

The Licensing Condition on Parasitic Gaps in English*

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1. Introduction

In this paper, I am concerned with the parasitic gap (henceforth, PG) construction, as exemplified in (1).

- (1) Which article did you file t without reading pg ?

The second gap in this sentence, denoted with pg , is what is called a “PG.” This comes from the fact that this gap cannot appear without the existence of the first gap, a trace created by the movement of the *wh*-phrase *which article*, which I refer to as a “real gap” (cf. Engdahl (1983)). In the literature, PGs have been exposed to questions of how they are derived and licensed.

Chomsky (1986) argues that PGs are produced by movement of null operators and licensed via chain composition. This proceeds along the line below:

- (2) Which article did you file t [without [Op [reading pg]]]?
 (3) a. $C = (\textit{which article}, t)$
 b. $C' = (Op, pg)$
 (4) If $C = (\alpha_1, \dots, \alpha_n)$ is the chain of the real gap, and $C' = (\beta_1, \dots, \beta_n)$ is the chain of the parasitic gap, then the “composed chain” $(C, C') = (\alpha_1, \dots, \alpha_n, \beta_1, \dots, \beta_n)$ is the chain associated with the parasitic gap construction and yields its interpretation.
 (5) $(C, C') = (\textit{which article}, t, Op, pg)$

The adjunct clause of (2), which is a representation of (1), illustrates that the null operator Op moves from the position of pg to the Spec of CP.¹ This means that the representation in (2) has the two chains in (3), which are formed in the main clause and in the adjunct clause, respectively. These independent chains are composed via chain composition in (4), thereby yielding the composed chain in (5). The formed chain has *which article* as its head and pg as its tail, whereby the PG sentence in (1) obtains its proper interpretation.

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¹ This movement is motivated by the fact that PGs are island-sensitive. See Chomsky (1986:55-56) for details.

Such a sentence as (1) is contrasted with (6) and (7) with respect to the licensing of PGs. Observe the following:

- (6) * Who filed which article without reading *pg*?
 (7) * John filed every article without reading *pg*.

(Kim and Lyle (1996:291))

These sentences indicate that PGs are inconsistent with the *wh*-in-situ construction and the quantifier raising (QR) construction, in which A'-movement at LF has been assumed to be involved in the course of derivations, unlike (1) (cf. Huang (1982) and May (1985)).

Kim and Lyle (K&L) (1996) attempt to explain this asymmetry, proposing the homogeneity condition (HC) that determines whether chains composed via (4) are well-formed, which requires that operators in composed chains should be homogeneous with respect to their type and position.² The purpose of this paper is to show that the HC-based account of PGs is not adequate both empirically and theoretically and to present a revised licensing condition on PGs, the parallelism condition (PC), according to which PGs are licensed via parallelism in chain formation between real gap chains and PG chains.

This paper is organized as follows. Section 2 briefly reviews K&L's (1996) analysis of PGs based on the HC. Section 3 points out that the HC-based analysis poses some empirical and theoretical problems. Section 4 proposes the PC, which is free from the problems faced by the HC. Section 5 makes some concluding remarks.

2. A Previous Study: Kim and Lyle (1996)

K&L (1996:291) propose that composed chains should satisfy the HC in (8).³

² K&L regard chain composition in (4) as an interface condition at LF that is required for the proper interpretation of PGs. This entails that PGs are licensed at LF. As they state, this is against the standard view that PGs are only licensed at S-structure (e.g. Endahl (1983)), which is based on the contrast between (1) and (6)-(7). LF licensing of PGs is more tenable than S-structure licensing of PGs, given that only the former is consonant with minimalism, in which there is no linguistic level but LF and PF (cf. Chomsky (1995)). In this paper, I do not deal with the issue about whether PGs can actually be licensed at LF because it is not my main aim. For discussion about it, see Kennedy (1997), K&L (1996:section 5.1), and Shimada (1999). In particular, Shimada (1999) demonstrates with elliptical sentences including subject-internal PGs that LF licensing of PGs is doubtless viable.

³ According to K&L, the HC is a subcase of the chain uniformity condition in the sense of Chomsky (1991) and Chomsky and Lasnik (1993), and it is reduced essentially to Full Interpretation. In other words, if a composed chain contains heterogeneous operators, the operators would be regarded as illegitimate LF objects.

- (8) Composed chains can only consist of homogeneous operators.

According to (8), PGs are licensed if operators in composed chains are homogeneous with respect to their type and position. This condition is responsible for the following asymmetry in the licensing of PGs:

- (9) Which article did you file t without reading pg ? (= (1))
 (10) * Who filed which article without reading pg ? (= (6))
 (11) * John filed every article without reading pg . (= (7))

Let us consider how the HC licenses or excludes the sentences in (9)-(11). Sentence (9) has the composed chain in (12), given that it contains movement of a null operator in the adjunct clause.

