^* \lambda x_3 [\text{wrote}(x, x_3) \ \& \ \text{book}(x_3)]$ as **the books that *x* wrote**. Due to the meaning of the star operator, the formula can then be rewritten as (64):

$$(64) \quad \lambda Q \forall x [\text{person}(x) \rightarrow \forall y (y \in \text{the books that } x \text{ wrote} \rightarrow Q(y))]$$

If we apply this quantifier to the predicate *omosiroi*, i.e., **interesting**, we obtain the wanted reading, viz. (65):

$$(65) \quad \forall x [\text{person}(x) \rightarrow \forall y (y \in \text{the books that } x \text{ wrote} \rightarrow \text{interesting}(y))]$$

If we compare this with Nishigauchi’s analysis (60), we realize that our LF yields exactly the same truth conditions which Nishigauchi assumes, since formula (65) is equivalent to the paraphrase given by Nishigauchi.¹⁹

¹⁹ Note that the analysis faces the first problem noted in footnote 6: it is an illusion that

The method adopted here is different in an essential aspect, however. Nishigauchi assumes that *mo* is an unselective quantifier binding every *wh*-phrase contained in its WH-complement *plus* the referential variable of the WH-complement. We assume, together with Ohno, that the referential argument of the complement is quantified separately. Thus we can handle Ohno's Korean example given in (45), which is repeated here as (66), whereas Nishigauchi predicts the wrong interpretation, as noted before.

- (66) I kake-nun [[*onu nala eso culphantoenun*] caek *ina*]
 this store [[*which country in is published*] book *ever*]
 panta
 sells
 'This store sells books published in every country.'

The derivation of the intended LF is roughly this:

- (67) a. this store [_{PP} [[*which*₁ country in is published] books]₂ mo] sells
 b. Inverse linking mechanism
 this store λ_{Q_3} [_{PP} [[[*which*₁ country in is published] books]₂ & Q₂] mo] sells
 c. QR
 λ_{Q_3} [_{PP} [[[*which*₁ country in is published] books]₂ & Q₂] mo]
 λ_3 [this store 3 sells]
 d. Existential closure of 'ever'-complement
 λ_{Q_3} [_{PP} \exists_2 [[[*which*₁ country in is published] books]₂ & Q₂] mo]
 λ_3 [this store 3 sells]
 e. *Wh*-phrase extraction from WH
 λ_{Q_3} [_{PP} *which*₁ country $\lambda_4 \exists_2$ [[[4 in is published] books]₂ & Q₂] mo] λ_3 [this store 3 sells]
 f. λ -abstraction over 'which₁'
 λ_{Q_3} [_{PP} λ_1 [*which*₁ country] $\lambda_4 \exists_2$ [[[4 in is published] books]₂ & Q₂] mo] λ_3 [this store 3 sells]

This LF can be translated in a one-to-one way into a formula which expresses Ohno's reading. To be sure, there is more to be said about the details of the "inverse linking mechanism," but the outcome must be something along the lines assumed here.

the paraphrase can be obtained without long extraction. Clearly, the *wh*-phrase is moved out of the relative clause to get the meaning right.

8. CONCLUSION

I have rejected LF Pied-Piping for the reason that it does not make sense semantically. Nevertheless, I have not given up the idea of “invisible” large scale pied-piping altogether. I have localized pied-piping at WH-structure. At LF, the pied-piped material is reconstructed at a position where it can be interpreted. The result is a structure without pied-piping.

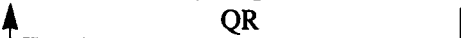
I want to conclude this article with a somewhat skeptical remark. As far as I can see, the only data which support the existence of pied-piping in Japanese at some intermediate level are *wh*-island effects. I did not question the relevant data. If these are not safe, then there is no evidence at all for pied-piping in Japanese and we could adopt the simpler standard approach.

