Rightward Movement: A Study in Locality

RIGHTWARD MOVEMENT: A STUDY IN LOCALITY

A Dissertation Presented

by

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Submitted to the Graduate School of the
University of Massachusetts Amherst in partial fulfillment
of the requirements for the degree of

DOCTOR OF PHILOSOPHY

September 2015

Department of Linguistics

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ACKNOWLEDGMENTS

I would first like to thank my committee: Kyle Johnson, Rajesh Bhatt, Brian Dillon, and Adrian Staub. They showed me what it looks like when linguistics is being done right. Kyle has earned a special thanks. There are no bounds to his patience and generosity. I know because I would have found them by now.

Thank you to the rest of the faculty in the UMass Linguistics Department. I'm not sure I could have hoped for a more generous and dedicated team of mentors. Thank you to the UMass Psychology Department. While I didn't spend much time over there, the things I learned have changed the way in which I approach linguistics.

Thank you to my cohort at UMass. This proved to be a group of some the best people I know: Elizabeth, Minta, Seda, Claire, Presley, Robert, and Andrew. I apologize for all the requests for grammaticality judgments about parasitic gap constructions. Thank you to all the grad students in the UMass Linguistics Department who were there when I arrived and to the all the grad students who were there when I left. I learned so much from studying linguistics with these people.

Thank you to those who offered their time to discuss the research presented here and elsewhere: Klaus Abels, Seth Cable, Emmanuel Chemla, Chuck Clifton, Vaneeta Dayal, Hamida Demirdache, Alex Drummond, Tom Ernst, Lyn Frazier, Jeremy Hartman, Vincent Homer, Tim Hunter, Gereon Müller, Eric Potsdam, Tom Roeper, Peggy Speas, Yasutada Sudo, Andrew Weir, the participants of the 36th Penn Linguistics Colloquium, the participants of WCCFL 32, the participants of NELS 45, and the participants of the LSA 2015, and the participants of the Tri-College Linguistics Lecture Series at Haverford College. Portions of this dissertation have or will appear in an altered form in *Lingua* 162, *Lingua*

164, and *Linguistics Inquiry* 47. Thank you to the anonymous reviewers of those articles for their extremely helpful comments and feedback. Any errors or misrepresentations of the ideas or comments of others are solely my responsibility.

Thank you to the University of Massachusetts Graduate School for the Dissertation Improvement Grant that funded the experiments presented in chapters 2 and 4.

I fear what my life would be like if it were not for Kathy Adamczyk, Karla Alfaro-Urias, Tom Maxfield, Michelle McBride, and Sarah Vega-Liros. I imagine that Tom, in particular, has dreamt what his life would be like if it were not for me.

Thank you to the Tri-College Linguistics Department and the Haverford College community for providing me with an academic home during the spring of 2015: Shizhe Huang, Brook Lillehaugen, and the students in my Spring 2015 classes. I feel very fortunate to have been given the amazing opportunity to be at Haverford. For providing me with an actual home, I extend a very warm thank you to Brook, Daniella, and Viola.

I'm lucky to have the friendship of some really amazing people: Ricard and Alyson, Nate and Ellen, Heather and Rich, Amanda and Genti, Faune, and Tom. These people have provided me with both much needed support and a much needed escape.

Thank you also to my families: my amazing parents Darren and Donna, Kara and Greg, Rick and Sherry, Trisha and Jerry, Nana and Papa Frank, and all the descendants thereof. The limitless love and encouragement of my parents is why I am here today.

Finally, thank you to my wonderful wife Carly. There is no exaggeration when I say that none of this could have happened without her.

ABSTRACT

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SEPTEMBER 2015

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The irregular behavior of rightward movement presents a challenge to theories that treat such configurations as the direct product of the mechanism responsible for leftward movement. For example, rightward movement appears not to be subject to certain island constraints and famously appears to be subject to stricter locality conditions than leftward movement. This dissertation presents investigations of two particular instances of rightward movement in English: Heavy-NP Shift (HNPS) and Extraposition from NP (EXNP). I argue that, by identifying the proper analyses for these phenomena, we can begin to attribute their apparent differences from leftward movement as the products of more general constraints on movement and properties of the particular mechanisms involved.

Chapters 2 and 3 present a case study on HNPS. Chapter 2 argues, on the basis of parasitic gap licensing, that there are instances of right DP-movement that are best modeled as the product of rightward linearized syntactic movement. I also present the results of

an acceptability judgment study to address the argument by Postal (1994) that it is in fact Right Node Raising that generates what are only apparent parasitic gap. Chapter 3 builds on research conducted by Nissenbaum (2000). I argue that the need to bind a parasitic gap licenses potentially unbounded and successive-cyclic rightward movement beyond what is possible for standard HNPS. This suggests that the locality conditions on rightward movement are not categorically different that the locality conditions on leftward movement. I attribute the otherwise exceptional locality of standard HNPS to a constraint on economy of derivation (Chomsky 1993).

Chapters 4 and 5 present a case study on EXNP. Chapter 4 proposes a novel connectivity diagnostic that strongly suggests that an extraposed relative clause is generated inside its host DP (cf. Rochemont & Culicover 1990). The results of an acceptability judgment study suggest that an NPI that appears in a relative clause and is licensed by the universal quantifier *every* remains licensed in an EXNP configuration. I argue that the QR-based theory of EXNP from Fox & Nissenbaum (1999) best models the available data as well as some of the irregular properties of EXNP. Chapter 5 investigates the locality conditions on EXNP. I present evidence for a set of strong subclausal locality conditions on EXNP. However, we will see interpretive evidence that an extraposed relative clause can be interpreted outside of its containing clause. I suggest that these facts can be made to follow from a treatment of QR as an unbounded successive-cyclic instance of covert movement (e.g., Cecchetto 2004). The result is that both HNPS and the movement responsible for EXNP, are potentially unbounded and successive-cyclic movements, just like their leftward counterparts.

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CHAPTER 1

THE PROBLEM OF RIGHTWARD MOVEMENT

In English and other languages it is possible to displace rightward various types of syntactic elements. This thesis is concerned with two particular cases of rightward displacement in English. The structure in (1b) is a non-canonical word order relative to its counterpart in (1a). This was called *Complex-NP Shift* by Ross (1967:54), but more recently is referred to as *Heavy-NP Shift* (HNPS). In (2), we see another non-canonical word order alternation that Ross (1967:18) called Extraposition from NP (EXNP). In (2b) a relative clause has been displaced rightward away from its host NP *coffee*.

(1) a. Tim bought $[_{\text{DP}}$ some coffee $]$ for his co-workers.

b. Tim bought e_1 for his co-workers $[_{\text{DP}}$ some coffee $]_1$.

(2) a. Tim bought $[_{\text{DP}}$ some coffee $[_{\text{CP}}$ that they serve downstairs $]]$ for his co-workers.

b. Tim bought $[_{\text{DP}}$ some coffee e_1 $]$ for his co-workers $[_{\text{CP}}$ that they serve downstairs $]_1$.

Our interest in these configurations concerns the type of operation that the grammar employs to generate them and how to best model the constraints on this operation.

Debates regarding whether the displaced element undergoes syntactic movement and, if so, whether this movement is in fact rightward have arisen for these and most if not all other instances of rightward displacement cross-linguistically. The main theoretical force that underlies the majority of such debates can be attributed largely to recurring observations of the irregular nature of rightward displacement. As we will see in section 1.1, this includes

the fact that rightward movement is rare relative to leftward movement and, in a number of ways, it does not display the same behavior as its leftward counterparts. This includes island effects and locality, among other things. For some researchers, then, it is suspect that the grammar should be designed in such a way as to have different types of movement operations and, further, that the decision of which type of movement to employ corresponds to the direction of displacement. The latter point rests especially heavily on the minds of those who view the linearization of syntactic structures as a purely post-syntactic operation (e.g., Kayne 1994, Chomsky 1995). In a grammar that determines the linear order of the terminals in a phrase marker outside of the narrow syntax, it is not a straightforward matter to provide a model where linear order can affect syntactic operations.

I will argue in this thesis that it is possible to understand the rightward displacement phenomena in (1) and (2) as the direct product of the same syntactic operation that generates leftward movement configurations. In section 1.2 I will outline an influential view of this operation: the *Copy Theory* of movement (Chomsky 1993). The irregularities of these rightward displacement configurations, I will argue, can be attributed to constraints on the application of movement that are independently motivated for leftward movement (viz., economy conditions) in addition to differences in the specific properties of the particular instances of movement under consideration. I will overview the evidence and arguments for these claims in a chapter-by-chapter outline of the dissertation in section 1.3.

1.1 Understanding the Problem

Rightward movement presents a problem for models of syntactic movement because it is ill-behaved relative to leftward movement. In addition to the fact that, relative to leftward movement, the motivating factors of rightward displacement are not well-understood, many researchers have been led to pursue analyses of rightward displacement phenomena that do not employ rightward movement.

One recurring alternative involves situating the displacement operation in the phonological component of the grammar (e.g., Chomsky & Lasnik 1977, Rochemont 1978, Chomsky 1986, Huck & Na 1990, Göbbel 2013, Hunter & Frank 2014). However, we will identify a number of cases of rightward displacement that have clear semantic import. Observing that rightward displacement affects both the linear string and the semantic interpretation, strongly suggests that it takes place in the syntactic component. The other common alternatives, which we will investigate extensively in the following chapters, propose that rightward displacement configurations are derived via leftward movement (Larson 1988, Kayne 1994) or via base-generation of the extraposed material directly to the verbal spine Rochemont & Culicover (1990). Let us turn now to some of the factors that have motivated these alternative approaches.

1.1.1 Typological Rarity

Part of the issue surrounding the undesirability of a grammar that permits movement that is linearized to the right stems from recurring observations by Kayne (1994) and many others that it is a cross-linguistic rarity for specifiers to be linearized rightward within particular domains. Dryer (2013a) provides one of many confirmations of the claim by Greenberg (1963) that languages that have a preference overwhelmingly tend to order the subject before the verb (1,193/1,387; 86.02%).[1] Dryer (2013b) also observes that, when languages prefer to displace *wh*-phrases in constituent questions, this most often involves placing the *wh*-phrase at the beginning of the utterance while "a few languages exhibit at least a weak tendency to place interrogative phrases at the end of sentences".

