

2000

Covert Movement and Parasitic Gaps

Jon Nissenbaum
MIT

Follow this and additional works at: <https://scholarworks.umass.edu/nels>



Part of the [Linguistics Commons](#)

Recommended Citation

Nissenbaum, Jon (2000) "Covert Movement and Parasitic Gaps," *North East Linguistics Society*. Vol. 30 ,
Article 10.

Available at: <https://scholarworks.umass.edu/nels/vol30/iss2/10>

This Article is brought to you for free and open access by the Graduate Linguistics Students Association (GLSA) at ScholarWorks@UMass Amherst. It has been accepted for inclusion in North East Linguistics Society by an authorized editor of ScholarWorks@UMass Amherst. For more information, please contact scholarworks@library.umass.edu.

Covert Movement and Parasitic Gaps^{*}

Jon Nissenbaum

MIT

0. Introduction

Since the earliest research on *parasitic gap* (PG) constructions at the close of the 1970s, it has been taken for granted that *overt* dependencies—those involving overtly dislocated phrases and their gaps—are necessary to license PGs. As Engdahl observed in her seminal discussion of the chief properties of PG constructions, “It appears to be the actual presence of a real gap that licenses a parasitic gap and not just the presence of a *wh*-phrase” (1983:22). Engdahl illustrated this generalization with the contrast in (1):

- (1) a. Which article_i did you file _j without reading _{pg}
b. *Who filed *which article* without reading _{pg}

For the most part, Engdahl's generalization has simply been stipulated in theories of PGs (in terms of a licensing condition which holds at s-structure). Several recent attempts have been made to account for it without the stipulation of an s-structure condition (Kim and Lyle 1995, Nissenbaum 1998a,b, Nunes 1998). But until now there have not appeared grounds for challenging its correctness.

This paper will present an empirical challenge to Engdahl's generalization. I will show that in a well-defined class of cases, PGs can be licensed by *wh*-in-situ. The paper has two main goals. The first is to explain why Engdahl's generalization is correct for the overwhelming majority of cases. I will argue that the near total inability of covert movement to license PGs can be explained by a simple, independently motivated property of grammar—namely, the property that forces extra specifiers to ‘tuck in’—together with facts about the syntax of PG constructions. The second goal is to show that this explanation predicts exactly those cases where Engdahl's generalization fails to hold.

^{*} I am grateful to Danny Fox, Sabine Iatridou and David Pesetsky for assistance with this research. I also benefited from discussions with Noam Chomsky, Martin Hackl, Norbert Hornstein, Chris Kennedy, Richard Larson, Gina Rendon, Norvin Richards, and Maribel Romero. I take sole responsibility for errors.

The argument will proceed as follows. First, I will try to establish the syntactic configuration in which PGs are licensed. Two relevant background assumptions adopted from previous work are (i) that the islands containing PGs are vP-adjoined null operator structures (i.e. semantic predicates) whose open position is available for binding by a local DP; and (ii) that the licensing DP (an intermediate trace of *wh*-movement in the canonical case) is in an outer specifier position of vP. The first section will provide evidence for the claim that *any* DP in this configuration—outer specifier/inner adjunct—not only can, but must license a PG in the adjunct.

If it could be shown that this configuration can only be derived by *overt* movement of the licensing DP to the outer spec-vP position, we would have an explanation for Engdahl's generalization. The second step of the argument (section 2) consists of motivating a general condition on movement: namely, that second (and subsequent) movements to a single projection do not extend the tree, but rather 'tuck in' as argued by Richards (1998). A consideration of multiple *wh*-constructions in Bulgarian will illustrate the 'tucking in' property of movement (the *non-extension condition*). I will then show that Engdahl's generalization can be explained by this condition, given the syntax motivated in section 1. It follows from the non-extension condition that the required configuration cannot be derived by *wh*-movement *past* an adjunct to the outer spec-vP position—the *wh*-phrase would be forced to tuck in below the adjunct, hence would be unable to license a PG. Instead, the only derivation that would yield the proper structure is one in which the intermediate *wh*-movement applies first, followed by merger of the adjunct *below* the outer spec position. This derivation is unavailable if the intermediate *wh*-movement is covert (on the assumption that overt operations may not follow covert ones). Since merger of the adjunct is overt (it needs to be spelled out), it must *precede* covert *wh*-movement. But then the *non-extension condition* will force the covert movement to tuck in below the adjunct, where it could not license a PG.

Finally, I will show (section 3) that a closer examination of the Bulgarian multiple-*wh* facts suggests an interesting consequence of the *non-extension condition*. An ordering puzzle noticed by Bošković (1995), I will argue, reveals that additional movement possibilities are created when there is more than one node available for a phrase to tuck in below. I will show that a consequence of this fact is that in a range of cases PGs *should* be licensed by covert *wh*-movement. The relevant cases are those in which there are two PGs (making the adjunct a two-place predicate). The outer spec-vP position (above the adjunct) created by the *overt* movement provides a 'cover' below which a subsequent (covert) movement can tuck in—raising past the adjunct yet still satisfying the *non-extension* requirement. It is predicted that this derivation will make the extra PG obligatory. Once we look for such cases, we do indeed find PGs licensed by *wh*-in-situ:

- (2) a. ?Which senator₁ did you persuade ₁ to borrow which car₂ after getting an opponent of _{pg1} to put a bomb in _{pg2} ?
 b. *Which senator₁ did you persuade ₁ to borrow which car₂ after putting a bomb in _{pg2} ?
- (3) a. ?Which kid₁ did you give which candy bar₂ to ₁ without first telling a parent of _{pg1} about the ingredients in _{pg2} ?
 b. *Which kid₁ did you give which candy bar₂ to ₁ without looking at the ingredients in _{pg2} ?