APPENDIX I: REMARKS ON WEAK CROSSOVER

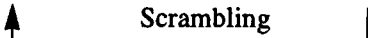
In this section, I would like to qualify my remarks on the crossover facts mentioned in connection with the third argument for LF Pied-Piping. Recall that the contrast to be explained is this:

- (66) a. John-wa [Mary-ga pro_i kau mae-ni] [Mishima-san-ga kaita hon-o]_i yonda
 b.*John-wa [Mary-ga pro_i kau mae-ni] [dare-ga kaita hon-o]_i yonda no
 ‘Before Mary bought *it*, John read *a/the* book that *Mishima/who* wrote.’

In section 5, I argued that the standard LF which correctly represents the reading of (66b) is (67), which exhibits a violation of the Bijection Principle. I conclude that this example of Choe’s rather supports the standard approach, contrary to the author’s intentions.

- (67) *dare-ga_j [_C [t_j kaita hon-o]_i] [John-wa [Mary-ga pro_i kau mae-ni] t_i yonda no]]


The argument needs some qualifications. First, in languages like Japanese and Korean, which allow scrambling, no crossover violation arises via scrambling. The following construction is grammatical, as brought to my attention by Shin-Sook Kim:

- (68) a. John-wa [dare-ga kaita hon-o]_i [Mary-ga pro_i kau mae-ni] t_i yonda no?


- b. dare-ga_j [_C [t_j kaita hon-o]_i [John-wa

 \uparrow
wh-movement
 [Mary-ga pro_i kau mae-ni] t_j yonda no]]

The LF generated from (68a) via *wh*-movement is (68b) and looks exactly like (67). Thus we seem to have reached the following situation: (68b) = (67), but (68b) is grammatical whereas (67) is not. How could that be?

There is much dispute in the literature as to the nature of scrambling. Is it A-movement, is it A'-movement, is it movement to an "extended A-position"? For discussion of the relevant literature and a defense of the claim that scrambling is A'-movement, see Müller and Sternefeld 1991. I don't want to contribute to that debate. For our purposes the following account will do. Suppose we cannot distinguish between the LFs (67) and (68b) in configurational terms. It follows that we have to make a distinction in derivational terms; that is, we have to remember the stage of the derivation at which a configuration is created. Let us distinguish movement indices created between D-structure and S-structure from other indices typographically, by means of the subscript S. Thus, (68b) is more appropriately represented as (69):

- (69) dare-ga_j [_C [t_j kaita hon-o]_{i,S} [John-wa [Mary-ga pro_i kau mae-ni] t_{i,S} yonda no]]

We now stipulate:

- (70) Traces with the index S are exempt from the Bijection Principle.

There are a lot of possibilities to technically implement this, but that is not the concern of this paper. Consider a standard example from English:

- (71) Who_i does his_i mother love t_i?

This configuration offends the Bijection Principle because the trace is created after S-structure, viz. at WH-structure. Thus, one has to keep in mind our terminology. As always, there is much more to say about this issue. In particular, if it doesn't apply to German – as Müller and Sternefeld (1991) would say – then parameterization is necessary.

The second, more subtle question is whether the criticism of Choe and Nishigauchi's analysis shown in (5b), here repeated as (72), is really conclusive. This point was brought to my attention by Irene Heim.

- (72) [dare-ga_j kaita hon-o]_i [_C John-wa [Mary-ga pro_i kau mae-ni] t_j
 yonda no_{ij}]

The objection presupposes that any constellation of the form

$$(73) \quad \alpha_i \dots \text{pron}_j \dots [\beta \dots \gamma_i \dots]_j \dots ,$$

where β is a definite or indefinite term and α is a quantifier or operator binding γ_i , γ_i a trace or a bound variable pronoun, creates a crossover configuration at LF. Irene Heim informs me that, according to James Higginbotham (pers. comm.), there are grammatical English sentences of that configuration, e.g., (74a) and (74b).

- (74) a. Which man_i said that her_j father spoils [his_i wife]_j?
 b. Each man_i said that her_j friends accompanied [his_i mother]_j to church.

