Parameters in Language Design

Edited by Soo-Min Hong

Organized by
The Korean Generative Grammar Circle &
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5. Conclusion

I showed in this paper that the nature of wh-prosody and wh-domains in a language like BK cannot be successfully treated without direct reference to the syntactic wh-agreement features. The results of the current investigation, therefore, provide direct evidence for the standard feature-based account of wh-movement, rather than Richards’ (2010) prosody-based view, which relates the syntactic parameter for the overt/covert distinction for wh-movement to the wh-specific phonological phrasing effects.

Selected References


Dynamicity in Sub-extraction Phenomena

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1. Introduction

Sub-extraction out of a DP has been widely discussed in the literature. In particular, the asymmetry between subjects and objects in sub-extraction has been at the center of intensive research.

(1) a. Whoi did you hear [a story about ti]?
   b. *Whoi did [a story about ti] amuse you?

(Lasnik & Saito 1992: 42)

As identified in (1a), the object DP a story about who allows sub-extraction out of it, so that the wh-phrase who is able to move to the front of the sentence. By contrast, the subject DP a story about who in (1b) does not allow sub-extraction out of it. The contrast has been called the CED effect (Huang 1982), as stated in (2).

(2) Condition on Extraction Domain (CED)

A phrase A may be extracted out of a domain B only if B is properly governed.

(Huang 1982: 505)

According to Huang, subjects are not proper domains for sub-extraction, unlike objects because subjects are not properly governed. The term ‘government’ used in GB-theory, however, is not valid any longer in the minimalist framework, and therefore, many studies have attempted to provide an alternative account for the CED effects without referring to the notion of government.

Most notably, the previous studies often argue that the final position or the base position of a DP determines the (im)possibility of sub-extraction: a DP that is moved to Spec TP disallows sub-extraction (e.g. Boeckx 2003, Stepanov 2007, Gallego & Uriagereka 2006, Gallego 2007), or a DP base-generated in phase-edges (Chomsky 2008) or as a specifier (Uriagereka 1999, Nunes & Uriagereka 2000) is opaque for sub-extraction. In section 2, we critically review the literature and examine the prediction of each study.
In section 3, we show that DPs merged within [Spec,TP], a phase edge, or specifiers sometimes do allow sub-extraction. We take this fact to imply that the condition on the sub-extraction domain is more dynamic in its nature than the previous studies predict. Based on this observation, in section 4, we propose “Morphological Freezing Effects” as the syntactic mechanism that regulates sub-extraction phenomena. The section is devoted to analyze the data shown in section 3, and we demonstrate how morphological freezing effects can successfully explain the dynamics in sub-extraction phenomena. Finally, we give concluding remarks in section 5.

2. Spec TP vs. Spec vP

Given the subject-object asymmetry in sub-extraction, it seems natural to attribute CED effects to some positional difference between subjects vs. objects. Under the vP internal subject hypothesis, it has been assumed that (transitive) subjects are base-generated in SpecvP and move to SpecTP. Thus, most previous studies point to either SpecvP or SpecTP as a designated island domain for sub-extraction.


Some researchers argue that nothing can be extracted out of a DP, which sits in Spec TP. Boeckx (2003), for instance, proposes that a chain can include at most one strong position (Principle of Unambiguous Chain, PUC), and SpecTP, in which features of subjects are checked, is one of the strong positions. Therefore, a subject that moves to SpecTP cannot move further and is frozen at SpecTP; the subject chain has already included a strong position. Boeckx further assumes that if features of a DP are checked in SpecTP, it means that a chain is already formed, so that a higher probe is unable to agree with a sub-embedded phrase within the DP. As a result, sub-constituents of the subject are assumed to be unable to move further when the subject itself is frozen at SpecTP. By contrast, sub-extraction from objects is allowed because objects do not undergo movement, and therefore objects do not form a chain. It implies that PUC does not apply to objects.

Similarly, Stepanov (2007) also proposes that CED effects are caused by illicit sub-extraction from an already formed chain. Adopting Takahashi (1994)'s account, Stepanov (2007) derives CED effects from Chomsky’s Chain Uniformity in (3).