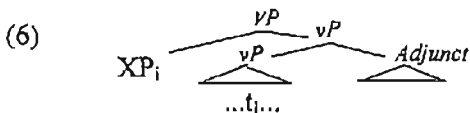
In addition to the discovery that a long-held assumption about PGs is incorrect, this research yields two further results. First, if the explanation for the pattern of overt vs. covert licensing of PGs is justified, I will have provided strong evidence for a covert component of grammar whose operations follow those of the overt component. Second, the new facts provide further evidence for the existence of covert phrasal *wh*-movement.

1. The syntactic configuration that licenses Parasitic Gaps

A solidly established property of PGs—perhaps their defining property—is that they are gaps inside islands which are licensed in certain movement configurations; a movement outside the island somehow makes them acceptable. A variety of matrix movements are able to license PGs, including interrogative *wh*-movement (4a), topicalization (4b), relativization (4c) and *heavy-NP-shift* (4d). In languages that allow it, scrambling of an NP to the left of an adverbial licenses a PG, illustrated for German in (5).¹

- (4) a. Which article_i did you file _i [without reading _i]
 b. John_i, I talked to _i [in order to impress _i]
 c. Mary's the person who_i we called _i up [after meeting with _i]
 d. John filed _i [without reading _i] a recent article about Amazonian frogs_i.
- (5) a. ...weil der Hans das Formular_i [ohne _i vorher auszufüllen] _i abgeschrieben hat
 because the H. the form [without _i first to-fill-out] _i copied has
 '...because Hans copied the form without filling it out first'
 b. ...weil der Hans [ohne *(es) vorher auszufüllen] das Formular_i abgeschrieben hat
 ...*(it)...

This section will attempt to establish the necessary and sufficient conditions under which PGs are licensed. The central claim to be defended is that all of the above constructions have in common a matrix vP configuration which makes the PG not only possible but obligatory. The common configuration, illustrated in (6), involves an *outer specifier* (formed by a movement out of the vP) and an *inner adjunct*.



1.1. Null operator structures adjoined to vP

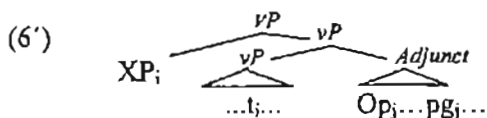
Two important assumptions that will not be defended here (but for which ample justification exists in the literature) are that the islands containing PGs are *null operator structures* and that the kinds of clausal adverbials in which PGs are found are adjoined to the full (clausal) vP. These assumptions have semantic consequences. The claim that a PG is bound by a phonetically empty operator with scope over the island containing it (proposed by Chomsky 1986; cf. Browning 1987, Nissenbaum 1998b for further

¹ In these and subsequent examples, the PG are distinguished by means of bracketing around the islands that contain them, as in ...[..._i...]...

supporting arguments) entails that the island is interpreted as a one-place predicate rather than as a clause. Such null operator structures are thus akin to relative clauses (where the operator may be either overt or empty), but adjoined to vP rather than to NP.

1.2. Movement to spec-vP

If clausal adjuncts like [*without reading it*] normally modify clausal vPs (see Nissenbaum 1998b for a sketch of the semantic composition), then there must be an alternative means by which a null operator structure—i.e. a predicate—like [*Op_i without reading ..._i*] is also able to compose with the vP. I will adopt the proposal (in its most general form) of Nissenbaum (1998a,b) that this semantic composition is made possible by raising of a DP to an outer spec-vP position. The consequence of such a movement is to turn the (lower segment of) vP into a derived predicate: it is interpreted as a lambda abstract that binds a variable in the position of the gap. Composition with the null operator structure is then simple, if the structure is the one proposed in (6) (as embellished below). The two predicates (lower vP segment and adjunct) compose by predicate modification, and the result applies to the raised XP by function application.²



I have argued in earlier work that the movements in (4)-(5) create this vP-configuration (Nissenbaum 1998a,b). For the sake of brevity I will simply assume that this is the case, referring the reader to literature in which arguments are given in some detail. The short leftward scrambling in (5) and the rightward heavy-NP-shift of (4d), I take to be movements to the vP-level position occupied by XP in (6'), abstracting away from linear order.³ As for the other movements in (4a-c), I will assume that in each case an intermediate step leaves a trace in the position of XP. Independent arguments for an intermediate landing site are presented in Fox (2000), based on scope and binding reconstruction effects (cf. also Chomsky 1998 and Nissenbaum 1998b for additional arguments for successive cyclic movement through spec-vP).

Given these assumptions about the syntax of PG constructions, their semantic interpretation is straightforward using a minimal arsenal of independently needed interpretive mechanisms (function application, predicate modification, and some form of predicate abstraction for interpreting chains). No special semantic rule of *chain composition* is required (cf. Chomsky 1986); as long as the appropriate configuration is possible to derive, the existence of PGs is predicted.

