

The Specificity Condition as Crossover

Yukio Furukawa

This paper proposes that the specificity condition is an instance of crossover, by appealing to the semantics of definite/specific DPs: since indexical values assigned to the determiners of definite/specific DPs depend on the value of the Wh-variable within the domains of such DPs, their values are offending to the operator-variable chain formed by the Wh-phrase. The data about DP-internal A-scrambling in Japanese, which repairs the ill-formedness of the specificity condition, support this analysis, although their grammaticality is not predicted by any previous analysis.

1. Introduction

Extraction out of a definite/specific DP is generally prohibited.¹ Compare (1) and (2) with (3), where extraction occurs out of non-specific DPs. The literature calls this phenomenon the specificity condition (SC).

- (1) a. ?? Who_i did you see the picture of t_i ?
b. *? Who_i did you see every picture of t_i ?
c. *? Who_i did you see most pictures of t_i ?
d. *? Who_i did you see each picture of t_i ?
e. * Who_i did you see John's picture of t_i ?
f. ?? Who_i did you see the pictures of t_i ? (Diesing 1992)

¹ French allows this type of Wh-extraction.

- (i) De qui Jean a-t-il vu la photo?
of whom John has-he seen the picture
'(lit.)*Of whom did John see the picture?' (Michel Paradis p.c.)

Since I am still investigating whether or not *la photo de qui* 'the picture of whom' is definite (cf. Chierchia 1998), I leave the issue about why French allows this type of extraction as an open question.

- (2) a. * Who_i did Mary say you saw a certain picture of t_i ?
 b. * Who_i did you destroy a picture of t_i ? (Diesing 1992)
- (3) a. Who_i did you see pictures of t_i ?
 b. Who_i did you see a picture of t_i ?
 c. Who_i did you see many pictures of t_i ?
 d. Who_i did you see several pictures of t_i ?
 e. Who_i did you see some pictures of t_i ? (Diesing 1992)

This paper proposes that SC is an instance of weak crossover (WCO), by appealing to the semantics of definite/specific DPs. Section 2 discusses some characteristic properties of SC, and, especially, presents some pieces of evidence that SC differs from subjacency. Then, Section 3 discusses why it is an instance of WCO. Section 4 presents two pieces of empirical evidence that support the proposal. Section 5 argues against some previous analyses of SC. Section 6 raises three problems in the proposal. Section 7 concludes the paper.

Before starting the discussion, I need a few assumptions about definiteness/specificity and WCO, since I am going to claim that SC is an instance of WCO. As for definiteness/specificity, I assume the following. Since what is definiteness/specificity is a debatable issue even in today's literature, I do not believe that this issue has a unified account. In this paper, I simply follow the proposal by Heim (1982)²³, that is, since definiteness/specificity requires that its referent be linked to a previously established discourse referent, it requires a definite discourse index, while non-specificity does not require it since its referent should not be linked to such a referent. I also assume that presuppositionality is equivalent to definiteness/specificity, following Diesing (1992). Finally, for the purpose of decomposition, I assume the iota-operator notation (but with a slight modification).

As for WCO, it is also a debatable issue even in today's literature, and I do not believe that a unified account exists about it, either. Moreover, WCO itself is a descriptive generalization, and hence I do not assume that WCO is a uniformed phenomenon. In this paper, I roughly assume that the configuration (4) is illegitimate in terms of WCO.⁴

- (4) *^{??}Op_i [... x_i ... t_i]

² See also Enç (1991).

³ In this sense, what is relevant to the discussion here is not uniqueness (cf. Russell 1905), but familiarity.

⁴ As is illustrated in (4), this paper assumes that not the bijection principle (cf. Koopman & Sportiche 1982; Reinhart 1983; Safir 1984) but 'leftness' (cf. Chomsky 1976; Higginbotham 1980) is the condition on WCO (see the discussion in Section 6.2 and Büring 2004). In any case, what is crucial in (4) is that the trace is an A'-trace.

2. Basic facts about SC: SC is not an instance of Subjacency.

As is observed in (1), Wh-extraction out of a DP headed by a strong determiner is not allowed. Although extraction out of a DP headed by a non-definite article is possible, the grammaticality will be changed once the specific reading of the DP is forced. Compare (2) with (3).

In this paper, I am going to focus my attention on the ill-formedness of (1a), (1f) and (2a), but I will not discuss details of the ill-formedness of (1b-e) and (2b). Although it seems hard to judge the subtle difference of the ungrammaticality between (1a) and (1b-d), it might be plausible to think that the ungrammaticality of (1b-d) involves at least one additional factor, namely the scope interaction between Wh-phrases and quantifiers.⁵ Also, this paper will not discuss anything about (2b). Diesing (1992) reports that verbs of destruction (e.g. *break*, *burn*, *destroy*, *tear up* and so on) require presuppositional DPs as their object arguments, and that, for many native speakers of English, (2b) is less acceptable than (3b). However, the grammaticality contrast between (2b) and (3b) seems to be less obvious, as far as I can see, in other words, the grammaticality judgment about (2b) diverges between native speakers.