According to Higginbotham, these sentences mean (75a) and (75b), respectively:

- (75) a. $\lambda p[\exists i(\text{man}_@ (i) \ \& \ p = \lambda w[\text{say}_w (i, \lambda w[\text{spoil}_w (i\text{'s wife's father}_w, i\text{'s wife}_w))]])]$
 b. $\forall i[\text{man}_@ (i) \rightarrow \text{say}_w (i, \lambda w[\text{accompany}_w (i\text{'s mother's friends}_w, i\text{'s mother}_w))]])]$

The problem remains of how these readings can be obtained from the surface. For the reasons given, the indexings exhibited by (74a, b) won't do, because we have to bind the bound variable pronoun *her_j*. The standard method of doing this is to scope the direct object, and this creates the crossover constellation discussed. For convenience, we give the LF for (75b) together with its interpretation:

- (75) b'. Each man_i [_{t_i} said that [his_i mother]_j [her_j friends accompanied _{t_j} to church]]
 b''. $\forall i[\text{man}_@ (i) \rightarrow \text{say}_w (i, \lambda w[\lambda j[\text{accompany}_w (j \text{ friends}_w, j)] (i\text{'s mother}_w)])] = \forall i[\text{man}_@ (i) \rightarrow \text{say}_w (i, \lambda w[\text{accompany}_w (i\text{'s mother friends}_w, i\text{'s mother}_w))]])]$

Thus, the LF (75b') is certainly not appropriate. Yet, it is hard to see how the S-structure (74b) lends itself to a well-formed LF yielding the correct result. The S-structure discussed by Choe and Nishigauchi is of exactly the same kind as the structures in (74a, b). Therefore, the criticism is still valid.

Now, Heim (1990) indicates a method based on techniques developed by Engdahl (1986) that may be used to handle the Higginbotham cases. Instead of (74a, b) we could work with the following LFs:

- (76) a. Which man_i [t_i said that her_{f(i)} father spoils [his_i wife]_{f(i)}]?
 b. Each man_i [t_i said that her_{f(i)} friends accompanied [his_i mother]_{f(i)} to church].

Here, f is a free variable ranging over Skolem functions, and $her_{f(i)}$ is an E-type pronoun (or pronoun of laziness). The value of f has to be determined from the linguistic context. In the case of example (76a), f is the function that assigns to any individual i the wife of i . In other words, the description of f is given by the term $[his_i\ wife]_{f(i)}$. The analogue holds for the structure in (76b). Obviously, the structures in (76a) and (76b) do not violate the Bijection Principle. The truth conditions for these LFs may then be rendered as (77a) and (77b), respectively:

- (77) a. $\lambda p[\exists i(\mathbf{man}_@ (i) \ \& \ p = \lambda w[\mathbf{say}_w (i, \lambda w[\mathbf{spoil}_w (f_w(i)\text{'s father}_w, f_w(i))])])]$,
 where $f_w = \iota g[\forall x(x\text{'s wife}_w(g_w(x)))]$
 b. $\forall i[\mathbf{man}_@ \rightarrow \mathbf{say}_w (i, \lambda w[\mathbf{accompany}_w (f_w(i)\text{'s friends}_w, f_w(i))])]$
 where $f_w = \iota g[\forall i(i\text{'s mother}_w(g_w(i)))]$

It is easy to see that these interpretations are equivalent to the ones considered before.

The question is now whether the Japanese equivalent of (74b) is grammatical under Higginbotham's reading. If this is the case, then its LF is not (75b') but rather (76b) and no crossover arises. The objection against the third argument would have to be qualified then: the structure for long *wh*-movement at LF would have to be the following one:

- (78) dare-ga_j [_C [John-wa [Mary-ga pro_{f(j)} kau mae-ni]
 [t_j kaita hon-o]_{f(j)} yonda no]]

Here, f must be interpreted as the function which assigns to any individual j the/a book that j wrote. Clearly, no crossover arises with this LF, and it has the correct interpretation, viz. (79):

- (79) $\lambda p[\exists j(\mathbf{person}_@ (j) \ \& \ p = \lambda w[\mathbf{read-before-Mary-buy-f}_w (j)_w(\mathbf{John}, f_w(j))])]$,
 where $f_w = \iota g[\forall j(j\text{'s/the-book-which } j \text{ wrote}_w(g_w(j)))]$

We therefore have to conclude this: if Higginbotham's readings were to exist in Japanese, Choe's argument could be turned into a valid argument against long *wh*-movement at LF, because under Heim's analysis no crossover violation would arise. Thus, the sentence discussed would have the reading under discussion, contrary to the facts.