- (12) $(C, C') = (\text{which article}_{CP}, t, Op_{CP}, pg)$

This composed chain is well-formed under the HC, because the two operators, *which article* and *Op*, are homogeneous with respect to their type and position, in that both of them are one unary operator and are in the Spec of CP. The PG in (9) is thus licensed.

Contrastively, the *wh*-in-situ construction in (10) is excluded as a violation of the HC. This is because the operators in the composed chain of (10) are heterogeneous with respect to their type. K&L suppose with Higginbotham and May (1981) and May (1985) that the in-situ *wh*-phrase in (10) moves to the matrix CP domain at LF, it establishes a mutual c-command relation with the matrix *wh*-phrase *who*, and the two *wh*-phrases undergo the operation *absorption*, whereby they form one complex n-ary operator. This is shown in (13a), which yields the composed chain in (13b).

- (13) a. $[WH_2^{\{1,2\}} x, y: x \text{ a person \& } y \text{ an article}] x^1 \text{ filed } y^2 \text{ without } Op$
 reading y^2
 b. * $(C, C') = (WH_2^{\{1,2\}}, t, Op, pg)$

This composed chain violates the HC because it comprises one binary operator and one unary operator, unlike (12). Sentence (10) is thus ruled out.

The HC-based account is extended to the QR construction in (11), which has the composed chain in (14).

$$(14) \quad * (C, C') = (\textit{every article}_{TP}, t, Op_{CP}, pg)$$

As illustrated in (14), this composed chain apparently satisfies the HC since the operator of the real gap and the operator of the PG are both one unary operator, as with (12). However, it consists of heterogeneous operators in terms of their position. That is, the object quantifier phrase *every article*, which is an operator of the real gap, adjoins to the TP via QR. On the other hand, the operator of the PG moves to the Spec of CP. This means that the composed chain in (14) contains the heterogeneous operators: the TP-operator *every article* and the CP-operator *Op*. Hence, the ungrammaticality of (11). It is also confirmed from the contrast in (15) that this sort of homogeneity between operators is crucial for the licensing of PGs.

(15) a. No article did John ever file without reading *pg*.

b. * John filed no article without reading *pg*.

(K&L (1996:292))

This contrast indicates that PGs are licensed with the HC respected if quantifier phrases move not to the TP-adjoined position, as in (15b), but to the Spec of CP, as in (15a).

Summarizing this section, I have reviewed K&L's (1996) analysis, which states that PGs are licensed via the HC that requires homogeneity in the type and position between operators in composed chains. In section 3, I provide some counterarguments to this analysis and show that it is not valid both empirically and theoretically.

3. Counterarguments

As outlined in section 2, K&L (1996), appealing to the differences in the type between operators and in the position between operators, account for the inconsistency of PGs with the *wh*-in-situ construction and the QR construction, respectively. In what follows, I present some counterarguments to each account of this inconsistency.

3.1. The Type-Based Account

As observed in the previous sections, the *wh*-in-situ construction in (16) fails to have PGs.

$$(16) \quad * \text{Who filed which article without reading } pg? \quad (= (6), (10))$$

Recall that K&L (1996) attribute this failure to the difference in the type between operators in the composed chain of (16). The crucial point here is that the two *wh*-phrases in the main clause undergo an operation of absorption. In (16), the in-situ *wh*-phrase *which article* moves to the matrix CP domain at LF in order to establish a mutual c-command relation with the matrix *wh*-phrase *who*, and they form one complex n-ary operator via absorption. This is shown below:

$$(17) \quad [WH_2^{\{1,2\}} x, y: x \text{ a person \& } y \text{ an article}] x^1 \text{ filed } y^2 \text{ without } Op \\ \text{reading } y^2 \quad (= (13a))$$

This LF representation produces the composed chain in (18).

$$(18) \quad * (C, C') = (WH_2^{\{1,2\}}, t, Op, pg) \quad (= (13b))$$

The formed chain is judged ill-formed by the HC because the operators are heterogeneous with respect to their type. This induces the ungrammaticality of (16).

There exist two questions to be asked in this reasoning. First, it is unclear why sentence (16) enforces absorption. Higginbotham and May (1981:49) state that absorption applies optionally to the *wh*-in-situ construction.⁴ If the in-situ *wh*-phrase in (16) moves only to take its scope within the matrix CP at LF, and absorption is not implemented at that point, then this sentence should have the composed chain in (19).

$$(19) \quad (C, C') = (which \text{ article}_{CP}, t, Op_{CP}, pg)$$

⁴ Consider the question in (i), for instance.