In the following subsections, I am going to present one of the remarkable characteristics of SC, i.e. its distinct property from subjacency.

2.1. SC in covert Wh-movement languages

As is observed in (1) and (2), overt Wh-movement languages like English obey SC, but here I would like to point out that Wh-in-situ languages like Japanese also obey SC. Let us look at some data of Japanese. In the literature on Japanese syntax and semantics, the following two things are observed: (i) a DP associated with a floated numeral classifier is, in general, non-presuppositional, and (ii) individual-level predicates require presuppositional arguments. (See Kamio 1983; Ishii 1997, 1999; Watanabe 2002.) Let us assume (i) and (ii).

- (5) a. *? [Susi-no gakusei]-ga **san-nin** doitugo-ga umai. (NC floated)
 [Susi-GEN students]-NOM 3-CL German-NOM good
 b. [**san-nin-no** Susi-no gakusei]-ga doitugo-ga umai. (NC unfloated)
 ‘Three students of Susi’s are good at German.’

Since the subject in (5a) is non-presuppositional by the association of a floated numeral classifier, it is incompatible with the individual-level predicate. Note that, the subject in (5b) is presuppositional by its compatibility with the individual-level predicate.

Let us replace *Susi-no* ‘Susi’s’ with a Wh-phrase, *dare-no* ‘whose’. The ungrammaticality of (6a), which is the Wh-counterpart of (5a), is not surprising, because the subject DP is non-presuppositional, and hence is not compatible with the individual-level predicate.

⁵ In Furukawa (2004), I discuss the ill-formedness of (1b-d).

- (6) a. *? [*dare-no* gakusei]-ga **san-nin** doitugo-ga umai no?
 [whose students]-NOM 3-CL German-NOM good Q
 b. * [**san-nin-no** *dare-no* gakusei]-ga doitugo-ga umai no?
 ‘Whose three students are good at German?’

The ungrammaticality of (6b) (the Wh-counterpart of (5b)) shows that Japanese obeys SC, since (covert) Wh-movement occurs out of the presuppositional subject. In fact, this type of ungrammaticality never happens if the subject is non-presuppositional. Contrary to (6), the matrix predicate in (7) is a stage-level predicate, and can take a non-presuppositional DP as its subject.⁶

- (7) [go-dai-no dono-syooboosyo-no syooboosya]-ga (genzai)
 [5-CL-GEN which-fire.station-GEN fire.engines]-NOM (now)
 syutudoukanou-desu ka?
 available-CPL Q
 ‘(lit.) 5 fire engines of which fire station are available now?’

Note that, the ill-formedness of (6b) cannot be identified with that of the complex NP constraint (CNPC). (8) is an instance of CNPC in Japanese. As is shown in (8), the question itself is grammatical (though it is claimed that Japanese obeys CNPC, see Nishigauchi 1990, 1999; Pesetsky 1987; Watanabe 1992).

- (8) Mary-wa [DP [CP John-ni [DP nani-o] ageta] hito]-ni atta no?
 Mary-NOM [[John-to [what-ACC] gave] person]-with met Q
 ‘(lit.)*What did Mary meet the person who gave t to John?’

Contrary to (8), the question is ungrammatical in (6b). Thus, (6b) is not identical to CNPC.

2.2. The absence of the additional Wh-effect in SC

The additional Wh-effect (see Richards 1998, 2001; Watanabe 1992), which remedies the ill-formedness of subjacency, cannot rescue the ill-formedness of SC. As the contrast between (9)

⁶ Some people may point out the quantificational nature of the unfloatable numeral classifier, and may further claim that the blocking effect of Wh-movement by the numeral occurs in (6b). In fact, Japanese shows the blocking effect.

- (i) a. What did everyone bring?
 b. ??daremo-ga nani-o kaimashita ka?
 everyone-NOM what-ACC bought Q
 c. nani-o_i daremo-ga t_i kaimashita ka?
 what-ACC everyone-NOM bought Q (Hoji 1985, 1986)

However, the ill-formedness of (6b) cannot be identified with the blocking effect. As the grammaticality of (7) shows, Wh-dependency is allowed across a numeral if the DP is non-presuppositional.

(and/or (10)) and (11) shows, the unacceptability of SC differs from the unacceptability of subjacency.⁷

- (9) a. ?* What_i did Mary read a report that John bought t_i?
 b. Who read a report that John bought what? (Watanabe 2001)

- (10)a. * What_j do you wonder who bought t_j?
 b. Who_i t_i wonders who bought what? (Richards 1998)

- (11)a. */??Who_i did John see the picture(s) of t_i?
 b. */??Who (said John) saw the picture of whom? (Norvin Richards p.c.)