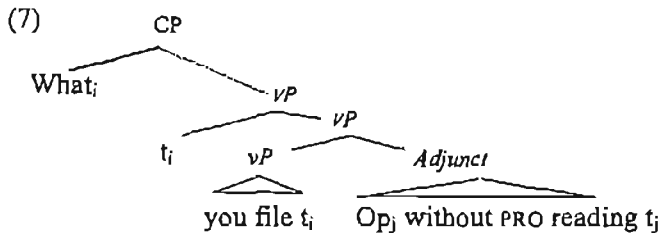
² For reasons that will soon become clear, I do not adopt Nissenbaum's (1998) assumption that lambda-abstraction over the lower vP segment applies at the point in the derivation when the movement occurs (following Heim & Kratzer 1998). Instead I will assume that lambda abstraction is simply an interpretive reflex of a configuration involving a chain, and that it is implemented as a type-shifting operation that raises the semantic type of its sister (or the lowest saturated projection of the head of its sister, if these are not identical) from $\langle D \rangle$ to $\langle e, D \rangle$. Thanks are due to Maribel Romero for discussion.

³ This is independent of the question whether HNPS is a rightward movement or instead a sequence of leftward movements as proposed by Kayne 1998 (following work by Larson 1988). For discussion see Nissenbaum (1999).

Covert Movement and Parasitic Gaps

1.3. 'Outer spec/Inner adjunct' configurations and obligatory PGs

The assumed structure of a sentence like (4a) is shown in (7), embodying the claims I have adopted about the syntax of PGs: that the intermediate trace of *wh*-movement in the outer vP-specifier position, and the vP-adjunct (a null operator structure) just beneath it, are necessary for PG licensing.



The remainder of this section will provide evidence for an even stronger claim: namely that this 'outer spec/inner adjunct' configuration makes a PG *obligatory*. In other words, we will see evidence that such a configuration is ill-formed if there is no PG in the adjunct. This claim is summarized in (8)⁴:

- (8) Any DP in a vP-specifier position that is structurally higher than a (clausal) modifier adjoined to the vP must be associated with a parasitic gap in that adjunct.

Of course, clausal vP-adjuncts do not always contain PGs. However, the condition stated in (8) allows an alternative structure in which a DP would *not* license a PG—namely, a structure in which the DP is *below* the adjunct, as in (9b).

- (9) a. *Ill-formed: no PG in this structure* b. *Well-formed*



Predictions: The twin claims that any sentence in which a vP-adjunct contains a PG will have the structure (6'), while any sentence in which a vP-adjunct does not contain a PG will instead have the structure (9b), yield testable predictions. In the case of *wh*-movement in English, we cannot hope to find direct evidence to pinpoint the position of an intermediate trace. However, it is possible to use indirect evidence from stacked adjuncts and (with plausible assumptions) extraposition. But we can begin with more direct evidence for (8), from a construction in which the intermediate position is pronounced.

Heavy NP Shift: Larson (1988a) observed that although HNPS licenses PGs, an NP *cannot* shift to the right of an adjunct with a pronoun instead of a PG—or for that matter,

⁴ I assume that this condition is a direct consequence of the semantic mechanism of predicate abstraction, once the latter is spelled out formally along the lines sketched in footnote 2. If lambda-abstraction type-shifts the lowest (saturated) segment of vP, an adjunct will have to have an open argument position in order to compose with it.

to the right of any similar adjunct that contains no PG.⁵ (Examples (10)-(11) are adapted from Larson 1988a.) On the other hand, (12) shows that the same adjuncts (without PGs) may appear to the right of an NP that has undergone HNPS past a non-clausal adverbial.⁶

- (10) a. John filed $_1$ [without reading $_1$] a recent article about Amazonian frogs₁
 b. *John filed $_1$ [without reading it₁] a recent article about Amazonian frogs₁
 c. *John filed $_1$ [without reading your e-mail] a recent article about Amazonian frogs₁
- (11) a. I hired $_1$ [without interviewing $_1$] Mary's favorite uncle from Cleveland₁
 b. *I hired $_1$ [without interviewing him₁] Mary's favorite uncle from Cleveland₁
 c. *I hired $_1$ [without talking to the chair] Mary's favorite uncle from Cleveland₁
- (12) a. John filed $_1$ in the top drawer a recent article about Amazonian frogs₁ [without reading it / * $_1$]
 b. I hired $_1$ with no hesitation Mary's favorite uncle from Cleveland₁ [without interviewing him / * $_1$]

This paradigm appears to provide direct confirmation of the prediction: if the shifted NP is higher than the clausal vP-adjunct, a PG is obligatory, while a shifted NP lower than the adjunct fails to license a PG.

- (9') a. *Ill-formed with no PG in this structure* b. *Well-formed*
-
- Diagram (a) shows a tree structure where a vP adjunct is higher than the shifted NP (XP₁). The tree is marked with an asterisk (*) and labeled 'Ill-formed with no PG in this structure'. The adjunct is labeled 'vP' and the shifted NP is labeled 'XP₁'. The text below the tree is '...t_i...' and '...(no PG)...'.
 Diagram (b) shows a tree structure where the shifted NP (XP₁) is higher than the vP adjunct. The tree is labeled 'Well-formed'. The adjunct is labeled 'vP' and the shifted NP is labeled 'XP₁'. The text below the tree is '...t_i...' and '...(no PG)...'.