Do Higginbotham's readings exist then in Japanese? Referee #2 gave the Japanese counterpart of (80a) to a Japanese informant:

(80) a. Each man_i said that [her_j friends] took [his_i mother]_j to the hospital.

b. sore-zore-no otoko-ga_i [[kanojo-no_j yujin]-ga
 each-GEN man-NOM she-GEN friend-NOM
 [kare-no_i haha]-o_j byoin-e tsureteitta to] itta
 he-GEN mother-ACC hospital-DIR brought C said

She writes: "... my informant seemed confident that 'her' and 'his mother' cannot be coreferential in Japanese. That is, Higginbotham's example does not hold in Japanese." Shin-Sook Kim double-checked the sentence with a Japanese informant and confirmed the conjecture. The corresponding Korean sentence behaves like its Japanese counterpart.

Clearly the matter is subtle and deserves more careful empirical investigation. For the time being, I conclude that an LF along the lines of Higginbotham is not available for Japanese and that Choe and Nishigauchi's argument against long *wh*-movement cannot be repaired.

APPENDIX II: WATANABE (1992) ON JAPANESE *WH*-MOVEMENT

Referee #1 comments on a previous formulation of my analysis (which is the same in all relevant aspects as the one presented in this article):

The proposed alternative [to Nishigauchi, A.v.S.] is, as far as I can tell, a notational variant of Watanabe's S-Str. [+WH] operator analysis, coupled with Chomsky's (1992) copy theory of movement.

I will comment on Chomsky's theory in Appendix III. Here, I want to point out the differences between Watanabe's and my proposals. To anticipate the criticism: Watanabe makes the same mistake as Nishigauchi.

Recall that the first argument pro Nishigauchi said that unbound LF movement is not compatible with the existence of *wh*-islands in Japanese. Now, Watanabe (1992: 13) claims that the facts are more complicated. He presents the following pattern:

(81) a.^{??} John-wa Tom-ni [Mary-ga nani-o katta ka dooka]
 John-TOP Tom-DAT Mary-NOM what-ACC bought whether
 tazuneta no?
 asked Q?

'What did John ask Tom whether Mary bought t?'

Answer: John asked Tom whether Mary bought Dylan Dog.

b.^{??} John-wa dare-ni [Mary-ga nani-o katta ka dooka]
 John-TOP who-DAT Mary-NOM what-ACC bought whether

tazuneta no?

asked Q?

'Who did John ask t whether Mary bought what?'

Answer: John asked Otto whether Mary bought Dylan Dog.

c.^{??} John-wa [Mary-ga nani-o katta ka dooka]_j Tom-ni t_j tazuneta no?

'What did John ask Tom whether Mary bought?'

Answer: John asked Tom whether Mary bought Dylan Dog.

d. John-wa [Mary-ga nani-o katta ka dooka]_j dare-ni t_j tazuneta no?

'Who did John ask whether Mary bought what?'

Answer: John asked Otto whether Mary bought Dylan Dog.

The difference between (81a) and (81c), and between (81b) and (81d), is that in (81c, d) the direct object, i.e., the embedded *whether*-interrogative, is scrambled in front of the dative object. If the latter is a *wh*-phrase, the sentence improves considerably.²⁰ With respect to the speakers who accept Watanabe's data, the conclusion must be that there are no absolute *wh*-islands in Japanese, in the sense that they are an extraction barrier in every context. Referee #1 comments on this:

The unclarity of Watanabe's generalization in (81) hinted at in footnote 20 of this paper is shared by many native speakers of Japanese. Some speakers observe the following: If we use the *masu-ka* ending, then the WH-island effect shows up much more clearly for many speakers. If they find improvement of such examples as the result of the addition of an extra WH, the extra WH may indeed c-command the WH in the island. [Reference numbers changed, A.v.S.]