3. Proposal

Contrary to any previous proposal, I would like to propose the following:

(12)SC comes from the crossover effect by claiming that, in SC sentences (like (13a)), the indexical value assigned to the definite/specific determiner is offending to the operator-variable chain formed by the Wh-phrase, because its value depends on the value of the Wh-variable.

- (13)a. */??Who_i did you see **the** picture(s) of t_i?
 b. */??Op_i [... x_i ... t_i]

Needless to say, it is not obvious that SC sentences like (13a) really fall in the WCO configuration (13b). The (un)grammaticality of (14) may suggest that WCO is limited to cases where the pronoun requires the bound variable interpretation. However, the definite determiner in (13a) is referentially disjointed from the operator. How can I say that (13a) is an instance of WCO?

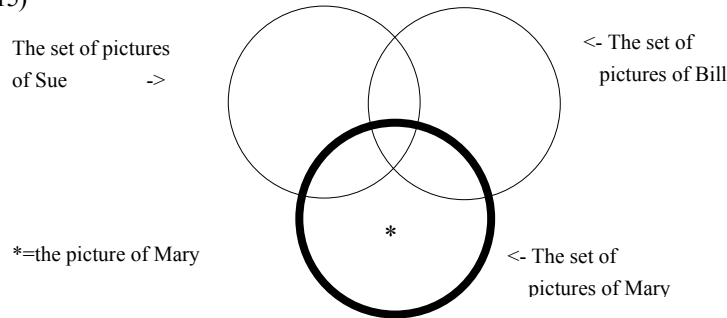
- (14) Who_i did his_{*i} mother love t_i?

Although the definite determiner in (13a) is referentially disjointed from the Wh-phrase, I am going to claim that the value assigned to the determiner depends upon the value of the Wh-phrase. For the convenience of my explanation, I am going to use the following example, first. *The picture of Mary* denotes one of the pictures whose subject for the photography is Mary. The value of the picture that *the picture of Mary* denotes cannot be the value of a picture where Mary is not included in its subjects, in other words, it is never chosen from the complement set

⁷ The ill-formedness of (11b) indicates that the claim that SC differs from subjacency is maintained even in Huang's (1982) type theory about subjacency, i.e., subjacency is an S-structure condition.

of pictures of Mary (see the Venn diagram (15)). It is reasonable to say that each candidate for its indexical value is restricted by the restriction of the determiner, namely [*picture of Mary*].

(15)



Suppose that *who(m)* replaces *Mary* in *the picture of who(m)*. The restriction on the assigned value to the determiner may not be changed even in this case. That is, the value of the picture cannot be the value of a picture where 'who(m)' is not (included in) its subjects. Thus, it is possible to say that each candidate for the value is restricted by the restrictor, namely [*picture of who(m)*], though *who(m)* is replaced by its variable for saturation.

To express the restricted nature of the assigned value to the definite determiner, I use the following iota-operator notation: the iota-operator binds a function as its variable whose argument is the restrictor NP (e.g. [*picture of Mary*] in (16a)).

- (16)a. **the** picture of Mary
 b. [ι_f [f[*picture of Mary*]] [*picture of Mary*]]

What (16b) means is that there is a definite function from the set of pictures of Mary (in the universe) to the value that *the picture of Mary* denotes. In this sense, the decomposition (16b) can correctly express the meaning of *the picture of Mary*.⁸

This iota-operator notation will decompose (17a) into the structure (17b). The dependent value on the Wh-variable within the function is offending to the operator-variable chain and creates the WCO configuration in (17b).

- (17)a. */?/?Who_i did you see **the** picture(s) of t_i?
 b. who_i you saw [ι_f [f[*picture of x_i*]] [*picture of t_i*]]
 c. *^{/?/?}Op_i [... x_i ... t_i]

⁸ Because of the limit of the space, I only discuss the syntactic architecture (16b). Furukawa (2004) provides its semantic calculus.

However, (16b) is a tentative decomposition at this stage, because it is one of the descriptions of the meaning of (16a). In fact, there are several ways to decompose the meaning of *the picture of Mary*. The standard iota-operator notation may decompose *the picture of Mary* as (18).

(18) ιx .picture of Mary(x)

Furthermore, there might be proposals that do not assume the iota-operator notation to express the meaning of *the picture of Mary*. I do not have any good explanation about whether or not the decomposition (16b) is the only one possible description of (the meaning of) *the picture of Mary*.⁹ At this stage, however, this analysis does not adhere to the (modified) iota-operator notation, since the basic reasoning for this analysis is (12).

This analysis correctly predicts the grammaticality of (19a) and (20a). Since no Wh-phrase occurs within the restriction of the definite determiner in (19a), no variable occurs within the argument of the function. Hence, it does not create the WCO configuration.