Extrapolation: Fox and Nissenbaum (1999) argued that relative clause extraposition (from non-subject NPs) marks the position of a covert movement. This movement is therefore just like HNPS, except that only part of the NP—the relative clause—is pronounced in the shifted position.⁷ If extraposition from a VP-internal *wh*-phrase behaves similarly—in this case, marking the position of the intermediate trace in spec-vP—we would expect contrasts similar to those above.

As above, the results appear to bear out the prediction. Extrapolation of a relative clause from a moved *wh*-phrase, past a clausal adjunct, requires a PG (as shown by the acceptability of the (a) examples of (13)-(14) as compared with the (b) and (c) examples).

⁵ Cf. also Engdahl (1983), who noticed the same pattern but pointed out that some speakers find the PG-less examples acceptable. I believe the contrasts are real, but that the deviance of examples like (10-11)b,c. can be neutralized with a strong pause (and 'comma intonation') between the adjunct and the shifted NP. The crucial fact, however, is that (10a)-(11a) can be pronounced without any hint of a pause, while the b. and c. examples, if acceptable at all, require one.

⁶ These non-clausal adverbials are of the type that Larson 1988b argued to be low in the VP.

⁷ Note that the conclusion reached by Fox and Nissenbaum 1999—that there is no 'covert component' of the grammar—is at odds with a central result of the present study. This is an interesting case in which different domains appear to yield conflicting results. As always, one hopes that further investigation will allow a resolution of the issue. For present purposes, I will assume only that relative-clause extraposition marks a movement site, without adopting the stronger conclusion. Cf. Guéron and May (1984).

- (13) a. Who_i did you praise _i [in order to impress _i][that teaches literature at Harvard]
 b. *Who_i did you praise _i [in order to impress *him*][that teaches literature at Harvard]
 c. *Who_i did you praise _i [in order to surprise me][that teaches literature at Harvard]
- (14) a.?What film_i would you see _i [if I could get tickets for _i][that John recommended]
 b. *What film_i would you see _i [if I could get tickets for *it*][that John recommended]
 c. *What film_i would you see _i [if it doesn't rain] [that John recommended]

On the other hand, an extraposed relative clause that appears *to the left* of a clausal vP-adjunct, as in (15)-(16), does not allow a PG but is acceptable without one.

- (15) a. *Who_i did you praise _i [that teaches literature at Harvard][in order to impress _i]
 b. Who_i did you praise _i [that teaches literature at Harvard][in order to impress *him*]
 c. Who_i did you praise _i [that teaches literature at Harvard][in order to surprise me]
- (16) a. *What film_i would you see _i [that John recommended][if I could get tickets for _i]
 b. What film_i would you see _i [that John recommended] [if I could get tickets for *it*]
 c. What film_i would you see _i [that John recommended] [if it doesn't rain]

The pattern in (13)-(16) would be explained on the assumption that the extraposition is marking the site of an intermediate trace, together with the claim in (8). And the pattern would be strikingly unexpected otherwise.

Stacked vP-adjuncts: The final test for the claim that an intermediate trace needs to be above an adjunct in order to license a PG, and below it in order not to, involves *wh*-movement out of a vP modified by more than one clausal adjunct. Examples (17) and (18) show, respectively, that both adjuncts may contain PGs, and both may lack them.

- (17) a. Who_i did you praise _i to the sky [after criticizing _i][in order to surprise _i]?
 b. Who_i will you hire _i [without interviewing _i][if John recommends _i]?
- (18) a. Who_i did you praise _i to the sky [after criticizing *him*][in order to surprise the poor man]?
 b. Who_i will you hire _i [without interviewing *him*][if John recommends *him*]?

However, an asymmetry appears in such sentences if *just one* of the two adjuncts contains a PG: it must be the innermost (19). Sentences in which only the outermost adjunct contains a PG are unacceptable (20):

- (19) a. Who_i did you praise _i to the sky [after criticizing _i][in order to surprise *him*]?
 b. Who_i will you hire _i [without interviewing _i][if John recommends *him*]?
- (20) a. *Who_i did you praise _i to the sky [after criticizing *him*][in order to surprise _i]?
 b. *Who_i will you hire _i [without interviewing *him*][if John recommends _i]?

This asymmetric pattern suggests that the intermediate trace of *wh*-movement can appear either above or below one or both of two *vP*-adjuncts—and whatever adjuncts happen to be in its scope must contain PGs (while adjuncts that outscope it must not). The one impossible structure to derive is the one that would license a PG just in the outer adjunct.

We thus have three kinds of evidence for the claim that the ‘outer spec/inner adjunct’ configuration forces the appearance of PGs. Moreover, the extraposition and stacked-adjunct tests provide strong support for the hypothesis that it is the intermediate trace of *wh*-movement that is crucial for PG-licensing. If *wh*-movement to spec-CP were alone sufficient, the deviant examples in (15), (16) and (20) would be quite puzzling.