- (i) Which man saw which woman?

This sentence has two interpretations, which are referred to as the “singular interpretation” or the “bijective interpretation” (cf. Higginbotham and May (1981)). These interpretations correspond to the LF representations in (ii), respectively.

- (ii) a. [WH *x*: *x* a man] [WH *y*: *y* a woman] *x* saw *y*
 b. [WH₂^{1,2} *x, y*: *x* a man & *y* a woman] *x* saw *y*

These representations stem from optional application of absorption. That is, representation (iia) is obtained if no absorption applies to (i), and conversely, representation (iib) is derived if absorption accommodates to (i). The question in (i) can thus require two answers as in (iii).

- (iii) a. John saw Mary.
 b. John saw Mary and Bill saw Nancy.

This composed chain is clearly subject to the HC with both the operator of the real gap and the operator of the PG in the Spec of CP. This forces (16) to be grammatical, contrary to fact. Thus, for K&L's account to hold, they must prove that such a sentence as (16) obligatorily undergoes absorption.

Second, it is suspicious whether LF-movement of in-situ *wh*-phrases, which is a presupposition for implementing absorption, actually takes place. Reinhart (1998) argues that LF-movement of in-situ *wh*-phrases cannot be justified both empirically and theoretically. Her argument is built from the issues about minimality and subjacency. Consider the ambiguous question in (20).

- (20) Who knows where to find what? (Reinhart (1998:33))

Such a question as (20) has generally been taken to be answered two ways, depending on the scope of in-situ *wh*-phrases (cf. Reinhart (1998)). If the in-situ *wh*-phrase *what* has scope within the embedded CP, the question in (20) can obtain *Max knows where to find what* as its answer. Or, this question can be answered by *Max knows where we can find bicycles*, with the in-situ *wh*-phrase in question taking scope within the matrix CP. In the latter case, if this in-situ *wh*-phrase takes scope in the matrix CP via LF-movement, this movement crossing over the closer *wh*-phrase *where* would violate minimality (cf. Chomsky (1995)). This suggests that in-situ *wh*-phrases undergo no LF-movement.

Other evidence against LF-movement of in-situ *wh*-phrases is given by the well-known contrast in (21).

- (21) a. * Who do you read books that *t* writes?
 b. Who reads the books that who writes?
 (Reinhart (1998:33))

This contrast has generally been regarded as a piece of evidence suggesting that LF-movement does not obey subjacency (cf. Huang (1982)). That is, sentence (21a), in which the overt *wh*-movement crosses the island, is ungrammatical. Contrastively, sentence (21b) is impeccable because the covert *wh*-movement over the island does not violate subjacency. However, this contrast can be strong evidence showing that in-situ *wh*-phrases never move at LF if it is independently confirmed that LF-movement is sensitive to subjacency. In effect, Reinhart (1991, 1998) demonstrates that LF-movement obeys subjacency.

Observe the example in (22), which is a sentence with comparative ellipsis.

- (22) More people love Bach than Mozart. (Reinhart (1991:362))

Reinhart argues that the underlined (correlate) phrase *Bach* must adjoin covertly to the *than*-phrase for interpretation at LF.⁵ It turns out from (23) that such a movement operation applies to (22).

- (23) * More people who love Bach arrived, than Mozart. (Reinhart (1998:34))

This sentence indicates that, if the underlined phrase in (22) is embedded in an island like a complex NP, it creates an island effect. This cannot be explained unless subadjacency also holds at LF, given that LF-movement of the underlined phrase is not clause-bound, as in (24).

- (24) More people said that they will vote for Bush in the last poll than for Dukakis. (Reinhart (1998:34))

In (24), the underlined phrase is embedded within a distinct clause, but this sentence remains grammatical. This shows that LF-movement of the underlined phrase to the *than*-phrase is not clause-bound. It then follows that the island effect observed in (23) can result only from the LF-movement of the underlined phrase *Bach*.

Bearing this in mind, consider again the sentence in (21b). If this in-situ *wh*-phrase moves to the matrix CP domain at LF, this sentence should be excluded as a violation of subadjacency. This is not the case, however. The contrast in (21) thus provides us with strong support against LF-movement of in-situ *wh*-phrases.⁶

The developed discussions above suffice to reject K&L's (1996) type-based account, which is responsible for the incompatibility of PGs with the *wh*-in-situ construction.

3.2. *The Position-Based Account*

The position-based account of the QR construction with PGs is apparently valid in that it can be supported by the facts in (25).