(19)a. Who saw the picture of John?

b. who_i [t_i saw [ι_r [f[picture of John]]] [picture of John]]

(20)a. Who_i did you see a picture of t_i ? (non-specific interpretation)

b. who_i [you saw [a picture of t_i]]

Since the object DP in (20) is non-specific, its article does not require any discourse value. I assume that the iota-operator is absent in (20), and, at the same time, the function is also absent. (Otherwise, the function is unbound.) Hence, it does not create the WCO configuration.

Note that, some people may worry about the existential quantificational nature of the indefinite DP in (20a). In fact, Diesing (1992) claims that indefinites undergo obligatory QR if and only if they are presuppositional. Although I admit that QRed indefinites are sometimes presuppositional, it is not clear to me whether or not every QRed indefinite is presuppositional. In (21), *three review articles* can take wider scope than *two graduate students*. In addition to this, its matrix predicate is a creation verb (*write*). Suppose (i) that *write* can take a non-presuppositional object argument, following Davies & Dubinsky (2003), Diesing (1992) and Heycock (1995), and (ii) that *three review articles* undergoes QR to obtain its wide scope interpretation. It is not necessary that *three review articles* is presuppositional, though it undergoes QR.

(21) Two students will write three review articles (for the next issue of our workingpaper).

⁹ In Furukawa (2004), however, I insist that the 'redundant' restrictions are necessary for familiarity.

4. Empirical evidence

4.1. Prediction about judgments

Jonathan Bobaljik (p.c.) pointed out to me that, if my analysis is the right analysis for SC, the judgment about SC should correlate with the judgment about WCO. That is, those people who have a weak marginality about SC also have a weak marginality about WCO. In fact, the marginality of WCO is weak in his judgment and also he does not find the specificity effect very strong. I also asked some native speakers of English, and WCO is a weak violation for those who have a weak marginality about SC.¹⁰ (I thank Jonathan Bobaljik and Susi Wurmbrand for this point.)

4.2. Japanese

In the literature, WCO is used as a diagnostic to verify whether or not scrambling has an A-property. As is shown in (22b), A-scrambling can remedy its ill-formedness.

(22)a. *Canonical order*

[soitu_{*ij}-no hahaoya]-ga dare_i-o aisiteiru no
 [the guy-GEN mother]-NOM who-ACC love Q
 ‘Who_i does his_{*ij} mother love?’

b. *A-scrambling of the Wh-phrase*

dare_i-o [soitu_{ij}-no hahaoya]-ga t_i aisiteiru no
 who-ACC [the guy-GEN mother]-NOM love Q
 ‘Who_i does his_{ij} mother love?’

c. *A'-scrambling of the Wh-phrase*

dare_i-o Taro-ga [soitu_{*ij}-no hahaoya]-ni [keisatu-ga t_i
 who-ACC Taro-NOM [the guy-GEN mother]-to [police-NOM
 sagasiteiru]-to tatae-ta no
 be.looking.for]-COMP tell-PAST Q
 ‘Who_i did Taro tell his_{*ij} mother that the police was looking for t_i?’

In Japanese, word order is less restrictive even in the DP level, and, in fact, there is a piece of

¹⁰ However, Jon Nissenbaum (p.c.) pointed out to me that the unacceptability of the typical WCO sentence (14) is stronger in his judgment than the unacceptability of SC. In fact, he has a strong unacceptability about (14), though he does not find the WCO effect very strong in the case of non-typical WCO sentences (e.g. the weakest crossover sentences).

evidence that shows the existence of DP-internal A-scrambling. Since the disjunctive phrase *Yukizirusi ka Nihonham* ‘Yukizirusi or Nihonham’ neither precedes nor c-commands the bound variable *soko-no-kogaisya* ‘its subsidiary’, the DP (23a) is ungrammatical. Once the disjunctive phrase is shifted to the initial position of the DP, however, it can bind the variable, as the grammaticality of (23b) indicates. The contrast between (23a) and (23b) indicates that the disjunctive phrase undergoes A-movement in (23b), because its fronting changes the variable binding relation.

- (23)a. [ni-do-no soko_{i,j}-no-kogaisya-no [Yukizirusi ka
 [2-CL-GEN its subsidiary company-GEN [Yukizirusi or
 Nihonham]_i-nitaiste-no kokuhatu]-ga...
 Nihonham]-against-GEN accusation]-NOM
 b. [[[Yukizirusi ka Nihonham]_i-nitaiste]_j-no ni-do-no soko_{i,k}-no-kogaisya-no t_j
 kokuhatu]-ga...
 ‘(lit.)two accusations by its_{i,j} subsidiary company against [Yukizirusi or Nihonham]_i.’

At this stage, we have a prediction: if my analysis is the right analysis for SC, A-scrambling of a Wh-phrase (across the offending determiner) can remedy its ill-formedness. Coming back to (5), there are several patterns among the association of the unfloatable numeral classifier in Japanese. (5a) and (5b) are repeated in (24a) and (24b), respectively. Also (24c-d) are unfloatable cases.