These types of facts have lead Kayne (1994:33–36,47) and others to conclude that a universal word order exists in which non-complements necessarily precede the head of their containing phrases. This is argued to be true of both base-generated and derived

[1]Broekhuis (2010) provides a more fine-grained perspective on these facts which takes into account the typology of the possible derivations for each of the six permutations of the subject, object, and verb.

specifiers. In simpler terms, Kayne (1994:71) states explicitly that "no movement rule can adjoin anything to the right of anything."

1.1.2 Illicit Movement

Another apparent issue for rightward movement is that the set of elements and categories that can be displaced rightward is a superset of those that can be displaced leftward. The problem is that there seems to be no principled reason for the directionality of displacement to affect the range of categories and syntactic objects that can be moved.

The example of EXNP in (3) presents a particularly salient example. While a relative clause can apparently be subextracted rightward, a relative clause cannot be subextracted leftward from its host (4)

(3) Sam brought $[_{\text{DP}}$ some potato salad e_1 $]$ to the party
$[_{\text{CP}}$ that he made last week $]_1$.

(4) * It was $[_{\text{CP}}$ that he made last week $]_1$
that Sam brought $[_{\text{DP}}$ some potato salad e_1 $]$ to the party.

The examples in (5) adapted from Fox & Nissenbaum 1999:133–134 illustrate the well-established observation that complements, but not adjuncts, can be extracted leftward from an NP. The examples in (6), also from Fox & Nissenbaum 1999, illustrate that this same argument/adjunct asymmetry is not observed in EXNP configurations.

(5) a. $[_{\text{PP}}$ Of whom $]_1$ did you see $[_{\text{DP}}$ a painting e_1 $]$?

b. * $[_{\text{PP}}$ From where $]_1$ did you see $[_{\text{DP}}$ a painting e_1 $]$?

c. * $[_{\text{PP}}$ By whom $]_1$ did you see $[_{\text{DP}}$ a painting e_1 $]$?

(adapted from Fox & Nissenbaum 1999:133, (1))

(6) a. We saw $[_{DP}$ a painting e_1 $]$ yesterday $[_{PP}$ of John $]_1$.

b. We saw $[_{DP}$ a painting e_1 $]$ yesterday $[_{PP}$ from the Museum $]_1$.

c. We saw $[_{DP}$ a painting e_1 $]$ yesterday $[_{PP}$ by John $]_1$.

(Fox & Nissenbaum 1999:134, (2))

1.1.3 Island Violations

Among the most recognized sources of evidence for movement is the fact that displacement from particular domains is disallowed (e.g., Ross 1967, Huang 1982). Chomsky (1973) observed that one such domain is a DP that appears in subject position. A DP that is otherwise transparent for subextraction, as in (7a) and (7b), becomes an opaque domain when it is in Spec,IP (7c).

(7) a. This is $[_{DP}$ the animal $]_2$ that they reviewed $[_{DP}$ a documentary about e_2 $]$ last week.

b. ? This is $[_{DP}$ the animal $]_2$ that there was $[_{DP}$ a documentary about e_2 $]_1$ reviewed e_1 last week

c. * This is $[_{DP}$ the animal $]_2$ that $[_{DP}$ a documentary about e_2 $]_1$ was reviewed e_1 last week.

I will capture this data as an effect of the *Subject Condition* as it is formulated in (8).[2]

(8) *Subject Condition*

A DP in Spec,IP is opaque for subextraction.

Culicover & Rochemont (1990:23–24) and Rochemont & Culicover (1990:33) point out that EXNP configurations presents an apparent obviation of the *Subject Condition*. The examples in (9) show that the PP *with blonde hair* can be subextracted rightward out of a DP in Spec,IP. The example in (10) assures us that this PP cannot be subextracted leftward.

[2]See Haegeman et al. (2014) for a discussion of ameliorating effects for the Subject Condition.

(9) a. $[_{DP}$ A man $[_{PP}$ with blonde hair $]]$ came into the room.

b. $[_{DP}$ A man e_1 $]$ came into the room $[_{PP}$ with blonde hair $]_1$.

(Culicover & Rochemont 1990:23, (2))

(10) * $[_{PP}$ With what color hair $]_1$ did $[_{DP}$ a man e_1 $]$ come into the room?

(Culicover & Rochemont 1990:24, (5a))

On the basis of this data, some researchers, including Rochemont & Culicover (1990) and Webelhuth et al. (2013), conclude that rightward displacement cannot be the product of the same mechanism that generates leftward movement. If it were, one would *a priori* expect to find that they are subject to the same set of island constraints.

1.1.4 Exceptional Locality

Perhaps the most well-known obstacle for the equal treatment of rightward and leftward displacement is that, in as far as its locality conditions can be pinned down, rightward displacement appears to be subject to stricter locality conditions that than leftward movement. Again, if rightward and leftward displacement were products of the same mechanism, it is not immediately obvious why the directionality of movement should affect the distance over which that movement can operate.

Leftward movement is commonly recognized as a potentially unbounded operation in the sense that it can theoretically cross an arbitrary number of clausal boundaries (11).

(11) a. What$_1$ did Tim buy e_1?

b. What$_1$ does Pam think $[_{CP}$ Tim bought e_1 $]$?

c. What$_1$ did Kim say $[_{CP}$ Sam thinks $[_{CP}$ Tim bought e_1 $]]$?

d. ...

Ross (1967:307) formulates the now famous condition on rightward movement that limits it to application to a single clause. He observed that rightward displacement operations, including HNPS and EXNP, are clause-bounded operations. The contrast in (12) illustrates

the clause-boundedness of HNPS. Rightward movement of the embedded object over a PP that modifies the embedded predicate is a marked word order, but entirely acceptable (12a). The minimally differing example in (12b) shows that rightward movement of the embedded object over a PP modifying the matrix predicate results in unacceptability (12b). This same manipulation in (13) shows that EXNP, too, is a clause-bounded operation; it is not possible to extrapose a relative clause to a position outside the clause containing its host.

(12) a. Pam said $[_{\text{CP}}$ that Tim bought e_1 for his co-workers [some coffee $]_1$].

b. * Pam said $[_{\text{CP}}$ that Tim bought e_1] to her co-workers [some coffee $]_1$.

(13) a. Pam said $[_{\text{CP}}$ that Tim bought [some coffee e_1] for his co-workers $[_{\text{CP}}$ that they serve in the library $]_1$].

b. * Pam said $[_{\text{CP}}$ that Tim bought [some coffee e_1]] to her co-workers $[_{\text{CP}}$ that they serve in the library $]_1$.

1.2 A Theory of Syntactic Movement

The goal of this thesis is to model rightward movement and capture as many of its eccentricities as possible. The model of movement with which we will do this is the so-called *Copy-Theory* of movement (Chomsky 1993). On this theory, movement is a syntactic operation *Move* that creates an exact copy of the instance of *which picture* in the complement position of the verb *took* in (14). This copy is then merged into a c-commanding position, such as Spec,CP in the present example.

(14) They know $[_{\text{CP}}$ $[_{\text{DP}}$ which picture$]_1$ C° $[_{\text{IP}}$ Tim $[_{v\text{P}}$ took $[_{\text{DP}}$ which picture$]_1$]]]

This essentially makes Move an operation indistinguishable from the basic structure building operation *Merge*. The difference between movement and other instances of merger lies primarily in the fact that the material that serves as the input to Move is taken directly from the syntactic structure that is being constructed.

Evidence for this particular conception of Move can be found in the inability of movement to repair Condition C violations. An example is provided below where the disjoint reference effect in the source structure (15a) persists following displacement of the offending R-expression (15b).

(15) a. * They know $[_{CP}$ he$_1$ took the older picture of Tim$_1]$.

b. * They know $[_{CP}$ $[_{DP}$ which picture of Tim$_1]_2$ he$_1$ took $x_2]$.

The previously standard analysis of movement suggested that the so-called *trace* of movement could be thought of simply as a variable bound by the moved element (e.g., Chomsky 1973). This is shown roughly in (15). Given this picture of movement, moving the offending R-expression *Tim* from the c-command domain of *he* should repair the Condition C violation. The fact that the Condition C violation persists suggests that movement in fact does not completely remove *Tim* from the c-command domain of *he*. We can capture this observation fairly straightforwardly, however, if we assume that the moved element has left behind a copy of itself. As shown in (16), the result is a representation in which there is an instance of *Tim* present in the c-command domain of, and coreferent with, the pronoun *he*.

(16) * They know $[_{CP}$ $[_{DP}$ which picture of Tim$_1]$ he$_1$ took $[_{DP}$ which picture of Tim$_1]]$.

The copy theory of movement raises some interesting questions regarding how movement is interpreted at the interfaces. For instance, treating the lower copy of a movement relationship as a content-less variable is straightforwardly compatible with the method for interpreting movement structures that is presented by Heim & Kratzer (1998). This system involves insertion of a numerical binder index below the landing site of the moved element where it will bind the variable left behind by movement (17a). The semantic component then interprets the constituent that is sister to the moved phrase as a derived predicate, which will take the moved element as its argument (17b).

(17) a. *LF representation*

which picture [1 [Sam took x_1]]

b. *Logical language*

$\lambda x[\text{Sam-took}(x)](\llbracket\text{which picture}\rrbracket)$

However, we have already seen in the discussion above that this does not make the correct predictions with respect to the inability for movement to ameliorate Condition C violations.

A solution that has been proposed by Engdahl (1980, 1986), Sauerland (1998), Fox (1999), and Elbourne (2005) is to slightly alter the lower copy of the moved element in a way that makes it serve as a variable. Fox (2002:67) refers to this as *Trace Conversion* and formalizes it as a two-step operation. Given a movement chain complete with a binder index, such as the one in (18a), Trace Conversion first inserts a variable into the lower copy (18b) and then replaces the determiner, in this case *which*, with a null variant of the definite article *the* (18c). This effectively turns the lower copy into a definite description which can then be interpreted as the bound variable in a derived predicate, just like we saw above.