⁵ Reinhart independently proves that interpretation of comparative ellipsis sentences cannot be derived via LF copy, differently from other types of ellipsis sentences. See Reinhart (1991) for details.

⁶ The drawn conclusion gives rise to a question as to what kind of mechanism allows *wh*-phrases to be interpreted in situ. For one solution to this question, see Reinhart (1992, 1998:section 2), who proposes the choice-function analysis for in-situ *wh*-phrases.

- (25) a. * John was killed *t* by a tree falling on *pg*.
 b. * Mary seemed *t* to disapprove of John's talking to *pg*.
 (Engdahl (1983:13))

Sentences (25a, b) show that A-movement environments, such as the passive construction and the raising construction, do not license PGs. In these sentences, the antecedents of the real gaps *John* and *Mary* undergo A-movement to the Spec of TP, whereas the antecedents of the PGs occupy the Spec of CP, thereby forming the composed chains in (26).

- (26) a. * $(C, C') = (John_{TP}, t, Op_{CP}, pg)$
 b. * $(C, C') = (Mary_{TP}, t, Op_{CP}, pg)$

Each chain in (26) violates the HC with the antecedents in the different positions, hence the deviance of (25).

As just seen above, it seems that the data in (25) can constitute empirical evidence that supports the position-based account. However, there is a crucial contrast that cannot be captured by this account, as in (27).

- (27) a. * Which articles did you say *t'* got filed *t* by John without him reading *pg*?
 b. Which Caesar did Brutus imply *t* was no good while ostensibly praising *pg*?

(Engdahl (1983:20-21))

The HC predicts (27a, b) to be both grammatical. In each sentence in (27), both the operator of the real gap and the operator of the PG move to the Spec of CP. This means that the composed chains of (27) satisfy the HC, as depicted in (28).

- (28) a. $(C, C') = (which\ articles_{CP}, t_{TP}, t, Op_{CP}, pg)$
 b. $(C, C') = (which\ Caesar_{CP}, t, Op_{CP}, pg)$

In (28a, b), the operators are homogeneous with respect to their position, and thus, sentences (27a, b) should be grammatical. However, we actually obtain the unexpected contrast in (27).

One might argue here that this contrast is captured by the anti-c-command condition in (29), instead of the HC.

- (29) A parasitic gap may not be c-commanded by the real gap.
(Engdahl (1983:22))

The condition in (29) has traditionally been regarded as licensing *wh*-subject constructions with PGs. For example, the contrast in (27) is explained as follows. Sentence (27a), where the real gap c-commands the PG, is excluded, given that the adjunct including the PG adjoins to the embedded *vP*. On the other hand, sentence (27b) is grammatical because the adjunct containing the PG adjoins to the matrix *vP*, and then, the PG is not c-commanded by the real gap. This account is apparently reasonable. The data in (30) and (31) illustrate, however, that the anti-c-command condition fails to receive enough empirical support.

- (30) ? Who did Bill believe [*t* visited you [without you having invited *pg*]]?
(Brody (1995:83))
- (31) a. ? Which famous linguists do you consider [*t* smarter than most friends of *pg*]?
b. ? Which painter did John regard [*t* as more promising than most contemporaries of *pg*]?
(Engdahl (1984:96))

In (30), the real gap surely c-commands the PG because the adjunct with the PG adjoins to the embedded *vP*, but nonetheless, this sentence is grammatical. Similarly, sentences (31a, b), in which the real gaps c-command into the small clause complements with the PGs, are still grammatical. This confirms that the anti-c-command condition, as well as the HC, does not qualify as licensing PGs.⁷ We thus remain in a position where we have no explicit licensing condition on PGs.

To sum up this section, I have shown that the HC presented by K&L (1996) is untenable at all. In the next section, I alternatively propose the PC that requires parallelism in chain formation between real gap chains and PG chains, which resolves the problems borne by the HC.

⁷ The anti-c-command condition has also captured the incompatibility of PGs with the matrix *wh*-subject constructions shown in (i), in addition to the contrast in (27).

- (i) a. * Which articles *t* got filed by John without him reading *pg*?
b. * Who *t* sent a picture of *pg*?
(Engdahl (1983:20))

Sentences (ia, b) are excluded because the real gaps c-command the PGs. As just stated with (30) and (31), however, this condition should be abandoned. I return in section 4.2 to the question of what explains the ungrammaticality of (i).

4. Proposal

In this section, I first propose the PC as a revised licensing condition on PGs. Then, based on the proposed condition, I explain the various facts on PGs observed above.