- (24)a. *? [Susi-no gakusei]-ga **san-nin** doitugo-ga umai. (NC floated)
 [Susi-GEN students]-NOM 3-CL German-NOM good
 b. [**san-nin**-no Susi-no gakusei]-ga doitugo-ga umai. (NC unfloatable)
 c. [Susi-no **san-nin**-no gakusei]-ga doitugo-ga umai. (NC unfloatable)
 d. [Susi-no gakusei **san-nin**]-ga doitugo-ga umai. (NC unfloatable)
 ‘Three students of Susi’s are good at German.’

We have already seen that (25a) and (25b), which are the Wh-counterparts of (24a) and (24b), respectively, are ungrammatical, and especially that the ungrammaticality of (25b) is the evidence for SC in Japanese. The analysis here decomposes the structure of (25b) as (25c).

- (25)a. *? [*dare-no* gakusei]-ga **san-nin** doitugo-ga umai no?
 [whose students]-NOM 3-CL German-NOM good Q
 b. * [**san-nin**-no *dare-no* gakusei]-ga doitugo-ga umai no?
 ‘Whose three students are good at German?’
 c. [wh-Op_i [[t_r[f [3 students of x_i]] [...wh-t_i...]] ...] Q]

Let us look at the Wh-counterparts of (24c) and (24d), namely (26a) and (26b), respectively. Again, the subjects of (26a) and (26b) are presuppositional by the compatibility

with the individual-level predicate. Since the Wh-dependency occurs out of the presuppositional subjects, it may be predicted that both (26a) and (26b) should be ungrammatical. Contrary to (25b), however, they are grammatical.

- (26)a. [*dare-no* **san-nin**-no gakusei]-ga doitugo-ga umai no?
 [whose 3-CL-GEN students]-NOM German-NOM good Q
 b. [*dare-no* gakusei **san-nin**]-ga doitugo-ga umai no?
 ‘Whose three students are good at German?’

The Crossover analysis can predict its grammaticality by assuming that the Wh-phrase in (26a) and the constituent containing the Wh-phrase in (26b) undergo DP-internal A-scrambling to the initial position of the subject DP. Although determiners are not overtly pronounced in Japanese, I propose that their A-scrambling moves across the determiner (with the offending variable) in (26). Then, the structures for (26a) and (26b) should be analyzed as (27a) and (27b), respectively, and their structural configurations are abbreviated in (27c) and (27d), respectively. Both (27c) and (27d) do not fall in the WCO configuration.

- (27)a. [*dare-no*_i [**san-nin**-no t_i gakusei]]-ga doitugo-ga umai no?
 b. [[*dare-no* gakusei]_i [**san-nin** t_i]]-ga doitugo-ga umai no?
 ‘Whose three students are good at German?’
 c. [wh-Op_i [[wh-t_i [t_r[f[3 students of x_i]][…(A-t_i?)…]]]]…]]
 d. [wh-Op_i [[[…wh-t_i…]]][t_r[f[3 students of x_i]][…(A-t_i?)…]]]]…]]

5. Some notes on previous analyses

5.1. Diesing (1992)

Diesing (1992) claims that extraction out of every presuppositional DP must be prohibited. Thus, her approach does not predict any possibility of Wh-extraction out of presuppositional DPs. We have already discussed in (27), however, that Wh-movement out of presuppositional DPs really exists in Japanese.¹¹

5.2. SC as the subject condition (Mahajan 1992)

Mahajan (1992) proposes that SC is an instance of the subject condition, and claims that SC is absent in those languages that do not show any subject condition effect. Since no one has revealed what the subject condition is, I have few things to say about this approach. However, one thing that I would like to mention here is the following: Japanese does not display any

¹¹ See also the discussion in Section 3.

subject condition effect.¹² As we observed above, however, it obeys SC. This is what he does not predict.

6. Problems in the crossover analysis

6.1. Revisiting CNPC

As I have concluded in Section 2.2, SC differs from CNPC. Through the discussion there, we obtained the following generalization (28) by the contrast between (9) and (11).

(28) Generalization:

The additional Wh-effect can remedy the ill-formedness of CNPC, while it cannot remedy the ill-formedness of SC.

SC and CNPC are configurationally similar to each other, and, in fact, there seem to be cases where the domain of CNPC and the domain of SC overlap. For example, if the specificity of the head noun in CNP is forced, even the additional Wh-effect cannot repair the unacceptability. Compare (30) with (29b). The unacceptability of (30) may suggest that (31) violates both CNPC and SC.

- (29)a. ?* What_i did Mary read a report that John bought t_i ?
 b. Who read a report that John bought what?

- (30)a. * Who read each report that John bought what?
 b. * Who read the detective's report that John bought what? (Roger Martin p.c.)