(18) a. $[_{\text{CP}}$ $[_{\text{DP}}$ which picture] 1 C° $[_{\text{IP}}$ Sam $[_{v\text{P}}$ took $[_{\text{DP}}$ **which picture**]]]]

b. *Variable Insertion* $\Longrightarrow$

$[_{\text{CP}}$ $[_{\text{DP}}$ which picture] 1 C° $[_{\text{IP}}$ Sam $[_{v\text{P}}$ took $[_{\text{DP}}$ **which** [**picture** $\boldsymbol{x}_1$]]]]]

c. *Determiner Replacement* $\Longrightarrow$

$[_{\text{CP}}$ $[_{\text{DP}}$ which picture] 1 C° $[_{\text{IP}}$ Sam $[_{v\text{P}}$ took $[_{\text{DP}}$ **the** [**picture** $\boldsymbol{x}_1$]]]]]

With this machinery, the Condition C violating example from (16) will have the form in (19) below. Trace Conversion will turn the lower copy into a definite description with a variable, but it will preserve the remaining content including the PP *of Tim*. Now, because an instance of *Tim* remains in the c-command domain of *he*, a Condition C violation is again correctly predicted under coreference.

(19) * They know

$[_{\text{CP}}$ $[_{\text{DP}}$ which picture of Tim_2] 1 [he_2 took $[_{\text{DP}}$ the [picture x_1] of Tim_2]]]

Note that the Copy-Theory of movement makes it so that the displaced material exists in two positions, yet it is only spoken in one of them. An important question, then, is how the phonological component interprets a movement chain and ultimately decides on a way to pronounce it. Chomsky (1993:35) stipulates that it is always the highest copy that is pronounced by the PF component. However a number of authors have noted that allowing PF to choose which copy of a moved element to pronounce could provide a very natural way of modelling the distinction between overt and covert movement (e.g., Brody 1995, Bobaljik 1995, Groat & O'Neil 1996).

Cases of overt movement, like the *wh*-movement we have observed so far, involve the PF component pronouncing the highest copy of the movement chain and deleting any others. This is shown the partial syntactic representation in (20).[3]

(20) They know $[_{CP}$ $[_{DP}$ which picture$]$ Sam took ~~$[_{DP}$ which picture$]$~~ $]$.

On the other hand, the PF component might choose to pronounce the lower copy of a movement chain and delete the higher copy. This would be the case for *wh*-in-situ languages and the type of covert movement typically postulated for cases of *Quantifier Raising* (QR) (May 1977, 1985, Rooth 1985).[4] The example in (21) is just such a case wherein the universally quantified DP *every boy* has moved to a position where it takes scope over the existentially quantified DP *a girl*.[5] At the interface with LF, the higher copy of this movement chain will be interpreted for scope and the lower copy will undergo Trace Conversion (21a). The PF component, on the other hand, will interpret the lower copy of the movement chain and delete the higher. The result is the QP being spoken in its base-generated position (21b).

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[3]See Nunes (1995, 2004) for a theory of how PF decides which chain members to delete and which to spell out.

[4]See Johnson (2012) for a discussion of why certain movements are overt and others covert.

[5]The DP *a girl* will also have formed its own movement chain, which will also need to be properly interpreted at the interfaces. For expository reasons I have chosen to set this issue aside.

(21) a. *Logical Form*

They know $[_{CP}$ $[_{QP}$ every boy$]$ 1 a girl danced with $[_{QP}$ the $[$boy $x_1]]$ $]$

'They know that, for every *x* such that *x* is a boy, there is a girl *y* such that *y* danced with the boy *x*.'

b. *Phonological Form*

They know $[_{CP}$ $\cancel{[_{QP}\text{ every boy}]_1}$ a girl danced with $[_{QP}$ every boy$]_1$ $]$

This conception of QR and its relationship to overt movement has important consequences for the theory of the grammar. It relies on a model in which the syntactic component of the grammar outputs a single representation wherein all movement, both overt and covert, has taken place. Any given movement chain created in this component is independently interpreted by each of the interface components. Which copy is pronounced and which copy is interpreted for scope and/or binding purposes is decided at PF and LF respectively. This type of model of the grammar is often referred to as a "Single Output" model following Bobaljik (1995, 2002).

Finally, it was noted as early as Freidin 1986 that movement will in some instances bleed Condition C violations. There is a contrast for many speakers between the now familiar example in (22a) and the example in (22b) with respect to the ability for *he* and *Tim* to corefer.

(22) a. * They know which picture of Tim_1 he_1 took.

b. They know which picture next to Tim_1 he_1 took.

Based on the nature of the asymmetry as an argument (22a) versus adjunct (22b) distinction, a solution proposed by Lebeaux (1988) is to allow adjuncts like *next to Tim*, but not complements like *of Tim*, to be merged with their host DP late on in the course of a derivation. As noted in Chomsky 1993, the asymmetry can be seen as the result of a requirement that all copies of a predicate have their argument positions saturated (e.g., the *Projection Principle*).

Therefore, the NP-complement *of Tim* will induce a Condition C violation by virtue of its necessary presence in both the higher and lower copy of the movement chain exactly in the way we saw in (19). With the option of *Late-Merge* offered by Lebeaux (1988) to adjuncts, the PP *next to Tim* can be introduced into the derivation once a copy of its host has been created and merged into a position outside of the c-command domain of *he*, as in (23).

(23) $[_{CP}\ [_{DP}$ which picture $[_{PP}$ next to Tim$_2]]_1$ he$_2$ took $\cancel{[_{DP}\text{ which picture}]_1}$]

This solution allows us to preserve the Copy-Theory of movement while effectively avoiding a representation for (22b) in which coreference of *he* and *Tim* would result in a Condition C violation.

The remainder of the thesis will adopt this framework as the basic model of syntactic movement. An issue that remains unsettled, and to which I will have little to contribute, is how the direction in which any given instance of movement is linearized is decided upon. For instance, it is not exactly clear what is it about *wh*-movement that requires it to be linearized leftward. And it is not clear precisely what is different about HNPS, for example, that requires it to be linearized rightward. Ideally, future research will have something insightful to say on this issue. However, I will mostly take it for granted throughout that directionality is the result of independent principles of the grammar, such as principles that guide prosodic structure or principles that reference information-structural preferences.

1.3 Towards a Solution: An Overview

The goal of this dissertation is to model the properties of rightward movement and account for its exceptional behavior by using the Copy-Theory of movement as it has been developed for instances of leftward movement. I will argue that rightward displacement is upward syntactic movement that is linearized rightward. Our empirical domain of investi-

gation will largely be limited to HNPS and EXNP of relative clauses as we observe them in English.

The dissertation is basically divided into two parts. Part I is composed of chapter 2 and chapter 3, which present a case study on HNPS. Chapter 4 and chapter 5 comprise Part II, which is a case study on EXNP of relative clauses.

1.3.1 Part I: Heavy-NP Shift

1.3.1.1 Chapter 2

Chapter 2 serves as argument in favor of an approach to HNPS that employs rightward movement of the displaced DP. The argument is based around a comparison of the treatment that various theories of HNPS offer for the ability of this operation to license parasitic gaps (24).

(24) John offended e_1 by not recognizing pg_1 immediately –

$[_{DP}$ his favorite uncle from Cleveland $]_1$.

(Engdahl 1983:12, (26))

I argue that the known properties of parasitic gaps are best captured without further stipulation under a rightward movement approach.

I also address the influential argument made by Postal (1994) that it is Right Node Raising and not HNPS that is responsible for configurations like (24). I provide evidence from an acceptability judgment study suggesting that not all such examples are subject to known constraints on Right Node Raising. This suggests that an alternative mechanism, such as HNPS and parasitic gap licensing, is available to generate a structure like (24). Observing that there are clear instances of HNPS that license parasitic gaps, I conclude that are cases of rightward $\overline{\text{A}}$-movement of a DP. Finally, I formalize HNPS as an operation that targets a position in the periphery of an articulated *v*P that is reserved for focused material.

1.3.1.2 Chapter 3

In chapter 3 we more closely examine structures that contain a parasitic gap licensed by rightward DP-movement. Building on research by Nissenbaum (2000) in the same domain we will be led to the discovery that the need to license a parasitic gap can motivate rightward DP-movement beyond its containing clause, contrary to what we saw in section 1.1.4.

(25) Sam thinks $[_{\text{CP}}$ that you like $e_1]$

because he saw you give $[pg_1$/*someone$]$ a present – $[$a new co-worker$]_1$.

This suggests that rightward movement is not categorically clause-bounded. Instead, there must be independent principles that require standard instances of HNPS to be very local.

I argue that standard economy of derivation considerations block applications of movement that are not required as part of ensuring convergence of a syntactic representation at the LF interface (Chomsky 1993). In the absence of a parasitic gap, rightward movement is only licensed as far as is required to produce an HNPS configuration. Provided with a parasitic gap, however, exceptional rightward movement of a DP beyond what is made possible by HNPS is licensed to ensure convergence.

I formalize this system by adapting the theory of parasitic gaps proposed in Nissenbaum (2000). In particular, I propose a modified theory of parasitic gap licensing that permits the cyclic composition of the parasitic gap domain and the matrix clause through Functional Application as opposed to Predicate Modification (see Heim & Kratzer 1998). However, it is crucially movement of a DP that makes that composition possible, thus ensuring convergence at LF. The result that we will observe is that rightward DP-movement can be potentially unbounded and successive-cyclic given the need to license a parasitic gap.

1.3.2 Part II: Extraposition from NP

1.3.2.1 Chapter 4

Chapter 4 compares two classes of analyses of EXNP that differ on where extraposed material is asserted to be base-generated. One class of analyses asserts that extraposed material is base-generated inside its host and somehow displaced rightward (Ross 1967, Chomsky & Lasnik 1977, Fox & Nissenbaum 1999, de Vries 2002). Another class of analyses asserts that extraposed material is generated outside its host and directly adjoined to the verbal spine in its extraposed position (Rochemont & Culicover 1990, Koster 2000, Webelhuth et al. 2013).

I propose a novel connectivity diagnostic that employs NPI-licensing by *every* and argues strongly in favor of a model of EXNP that base-generates an extraposed relative clause within its host DP. More specifically, I provide evidence from an acceptability judgment study suggesting that an NPI in a relative clause that is licensed by the universal quantifier *every* (26a) remains licensed in an EXNP configuration (26b).

(26) a. We took $[_{DP}$ every guest $[_{CP}$ who ate *any* of the potato salad $]]$ to the hospital.

b. We took $[_{DP}$ every guest $]_1$ to the hospital

$[_{CP}$ who ate *any* of the potato salad $]_1$.

Observing that NPIs are otherwise not licensed in the nuclear scope of the universal quantifier *every*, such data strongly suggest that the extraposed relative clause is interpreted in the restrictor argument of *every*.