4.1. The Parallelism Condition

In section 3.2, I provided the contrast in (27) as a piece of counterevidence to the HC, repeated as (32).

- (32) a. * Which articles did you say *t'* got filed *t* by John without him reading *pg*?
 b. Which Caesar did Brutus imply *t* was no good while ostensibly praising *pg*?

It is important to note here that there is a difference in the presence or absence of passivization between (32a) and (32b). In other words, the *wh*-phrase in (32a) undergoes A-movement in the course of derivation, but the *wh*-phrase in (32b) does not. It is only natural to consider that this results in the difference of grammaticality in (32). To see if this is the case, consider the minimal pair in (33).

- (33) a. * Who did Bill believe *t'* was visited *t* by John while him having refused to meet *pg*?
 b. ? Who did Bill believe *t* visited John while him having refused to meet *pg*?

Sentence (33a) that involves A-movement of the *wh*-phrase is less acceptable than sentence (33b) that lacks it. This implies that A-movement in (32a) and (33a) affects grammaticality in some way.

On the contrasts above, I propose the condition in (34), which I refer to as the PC.

- (34) Composed chains can only consist of parallel chains.

This condition states that PGs are licensed if real gap chains and PG chains are parallel with respect to chain formation. The PC defines the well-formedness of composed chains as *parallelism in chain formation between real gap chains and PG chains*. By contrast, the HC gives a definition of it with the two notions *homogeneity in the type between operators* and *homogeneity in the position between*

operators. The PC is simpler than the HC, and, in addition, the former has empirical validity than the latter does. In this sense, the PC is more desirable than the HC. In what follows, I confirm that the PC is more empirically adequate than the HC, showing that the former is capable of capturing not simply the contrasts in (32) and (33) but the facts on PGs that we have seen so far.

4.2. Explanation

Let us consider in what way the PC accounts for the contrast in (32), which is a piece of evidence against the HC. The sentences in (32) create (35) as their composed chains, respectively.

- (35) a. * (C, C') = (*which articles*_{CP}, *t*_{TP}, *t*, *Op*_{CP}, *pg*)
 b. (C, C') = (*which Caesar*_{CP}, *t*, *Op*_{CP}, *pg*)

As expressed in (35a), this composed chain does not consist of parallel chains because only the real gap chain contains *t*_{TP} as an intermediate trace. This yields the ungrammaticality of (32a). In contrast, the composed chain in (35b) respects the PC since it does not have such an offending trace. Sentence (32b) is thus grammatical.

The same is true for the sentences in (33), from which the composed chains in (36) are produced.⁸

⁸ Sentence (33b) might have the same illicit composed chain as in (36a), rather than the licit one in (36b), given that subjects are standardly assumed to undergo A-movement from the Spec of *v*P to the Spec of TP. This incorrectly leads us to state that sentence (33b) is ungrammatical. That does not mean, however, that the PC has to give way to another condition. There seem to me to be at least two possible options to overcome this problem.

First, the *wh*-subject in (33b) moves directly to the matrix Spec of CP without going through the Spec of TP, and thus, this sentence appropriately obtains the licit composed chain in (36b). This is based on the assumption that natural language bans string-vacuous movement (cf. Chomsky (1995), Takano (1996:chapter 4)). This assumption prevents the *wh*-subject in (33b) from moving from the Spec of *v*P to the Spec of TP and forces it to move directly to the matrix Spec of CP. Thus, sentence (33b) can properly produce the composed chain in (36b). Second, this *wh*-subject actually moves via the Spec of TP to the matrix Spec of CP, but this stopover position is invisible to the PC, thereby yielding the licit composed chain in (36b). This results from the stipulation that the PC ignores chains created by string-vacuous movement. At this moment, it is uncertain which option should be taken, but I postulate that either option helps (33b) to correctly form (36b) as its composed chain.

The phase theory proposed in Chomsky (2001) poses another problem. This theory requires that the derivation proceeds by phases (i.e. *v*Ps and CPs). Given this, in (32) and (33), the *wh*-subjects move to the matrix Spec of CP going through the edge of the matrix *v*P. This movement is not string-vacuous. If the phase theory is adopted here, the PC might wrongly rule out the fine (b)-sentences as well as the bad (a)-sentences. This comes from the idea that the composed chains of the (b)-sentences, where the *wh*-subjects move via the edge of the matrix *v*P to the matrix Spec of CP, might not contain parallel chains. In order to handle this problem, we need

- (36) a. * $(C, C') = (who_{CP}, t_{TP}, t, Op_{CP}, pg)$
 b. $(C, C') = (who_{CP}, t, Op_{CP}, pg)$

As just described above, these composed chains are just the same ones as in (35) with respect to chain formation. This means that the composed chain in (36a) is ruled out as a violation of the PC, while the one in (36b) is well-formed with the PC respected. Thus, sentence (36a) is ungrammatical, but (36b) grammatical.