2. Deriving Engdahl's generalization

So far we have seen evidence that PGs are licensed by a local DP in an outer *vP*-specifier position above the adjuncts that contain them. If it could be demonstrated that this configuration can only be derived by overt movement, we would derive the generalization that only overt movement licenses PGs. To the extent that this generalization is correct—as it appears to be for the vast majority of cases—a theory of grammar ought to explain it. The goal of this section is to argue that Engdahl's generalization is explained by a general constraint on movement that forces the ‘outer spec/inner adjunct’ configuration to be derived in the overt syntax. Evidence for this constraint comes from a consideration of multiple interrogatives in Bulgarian, to which we turn next.

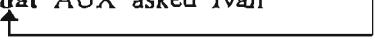
2.1. Bulgarian multiple-*wh* questions and the *non-extension* condition

Bulgarian is a multiple-*wh*-fronting language: all *wh*-phrases appear at the left edge of the interrogative clause (21). Moreover, the ordering of the two *wh*-phrases is rigid. The one whose base position is higher must appear first, as show by the unacceptability of (22).

(21) Kogo kakvo e pital Ivan (Examples from Bošcović 1995, cited in Richards 1997)
whom what AUX asked Ivan
 ‘Who did Ivan ask what?’

(22) ?*Kakvo kogo e pital Ivan
what whom AUX asked Ivan
 ?* ‘What did Ivan ask who?’

Richards (1997), following Rudin (1985), saw the rigid order of the *wh*-phrases as evidence for the Superiority condition (stated, in terms of a theory of attraction-driven movement, as a requirement that the closest *wh*-phrase must be attracted first). Richards proposed that the parallel order of *wh*-phrases and their gaps is explained by Superiority together with an additional assumption that the second movement ‘tucks in’ below the position of the first:

(23) Kogo₁ kakvo₂ e pital Ivan ... ₋₁ ₋₂ (Modified from Pesetsky 1999)
whom what AUX asked Ivan


Richards supported the generalization that consecutive movements tuck in with facts from a number of other languages. I will assume that it is correct. However, I will depart from Richards' account for the phenomenon, taking it to be more general than he claimed. I will argue that the 'tucking in' generalization is statable as a *non-extension condition*:

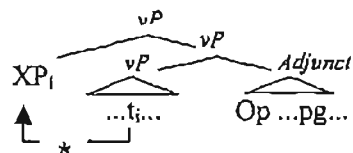
- (24) **Non-extension condition:** Movement may not extend the tree if an alternative exists (it must tuck in *below the outermost segment* whenever possible⁸).

In other words, 'tucking in' is the consequence of a preference for non-extending movements. I will argue in the next sub-section that this generalization is broader than just multiple specifiers—movement cannot extend past adjuncts either.

2.2. 'Tucking in' explains why covert movements don't (normally) license PGs

I presented an array of evidence suggesting that parasitic gaps are licensed in the 'outer spec/inner adjunct' configuration illustrated in (6'). Now I will argue that from the *Non-extension condition* (24) it follows that (6') can be created *only* if movement of XP is overt. Suppose the derivation has progressed to the point of merging the vP with an adjunct, and that the next step is raising of an XP to a spec-vP position. Raising of XP past the adjunct will be blocked by the *non-extension condition*; the XP will be forced instead to tuck in below the adjunct—a position from which it will fail to license the PG.

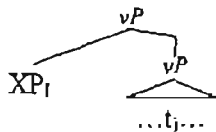
(25)



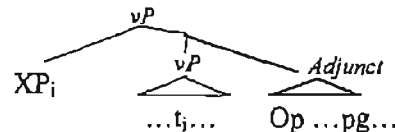
Non-extension condition (24) prohibits movement of XP above the adjunct

If (24) will always block movement from forming the proper configuration, the question arises how a PG could ever be licensed. An alternative derivation provides an answer: Nothing blocks XP from raising to spec-vP *prior* to merger of the adjunct (26a). The right configuration can then be created by merging the adjunct *below* XP (26b).

(26) a. *raising of XP*



b. *merger of adjunct below XP*

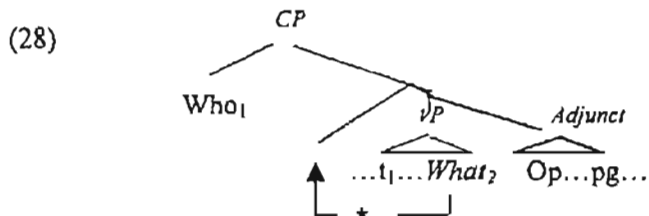


This derivation will work for sentences with overt movement. However, on the assumption that overt operations precede covert ones, it will follow that an instance of covert *wh*-

⁸ It is obviously not possible for this preference principle to be satisfied by every movement; for example first movements generally have to extend the tree in order to raise past the attracting head. In addition, on the assumption that the vP-level 'object shift' position is above the internal subject position in spec-vP, movement to the 'outer spec' position evidently extends the vP. This is plausibly due to a constraint against disrupting the thematic relation between a theta-role assigner and its argument. "Whenever possible" in (24) should be understood as including adjuncts and (non-thematic) specifiers.

movement like that in (27) cannot have the derivation in (26). The reason is that merger of the adjunct is an overt operation—it needs to be spelled out—hence it must *precede* *wh*-movement. And then, as was the case in (25), the *non-extension condition* (24) will force *what* to tuck in below the adjunct:

(27) * Who filed *what* [without reading _]



3. Predicting the cases where Engdahl's generalization fails to hold

I argued in the last section that a *non-extension condition* prohibits tree-extending movements past adjuncts and (non-thematic) specifiers. The argument was based on a demonstration that a condition of this sort derives Engdahl's generalization. In this section I will provide further support for the *non-extension condition*, by showing that an interesting prediction is borne out. Namely, Engdahl's generalization is predicted to break down in a restricted domain of cases involving multiple *wh*-movement from inside *vP*.