I argue, on the basis of additional observations, that these facts are best modeled with the QR-based theory of EXNP developed by Fox & Nissenbaum (1999). On this theory, the host of the extraposed material undergoes QR and the extraposed material is subsequently late-merged into the higher copy. As noted by Fox & Nissenbaum (1999) this theory also has the benefit of accounting for some of the otherwise puzzling facts about EXNP configurations, including the apparent movement of relative clauses and the apparent island insensitivity. I suggest that this theory may also provide a way of accounting for the par-

ticularly problematic cases of split-antecedence that were observed by Perlmutter & Ross (1970).

1.3.2.2 Chapter 5

This chapter is largely in service of examining the locality conditions on EXNP. However, we will see that the investigation also brings to light two puzzles that go unanswered but provide a direction for future research.

We will observe that there are subclausal locality conditions on EXNP that roughly prohibit extraposed material from being adjoined above the first dominating *v*P or CP. However, we will also observe that there can be a rather extreme disconnect between where an extraposed relative clause can be spoken and where it can be interpreted. We will encounter interpretive evidence from quantifier scope interactions and Antecedent-Contained Deletion that extraposed relative clauses and their hosts can be interpreted beyond the first dominating *v*P or CP as well as beyond the first containing clause, again, in violation of what is predicted by the supposed clause-boundedness of rightward movement.

I argue that we can understand this disconnect by treating covert movement, and QR especially, as a potentially unbounded and successive-cyclic movement (Nissenbaum 2000, Cecchetto 2004, Hulsey & Sauerland 2006, Takahashi 2006). In conjunction with a constraint that requires the late-merger of an extraposed relative clause to take place within the first cycle of QR, the strict locality of EXNP follows as a result of the normal behavior of QR. The exceptional interpretive possibilities follow from the ability of QR to continuously widen the scope of the relative clause and its host. The ultimate result is that, like leftward movement and HNPS, the QR operation that drives EXNP is also a potentially unbounded and successive-cyclic movement.

CHAPTER 2

MODELLING HEAVY-NP SHIFT

The goal in this chapter is to undertake an investigation of the mechanism responsible for the Heavy-NP Shift (HNPS) configuration in (1b) that we get from the base order in (1a).

(1) a. Tim bought $[_{DP}$ some coffee $]$ for his co-workers.

b. Tim bought for his co-workers $[_{DP}$ some coffee $]$.

Of central interest is whether the rightward displacement we observe in examples like (1b) is actually movement that results in rightward adjunction (e.g., Ross 1967) or if it is simulated via one or more movements that result in leftward adjunction (e.g., Larson 1988, Kayne 1994, Rochemont & Culicover 1997). We will look briefly at a few ways to implement these ideas in section 2.1.

I will argue that a rightward movement approach should be preferred on the basis of parasitic gap structures like the familiar example in (2).

(2) John offended e_1 by not recognizing pg_1 immediately –

$[_{DP}$ his favorite uncle from Cleveland $]_1$.

(Engdahl 1983:12, (26))

We will see evidence in section 2.2 suggesting that these constructions are more naturally handled on a rightward movement account. Leftward movement accounts require us to make construction-specific stipulations and employ unmotivated derivations and representations that are unnecessary on a rightward movement approach.

In section 2.3 I address a common response to the analysis of the adjunction structure in (2) as a parasitic gap construction which asserts with Williams (1990) and Postal (1994) that they are instead derived via the same mechanism of Right Node Raising (RNR) that is responsible for coordination structures of the type in (3).

(3) John saw e_1 and recognized e_1 – [his favorite uncle from Cleveland]$_1$.

We will review the arguments for this alternative presented by Williams (1990, 1995) and most notably Postal (1993, 1994) and find that the strongest conclusion these arguments license is that it is possible for RNR to produce adjunction structures like (2). What we will not find is evidence that all such constructions are necessarily derived via RNR. I will present three independent pieces of evidence showing that, once we remove any impediments to parasitic gap licensing, we can identify adjunction structures like (2) which show properties of HNPS and fail to show properties of RNR. The overall conclusion will be that adjunction structures can be derived either by parasitic gap licensing or by RNR.

I present experimental evidence in section 2.4 to support one of these counterarguments to the claim that only RNR is available to derive examples like (2). We will see an acceptability judgment study which reveals that coordinate structures like (3) are subject to a known constraint on RNR—the *Right Edge Restriction* (Postal 1974, Wilder 1995, Hartmann 2000)—while adjunction structures like (2) are not subject the same constraint. The results of this study as well as the arguments in section 2.3 means for leftward approaches to examples like (2) and HNPS more generally that they cannot resort to an RNR analysis to avoid the issues to be observed below.

Section 2.5 presents two notes on the relationship between parasitic gap licensing and RNR. If both strategies are available for deriving (2), we can ask whether they are in free variation or if one is preferred over the other. I will show that, based on the evidence made available to us in this chapter, there is reason to think that HNPS with the creation of a parasitic gap is preferred to RNR. The appropriate caveats are made, however, and it is noted that further work on this issue is necessary.

Section 2.6 finally formalizes the HNPS operation. I follow the original analysis of HNPS presented by Ross (1967) whereby a rightward displaced DP is moved and right adjoined in a c-commanding position. I present evidence from Rochemont & Culicover (1990) to motivate the idea that HNPS is a discourse-configurational structure reserved for displacing focused material. Consistent with arguments provided by Johnson (1985), we will start by asserting that a DP that has undergone HNPS targets a position inside the first dominating *v*P.

2.1 Two Competing Models of Heavy-NP Shift

Rightward displacement is more traditionally modeled by movement involving right adjunction (e.g., Ross 1967). A common way to model the motivation for this movement is to treat HNPS as an information-structural configuration. For example, it has been suggested that HNPS is licensed as a means for marking the displaced DP as new in the domain of discourse (Rochemont 1978, Rochemont & Culicover 1990, Ward & Birner 1996). It is important to acknowledge, however, that research by Arnold et al. (2000), Wasow & Arnold (2003) and others has demonstrated that weight and structural complexity can motivate rightward displacement independent from the discourse status of the displaced element. While I agree that such rightward displacement lacking semantic import would arguably be a post-syntactic phenomenon, the discovery that such examples exist does not by itself prove that rightward displaced elements can never be the result of syntactic movement.

Postal (1974) provides examples of HNPS similar to those below that demonstrate the acceptability of HNPS despite a lack of weight and complexity in the shifted DP. I have slightly altered these examples to control for the number of words and syllables and, as best as possible, for relative complexity. This is what is provided in (4) where the shifted DP and the constituent it crosses are relatively equal in weight. The example in (5) manipulates the complexity of the shifted DP and the material it crosses in a way similar to

Wasow & Arnold (2003): the PP that is crossed contains an embedded clause while the shifted DP does not.

(4) Tim gave e_1 to his aunt – [all the sheep]$_1$

(5) Tim gave e_1 to the customers he recognized – [his best sheep]$_1$

Because these examples do not lend themselves to an account of the acceptability of rightward displacement in terms of relative weight or complexity, their acceptability suggests that there is some alternative criterion motivating rightward movement. In section 2.6.2 I will provide evidence that, indeed, informational-structural considerations can govern the acceptability of HNPS. It is these instances of rightward DP-movement that we will attempt to model in this thesis. Therefore, I will attempt to control for effects of weight and complexity of rightward displaced DPs in an attempt to control for the potential confound these factors present. In this chapter and the next I will present evidence and argumentation that this movement does take place in the syntactic component. If there is indeed a non-syntactic means for rightward displacement, the prediction is that displacement for these reasons will be exempt from any syntactic criteria (e.g., the Right Roof Constraint, Larson's Generalization (sec. 3.2 ch. 3), parasitic gap licensing, etc.).

Let us turn now to the ways in which the relevant instances of HNPS have been modeled. The standard way of looking at syntactic approaches to HNPS is based on the direction of the movement involved. As noted above, the old standard has been to treat HNPS as movement to the right. Subsequent research on rightward displacement has seen an alternative approach emerge whereby one or more applications of leftward movement simulate rightward movement (e.g., Larson 1988, Kayne 1994, Rochemont & Culicover 1997).

2.1.1 The Rightward Movement Approach to HNPS

Ross (1967:sec. 3.1.1.3) provided what can be considered the canonical approach to HNPS configurations like (6).

(6) He attributed to a short circuit [$_{DP}$ the fire which destroyed most of my factory].

(Ross 1967:51, (3.15))

He formulated a rule—actually called *Complex NP Shift*—which roughly stated that a direct object may be moved rightward and adjoined to the first CP that dominates the direct object's base position (7).

(7) [$_{CP}$ [$_{CP}$ He attributed e_1 to a short circuit]
[$_{DP}$ the fire which destroyed most of my factory]].

Since then, rightward approaches to HNPS have largely treated VP or *v*P as the locus of the movement operation (e.g., Bresnan 1976, Stowell 1981, Johnson 1985). This is sketched in (8).

(8) He [$_{vP}$ [$_{vP}$ attributed e_1 to a short circuit]
[$_{DP}$ the fire which destroyed most of my factory]].

Johnson (1985:sec. 3.3.1) makes this argument on the basis that HNPS is degraded when it shifts a DP past speaker-oriented adverbials, subject-oriented adverbials, and temporal adverbials (9).

(9) a. * Eleanor bought e_1 apparently [$_{DP}$ brand new drapes for the whole house]$_1$.

b. * Vern left e_1 angry [$_{DP}$ that store where service is so slow]$_1$.[1]

c. * Julie didn't buy e_1 until it became available [$_{DP}$ that book on Venus]$_1$.[2]

(Johnson 1985:85, (28))

[1]Johnson (1985) notes that there is a grammatical reading for this example that treats *angry* as a VP modifier synonymous with *angrily*.

[2]This example may fall under the purview of *Larson's Generalization*, which is introduced in 3.1 of the following chapter.

If we assume that the types of adjuncts we find in (9) are adjoined in the vicinity of the subject's surface position in the IP, these data are consistent with the claim that HNPS cannot escape VP.

2.1.2 Leftward Movement Approaches to HNPS

2.1.2.1 Predicate Raising: Larson 1988

Larson's (1988) analysis of HNPS is presented as a consequence of a theory of the internal organization of the VP. His VP-shell approach to argument structure allows us to treat the rightward displaced DP as having been stranded by leftward movement of the other occupants of the VP (10). This analysis is sometimes referred to as *Complex Predicate Raising* (Larson 1988), *Light Predicate Raising* (Larson 1989), and *Predicate Raising* (Rochemont & Culicover 1997).