(3) Chain Uniformity: Chains must be uniform. (Chomsky 1995: 91)

Under Stepanov’s proposal, nothing can be extracted from an already formed chain, because sub-extraction would violate (3). Put it differently, when sub-extraction take place, the extracted phrase becomes an adjunct to the subject DP. This adjunction yields an illicit chain such that the head DP in SpecTP contains an adjunct whereas the tail in SpecvP does not embed an adjunction structure. This is illustrated with (4). The head of the chain is [a story about who]. In contrast, the tail of the chain is [a story about who], which lack the adjunction structure that exists in the head. They are not the same, violating chain uniformity.

(4) a. *Who [SpecTP [SpecvP [a story about who]]] did [SpecvP [a story about who] amuse you]]?

The object, however, does not move (to SpecTP), so consequently there is no object chain formed in syntax; therefore, sub-extraction from the object may freely occur without violating the chain uniformity condition.

Gallego (2007) and Gallego and Uriagereka (2006) are in the same line with the above studies; they argue that Spec TP is the freezing position, from which nothing is able to be extracted. Modifying Chomsky’s (2000, 2001) Activity Condition, Gallego & Uriagereka propose revised Activity Condition (5).

(5) Activity Condition

Active elements (those with unvalued structural Case) that agree with a φ-Probe are ‘frozen in place’, being unable to move or allow movement from within them. (Gallego & Uriagereka 2006: 45)

Following Boeckx (2003), they argue that subjects are Case-valued in SpecTP, so that subjects are frozen in SpecTP. Consequently, the subject as well as its sub-constituent is unable to move.1

In short, the three major approaches that regard SpecTP as a designated island for sub-extraction share the premise that sub-extraction occurs from SpecTP. They also share the assumption that sub-extraction phenomena is

1. Gallego & Uriagereka (2006) note that sub-extraction may occur from the subject if intermediate position is available, as in raising or ECM constructions. Note, however, that there is no reason to assume that sub-extraction from a transitive subject must apply at SpecTP, whereas sub-extraction from a raised/ECM-ed subject may occur from an intermediate landing site. If sub-extraction out of an intermediate site is ever possible, one might wonder why sub-extraction may not occur from SpecvP where the transitive subject is externally merged.
constrained by some principle in the grammar such as Principle of Unambiguous Chain, Chain Uniformity, or Activity Condition.

While the details may differ, all the three studies predict that the subject at SpecvP would allow sub-extraction, in contrast to the subject that moved to SpecTP. Because the subject that remains at SpecvP does not form a chain, chain-related constraints such as PUC or Chain Uniformity would not apply. Furthermore, the previous studies uniformly predict that sub-extraction from the object that has undergone movement is impossible due to chain-related constraints stated above.

The studies such as Boeckx (2003) and Stepanov (2007) predict that sub-extraction out of the derived subject would be impossible because the derived subject occupies SpecTP in the end. Gallego & Uriagereka (2006), in contrast, argue that sub-extraction may occur from the intermediate position in raising or ECM constructions. Thus, they predict sub-extraction from the subject in raising and ECM constructions are possible (see note 1).

In section 3, we demonstrate that the predictions of the previous proposals are only partly borne out, and that some of the facts cannot be properly explained by the previous studies.

2.2. Spec vP is frozen (Nunes and Uriagereka 2000, Uriagereka 1999, Chomsky 2008)

The second line of the approaches argues that nothing can be extracted from a DP that is base-generated in SpecvP. Nunes and Uriagereka (2000) and Uriagereka (1999) employ Multiple Spell-Out (MSO) to explain CED effects. Under MSO, specifiers, but not complements, are spelled out independently from a head, due to LCA requirement. Namely, a given head can be linearized with respect to sub-constituents within their complements, which are command units. By contrast, a head cannot be linearized with respect to the sub-constituents in their specifiers, which are non-Command units made in a separate derivational workspace. Therefore, when a specifier is merged to the syntax, nothing within the specifier is an available syntactic apparatus because the specifier-internal elements have already been spelled out; consequently, any sub-extraction from a non-syntactic object may be as hard as sub-extraction out of a single word. Therefore, under this approach, condition on extraction domain is determined by the base-Merge position of a DP. Since transitive subjects are base-merged as specifiers in SpecvP, they do not allow their sub-constituents to be available for another syntactic operation, and thus sub-extraction is blocked.