The current explanation predicts that a PG sentence should have grammatical status if A-chain intervenes both in its real gap chain and in its PG chain. In fact, this prediction is borne out by the following grammatical sentence:

- (37) ? Which candidate do you think t' was hired t without believing pg' to have been fired pg before?

In (37), both the operator of the real gap and the operator of the PG undergo A-movement in the course of derivation, unlike (32a) and (33a), thereby creating the composed chain in (38).

- (38) $(C, C') = (which\ candidate_{CP}, t_{TP}, t, Op_{CP}, pg_{TP}, pg)$

This composed chain satisfies the PC because the real gap chain and the PG chain are parallel with respect to chain formation, and thus, sentence (37) is grammatical.

Moreover, it goes without saying that the proposed condition is also able to capture the facts that the HC can (see section 2 and 3.2). Here, let us take the QR construction and the *wh*-in-situ construction that are at odds with PGs. Consider the following:

- (39) a. * John filed every article without reading pg . (= (7), (11))
 b. * $(C, C') = (every\ article_{TP}, t, Op_{CP}, pg)$ (= (14))

Sentence (39a) displays the QR construction, in which PGs are not licensed. That should be reduced to a violation of the PC. This sentence has (39b) as its composed chain. It violates the PC because it does not involve parallel chains. That is, the operator of the real gap undergoes chain formation to the TP-adjoined position via QR, whereas that of the PG occupies the Spec of CP through chain

to consider the questions as to which chains in composed chains the PC makes reference to and what kind of internal structures gerundive constructions in adjunct clauses have. In this paper, I leave these questions open for future research.

formation. Hence, the ungrammaticality of (39a).

Similarly, the inconsistency of PGs with the *wh*-in-situ construction in (40) is explained as a violation of the PC.

- (40) * Who filed which article without reading *pg*? (= (6), (10), (16))

Given that the in-situ *wh*-phrase in (40) does not undergo LF-movement (see section 3.1), this sentence would have the composed chain in (41).⁹

- (41) * (C, C') = (*which article*, Op_{CP} , *pg*)

As described in (41), this composed chain does not comprise parallel chains. Whereas the *wh*-phrase *which article* remains in situ without chain formation to the Spec of CP, the operator of the PG is in the Spec of CP through chain formation. This means that the composed chain in (41) does not keep to the PC. Sentence (40) is thus ruled out.

The present analysis does not entail that PGs are at odds with any sentence containing in-situ *wh*-phrases. If a PG sentence involves binary quantification both in the main clause and in the adjunct clause, the PC predicts the sentence to be grammatical. The grammatical example in (42) bears out this prediction.

- (42) ? Which senator_i did you persuade *t_i* to borrow which car_j [after getting an opponent of *pg_i* to put a bomb in *pg_j*]? (Nissenbaum (2000:12))

In the main clause of (42), the *wh*-phrase *which senator* moves to the Spec of CP. On the other hand, the in-situ *wh*-phrase *which car* does not undergo such a movement operation, along the same line as in (40). If the adjunct clause is parallel with the main clause with respect to quantification, this sentence would have the LF representation in (43).

- (43) Which senator_i did you persuade *t_i* to borrow which car_j [after Op_i getting an opponent of *pg_i* to put a bomb in Op_j]?

In the adjunct clause of (43), Op_i moves from the position of *pg_i* to the Spec of CP, but Op_j stays in situ with no movement at LF, thereby yielding the two composed

⁹ One might argue that sentence (40) cannot have this composed chain because the in-situ *wh*-phrase itself does not create a chain in the absence of LF-movement. However, I assume that this in-situ *wh*-phrase forms a trivial (one-membered) chain (cf. Chomsky (1995)).

chains in (44).

- (44) a. $(C, C') = (\text{which senator}_{iCP}, t_i, Op_{iCP}, pg_i)$
 b. $(C, C') = (\text{which car}_j, Op_j)$

Each chain in (44) satisfies the PC because the real gap chain and the PG chain are parallel with respect to chain formation. Sentence (42) is thus grammatical.¹⁰

Let us now turn to the embedded *wh*-subject constructions with PGs in (30) and (31), repeated as (45) and (46), which are counterexamples to the anti-c-command condition.

- (45) ? Who did Bill believe [*t* visited you [without you having invited *pg*]]?
 (46) a. ? Which famous linguists do you consider [*t* smarter than most friends of *pg*]?
 b. ? Which painter did John regard [*t* as more promising than most contemporaries of *pg*]?