Let us put aside these doubts and accept Watanabe's judgments for the sake of the argument. The question remains of how the contrast in acceptability between (81d) and the other sentences is explained. Watanabe's account is roughly this:

1. A rather abstract syntax for *wh*-phrases is assumed. For instance, *nani* 'what' has the structure [_{DP} Op_i [_{D'} [_{QP} nani_i] [_D φ]]], whereas Nishigauchi's [_{PP} [_{CP} dare-ga kai-ta] hon-o] 'a book that who wrote' would roughly have a structure like [_{DP} Op_i [_{NP} [_{CP} dare_i-ga kai-ta]]

²⁰ In Korean, there does not seem to be a difference between (81c) and (81d), at least not for my informants, although Korean and Japanese syntax are notoriously similar. My Japanese informant doesn't get the contrast either.

hono]].²¹ The essential point of the analysis is that we find an empty operator in the specifier position of a nominal containing a *wh*-word which is coindexed with the *wh*-word. This operator-*wh*-word relation replaces Nishigauchi's mechanism of WH-percolation.²² The operator is called "pure *wh*-operator."

2. At S-structure, each SpecC of a CP headed by *ka/no* is filled by exactly one *wh*-operator. This can be a pure *wh*-operator moved out of a DP, where this movement behaves exactly like overt *wh*-movement in languages like English. In other words, this movement is constrained by Subjacency. Or it is an empty operator Op, which may be regarded as 'whether'.
3. "At LF, the DP from whose Spec S-structure movement has taken place will be raised to the target CP-Spec. By generating a pure *wh*-operator in the Spec, that DP is specified as a *wh*-phrase, and this information has to be recovered at LF" (Watanabe 1992: 61).
4. At LF, every *wh*-phrase moves to the Spec of an interrogativizer. This movement relation is not constrained by Subjacency, but by the following principle:

Anti-Superiority: "A multiple question is well-formed in Japanese only if at S-structure there is a *wh*-phrase which is not c-commanded by the *wh*-phrase from which the pure *wh* is already moved into the target of CP." (p. 79)

We first note that Watanabe's assumptions correctly describe the facts listed in (81): the SpecC of the matrix has to be filled with a pure *wh*-operator at S-structure. In (81a) and (81c), the only *wh*-phrase is *nani-o* 'what', which is embedded in a relative clause. Therefore, movement of its pure *wh*-operator to the matrix Spec constitutes a violation of Subjacency. (81b) contains two *wh*-phrases, the dative *dare-ni* 'who' and the embedded accusative *nani-o* 'what'. The former c-commands the latter. Therefore Anti-Superiority requires that the pure *wh*-operator of *nani-o* be moved. As before, a Subjacency violation arises. It should be clear by now that scrambling the embedded object-clause in front of the dative saves the construction: the dative *dare-ni* no longer c-commands *nani-o*. Therefore, its pure *wh*-operator can move to SpecC. This movement doesn't cross any barrier.

²¹ I am not sure about the details since Watanabe doesn't indicate concrete trees. On his p. 58, there is an abstract scheme. I have omitted an empty intermediate QP. Furthermore, I do not know where the case particle is located exactly.

²² Cf. fn. 6.

Now comes the criticism of the theory. Consider the derivation of the LF for Nishigauchi's standard example:

(82) a. D-structure:

Kimi-wa [_{DP} Op_i [_{NP} [_{CP} dare_i-ga kai-ta] hon-o]]
 you-TOP who-NOM wrote book-ACC
 yomi-masi-ta-ka?
 read Q

b. S-structure:

[_{CP} Op_i [_C Kimi-wa [_{DP} t_i [_{NP} [_{CP} dare_i-ga kai-ta] hon-o]] yomi-
 masi-ta [_C-ka]]]

c. Logical Form:

[_{CP} [_{DP} t_i [_{NP} [_{CP} dare_i-ga kai-ta] hon-o]]]_j [_C Kimi-wa t_j yomi-masi-
 ta [_C-ka_{ij}]]]²³

d. Interpretation:

'For which j,i, j a book, i a person that wrote j, did you read j?'

As the logical form shows, we have LF Pied-Piping. Therefore, Watanabe's theory cannot be correct. The mistake is that he moves the complex DP to "its" Op at LF. Thus, Watanabe's account clearly differs from ours in an essential aspect.