3.1. A Bulgarian word order puzzle, and a simple solution

Bošćović (1995, 1997) noticed an interesting word order puzzle in Bulgarian. While the order of two *wh*-phrases is rigid, the order of *more* than two *wh*-phrases is not. When a Bulgarian multiple interrogative contains three *wh*-phrases, *Wh*₂ and *Wh*₃ may be freely ordered.

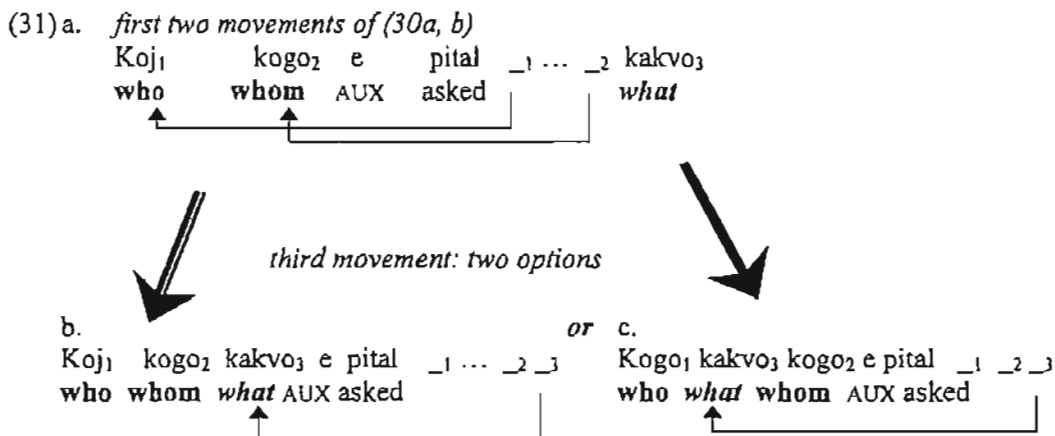
- (29) a. [*Wh*₁ **Wh**₂ **Wh**₃ ...*t*₁...*t*₂...*t*₃]
 b. [*Wh*₁ **Wh**₃ **Wh**₂ ...*t*₁...*t*₂...*t*₃]

- (30) a. Koj Kogo kakvo e pital (examples from Bošćović 1997)
 who whom what AUX asked
 b. Koj Kakvo kogo e pital
 who what whom AUX asked
 'Who asked whom what?'

A number of proposals have been advanced to account for this fact. Bošćović (1997) argued that only the highest of the *wh*-phrases moves to spec-CP; the others adjoin to a lower projection and are not constrained by Superiority. Richards (1998) proposed instead that a general property of grammatical dependencies allows constraints like Superiority to be ignored for second and subsequent movements (his Principle of Minimal Compliance).

These proposals have in common an assumption that the lesson from Bošcović's word order puzzle is that the Superiority condition constrains only the first movement, and not the next two.

However, we need not make that assumption. Another solution—one that does not assume Superiority is ever relaxed—is provided by the *non-extension condition*. I argued that the rigid ordering of two *wh*-phrases follows from Superiority and *non-extension* because the second mover always tucks in below the first moved phrase. But the *free* ordering of *wh*₂ and *wh*₃ would also follow from these two conditions. Superiority will always force *wh*₂ to move second, and *non-extension* will force it to tuck in below *wh*₁. But the *third* mover—*wh*₃—will have two options. It can tuck in below both *wh*₁ and *wh*₂; alternatively, it can sandwich in between *wh*₁ and *wh*₂—a move that would not extend the tree. These two possibilities are illustrated in (31b,c):

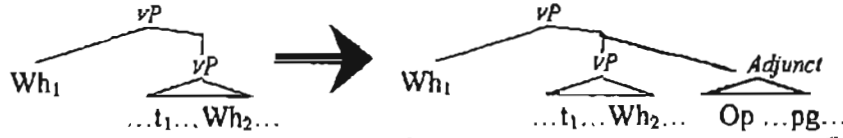


3.2. A 'Bulgarian strategy' for multiple parasitic gaps in English

In section 2, I argued that the *non-extension condition* (24) underlies two very different phenomena: the parallel order of *wh*-phrases and their gaps in Bulgarian double interrogatives, and Engdahl's generalization that covert movements don't license PGs. However, in the last sub-section we saw that the same condition predicts a case where the rigid ordering is relaxed in Bulgarian. I will now show that in exactly the same way, the *non-extension condition* predicts a break-down of Engdahl's generalization. In short, it is predicted that Engdahl's generalization will fail when a 'Bulgarian strategy' is possible.