The grammaticality of these sentences is properly explained under the PC. Consider their composed chains in (47) and (48).

- (47) $(C, C') = (\text{who}_{CP}, t, Op_{CP}, pg)$
 (48) a. $(C, C') = (\text{which famous linguists}_{CP}, t, Op_{CP}, pg)$
 b. $(C, C') = (\text{which painter}_{CP}, t, Op_{CP}, pg)$

¹⁰ Sentence (i) might become problematic for the current analysis.

- (i) * Which parcel_i did you give *t_i* to whom without opening *pg_i*? (K&L (1996:288))

This is because the composed chain of (i) satisfies the PC, as in (ii).

- (ii) $(C, C') = (\text{which parcel}_{CP}, t, Op_{CP}, pg)$

This composed chain consists of parallel chains, and thus, sentence (i) should be grammatical, contrary to fact. However, if the in-situ *wh*-phrase *whom* in (i) is replaced with *John*, it improves grammaticality, as in (iii).

- (iii) ? Which parcel_i did you give *t_i* to John without opening *pg_i*?

The composed chain of this sentence is just the same one as in (ii). Apparently, the ungrammaticality of (i) is ascribed to the presence of the in-situ *wh*-phrase. Given that sentence (42) has a grammatical status, however, the true reason why sentence (i) is ungrammatical is that multiple questions are only consistent with multiple PGs. It thus follows that sentence (i) does not constitute a counterexample to the PC, regardless of exactly what this consistency is.

As illustrated in (47) and (48), each composed chain conforms to the PC because both the operator of the real gap and the operator of the PG undergo chain formation to the Spec of CP. Hence, the grammaticality of (45) and (46).

The last question to be answered is why PGs are not compatible with the matrix *wh*-subject constructions in (49), which have traditionally been captured by the anti-c-command condition (see note 7).

- (49) a. * Which articles *t* got filed by John without him reading *pg*?
 b. * Who *t* sent a picture of *pg*?

Given, however, that this condition has already been rejected in section 3.2, the ungrammaticality of (49) should be explained by the PC, adopting the vacuous movement hypothesis (VMH) (cf. Agbayani (2000, 2006), Chomsky (1986), George (1980)). This hypothesis prohibits *wh*-subjects from moving locally to the Spec of CP.¹¹ Under the VMH, sentences (49a, b) actually have the LF representations in (50), from which the composed chains in (51) are formed.¹²

- (50) a. * [_{TP} Which articles got filed *t* by John without him reading *pg*]?
 b. * [_{TP} Who *t* sent a picture of *pg*]?
 (51) a. * (C, C') = (*which articles*_{TP}, *t*, *Op*_{CP}, *pg*)
 b. * (C, C') = (*who*_{TP}, *t*, *Op*_{CP}, *pg*)

¹¹ For example, the ban on local topicalization supports the VMH, supposing that topics move to the Spec of CP. Consider the facts discussed by Lasnik and Saito (1992:111).

- (i) a. John thinks that himself, Mary likes *t*.
 b. * John thinks that himself, *t* likes Mary.

The anaphor *himself* in (ia), which is topicalized from object position in the embedded clause, can take *John* in the matrix clause as its antecedent. Contrastively, if this anaphor is a topicalized subject as in (ib), it cannot take *John* as its antecedent. This shows that subjects do not move locally to the Spec of CP.

¹² As described in (50a), I argue that the *wh*-subject in (49a) is actually in the Spec of TP at LF. This is because it moves via passivization but does not undergo further movement to the Spec of CP under the VMH. As Chomsky (1986:49-50) states, however, *wh*-subjects might move covertly to the Spec of CP though they remain in situ at the level prior to LF; still, I assume with Chomsky (2008) that the *wh*-subject in (49a) occupies the Spec of TP even at LF. Chomsky (2008) proposes the theory of feature inheritance, according to which Agree and Tense features are inherited from C to T. Suppose here that T also inherits Q-features from C. Then, it yields a lack of motivation for *wh*-subjects to move to the Spec of CP. This means that in (49a), the *wh*-subject does not move to the Spec of CP (see also Shimada (2008) for a similar but distinct line of the VMH).

The same holds for (49b). Similarly in this case, if T inherits Q-features from C, then the *wh*-subject would move from the Spec of *v*P to the Spec of TP, from which it does not move to the Spec of CP in the absence of any motivation for the movement.

In (51), the real gap chains are different with respect to chain formation from the PG chains, and thus, these composed chains are excluded as a violation of the PC. This induces the ungrammaticality of (49).