Our proposal is, however, influenced by one idea of Watanabe's, namely the distinction of two different levels with different constraints: Watanabe's S-structure is our WH-structure and it is constrained by Subjacency. LF movement is not constrained by Subjacency, neither in Watanabe's system nor in ours. We could incorporate Anti-Superiority as a constraint for LF movement if we wanted. As mentioned earlier, Watanabe's system *could* generate the correct LF, but it doesn't. If it did, it would be a notational variant indeed, because it doesn't matter how the WH-phrase is characterized – whether by means of Nishigauchi's mechanism of WH-percolation or by Watanabe's Op-*wh*-relation.

²³ Perhaps the DP is not substituted for Op but adjoined to it. For the interpretation, nothing would change. In order to make sense of the LF, *dare-ga* must be interpreted as if it were in SpecD; i.e., in a consequent transparent LF it must be moved to that position. This has no impact on the interpretation listed under (82d).

APPENDIX III: RECONSTRUCTION OR COPY-AND-DELETION?

One of referee #1's comments on the theory outlined in the previous section is that it is "conceptually costly" to give up the Subjacency constraint for LF movement. He further remarks that one of the main motivations of the copy-and-deletion approach developed in Chomsky's (1992) minimalist program was to avoid reconstruction. Hence, two major conceptual disadvantages of my approach could be avoided if we adopted that program. Let us check these claims in some detail. This is what the referee says:

If we adopt Chomsky's [1992] copy theory of movement (with deletion that the theory allows), we get the desired semantics. The derivation [of the standard example as given, e.g., in (49a); A.v.S.] could look like this:

- (a) $[_{CP} [_{IP} \dots [_{NP} [_{CP} \text{who-NOM } ec_i \text{ wrote}] \text{book}]] \dots] ka$

Movement at LF of the entire NP, leaving its copy behind:

- (b) $[_{CP} [_{NP} [_{CP} \text{who-NOM } ec_i \text{ wrote}] \text{book}]] [_{IP} \dots [_{NP} [_{CP} \text{who-NOM } ec_i \text{ wrote}] \text{book}]] \dots] ka$

Raising of 'who' (see Chomsky 1992: 50):

- (c) $[_{CP} [_{NP} \text{who}_k [_{CP} t_k\text{-NOM } ec_i \text{ wrote}] \text{book}]] [_{IP} [_{NP} \text{who}_k [_{CP} t_k\text{-NOM } ec_i \text{ wrote}] \text{book}]] \dots] ka$

(I left it vague whether 'who' is adjoined to CP or NP.)

Deletion inside SpecC as well as in the position of the "trace" (i.e., the copy):

- (d) $[_{CP} [_{NP} \text{who}_k [_{IP} \dots [_{NP} [_{CP} \text{who-NOM } ec_i \text{ wrote}] \text{book}]] \dots] ka]$

One may want to raise the entire NP to an IP-adjoined position, if it is treated as an indefinite and if indefinites must be so adjoined. If we choose to do so, we get the identical LF configuration as that given in (50) [= (51)].

... it seems that the conceptual problems that might be raised against the further articulation of the analysis along this line will be much less serious than those raised against the proposed account in the paper.

Note first that the LF (d) is not exactly what the referee seems to have in mind, because the second 'who' must be deleted and its trace must be coindexed with the higher 'who'.²⁴ This, however, is easily accommodated. The only thing we have to do is to build up the complex NP which we find in SpecC, i.e., $[_{NP} \text{who}_k [_{CP} t_k\text{-NOM } ec_i \text{ wrote}] \text{book}]$, before we move it. Then we can delete. To assess the proposal, let us consider the precise structures before and after deletion. (The empty category ec_i , which marks the relative pronoun, is immaterial for the derivation and therefore neglected.)

²⁴ The referee tacitly assumes that Chomsky's (1992) approach coindexes traces with their antecedents. I follow him in this respect, though it is not clear to me whether Chomsky's approach allows that. Perhaps the indices are the "enumeration indices."

(83) a. Before deletion:

[_{CP} who-NOM_k [[t_k wrote] book]_i [_{C'} who-NOM_k [[t_k wrote] book]_i
you-TOP who-NOM_k [[t_k wrote] book]_i read ka]]

b. After deletion:

[_{CP} who-NOM_k [_{C'} [[t_k wrote] book]_i you-TOP t_i read ka]]

(83b) is exactly my LF. Thus, I agree with referee #1 that the copy-and-deletion approach can do everything my proposal can.