Chomsky (2008) also argues that CED effects are determined by the base structures rather than the surface structures. Chomsky defines CP and v*P as the strong phases. According to him, the external argument of a strong phase head itself can be accessed from the next higher phase, but sub-constituents within the external argument of a strong phase head cannot be accessed in the next higher phase (Edge Opaqueness). Thus, even though a transitive subject DP, which is the external argument of v*P, itself can take part in operations in the upper phase, the sub-constituents of the DP in phase edge are not available syntactic units, being unable to be extracted out of the subject DP. In other words, external arguments of a strong phase are not proper sub-extraction domains.

Both the MSO account (Nunes and Uriagereka 2000 and Uriagereka 1999) and Edge Opaqueness (Chomsky 2008) assume that the asymmetry between transitive subjects and objects with respect to sub-extraction is due to the difference of the base position between them; SpecvP vs. non-SpecvP. On the other hand, the two accounts have a different prediction with regard to sub-extraction out of a transitive subject.

Under MSO accounts, a subject is independently spelled-out from its head and its status as a non-command unit is not changed irrespective of whether the subject is moved to another position or not. Thus, even when a subject, which is base-generated as specifier in SpecvP is moved to another position from its base position, the sub-constituents within the subject cannot be extracted. By contrast, under Chomsky’s phase account, if a subject base-merged in SpecvP moves to a non-phase edge position, the sub-constituents in the subject becomes accessible in the next higher phase, because the elements are embedded in an argument that does not sit in a phase-edge anymore.2

Under MSO, any DP base-generated as a specifier is determined as opaque domain of sub-extraction from its base position. Thus, MSO predicts transitive subjects do not allow sub-extraction and objects do allow regardless of the disposition of the DP itself. Since subjects of unaccusative and passive structure are base-generated as complements, they are predicted to be a proper domain of sub-extraction under this theory. Chomsky (2008) makes almost the same prediction with MSO accounts except Raising and ECM construction for the reason we noted above. DPs which are not base merged in phase edge are predicted to allow sub-extraction (e.g. objects, unaccusative or passive subjects). In contrast, it is predicted that DPs base-merged in phase-edge disallow sub-extraction (e.g. transitive subjects).

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2 Chomsky (2008) argues that a DP in SpecTP also blocks sub-extraction. According to him, if SpecTP is a proper target point for sub-extraction, transitive subjects and derived subjects such as unaccusative or passive subjects should pattern together. However, they show different behavior regarding sub-extraction. See section 3 for data.
In the next section, however, we show that some of the predictions are not supported by the fact, which leads us to an alternative approach to sub-extraction phenomena.

3. The distribution of proper sub-extraction domains

As seen in section 1, transitive subjects do not allow sub-extraction, but objects allow sub-extraction, as illustrated in (6) (repeated from (1)).

(6) a. Who did you hear [a story about t]?  
   (Lasnik & Saito 1992: 42)

English is a language in which EPP of T is obligatorily satisfied. However, in other language such as Spanish or German, in which EPP is optional, transitive subjects can remain in its base position, SpecvP. Interestingly, sub-extraction out of in-situ subjects is also impossible, as shown in (7).

(7) a. *[cP De qué artistas C* han herido [TP [las obras t] v*... of what artists have-3.PL hurt the works tu sensibilidad ]]?  
   [Spanish]
   ‘Which artists have [the works of t] hurt your sensitivity?’
   (Uriagereka 1988: 122)

b. ?* Was, hat [vP denn [t1 für eine Ameise]  
   What has vP-adj.PRT for a ant den Beamten gebissen]  
   [German]
   ‘What kind of ant has bitten the clerk?’
   (Jurka 2010: 59)

In the Spanish example (7a), the subject DP las obras de qué artista ‘the works of what artists’ sits in SpecvP, not moving to Spec TP. Nevertheless, the embedded PP de qué artista ‘of what artists’ cannot be extracted out of the subject DP. German also shows the same pattern with respect to sub-extraction out of in situ subjects. German has particles like denn, which indicate the vP boundary (Jurka 2010, p.89). Even if the subject war für eine Ameise ‘what kind of ant’ does not move to SpecTP and appears to the right of the vP-boundary, was ‘what’ cannot be separated from the subject DP. These data indicate that sub-extraction out of a transitive subject is impossible even when the subject stays in SpecvP, not moving to SpecTP.