(10) I [gave to John]$_1$ everything that he demanded e_1.

(Larson 1988:347, (20a"))

The movement that we see above is made possible on Larson's account by a process that turns the string *gave to John* into a "complex lexical category" (Larson 1988:349). This process, which is referred to as $\overline{V}$ *Reanalysis*, is provided in (11).[3]

(11) $\overline{V}$ *Reanalysis*

Let α be a phrase $[_{\overline{V}} \ldots]$ whose Θ-grid contains one undischarged internal Θ-role. Then α may be reanalyzed as $[_V \ldots]$.

(Larson 1988:348)

For Larson (1988), the verb *give* and its arguments begin life as the VP^1 constituent in (12a) with the direct object *everything that he demanded* in Spec,VP^1 and the prepositional object *to John* in the complement position of VP^1. Following an application of $\overline{V}$-Reanalysis of

[3]See Runner (1995:sec. 4.4) for a series of arguments supporting a necessary reformulation of $\overline{V}$-Reanalysis. Rochemont & Culicover (1997:292–294) and Nissenbaum (2000:89–94) provide arguments specifically against Larson's (1989) predicate raising analysis.

$\overline{V}^1$, (12b) shows the complex V° undergoing an independently motivated instance of verb raising to the empty head position of the higher VP_2.

(12) a. $[_{VP^2}$ Spec $[_{\overline{V}^2}$ *e* $[_{VP^1}$ $[_{DP}$ everything that he demanded] $[_{\overline{V}^1}$ gave to John]]]]

b. $[_{VP^2}$ Spec $[_{\overline{V}^2}$ $\boxed{[_{V^\circ} \text{ gave to John }]_1}$

$[_{VP^1}$ $[_{DP}$ everything that he demanded] t_1]]]].

2.1.2.2 Stranding: Kayne 1994

Kayne (1994:ch. 7) presents an analysis of HNPS that preserves the spirit of the predicate raising analysis but is intended to be compatible with his *antisymmetric* theory of syntax. This is a theory of grammar proposing that c-command in a syntactic phrase marker can be translated directly into linearization statements. The assertion is that c-command universally translates into a precedence relationship. The effect is ultimately a universal Spec-Head-Comp order for phrases. What we get, then, is an analysis that is actually moving the prepositional object leftward while the apparently rightward shifted DP remains in-situ (13).

(13) John gave $[_{PP}$ to Bill $]_1$ all his old linguistics books e_1.

This analysis works by treating all of the post-verbal material as part of an underlying small clause configuration (14a). The HNPS word order is achieved by moving the prepositional object *to Bill* to the specifier of some higher phrase, YP in (14b). In this position, *to Bill* will c-command and consequently linearly precede the in-situ direct object.

(14) a. $[_{XP}$ $[_{DP}$ all his old linguistics books] $[_{\overline{X}}$ X° $[_{PP}$ to Bill]]].

b. John gave $[_{YP}$ $\boxed{[_{PP} \text{ to Bill }]_1}$ $[_{\overline{Y}}$ Y°

$[_{XP}$ $[_{DP}$ all his old linguistics books] $[_{\overline{X}}$ X° e_1]]]]].

2.1.2.3 Remnant Movement: Rochemont & Culicover 1997

Rochemont & Culicover (1997:294–296) entertain various versions of a remnant movement analysis for HNPS. On these accounts, the HNPS word order is simulated via a series of leftward movements involving the apparently rightward displaced DP and the resulting remnant VP.[4] The payoff to be had, despite the additional complexity, is that these analyses capture the fact that the rightward shifted DP displays a number of properties we would expect from a phrase that has undergone movement. This includes the ability to license parasitic gaps (e.g. Engdahl 1983) and inability to subextract material from the DP in its shifted position (i.e., Freezing Effects; Wexler & Culicover 1980). We will examine these in more detail in the following sections.

The most straightforward execution presented by Rochemont & Culicover (1997:294, (49)) would derive Kayne's example by beginning with what is essentially a Larsonian VP-shell as in (15a). The apparently displaced DP will first move to the specifier of a head X° that dominates the VP (15b). The remnant VP then subsequently moves to the specifier of another head that dominates XP (15c).

(15) a. John $[_{\mathrm{YP}}\ [_{\overline{\mathrm{Y}}}\ \mathrm{Y}^{\circ}\ [_{\mathrm{XP}}\ [_{\overline{\mathrm{X}}}\ \mathrm{X}^{\circ}$
$[_{\mathrm{VP}}\ [_{\mathrm{DP}}$ all his old linguistics books $]\ [_{\overline{\mathrm{V}}}$ gave $[_{\mathrm{PP}}$ to Bill $]\ ]]]]]]$.

b. John $[_{\mathrm{YP}}\ [_{\overline{\mathrm{Y}}}\ \mathrm{Y}^{\circ}\ [_{\mathrm{XP}}\ \boxed{[_{\mathrm{DP}}\text{ all his old linguistics books }]_1}\ [_{\overline{\mathrm{X}}}\ \mathrm{X}^{\circ}$
$[_{\mathrm{VP}}\ e_1\ [_{\overline{\mathrm{V}}}$ gave $[_{\mathrm{PP}}$ to Bill $]\ ]]]]]]$

c. John $[_{\mathrm{YP}}\ \boxed{[_{\mathrm{VP}}\ e_1\ [_{\overline{\mathrm{V}}}\text{ gave }[_{\mathrm{PP}}\text{ to Bill }]\ ]]_2}$
$[_{\overline{\mathrm{Y}}}\ \mathrm{Y}^{\circ}\ [_{\mathrm{XP}}\ [_{\mathrm{DP}}$ all ... books $]_1\ [_{\overline{\mathrm{X}}}\ \mathrm{X}^{\circ}\ e_2\ ]\ ]]]]$

[4] Williams (2003:35–36) argues against remnant movement analyses of HNPS, as well as movement analyses more generally, based on the distribution of focus accent in HNPS configurations.

Mimura (2009) and Wallenberg (2009:ch. 7) each provide a more detailed account of HNPS along these lines. Both start by adopting the more articulated theory of the left periphery that is offered by Rizzi (1997). This minimally provides both a focus-dedicated and topic-dedicated position at the left edge of the clause. They take it to be the case that the apparently rightward displaced DP receives a focused interpretation in that it presents information that is not in the conversational background (e.g., Rochemont 1986, Rochemont & Culicover 1990, Ward & Birner 1996). The initial movement of the relevant DP shown in (16a) will be to the specifier of a left peripheral focus position (FocP). The remnant, which includes the surface position of the subject and the remainder of the predicate, moves to the specifier of a higher topic position (TopP) as shown in (16b).

(16) a. $[_{\text{TopP}}\ [_{\overline{\text{Top}}}\ \text{Top}^{\circ}\ [_{\text{FocP}}\ \boxed{[_{\text{DP}}\ \text{all his old linguistics books}\ ]_1}\ [_{\overline{\text{Foc}}}\ \text{Foc}^{\circ}\ \ldots$

$[_{\text{IP}}\ \text{John}\ [_{\text{VP}}\ e_1\ \text{gave to Bill}\ ]]\ ]]]]$

b. $[_{\text{TopP}}\ \boxed{[_{\text{IP}}\ \text{John}\ [_{\text{VP}}\ e_1\ \text{gave to Bill}\ ]]_2}$

$[_{\overline{\text{Top}}}\ \text{Top}^{\circ}\ [_{\text{FocP}}\ [_{\text{DP}}\ \text{all}\ \ldots\ \text{books}\ ]_1\ [_{\overline{\text{Foc}}}\ \text{Foc}^{\circ}\ \ldots\ e_2\ ]]]]$

The result here is equivalent to the output of the derivation in (15) above, but it has the benefit of encoding specific information-structural properties of the HNPS configuration.

2.2 Choosing a Direction with Parasitic Gaps

Choosing between leftward and rightward approaches on purely empirical grounds has proven to be a difficult venture. Rochemont & Culicover (1997), Abels (2007), and Abels & Neeleman (2012) have argued that it will always in principle be possible to simulate any observable rightward displacement configuration via one or more leftward movements. As Abels & Neeleman (2012) discuss in detail, this is particularly true in the absence of (i) explicit constraints on the type of remnant movements we saw in section 2.1.2.3 and (ii) an explicit theory of the positions to which these movements take place.

It is worth pointing out that, at present, both of these components are available to us. Mimura (2009) and Wallenberg (2009) have provided a theory of the positions that the relevant movements target. Additionally, more articulated theories of the constraints on remnant movement have been made available in the literature (for a recent overview see Grewendorf 2015). However, I am currently unaware of any analysis of HNPS that explicitly links these two parts of what would count as a complete theory of HNPS under remnant movement. Given the particular goals of this thesis, I will leave it as a challenge to future research to provide such a theory.

The approach we will take instead is to examine more closely the account that the above analyses provide for rightward displacement and parasitic gap licensing. The empirical domain of our investigation, therefore, will be constructions of the shape in (17).

(17) John offended e_1 by not recognizing pg_1 immediately –

$[_{DP}$ his favorite uncle from Cleveland $]_1$.

(Engdahl 1983:12, (26))

Since Engdahl 1983 these structures have often been analyzed on par with more canonical parasitic gap constructions identified by Ross (1967) and discussed also by Taraldsen (1981). Parasitic gap constructions are exemplified by structures like the one provided in (18).

(18) Who$_1$ did you offend e_1 by not recognizing pg_1 immediately?

What makes parasitic gap structures interesting in their own right is that the gap position, which I have labelled as *pg*, is co-indexed with a DP displaced from within a domain that otherwise acts as an island for extraction (19).

(19) * Who$_1$ did you offend my aunt [by not recognizing e_1 immediately]?

Also following Engdahl (1983), it is largely considered to be the case that what licenses a parasitic gap is an instance of overt $\overline{\text{A}}$-movement in the clause that is hosting the parasitic gap domain. We can demonstrate this by contrasting the example in (18) with the

examples in (20) and (21). These examples respectively reveal that covert *wh*-movement and quantifier raising do not license parasitic gaps.[5] The example in (22) reveals that it is $\overline{\text{A}}$-movement in particular that licenses parasitic gaps as the instance of A-movement in (22) fails to do so.[6]

(20) * Who offended *whom*$_1$ by not recognizing *pg*$_1$ immediately?