Let us look at the alleged conceptual advantages. Referee #1 obviously believes that the approach can maintain Subjacency at LF – the first conceptual advantage. This is not so. The relation between *who-NOM_k* and its trace *t_k* violates the constraint; i.e., the extraction of *who-NOM_k* violates Subjacency. Therefore, (83a) violates Subjacency.

A second advantage of the approach might be that it avoids reconstruction. This, however, has a price, viz. the deletion rule. The precise nature of the deletion rule does not follow from Chomsky 1992, as far as I can see. In particular, I am not aware of a formulation in syntactic terms. It might turn out that we have to build in the trace-theoretic restrictions which I have sketched for reconstruction in section 6. That would bring the two approaches close together. Thus, given the state of the art at the time I wrote the paper, the conceptual advantage of the copy-and-deletion approach was not obvious at all, and I don't know how much has changed since then. Thus, neither of the two objections of referee #1 convinces me.

There were actually three motivations for preferring the reconstruction approach, two of them empirical, one of a more theoretical nature. I still believe that the first of these has some force, whereas I am not so sure of the other two motivations anymore.

The first motivation is that we have to reconstruct scrambling in Japanese in a lot of cases in a way that cannot be formulated in an obvious manner in the copy-and-deletion approach. Consider the following example taken from Kang and Müller 1993, in which the argument reported next is made. It is a Korean example, but Japanese behaves exactly alike (see Saito 1989, 1992).

(84) a. nuku-lul_i Shin-Suk-un [Sunhi-ka t_i sungpae ha-nun-ji]
Who-ACC Shin-Suk-NOM Sunhi-NOM admiration-make-Q
a-ni?
knows-Q

b. Shin-Suk-un nuku-lul_i [Sunhi-ka t_i sungpae ha-nun-ji] a-ni?

- c. 'For which person, Shin-Suk knows whether Sunhi admires that person?'
- d. 'Does Shin-Suk know for which person Sunhi admires?'

While one might claim that the scrambled *wh*-phrase is inside the embedded CP for example (84b), this is excluded for (84a), because there it is in front of the matrix subject. Both sentences are ambiguous: the scrambled *wh*-phrase may be either in the higher or in the lower Comp at LF. In other words, both have the readings listed under (84c) and (84d). The second reading is even preferred.

The analysis is no problem for the reconstruction theory, because we can reconstruct the scrambled *wh*-phrase before we build up the WH-structure. This is the derivation of reading (84d) with (84a) as S-structure input:

- (85) a. nuku-lul_i Shin-Suk-un [Sunhi-ka t_i sungpae ha-nun-ji] a-ni?
S-Str.
- b. Reconstruction:
Shin-Suk-un [Sunhi-ka nuku-lul sungpae ha-nun-ji] a-ni?
- c. WH-movement:
Shin-Suk-un [nuku-lul_i [Sunhi-ka t_i sungpae ha-nun-ji] a-ni?
WH-Str.
= LF

These data might be a problem for the copy-and-deletion approach, because we need upward deletion for the derivation of the LF:

- (86) a. nuku-lul_i Shin-Suk-un [nuku-lul_i Sunhi-ka nuku-lul_i sungpae ha-nun-ji] a-ni?
S-Str.
- b. Upward and downward deletion
Shin-Suk-un [nuku-lul_i [Sunhi-ka t_i sungpae ha-nun-ji] a ni?
WH-Str.
= LF

Note incidentally that we must make the same assumption for upward deletion which we made for Reconstruction: it can't leave any trace. Downward deletion, on the other hand, must leave a trace, because we need it for the correct interpretation.

The derivation lends itself to illustrating my theory-internal motivation for not having chosen this approach. In order to avoid downward movement (or upward WH-movement of the lowest *wh*-phrase after upward deletion of the highest), scrambling has to proceed via SpecC. Now, Müller and

Sternefeld (1993) have forcefully argued that this is improper movement, which violates their Principle of Unambiguous Binding (PUB): long scrambling cannot proceed via Comp. The S-structure (86a), which is needed to make the deletion approach work, is in conflict with that assumption.