Sub-extraction out of an object is not affected by the movement of the object as well. In (8), the object dos libros ‘two books’ allows sub-extraction regardless its position; thus PP qué escrito ‘of what writer’ is able to be extracted from within the object in (8a) that has undergone movement to the left of the subject and also from the non-moved object in (8b).

(8) a. [cP De qué escrito, ha comprado [vP [dos libros t], Maria t]]?  
   ‘Which writer have María bought two books?’ [Spanish]

b. [cP De que escrito, ha comprado [vP Maria [de libros t, t]]]?
   ‘Of what writer have María bought two books by?’
   (Gallego & Uriagereka 2006: 64)

Next, unaccusative/passive subjects allow sub-extraction as shown in (9). In (9a), an unaccusative subject a student from which class permits its sub-constituent PP from which class to move out of it. Likewise, in (9b), a passive subject a picture of whom allows its sub-constituent of whom to be extracted out of it.

(9) a. From which class did a student arrive?  
   (Unaccusative)

b. Of which car was a picture awarded a prize?  
   (Passive)
   (Chomsky 2008: 147)

Subjects in Raising and ECM constructions are also transparent for sub-extraction as shown in (10). In (10a), the raising subject the driver of which car allows its sub-constituent of which care to move out of it. In (10b) too, the ECM object the driver of which car is transparent for sub-extraction, being able to let its sub-constituents go out of it.

(10) a. Of which car is the driver likely to cause a scandal?  
   (Raising)

b. Of which car did they believe the driver to have caused a scandal?  
   (ECM)
   (Chomsky 2008: 153)

Furthermore, one more sub-extraction phenomenon that has not been considered under the previous studies revised above is the pattern like (11). In German, was- für cannot be split from a transitive subject, as in (11a). However, the transitive subjects do suddenly allow sub-extraction when an
object is scrambled to the left of the subject, as in (11b). Müller calls it ‘Melting Effects.’

(11) a. *Was haben [DP tann für Bücher] [DP den Fritz] beeindruckt?
what have for books the Fritz impressed
‘What kind of books impressed Fritz?’ [German]

b. Was haben [DP den Fritz] [DPs für Bücher] impri ed?
what have the Fritz for books impressed.
‘What kind of books impressed Fritz?’ [German]

(Müller 2010: 61)

Melting effects refer to the fact that a transitive subject base-generated in SpecvP does allow sub-extraction when the object scrambles to the left of it. This constitutes a counter-example against the MSO account. Chomsky’s Edge Opaqueness approach is also hard to explain Melting effects. The subject in (11) still occupies SpecvP, phase edge position, hence, we would expect that the subject would not allow sub-extraction regardless of object scrambling, contrary to the fact in (11b).

In sum, the predictions concerning sub-extraction phenomena can be summarized as in (12). ‘v’ indicates that such sub-extraction phenomenon is compatible with the prediction of the approach under discussion, and ‘*’ means such kind of sub-extraction phenomenon shows a different behavior from what the relevant approach predicts.

As shown in the table (12), there is no single account that is compatible with all the data discussed in the literature. Not all DP in SpecTP blocks sub-extraction; Not all DP in SpecvP is opaque for sub-extraction; Not all objects allow sub-extraction. Therefore, we argue that sub-extraction phenomena cannot be properly captured under such static theories that designate certain domains as islands for sub-extraction in syntax. We argue that sub-extraction phenomena are dynamic in nature, and the dynamicity calls for an alternative account for sub-extraction domain, which is flexible enough to accommodate the variation among constructions.