(21) You offended every salesman$_1$ by not recognizing **pg*$_1$/him$_1$.

(22) * [His uncle]$_1$ was offended e_1 by John not recognizing *pg*$_1$ immediately.

In what follows I will argue that leftward movement approaches do not provide a straightforward account of the properties of parasitic gap constructions. Showing that rightward movement approaches more naturally account for these structures, I will argue that rightward movement approaches are to be preferred. Of course, it is debatable whether or not examples like (17) represent true parasitic gap constructions. Williams (1990, 2003) and Postal (1993, 1994) have argued that a Right Node Raising (RNR) analysis might be more suitable for these types of constructions. This means that a natural recourse for leftward movement analyses is to assert that (17) is not a parasitic gap construction and will not necessarily behave as such. In anticipation of this objection, I will argue in sections 2.3 and 2.4 that a RNR analysis cannot provide a viable alternative to all apparent instances of rightward movement and parasitic gap licensing.

2.2.1 Stranding and Parasitic Gaps

The observation that parasitic gaps are licensed by movement is not straightforwardly compatible with an analysis of HNPS which asserts that the supposedly rightward displaced DP remains in-situ. Kayne (1994:73–74) concedes this point and takes the course outlined

[5]While the generalization that covert movement does not license parasitic gap holds in simple cases like (20) and (21), Nissenbaum (2000:ch. 3) argues that it is not entirely accurate. He provides evidence that covert *wh*-movement can license a parasitic gap in the case that there are multiple *wh*-phrases undergoing covert movement.

[6]See Culicover (2001) for an overview and discussion of the properties of parasitic gap constructions.

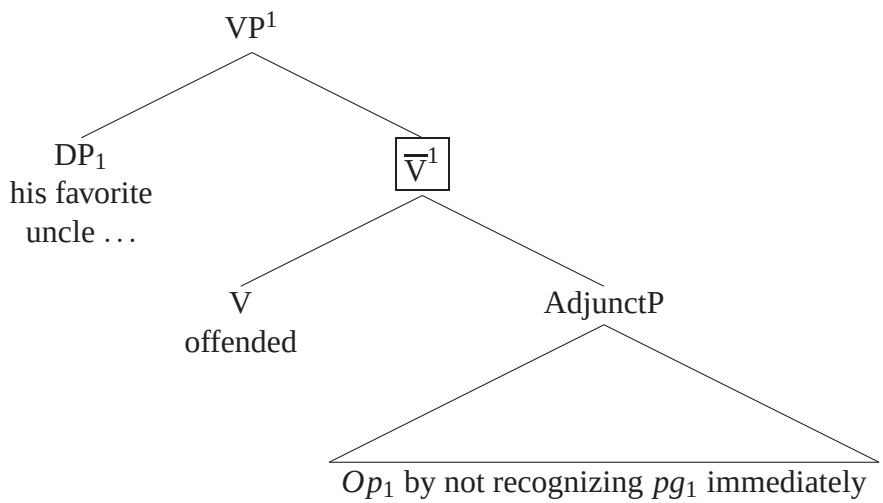
above to suggest that examples of the shape in (15), which is provided again below, are derived via RNR and sit outside the purview of analyses of parasitic gap licensing.

The strategy pursued by Larson (1989:sec. 4) is to provide a theory of parasitic gaps that uncouples syntactic movement of the displaced DP and the licensing of the parasitic gap, despite appearances. Larson (1989) adopts a null-operator analysis for the parasitic gap domain (Contreras 1984, Chomsky 1986, Browning 1987) and proposes that the structure in (23) as the underlying structure for (17).

(15) John offended e_1 by not recognizing pg_1 immediately –

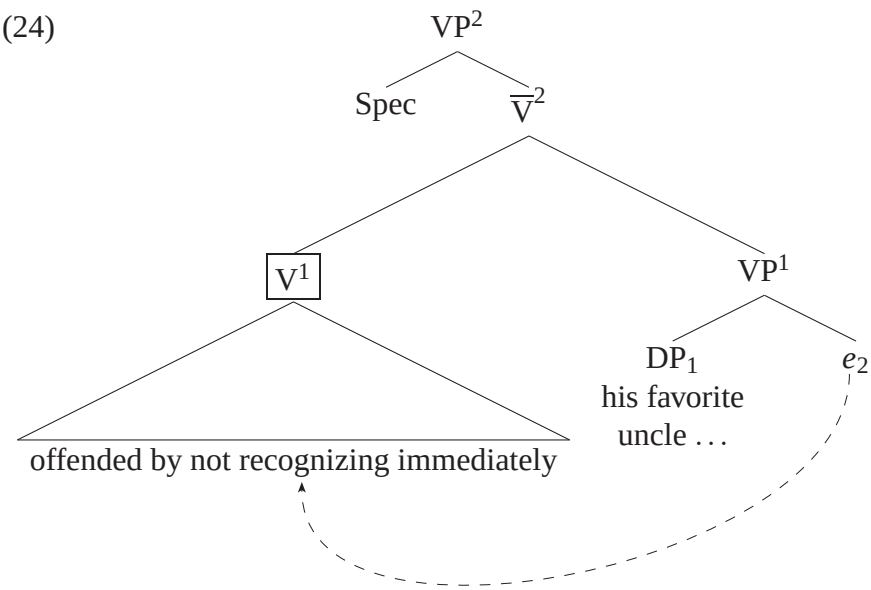
$[_{DP}$ his favorite uncle from Cleveland $]_1$.

(23)



What appears to be HNPS deriving a parasitic gap instead involves an application of $\overline{V}$-Reanalysis to the $\boxed{\overline{V}^1}$ in (23). It is not made clear precisely what the output of $\overline{V}$-Reanalysis is. However, we can imagine that the resulting complex lexical item V^1, perhaps without the null-operator chain, is raised into the empty head position of a higher verbal projectionVP^2. The result is shown in (24).

(24)



This analysis achieves the desired word order and does so without moving the apparently rightward displaced DP. In section 3.3 of the following chapter, though, we will see that it is more of a liability of the predicate raising analysis that the apparently displaced DP remains in-situ. We will find that rightward displacement that results in the licensing of a parasitic gap has the ability to widen the scope of the displaced DP. This suggests that the DP does undergo movement as part of deriving an HNPS configuration.

A second problem for this approach to rightward displacement and parasitic gaps is identified by Nissenbaum (2000). The example in (25) suggests that it is possible for a rightward displaced DP to have its base position in an embedded clause and license a parasitic gap in an adjunct that modifies the matrix clause.

(25) I claimed that I liked e_1 in order to get you to rent pg_1 –

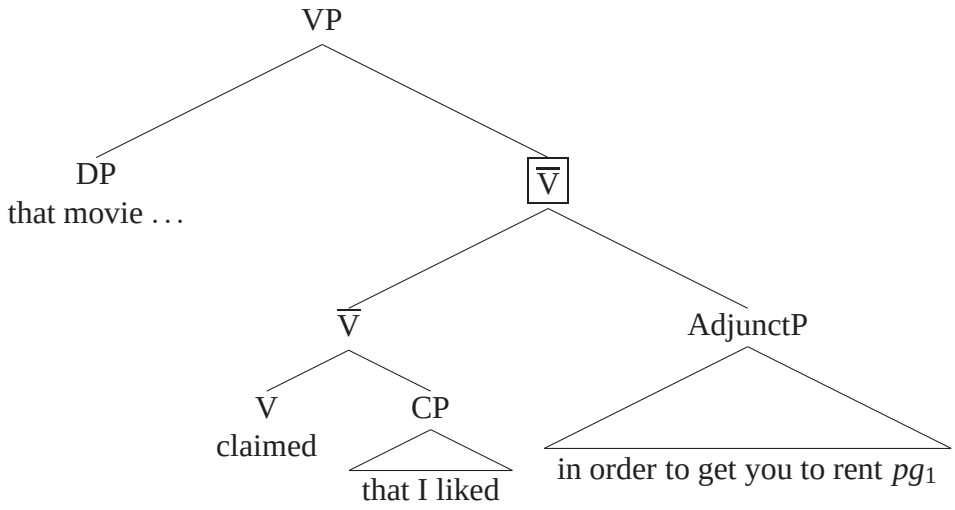
$[_{\text{DP}}$ that movie with Fred Astaire and Audrey Hepburn $]_1$.

(Nissenbaum 2000:89, (3a))

The problem, as Nissenbaum (2000) discusses, is that the underlying representation that Larson (1989) would need for (25) will have to generate in the matrix clause the DP that is interpreted as the direct object of the embedded predicate. Only in this way is it possible to create a $\boxed{\overline{\text{V}}}$ node with one undischarged Θ-role that excludes the displaced DP. This is

the representation that we see in (26), which we do not expect to be interpretable. The DP *that movie* . . . should be interpreted as the direct object of the embedded predicate *like*. Because it has been generated outside the embedded clause, it is not clear that this should be possible without a stipulated mechanism to bridge the clausal span between the DP and its selecting predicate.[7]

(26)



Less dramatic examples involving Raising-to-Object predicates like (27) reveal that Nissenbaum's criticism will be a general issue for the predicate raising analysis. Arguments selected by an embedded predicate that appear to the right of adjuncts modifying the embedding predicate will require us to stipulate non-local selection in order to accommodate them.

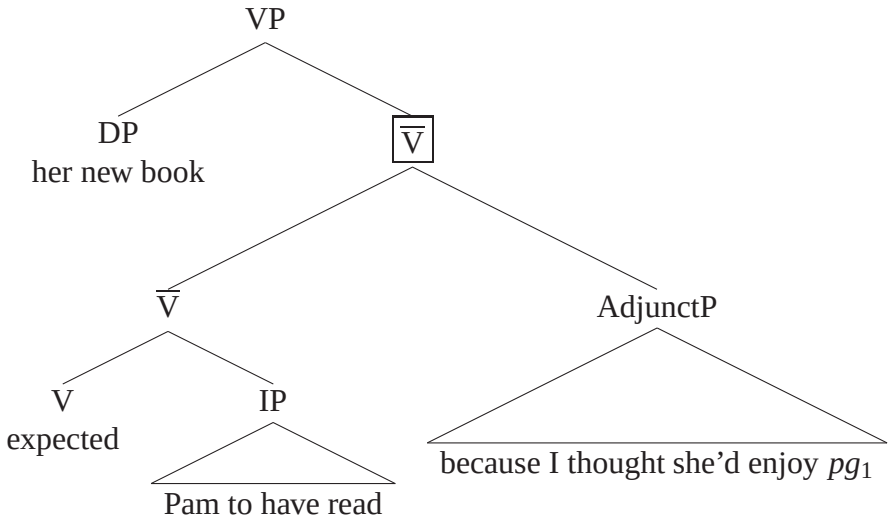
(27) I expected Pam to have read e_1 because I thought she'd enjoy pg_1 – $[_{DP}$ her new book $]_1$.