¹² Some previous analyses point out that Japanese does not show the subject condition. For example, Lasnik & Saito (1992) observe that there is no contrast between (ia) and (ib). The Wh-word *dono hon-o* 'which book' in (ia) is extracted by the Wh-scrambling out of the sentential object in the embedded clause, whereas that in (ib) is extracted out of the sentential subject of the embedded clause. Although those two sentences are marginal because the Wh-scrambling moves across a CNP, they report that the grammaticality of (ib) is the same as that of (ia). Thus, the lack of contrast between them indicates that Japanese does not obey the subject condition.

- (i) a. ??dono hon-o_i Mary-ga [John-ga t_i katta koto]-o mondai-ni
 which book-ACC Mary-NOM [John-NOM bought fact]-ACC problem-to
 siteiru no?
 making Q
 '(lit.) Which book is it that Mary is calling the fact that John bought it into question?'
 b. ??dono hon-o_i Mary-ga [[John-ga t_i katta koto]-ga mondai-da
 which book-ACC Mary-NOM [[John-NOM bought fact]-NOM problem-CPL
 to] omotteru no?
 COMP think Q
 '(lit.) Which book is it that Mary thinks the fact that John bought it is a problem?'
 (Lasnik & Saito 1992)

- (31)a. * What_i did Mary read each report that John bought t_i?
 b. * What_i did Mary read the detective's report that John bought t_i?

Now, look at (32). There seems to be a possibility that (32a) violates both CNPC and SC, because *which car* moves across the head noun of the relative clause whose determiner is *the*. If the generalization (28) is correct, however, (32a) does not violate SC, as the grammaticality of (32b) shows. Then, how can my analysis save (32b) (and (32a))?¹³

- (32)a. * Which car_i did John persuade the man who bought t_i to sell the hubcaps?
 b. Who_i t_i persuaded the man who bought which car to sell the hubcaps?
 (Richards 1998)

This is an open question, but, basically, (32) is everybody's problem if SC is applicable to covert Wh-movement.

6.2. SC in Japanese

6.2.1. String-vacuous scrambling

By the compatibility with the individual-level predicate, the subject of (33), which lacks the numeral classifier, is also presuppositional.

- (33) [*dare-no* gakusei]-ga doitugo-ga umai no?
 [whose students]-NOM German-NOM good Q
 'Whose students are good as German?'

If I apply my analysis (to explain the grammaticality of (27a)) to (36), one problem will arise. Since the determiner is not overtly pronounced in Japanese, the fronting of the Wh-phrase does not change its PF-string, in other words, its scrambling looks like a string vacuous scrambling.

- (34)a. [*dare-no*_i [t_i gakusei]]-ga doitugo-ga umai no?
 [whose [students]]-NOM German-NOM good Q
 b. [wh-Op_i [[wh-t_i [t_i f [student of x_i]] [A-t_i]] ...]]
 (The underlined part indicates an unpronounced element.)

¹³ This approach does not assume that every DP headed by *the* is definite. For example, some nouns in English (e.g. *king*, *president*, *prince* etc.) allow Wh-movement out of their domains even if they are headed by *the*. These nouns share a property: in order for them to be definite, their belongings must be specified. For example, *the king* can be definite if and only if the country where he belongs is specified.

- (i) a. Which country_i did James Bond kill the king of t_i?
 b. Which company_i did Forbs introduce the president of t_i? (Jon Nissenbaum p.c.)

6.2.2. The c-command relation in WCO

To explain the grammaticality of (27b), repeated in (35a), I claimed that the constituent containing the Wh-phrase (*dare-no gakusei* ‘whose students’) undergoes A-scrambling.

- (35)a. [[*dare-no* gakusei]_i [**san-nin** t_i]]-ga doitugo-ga umai no?
 [[whose students] [3-CL]]-NOM German-NOM good Q
 ‘Whose three students are good at German?’
 b. [wh-Op_i [[[...wh-t_i...]_j [_v[f[3 students of x_i]][(A-t_j?)...]]]...]Q]

As is shown in its abbreviated structure (35b), however, the Wh-trace of *dare-no* ‘whose’ does not c-command the offending variable within the function. The problem behind (35) is the following: Safir (1984) claims that not precedence (or ‘leftness’) but the c-command relation (or the bijection principle) is the condition on WCO by the following evidence.

- (36)a. ?? Who_i did you give a picture of t_i to him_i?
 b. ?? Who_i did you give a picture of him_i to t_i?
 c. who_i[... [...wh-t_i...][...vbl_i...]]...

He observes that (36a) and (36b) are equally ungrammatical, and concludes that (36a) still violates WCO. If the c-command relation is necessary to explain WCO, as he claims, (35a) should still fall in its configuration. However, (35a) is grammatical. To reduce the grammaticality of (35a) to the absence of WCO, I have to assume the ‘leftness’ condition.