4. Morphological Freezing Effects

We argue that Gallego & Uriagereka (2006) is basically on the right track in arguing that Chomsky’s Activity Condition (Chomsky 2000, 2001) is the key to understanding the various sub-extraction phenomena. We
depart from them, however, in arguing that it is the feature relationship, but not the position of the subject that matters in determining the presence or absence of CED effects. We propose that the dynamicity in freezing effects comes from the interaction in feature checking, and this way we can overcome problems with Gallego & Uriagereka (2006).

To set the baseline of our proposal, let us first consider the Activity Condition, which is stated in (13)-(14). (13) states Chomsky's Activity condition, and (14) is an adaptation by Gallego & Uriagereka (2006).

(13) **Activity Condition** (Chomsky 2000: 38)
If structure Case has already been checked (deleted), the phrase P(G) is 'frozen in place', unable to move further to satisfy the EPP in a higher position. More generally, uninterpretable features render the goal active, able to implement operation: to select a phrase for Merge (Pied-piping) or to delete the probe.

(14) **Activity Condition Revised** (Gallego & Uriagereka 2006: 45)
Active elements (those with unvalued structural Case) that agree with a \*-Probe are 'frozen in place', being unable to move or allow movement from within them.

The condition in (14) covers two kinds of freezing effects; the first kind is syntactic freezing that makes a goal itself unable to move, and the second kind is morphological freezing that makes elements embedded within the goal unable to escape from the goal. Crucially, under (14), Agree is assumed to take place in Spec-Head configuration.

Departing (14), we propose the morphological freezing effect (15) in conjunction with Minimal Search (16), which restricts the domain of Agree to the closest c-command domain of the probe.

(15) **Morphological Freezing Effects**
A goal which all its uninterpretable features are valued should be frozen morphologically (rather than syntactically) and can no longer agree with any probe in a higher position.

(16) **Minimal Search (Probe - Goal system)**
a. Matching is feature identity.
   b. D(P) is the sister of P
   c. Locality reduces to "closest c-command".

Under Minimal Search, a transitive subject DP is Case valued in its base position, SpecvP, as shown in (17a). In other words, all uninterpretable features of the subject DP are valued at SpecvP. Due to the Morphological freezing effects, the subject DP becomes a morphologically unbreakable unit at SpecvP. Under our proposal, the morphologically frozen DP itself is still available for satisfying EPP feature of T, so the DP can move to Spec TP, as in (17b).

(17) a. \[ \text{Morphologically frozen!} \]

This explanation lies in the same line with the previous studies which argue for the concept of 'Freezing' in syntax. By adopting the Minimal Search, however, our proposal has a different prediction: because a DP is morphologically frozen when its licensing head is introduced in syntax, the DP is a proper sub-extraction domain so far as the extraction may occur before the licensing head of the DP is introduced in the derivation. Sub-extraction out of a DP is possible only when a potential landing site is available for the sub-extracted element before the licensing head of the DP is introduced in syntax. This derivation can be illustrated as in (18b).

(18) a. Contrary to in (18a), in (18b), there is a potential landing site Spec aP. Thus sub-constituent \( y \) can move out of a DP before an Agreeing head for the DP is merged in syntax. Under the current approach, we do not posit a specific position from which nothing can be extracted. Instead, a DP
becomes an improper domain for sub-extraction when all its uninterpretable features are valued by introducing its licensing head (cf. Bošcović 2008, who proposes Operator Freezing).

Our proposal can explain CED effects as depicted in (19) and (20). (19) shows why sub-extraction from a transitive subject is impossible. Right after the subject DP *a story about who* is merged, its licensing head $T$ is introduced in syntax, and therefore, the subject DP is morphologically frozen in its base position SpecvP, as in (19a). There is no potential landing site for sub-extraction.

(19) *Who did a story about amuse you?*

a. $\varepsilon_0$ !

\[
\text{transitive Subj.}
\]

b. ![Diagram](image)

On the other hand, in (20), the object DP *a story about who* is merged in complement of $V$, so there is a landing site available, namely SpecVP, before $v$, which is the licensing head of the object DP is merged in the derivation. Therefore, sub-constituents of the object DP can be extracted to the potential landing site before the DP is morphologically frozen.