The structure that is required for $\overline{V}$-Reanalysis to be possible in (27) is shown below in (28). Again, we see that the displaced DP is required to be generated in a non-local position

[7]It has been argued recently by Saab (2015) that non-local Θ-role assignment is possible in particular circumstances.

relative to its selecting predicate. This is necessary for a $\boxed{\overline{\text{V}}}$ to be generated that has one undischarged Θ-role as required by the formulation of $\overline{\text{V}}$ Reanalysis in (11).

(28)



This conceptual issue makes a predicate raising analysis implausible as the mechanism responsible for parasitic gap licensing by rightward displacement, and therefore as the analysis of rightward DP displacement generally.

2.2.2 Remnant Movement and Parasitic Gaps

It is presented as a virtue of remnant movement analyses by Rochemont & Culicover (1997), Mimura (2009), and Wallenberg (2009, 2015) that they can account for the observation that parasitic gaps are licensed in HNPS configurations. Recall that these analyses derive the rightward displacement of the shifted DP via leftward movements of the DP and resulting remnant phrase. However, it is not made explicit in these or other works precisely how we might expect the licensing of parasitic gaps to work. Let us consider, then, what such an analysis might look like.

First, we know that overt $\overline{\text{A}}$-movement of the DP is supposed to be involved in the presence of the parasitic gap. But it is not simply the case that any application of overt $\overline{\text{A}}$-movement will license a parasitic gap. Witness in (29a) that *wh*-movement to the embedded CP is not sufficient for licensing a parasitic gap in an adjunct clause modifying the matrix

predicate. As shown in (29b), the licensing movement must be to the same clause that contains the parasitic gap domain.

(29) a. * They$_2$ knew [$_{CP}$ who$_1$ Sam invited e_1] PRO$_2$ after talking to pg_1.

b. Who$_1$ did they$_2$ think [$_{CP}$ Sam invited e_1] PRO$_2$ after talking to pg_1?

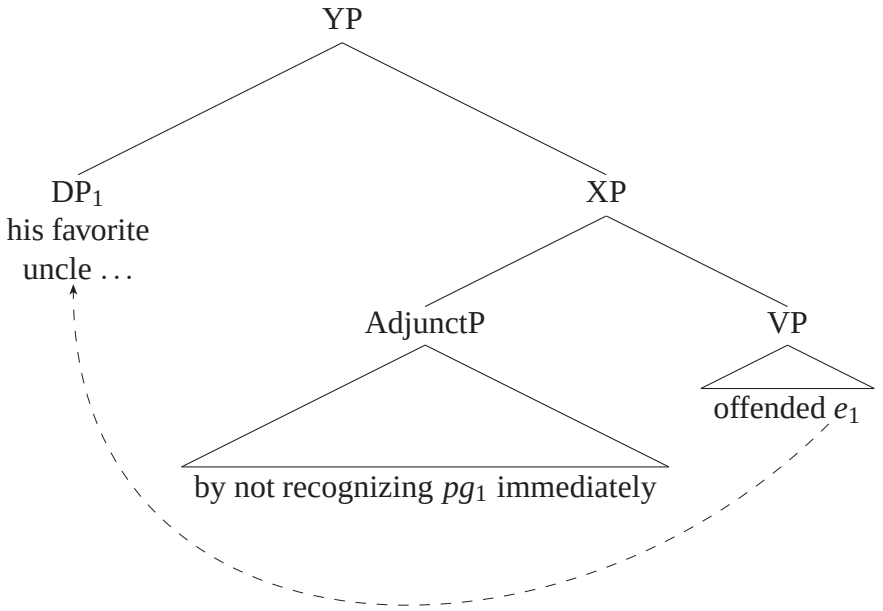
I interpret this contrast as evidence that it is crucially movement to a position that c-commands the parasitic gap domain that will license the parasitic gap.

Abstracting away from exactly which positions serve as the loci of the movement operations, we could imagine that the step in the derivation that licenses the parasitic gap in (17), which I provide one more time, produces the representation in (30). To ensure that the c-command relationship between the licensor and the parasitic gap domain is established, the direct object has moved to some YP that c-commands the XP.

(15) John offended e_1 by not recognizing pg_1 immediately –

[$_{DP}$ his favorite uncle from Cleveland]$_1$.

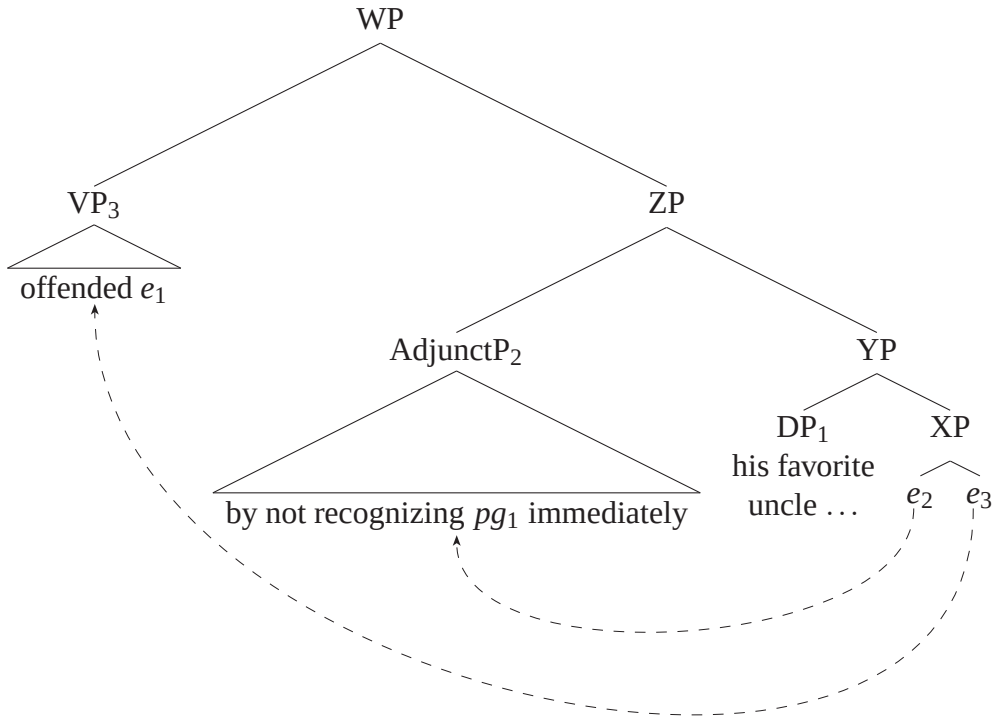
(30)



Of course, on the assertion that c-command translates into linear precedence—an assertion that crucially motivates a remnant movement analysis—both the AdjunctP and the

VP will necessarily undergo additional leftward movement operations. This will produce a representation along the lines of (31).

(31)



This tree is the result of first moving the AdjunctP to some ZP that c-commands the phrase YP containing the shifted DP followed by movement of the VP to some WP that c-commands the ZP containing the derived position of the AdjunctP.

While the linear order of the VP, AdjunctP, and the displaced DP is correct, we find that this representation and its derivation are problematic once we consider examples like those in (32). These examples are HNPS configurations that also have an initial clausal adjunct. As the contrast reveals, a parasitic gap is not licensed in a clausal adjunct that appears clause initially.

(32) a. By not recognizing him immediately

John offended e_1 this afternoon $[_{DP}$ his favorite uncle from Cleveland $]_1$.

b. * By not recognizing pg_1 immediately

John offended e_1 this afternoon $[_{DP}$ his favorite uncle from Cleveland $]_1$.

Let us assume for the sake of argumentation that it is possible for clausal adjuncts to undergo movement. In this case we are learning two particular things from the contrast in (32). First, not only must the movement of the parasitic gap licensor be to a position that c-commands the parasitic gap domain, but the parasitic gap licensor must be in a c-commanding position in the surface representation. We are also learning from the example in (32b) that it is not possible to reconstruct a clausal adjunct for the purpose of licensing a parasitic gap.

Looking back now to the representation in (31) we find that the parasitic gap licensor is not in a position where it c-commands the parasitic gap domain and nor could it be. If it were, it would incorrectly be linearized to the left of the parasitic gap given the assertions of an Antisymmetric syntax. Moreover, we know that covert movement is not an option for satisfying the c-command constraint illustrated by (32) because covert movement does not license parasitic gaps. The last resort, then, is to suggest that the parasitic gap can be licensed by interpreting the parasitic gap domain in its base-position in the scope of the parasitic gap licensor. But, again, based on the examples in (32), we have no reason to think that this provides a means for licensing a parasitic gap. This requirement for movement and subsequent reconstruction of the parasitic gap domain casts doubt on the ability of this analysis to account for parasitic gap constructions involving rightward displacement.[8] This, I suggest, makes a remnant movement account to the rightward displacement phenomenon undesirable.

[8]This presents only one way in which a remnant movement analysis could generate the intended word order. However, any remnant movement derivation assuming an Antisymmetric syntax will suffer from the issues described here. The parasitic gap domain can only proceed the rightward displaced DP if, at some point, it moves to a position c-commanding the rightward displaced DP. The parasitic gap, therefore, can never be c-commanded by its licensor at the appropriate level of representation. For the sake of exposition, I will leave this for the reader to confirm.

2.2.3 Rightward Movement and Parasitic Gaps

In the previous subsections, we saw some issues faced by leftward movement approaches with respect to parasitic gap constructions that involve rightward displacement. The stranding analysis from Kayne (1994) and the predicate raising analysis from Larson (1988, 1989) both fail to capture the fact that the licensing of a parasitic gap correlates strongly with the application of $\overline{\text{A}}$-movement. This is a property of parasitic gaps that fits in naturally with rightward movement approaches to HNPS. Recall that for Engdahl (1983) the instance of rightward displacement we see in (33) is an instance of rightward $\overline{\text{A}}$-movement.