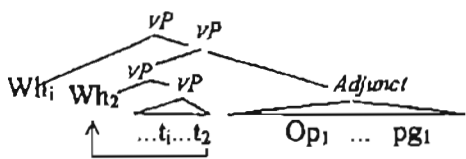
Suppose there are *two* *wh*-phrases internal to a *vP* modified by an adjunct—both of which will raise to intermediate spec-*vP* positions, one of them overtly. If the overt *wh*-movement precedes merger of the adjunct (to form an outer-spec/inner adjunct configuration), then the derivation should have *two* possible continuations, parallel to Bulgarian triple-*wh*-questions. The *wh*-in-situ will be able either to tuck in below the adjunct, or to raise past it to a position below the outer specifier. These options are illustrated in (32b,c).

(32) a. First: Overt movement of Wh_1 and then merger of the adjunct (just like (26a,b))

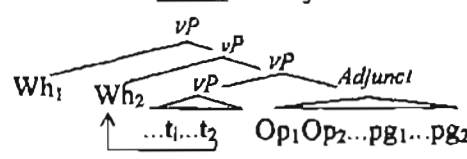


There are two options for the next step (just as in Bulgarian):

b. Wh_2 tucks in below the adjunct



OR c. Wh_2 tucks in below Wh_1 , but above the adjunct



The step illustrated in (32c) is the continuation of interest. If this derivation is chosen, then the adjunct can—in fact, must—contain two PGs, by the generalization (8).⁹ We have already seen relatively acceptable examples of the kind of sentence predicted by this derivation, repeated below as (33a,b).

- (33) a. ?Which senator₁ did you persuade ₁ to borrow *which car*₂
[after getting an opponent of ₁ to put a bomb in ₂]?
b. ?Which kid₁ did you give *which candy bar*₂ to ₁
[without first speaking with ₁ about the ingredients in ₂]?

An alternative derivation is predicted to exist as well, reflected in (32b). If this derivation is chosen instead, the adjunct will not be interpretable with two PGs. However it will be interpretable with just one PG, licensed by the overtly raised *wh*-phrase¹⁰:

- (34) a. ?Which senator₁ did you persuade ₁ to borrow *which car*₂ [after talking to ₁ for an hour]
b. ?Which kid₁ did you give *which candy bar*₂ to ₁ [in order to impress ₁]?

On the other hand, there should be *no way* to license a single PG associated with the *wh*-in-situ. This prediction, too, seems to be borne out:

- (35) a. *Which of you persuaded a senator to borrow *which car*₂ [after putting a bomb in ₂]
b. *Which of you gave a kid *which candy bar*₂ [without first telling him about the ingredients in ₂]?

⁹ And ultimately reducing to the fact that the lowest vP segment will be interpreted as a two-place predicate by the rule of lambda abstraction sketched in footnotes 2 and 4.

¹⁰ Semantic composition would be straightforward. While the lowest vP-segment would be a two-place predicate, the outermost argument position (the lambda-abstract over the gap left by the second movement) would be bound immediately by the intermediate trace of *wh*₂, leaving a one-place predicate.

Interestingly, it seems that the order of the PGs has to mimic the surface order of the two *wh*-phrases, suggested by the contrast between (33) and (36). This is exactly what is predicted given that the empty operator movements in the adjunct will be subject to the same constraints (Superiority and *non-extension*) as the movements in the matrix.

- (36) a. *Which car₁ did you lend _₁ to *which senator*₂ [after getting an opponent of _₂ to put a bomb in _]
 b. *Which kid₁ did you give *which candy bar*₂ to _₁ [without mentioning the ingredients in _₂ to a parent of _]
 c. *Which senator₁ did you give *which candy bar*₂ to _₁ [without mentioning the ingredients in _₂ to a parent of _]

A further prediction is that the 'extra' PG must be in the same island as the 'first' one (37). This follows from principles of semantic composition: the vP is a two-place predicate while each of the adjuncts is a one-place predicate, so composition will be impossible.

- (37) a. *Which senator₁ did you persuade _₁ to buy *which car*₂ [after talking to _₁][without fixing _₁ first]
 b. *Which kid₁ did you give *which candy bar*₂ to _₁ [without talking to _₁][in order to get rid of _₂]?
 c. *Which senator₁ did you persuade _₁ to buy *which car*₂ [after talking to _₁][in order to get rid of _₂]?

I conclude this section with a few more examples of 'extra' PGs licensed by *wh*-in-situ:

- (38) a. ?Who did you talk to _ about reviewing *which article* [after showing a colleague of _ several examples in _]
 * *Who _ talked to you about reviewing which article [after discussing several examples in _]*
 * *Who did you talk to _ about reviewing which article [after showing a colleague several examples in _]*
 b. ?Who did you invite _ to *which department* [in order to introduce _ to people who work for _]
 * *Who _ invited you to which department [in order to introduce you to people who work for _]*
 * *Who did you invite _ to which department [in order to introduce him to people who work for _]*
 c. ?Which book₁ did you give _ to *which student* [without first showing _ to friends of _]
 * *Who _ gave a book to which student [without first showing it to friends of _]*
 * *Which book did you give _ to which student [without first showing it to friends of _]*
 d. ?Which actor did they assign *which role* to _ [without even asking _ if he wanted _]
 * *Which actor _ was assigned which role [without even saying he wanted _]*
 * *Which actor did they assign which role to _ [without even knowing if he wanted _]*
 e. ?Who did you put _ in *which office* [before talking to _ about the furniture in _]
 * *Who _ put people in which office [before talking to anyone about the furniture in _]*
 * *Who did you put _ in which office [before talking to anyone about the furniture in _]*