(20) Who did you hear a story about?

a. $\varepsilon_0$ !

\[
\text{transitive Obj.}
\]

b. ![Diagram](image)

Our proposal can explain sub-extraction from non-moved transitive subjects or moved objects as well. Morphological freezing approach predicts that the movement of a subject or object itself has no effect on the morphological freezing. Thus, both moved transitive subjects and in-situ transitive subjects are morphologically frozen in its base position SpecvP before sub-extraction occurs. By contrast, both moved objects and in-situ objects are morphologically frozen in its base position, complement of $VP$, after sub-extraction takes place. This prediction turns out to be true as shown in (7) and (8) (Repeated in (21) and (22)). (21) shows that transitive subjects are not proper sub-extraction domain even though they do not move to SpecTP (i.e. they stay at SpecvP). In addition, (22) shows that objects allow sub-extraction even though they are moved to another position.

(21) a. *[c•P De qué artistas, C* han herido [TP Ts [v+P [las obras t₁] v*... of what artists have-3.PL hurt the works tu sensibilidad ] ]]? [Spanish] your sensitivity ‘Which artists have [the works of t₁] hurt your sensitivity?’ (Uriagereka 1988: 122)

b. ?* Wasj_ hat [vP denn [t₁ für eine Ameise] What has vP-adj.PRT for a ant den Beamten gebissen]? [German] the clerk bitten ‘[What kind of ant] has bitten the clerk?’ (Jurka 2010: 59)

(22) a. *[c•P De qué escritor, ha comprado [vP dos libros t₁, Maria t₂]]? Of what writer have-3SG bought two books Maria ‘Which writer has Maria bought two books by?’ [Spanish]

b. *[c•P De que escritor, ha comprado [vP María [dós libros t₁]]]? Of what writer have-3SG bought Maria two books ‘Which writer has Maria bought two books by?’ (Gallego & Uriagereka 2006: 64)

Next, our proposal can be extended to derived subjects. The unaccusative/passive subjects are base-merged within $VP$, just like objects. Hence, our account for sub-extraction from objects straightforwardly extends to such cases, as in (23). An embedded wh-phrase of *which car* could move out of the unaccusative/passive subject before the subject is Case-valued by T in (23a). T is introduced in syntax after sub-extraction
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Melting effects (25) (recall (11)) can be explained under our proposal as well.

(25) a. *Was haben [DP the Fritz] [VP für Bücher] beeindruckt?  
   ‘What kind of books impressed Fritz?’ [German]  
   b. Was haben [DP den Fritz] [VP für Bücher] beeindruckt?  
   ‘What kind of books impressed Fritz?’ [German]  
   (Müller 2010: 61)

When the object undergoes scrambling to the left of the subject, as in (25b), we assume a new functional projection is introduced to trigger object scrambling, as in (26a).\(^1\) We argue that this new functional projection is located between vP and TP, so that it serves as an intermediate landing site for sub-extraction before the subject agrees with its Case licenser T, as in (26b). Therefore, even transitive subjects may allow sub-extraction when object scrambling occurs.

In sum, morphological freezing effects can account the dynamic sub-extraction phenomena presented in section 3. Every derivation that allows

\(^1\) Grewendorf (2005) argues that the German middle field scrambling is nothing but topic or focus movement. In addition to the idea, we adapt Miyagawa’s (2010) proposal that aP hosts a focus phrase. Based on those studies, we suggest that aP that serves to host scrambled objects occurs as needed, between T and vP (cf. Miyagawa 2010, who posits aP between T and C).
sub-extraction from a DP includes at least one potential landing site between its probe and, the launching site. Such intermediate position makes it possible that sub-extraction takes place when its domain is not morphologically frozen. It means that the condition on sub-extraction domain cannot be stated such that a fixed position is frozen domain; Rather, the (im)possibility of sub-extraction may vary depending configurations, crucially affected by feature relationships in syntax.

5. Conclusion

The ultimate purpose of this study is to understand what the proper condition for sub-extraction is in the minimalist perspective. We argue that adopting Agree system proposed by Chomsky (2000, 2001), a domain becomes 'morphologically frozen' when it lacks uninterpretable feature. Departing from the previous analyses that defines sub-extraction domain as categorical positions, our proposal may capture dynamicity in sub-extraction based on the general interactions between feature Agree and their influence for morphology.

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