Note that, however, there seem to be some pieces of evidence that indicate that not the bijection principle but ‘leftness’ is preferred as the condition on WCO in Japanese. The bound variable in the matrix clause (*sono sensei* ‘his teacher’) can be bound by the QP within the CNP (*dono gakusei* ‘which/every student’). The availability of the bound variable interpretation in (37) may suggest that the c-command relation between the surface position of QP and the bound variable is not necessary for the bound variable interpretation.

- (37) [[*dono* gakusei]-ga syootaisita] pianisuto]-mo sono_i sensei datta.
 [[which student-NOM invited] pianist]-MO¹⁴ his teacher was
 ‘For every student_i, the pianist who he_i invited was his_i teacher.’ (Shimoyama 2001)

¹⁴ In the literature of Japanese syntax & semantics, the particle MO is usually considered to be an operator that quantifies over quantificational elements, so-called indeterminates (*dono gakusei* ‘which student’ in (37)), within the domain it attaches.

7. Conclusion

This paper proposed that SC is an instance of WCO, by appealing to the semantics of definite/specific DPs. This analysis differs from an approach taken by Diesing (1992), who claims that extraction out of any presuppositional DP is disallowed, in that it allows extraction out of presuppositional DPs if the Wh-movement occurs from an A-scrambled position. Japanese shows this type of extraction, and its grammaticality is correctly predicted by this approach, though Diesing's approach cannot predict it. Note that, my analysis may have significance in another aspect: further extension of the functional indexing approach by Engdahl (1986), Chierchia (1991) and Hornstein (1995) is possible.

Acknowledgements

I would like to thank Jonathan Bobaljik, Danny Fox, Yosef Grodzinsky, Peter Hallman, Nobuko Hasegawa, Kazuko Inoue, Yasuo Ishii, Kyle Johnson, Kazuki Kuwabara, Yuko Maki, Roger Martin, Marcin Morzycki, Jon Nissenbaum, Michel Paradis, Norvin Richards, Uli Sauerland, Tomokazu Takehisa, Lisa Travis, Akira Watanabe and Susi Wurmbrand for helpful comments and suggestions. I am also grateful to Benjamin Spector and Anna Roussou for their comments at ConSOLE XII.

References

- Abney, S. (1987). *The English Noun Phrase in its Sentential Aspect*. Doctoral dissertation, MIT.
- Biring, D. (2004). Crossover Situation. *Natural Language Semantics* 12, pp. 23-61.
- Chierchia, G. (1991). Functional WH and Weak Crossover. *WCCFL* 10, pp. 75-90.
- Chierchia, G. (1998). Reference to Kinds across Languages. *Natural Language Semantics* 6, pp. 339-405.
- Chomsky, N. (1973). Conditions on Transformations. Anderson, S. et al. (eds.), *A Festschrift for Morris Halle*. Holt, Rinehart, and Winston, New York, pp. 232-286.
- Chomsky, N. (1976). Conditions on Rules of Grammar. *Linguistic Analysis* 2, pp. 303-351.
- Davies, W. D., & S. Dubinsky. (2003). On Extraction from NPs. *Natural Language & Linguistic Theory* 21, pp. 1-37.
- Diesing, M. (1992). *Indefinites*. The MIT Press, Cambridge, MA.
- Elbourne, P. (2000). E-Type Pronouns as Definite Articles. *WCCFL* 19, pp. 83-96.
- Enç, M. (1991). The Semantics of Specificity. *Linguistic Inquiry* 22, pp. 1-25.
- Engdahl, E. (1986). *Constituent Questions*. D. Reidel, Dordrecht.
- Fiengo, R. & J. Higginbotham. (1981). Opacity in NP. *Linguistics Analysis* 7, pp. 395-421.
- Fodor, J. & I. Sag. (1982). Referential and Quantificational Indefinites. *Linguistics and Philosophy* 3, pp. 355-398.
- Furukawa, Y. (2004). *The Specificity Condition as Crossover*. Ph.D. Evaluation paper. McGill University.
- Giorgi, A. & G. Longobardi. (1991). *The Syntax of Noun Phrase*. Cambridge University Press, Cambridge.
- Heim, I. (1982). *The Semantics of Definite and Indefinite Noun Phrases*. Doctoral dissertation, University of Massachusetts, Amherst.
- Heycock, C. (1995). Asymmetries in Reconstruction. *Linguistic Inquiry* 26, pp. 547-570.
- Higginbotham, J. (1980). Pronouns and Bound Variables. *Linguistic Inquiry* 11, pp. 679-708.
- Hornstein, N. (1995). *Logical Form*. Blackwell, Oxford.
- Hoji, H. (1985). *Logical Form Constraints and Configurational Structures in Japanese*. Doctoral dissertation, University of Washington.