4 Conclusions

This paper presented new facts that topple a long-standing assumption about parasitic gap constructions: it was shown that in a well-defined class of cases PGs are licensed by *wh*-in-situ. These facts imply that all previous accounts for the supposed inability of covert movement to license PGs cannot be correct. An alternative theory was proposed which, on the basis of independently attested generalizations, predicts the existence of PGs licensed by covert movement, in exactly the environments in which they seem to appear. Specifically, it was argued that PGs are licensed in an outer-specifier/inner-adjunct configuration, based primarily on semantic considerations and with supporting evidence from heavy-NP-shift, extraposition and stacked vP-adjuncts. The near total absence of PGs licensed by covert movement was then argued to follow from a generalization about movement motivated on grounds quite independent of PG constructions—namely that movements ‘tuck in’ below the outermost segment of a projection when this doesn’t disrupt thematic relations. Given this generalization, movement cannot proceed past a vP-adjunct to the outer specifier position to create the configuration needed for PG-licensing. Instead, the outer specifier/inner adjunct configuration must be derived first by movement of the licensing DP to spec-vP, then by merger of the adjunct immediately below. Since merger of an adjunct is an overt operation (it is pronounced), the immediately prior movement to spec-vP must also be overt. One exception is predicted, however: a derivation that involves multiple movements to spec-vP. If an overt movement is followed by adjunct merger just below the root (yielding the proper configuration for PG-licensing), then a subsequent (covert) movement should be able to raise past the adjunct without violating the ‘tucking in’ generalization—the covert movement can merge below the outer specifier but above the adjunct. Such a configuration should require two PGs in the adjunct.

Finally, to the extent that this explanation for the pattern of overt vs. covert licensing of PGs is justified, we have evidence of a quite compelling nature for a covert component of grammar whose operations follow those of the overt component.

References

- Bošković, Željko (1995), “On certain violations of the Superiority Condition, AgrO, and economy of derivation,” ms. University of Connecticut, Storrs.
- Bošković, Željko (1997), “Multiple WH-fronting and economy of derivation,” in E. Curtis, J. Lyle and G. Webster (eds.) *Proceedings of WCCFL 16*. Stanford: CSLI.
- Browning, Maggie (1987), *Null Operator Constructions*. Ph.D. dissertation, MIT. Cambridge, Mass.: MITWPL.
- Chomsky, Noam (1986), *Barriers*. Cambridge, Mass.: MIT Press.
- Chomsky, Noam (1998), “Minimalist inquiries: the framework,” Cambridge, Mass.: MITWPL.
- Engdahl, Elisabet (1983), “Parasitic Gaps,” *Linguistics and Philosophy* 6, 5-34.
- Fox, Danny (2000), *Economy in Semantic Interpretation*. Cambridge: MIT Press.

- Fox, Danny, and Jon Nissenbaum (1999), "Extraposition and scope: a case for overt QR," talk presented at WCCFL 18, Tucson, Arizona. (Conference proceedings forthcoming from Cascadilla Press.)
- Guéron, Jacqueline, and Robert May (1984), "Extraposition and logical form," *Linguistic Inquiry* 15, 1-32.
- Heim, Irene, and Angelika Kratzer (1998), *Semantics in Generative Grammar*. Oxford: Blackwell.
- Kayne, Richard (1998), "Overt vs. covert movement," *Syntax* 1, 128-191.
- Kim, Soowon and James Lyle (1995), "Parasitic gaps, multiple questions, and VP ellipsis," in J. Camacho, L. Choueiri and M. Watanabe (eds.) *dings of WCCFL 14*. Stanford: CSLI.
- Larson, Richard (1988a), "Light Predicate Raising," MIT Center for Cognitive Science: Lexicon Working Papers vol. 27. Cambridge, Mass.: MITWPL.
- Larson, Richard (1988b), "On the double object construction," *Linguistic Inquiry* 19, 335-391.
- Nissenbaum, Jon (1998a), "Derived predicates and the interpretation of Parasitic Gaps," in S. Blake, E.S. Kim and K. Shahin (eds.) *Proceedings of WCCFL 17*. Stanford: CSLI
- Nissenbaum, Jon (1998b), "Movement and derived predication: evidence from Parasitic Gaps," in U. Sauerland & O. Percus (eds.), *The Interpretive Tract: MITWPL 25*. Cambridge, Mass: MITWPL.
- Nissenbaum, Jon (1999), "Cyclicality and spellout: studies on the overt-covert distinction," ms. MIT.
- Nunes, Jairo (1995), *The copy theory of movement and linearization of chains in the minimalist program*. Ph.D. dissertation, University of Maryland at College Park.
- Pesetsky, David (1999), "Lifestyles of the *which* and famous: English is Bulgarian," handout from conference talk, FASL, Seattle, Washington.
- Richards, Norvin (1998), *What moves where when in which language?* Ph.D. dissertation, MIT. Cambridge, Mass.: MITWPL.
- Rudin, Catharine (1985), *Aspects of Bulgarian Syntax: Complementizers and wh-constructions*. Columbus, Ohio: Slavica Publishers.

Dept. of Linguistics, E39-251
MIT
77 Massachusetts Ave.
Cambridge, MA 02139

nissenbaum@mit.edu