Summarizing this section, I have proposed the PC and reduced the (in)compatibility of PGs with various sentences to this condition. This reduction proves that the PC is empirically adequate.

5. Concluding Remarks

In this paper, I have shown that the HC presented by K&L (1996) is insufficient both empirically and theoretically and have proposed the PC as a revised licensed condition on PGs, according to which PGs are licensed if real gap chains and PG chains are parallel with respect to chain formation. The proposed condition has enabled us to explain the facts that the HC can or cannot. In future investigation, I would like to provide the PC with theoretical justification.

REFERENCES

- Agbayani, Brian (2000) "Wh-Subjects in English and the Vacuous Movement Hypothesis," *Linguistic Inquiry* 31, 703-713.
- Agbayani, Brian (2006) "Pied-Piping, Feature Movement, and Wh-Subjects," *Wh-Movement: Moving on*, ed. by Lisa Lai-Shen Cheng and Norbert Corver, 71-93, MIT Press, Cambridge, MA.
- Brody, Michael (1995) *Lexico-Logical Form: A Radically Minimalist Theory*, MIT Press, Cambridge, MA.
- Chomsky, Noam (1986) *Barriers*, MIT Press, Cambridge, MA.
- Chomsky, Noam (1991) "Some Notes on Economy of Derivation and Representation," *Principles and Parameters in Comparative Grammar*, ed. by Robert Freidin, MIT Press, Cambridge, MA.
- Chomsky, Noam (1995) *The Minimalist Program*, MIT Press, Cambridge, MA.
- Chomsky, Noam (2001) "Derivation by Phase," *Ken Hale: A Life in Language*, ed. by Michael Kenstowicz, 1-52, MIT Press, Cambridge, MA.
- Chomsky, Noam (2008) "On Phases," *Foundational Issues in Linguistic Theory: Essays in Honor of Jean-Roger Vergnaud*, ed. by Robert Freidin, Carlos P. Otero, and Maria Luisa Zubizarreta, 133-166, MIT Press, Cambridge, MA.
- Chomsky, Noam and Howard Lasnik (1993) "The Theory of Principles and Parameters," *Syntax: An International Handbook of Contemporary Research*, ed. by J. Jacobs, A. von Stechow, and W. Sternefeld, and T. Vennemann, 506-569, Walter de Gruyter, Berlin.
- Engdahl, Elisabet (1983) "Parasitic Gaps," *Linguistics and Philosophy* 6, 5-34.
- Engdahl, Elisabet (1984) "Why Some Empty Subjects don't License Parasitic Gaps," *WCCFL* 3,

91-104.

- George, Leland (1980) *Analogical Generalization in Natural Language Syntax*, Doctoral dissertation, MIT.
- Higginbotham, James and Robert May (1981) "Questions, Quantifiers and Crossing," *The Linguistic Review* 1, 41-80.
- Huang, James (1982) *Logical Relations in Chinese and the Theory of Grammar*, Doctoral dissertation, MIT.
- Kennedy, Christopher (1997) "VP-Deletion and "Nonparasitic" Gaps," *Linguistic Inquiry* 28, 697-707.
- Kim, Soowon and James Lyle (1996) "Parasitic Gaps, Multiple Questions, and VP Ellipsis," *WCCFL* 14, 287-301.
- Lasnik, Howard and Mamoru Saito (1992) *Move α : Conditions on its Application and Output*, MIT Press, Cambridge, MA.
- May, Robert (1985) *Logical Form*, MIT Press, Cambridge, MA.
- Nissenbaum, Johnathan (2000) *Investigations of Covert Phrase Movement*, Doctoral dissertation, MIT.
- Reinhart, Tanya (1991) "Elliptic Conjunctions: Nonquantificational LF," *The Chomskyan Turn*, ed. by A. Kasher, 360-384, Blackwell, Oxford.
- Reinhart, Tanya (1992) "*Wh*-In-Situ: An Apparent Paradox," *Proceedings of the 8th Amsterdam Colloquium*, ed. by P. Dekker and M. Stokhof, Institute for Logic, Language and Computation, University of Amsterdam.
- Reinhart, Tanya (1998) "*Wh*-In-Situ in the Framework of the Minimalist Program," *Natural Language Semantics* 6, 29-56.
- Shimada, Masaharu (1999) "VP-Ellipsis and Parasitic Gaps," *English Linguistics* 16, 145-151.
- Shimada, Masaharu (2008) "*Wh*-Movement and Linguistic Theory," *English Linguistics* 25, 519-540.
- Takano, Yuji (1996) *Movement and Parametric Variation in Syntax*, Doctoral dissertation, University of California, Irvine.

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