I am not so convinced of this argument anymore for the following reason. The PUB is designed for a theory which assumes traces in the GB-style. The principle rules out the configuration:

(87) nuku-lul_i Shin-Suk-un [t_i Sunhi-ka t_i sungpae ha-nun-ji] a-ni?

This structure doesn't appear anywhere in derivation (86). My guess is that a theory along the lines of Chomsky 1992 would have to reformulate the PUB such that derivation (86) doesn't violate it. For this example, it would be sufficient to say that the PUB is checked at LF, but the matter is certainly more complicated than that.

The third motivation is the idea developed by Heim (1992) and Beck (1993) that Reconstruction is constrained by "reconstruction barriers," which rule out certain possible LFs. Negation is claimed to be such a barrier. I am not so sure about that anymore either. Beck (1993) gives the following example from German:

- (88) a. *Wieviele Hunde hat Karl nicht gefüttert? (Drei!)*
 How many dogs has Karl not fed? (Three!)
- b. 'For which n, there are n dogs which Karl did not feed?'
- c.*'For which n, it is not so that Karl fed n-dogs.'

Imagine a situation in which Karl fed a, b, c and he did not feed d, e, f. The answer "Three" is true under reading (88b), but false under reading (88c), because $3 \neq$ the maximal n such that there is no group of n dogs such that Karl fed that group. If the totality of dogs were 6, then the answer under reading (88c) should be "Six," if feeding a group means to feed every member of the group. This is so odd that one might think that this reading doesn't exist. English, Japanese, and Korean behave exactly like German in this respect.

If we assume with Heim and Beck that negation is a reconstruction barrier, then we would have an explanation for the missing reading, for the LFs expressing readings (88b) and (88c) are (88b') and (88c'), respectively:

- (88) b'. How many_n [n dogs]_i not Karl has fed t_i?
- c'.*How many_n not [n dogs]_i Karl has fed t_i?

If the negation is a barrier for the reconstruction of the pied-piped material [*n dogs*]_i, LF (88c') cannot be derived anymore.

It is hard to see how the deletion approach could block (88c'). The constellation before deletion is this:

- (89) [how many_n [n dogs]]_i
 [c' [how many_n [n dogs]]_i not Karl has fed [how many_n [n dogs]]_i]?

Not cannot be a barrier for deletion. Otherwise we couldn't delete the lexical material of the D-position and we would not arrive at an interpretable LF. Therefore, the deletion approach has problems with an account of reconstruction barriers. Perhaps there are no such barriers. In that case, we should find a semantic explanation for the odd reading.²⁵

One would think that Nishigauchi's example provides an ideal test for falsifying the hypothesis that NEG is a (universal) reconstruction barrier. Consider the following example:

- (90) a. book that who wrote you not-read?
 b. For which *x*, *x* a person, there is a book that *x* wrote NOT you read that book?
 c. For which *x*, *x* a person, NOT there is a book that *x* wrote & you read that book?

It appears that reading (90c) should not be possible since it seems to presuppose an LF with reconstruction under NOT. Actually, the Japanese sentence (90a) has reading (90c). Unfortunately, this doesn't prove anything, because the Japanese bare NP 'book that *x* wrote' can mean 'the books that *x* wrote'. Therefore, there exists an LF without reconstruction under NOT which has the same reading as (90c):

- (90) d. For which *x*, *x* a person, the books that *x* wrote NOT you read those books?

When I wrote the paper, I hoped to be able to explain Hasegawa's (1986) data, which underlie the fourth argument pro Nishigauchi, by saying

²⁵ We ask for the maximal *n*, such that it is not so that *n* Ps are Q. If P is finite and not all Ps are Q, then this *n* will always be the cardinality of P. If P is non-finite, then the term doesn't denote anything under the conditions stated. Thus, in some sense, the reconstruction under NOT makes the question trivial. After completion of the article, I became acquainted with the dissertation of Hotze Rullmann (Rullmann 1995), in which an explanation along these lines is given.

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