- Hoji, H. (1986). Scope Interaction in Japanese and its Theoretical Implications. *WCCFL* 5, pp. 87-101.
- Huang, J. (1982). *Logical relations in Chinese and the Theory of Grammar*. Doctoral dissertation, MIT.
- Ishii, Y. (1997). Scrambling and the Weak-Strong Distinction in Japanese. *University of Connecticut Working Papers in Linguistics* 8, pp. 89-112.
- Ishii, Y. (1999). A Note on Floating Quantifiers in Japanese. Muraki, M. et al. (eds.), *Linguistics: in Search of the Human Mind*. Kaitakusha, Tokyo, pp. 236-267.
- Ishii, Y. (2001). Presuppositional Effects of Scrambling Reconsidered. Inoue, K. (ed.), *the Proceedings of the COE International Symposium*, Kanda University of International Studies, Chiba, Japan.
- Kakegawa, T. (2001). Definiteness and the Structure of Noun Phrases in Japanese. *MIT Working Papers in Linguistics* 38, pp. 127-141.
- Kamio, A. (1983). *Meishiku-no koozoo* 'The structure of noun phrases'. Inoue, K. (ed.), *Nihongo-no kihon koozoo* 'Fundamental structures of the Japanese language'. Sanseido, Tokyo, pp. 77-126.
- Koopman, H. & D. Sportiche. (1982). Variables and the Bijection Principle. *The Linguistic Review* 2, pp. 139-160.
- Kratzer, A. (1995). Stage-Level and Individual-Level Predicates. Carlson, G. N. et al. (eds.), *The Generic Book*. The University of Chicago Press, Chicago, pp. 125-175.
- Krifka, M. (1992). Definite NPs aren't Quantifiers. *Linguistic Inquiry* 23, pp. 156-163.
- Lasnik, H. & M. Saito. (1992). *Move α* . The MIT Press, Cambridge, MA.
- Lasnik, H. & T. Stowell. (1991). Weakest Crossover. *Linguistic Inquiry* 22, pp. 687-720.
- Mahajan, A. (1992). The Specificity Condition and CED. *Linguistic Inquiry* 23, pp. 510-516.
- Milsark, G. (1974). *Existential Sentences in English*. Doctoral dissertation, MIT.
- Nakanishi, K. (2002). Predicative and Quantificational Numerals in Japanese. *The Proceedings of Asian GLOW 2002*.
- Nishigauchi, T. (1990). *Quantification in the Theory of Grammar*. Kluwer Academic Publishers, Dordrecht.
- Nishigauchi, T. (1999). *Ronrikouzou to Bunpouriron* 'Logical Structure and the Theory of Grammar'. Kuroshio, Tokyo.
- Partee, B. (1987). Noun Phrase Interpretation and Type-Shifting Principle. Groenendijk, J. et al. (eds.), *Studies in Discourse Representation Theory and the Theory of Generalized Quantifiers*. Foris, Dordrecht, pp. 115-143.
- Pesetsky, D. (1987). Wh-in-situ: Movement and Unselective Binding. Reuland, E. et al. (eds.), *The Representation of (In)definiteness*. The MIT Press, Cambridge, MA, pp. 98-129.
- Reinhart, T. (1983). Coreference and Bound Anaphora: a Restatement of the Anaphora Question. *Linguistic and Philosophy* 6, pp. 47-88.
- Richards, N. (1998). The Principle of Minimal Compliance. *Linguistic Inquiry* 29, pp. 599-629.
- Richards, N. (2001). *Movement in Language*. Oxford University Press, Oxford.
- Ross, J. R. (1967). *Constraints on Variables in Syntax*. Doctoral dissertation, MIT.
- Russell, B. (1905). On Denoting. *Mind* 14, pp. 479-493. Reprinted in Martinich, A. P. (ed.) 2001, *The Philosophy of Language*. Oxford University Press, Oxford, pp. 212-220.
- Safir, K. (1984). Multiple Variable Binding. *Linguistic Inquiry* 15, pp. 603-638.
- Saito, M. (1992). Long Distance Scrambling in Japanese. *Journal of East Asian Linguistics* 1, pp. 69-118.
- Sauerland, U. (1998). *The Meaning of Chains*. Doctoral dissertation, MIT.
- Shimoyama, J. (2001). *Wh-Constructions in Japanese*. Doctoral dissertation, University of Massachusetts, Amherst.
- Strawson, P. F. (1950). On Referring. *Mind* 59, pp. 320-344. Reprinted in Martinich, A. P. (ed.) 2001, *The Philosophy of Language*. Oxford University Press, Oxford, pp. 228-242.
- Watanabe, A. (1992). Subjacency and S-Structure Movement of Wh-in-situ. *Journal of East Asian Linguistics* 1, pp. 255-291.
- Watanabe, A. (2001). Wh-in-situ Languages. Baltin, M. et al. (eds.), *The Handbook of Contemporary Syntactic Theory*. Blackwell, Oxford, pp. 203-225.
- Watanabe, A. (2002). Functional Projections of Nominals in Japanese: Syntax of Classifiers. ms. University of Tokyo.