(33) John offended e_1 by not recognizing pg_1 immediately

[his favorite uncle from Cleveland]$_1$.

The predicate raising analysis also suffered from Nissenbaum's (2000) observation that rightward displacement of the arguments of embedded predicates require stipulating a non-local relationship between the argument and its selecting predicate. A rightward movement approach does not entirely overcome this issue. It may not have escaped the reader's attention that the example in (23), which I have provided below, is exceptional from the point of view of the usual locality constraints on rightward movement. We know from the discussion in section 2.1.1 that rightward displacement appears to be a clause-bounded operation. Therefore, it will be necessary on a rightward movement approach to stipulate for the time being that rightward movement can escape its containing clause, contra the Right Roof Constraint, at least under certain circumstances.

(23) I claimed that I liked e_1 in order to get you to rent pg_1 –

[$_{\text{DP}}$ that movie with Fred Astaire and Audrey Hepburn]$_1$.

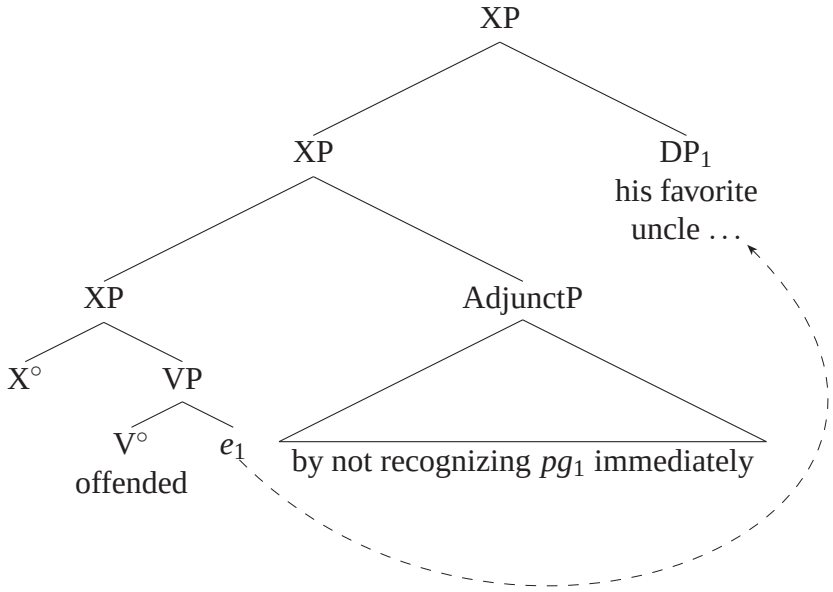
In the next chapter I will argue that it is precisely when there is a parasitic gap that we get the type of exceptional rightward movement illustrated in (23). Therefore, what appears to

be a stipulation at this point will become a principled exception to the locality constraints on rightward displacement.

Remnant movement approaches were argued to suffer from a need to move a parasitic gap domain for the purpose of linearization but interpret a lower copy to satisfy a c-command constraint on parasitic gap licensing. It turns out that this will also be an issue for the predicate raising analysis. The parasitic gap domain contained in the reanalyzed $\overline{\text{V}}$ must somehow be interpreted in a position where it is c-commanded by the licensor of the parasitic gap.

This is an issue that we avoid on the rightward movement approach. Consider the representation in (34) that we derive given the option of right adjunction. (I will remain vague for the time being concerning the identity of the phrase I have labelled as XP.)

(34)



In this representation we have $\overline{\text{A}}$-moved the DP and right adjoined it to the verbal spine. By allowing the phrase marker to be linearized as shown, we produce the intended word order of the VP, the AdjunctP, and the displaced DP. In addition, because the parasitic domain remains in-situ, we straightforwardly capture the observations above that the parasitic gap licensor c-commands the parasitic gap domain at the surface representation and reconstruction of the parasitic gap domain becomes a non-issue.

It is largely on the basis of parasitic gap licensing that I will promote a rightward movement approach to HNPS configurations. However, as I have already noted above, the recourse available for proponents of leftward movement analyses is to assert that apparent parasitic gaps induced by rightward movement are instead the product of the same mechanism that is responsible for deriving RNR constructions. The availability of this alternative all but removes the teeth of the objections presented above. A failure to derive parasitic gap constructions is not problematic if there are no parasitic gap constructions induced by rightward displacement. In the following section I will argue that RNR cannot be considered a viable alternative to every apparent instance of rightward movement and parasitic gap licensing. In this way, I try to reinforce the bite of the argumentation that has been presented so far.

2.3 Rightward DP-Movement Licenses Parasitic Gaps

Parasitic gap constructions form part of a larger set of displacement constructions that we can refer to as *dependent gap structures*, whose defining property is that the presence of at least one of the gap sites is dependent on the presence of another gap site. Among the members of this class are the now familiar rightward displacement constructions shown in (35) and (36). I will distinguish these structures respectively as *coordinate gap* structures and *adjunct gap* structures.[9]

[9] Also among the class of dependent gap structures are leftward displacement phenomena such as so-called Across-the-Board extractions (i) and parasitic gap constructions induced by leftward movement (ii), both of which were originally discussed by Ross (1967).

(i) [Whose uncle]$_1$ did you see e_1 and not immediately recognize e_1?

(ii) [Whose uncle]$_1$ did you offend e_1 by not immediately recognizing pg_1?

I will return to these structures briefly in the summary of this chapter. See Postal (1993) for a comparative examination of these particular dependent gap structures and Hornstein & Nunes (2002) for a proposed account of their differences.

(35) *Coordinate gap structure*

a. You saw e_1 and immediately recognized e_1 – [my favorite uncle from Cleveland]$_1$.

b. $[[_{Conj} \ldots e_1 \ldots]$ and $[_{Conj} \ldots e_1 \ldots]] - \mathrm{XP}_1$

(36) *Adjunct gap structure*

a. You offended e_1 by not immediately recognizing e_1 –
[my favorite uncle from Cleveland]$_1$.

b. $[_{Matrix} \ldots e_1 \ldots [_{Adjunct} \ldots e_1 \ldots]] - \mathrm{XP}_1$

The mechanism standardly taken to be responsible for the derivation of coordinate gap structures was originally discussed by Ross (1967) and has gone by the name Right Node Raising since Postal 1974. Various mechanisms have been proposed for the derivation of RNR including backward deletion/ellipsis (Ross 1970, Wexler & Culicover 1980, Hartmann 2000, Abels 2004, Bošković 2004, Ha 2008), Across-the-Board extraction (Maling 1972, Bresnan 1974, Postal 1974, 1998, Sabbagh 2007), and multidomination (McCawley 1982, Blevins 1990, Phillips 1996, Wilder 1999, Johnson 2007, Bachrach & Katzir 2009).[10]

Since Engdahl (1983) it has been common to analyze adjunct gap structures as the product of the same mechanism responsible for parasitic gap licensing (PG-licensing) of the type we are familiar with from examples such as (37). Typical analyses for PG-licensing include Across-the-Board extraction (Ross 1967, Williams 1990, Munn 1992), treating the parasitic gap as a bound null-pronominal (Kayne 1983, Cinque 1990, Frampton 1990, Postal 1993), and null-operator analyses (Contreras 1984, Chomsky 1986, Browning 1987, Nissenbaum 2000). Other analyses have been proposed as well including multidomination (Kasai 2010) and sideward movement (Nunes 2001, 2004).[11]

(37) [Whose uncle]$_1$ did you offend e_1 by not immediately recognizing pg_1?

[10]For the purposes of the present argument, I will mostly set aside the issue of which mechanism (or mechanisms; see Barros & Vicente 2011 but cf. Larson 2012) are or are not behind RNR.

[11]See Culicover (2001) for an extensive review and discussion of the properties of parasitic gaps and analyses for them.

Importantly, what has often been taken to be true is that unique mechanisms are responsible for each of (35) and (36).[12] Postal (1994) challenges this idea directly by arguing that adjunct gap structures are in fact the product of the same RNR operation that derives coordinate gap structures.

With a focus on data involving rightward DP-movement past a clausal adjunct with a dependent gap, I will argue against Postal's (1994) conclusion. In section 2.3.1 we will review the evidence and argumentation in Postal 1994. We will see that the strongest conclusion that can be reached from the available evidence is that RNR *can* be employed to derive adjunct gap structures, but not that it *must* derive adjunct gap structures. Section 2.3.2 provides evidence to support this contention. We will see that there are instances where adjunct gap and coordinate gap structures display distinct behavior with respect to properties of RNR. The results of these two sections together reveal that there are at least two mechanisms that can potentially derive adjunct gap structures. Based on the discussion to follow, I will suggest that, in addition to RNR, PG-licensing by HNPS can also be employed to derive adjunct gap structures (Engdahl 1983, Nissenbaum 2000).

2.3.1 On Pseudoparasitic Gaps: Postal 1994

Postal (1994:sec. 2) observes that there are a number of restrictions on the distribution of parasitic gaps (PGs) in leftward movement configurations that fail to constrain the known RNR induced gaps in coordinate gap structures. These properties are summarized in Table 2.1, which is adapted from Postal 1994:92.

[12]Notable exceptions include attempts to provide a pure Across-the-Board extraction analysis to both adjunct gap and coordinate gap structures by Pesetsky (1982), Huybregts & van Riemsdijk (1985), Haïk (1985) and Williams (1990) or a null-operator analysis to both adjunct gap and coordinate gap structures Munn (1992). However, see Postal 1993 for extensive argumentation against such unified analyses.

	PGs	RNR
Subject to categorial restrictions (sec. 2.3.1.1)	yes	no
Subject to the Island Condition (sec. 2.3.1.2)	yes	no
Subject to the Pronominal Condition (sec. 2.3.1.3)	yes	no
Subject to the Passivizability Condition (sec. 2.3.1.4)	yes	no
Subject to the Predicate Nominal Condition (sec. 2.3.1.5)	yes	no

Table 2.1. Properties of dependent gap structures

Postal (1994:sec. 4.2) then investigates whether adjunct gap structures pattern with RNR induced gaps in coordinate gap structures or parasitic gaps. Observing that adjunct gap structures pattern with RNR gaps with respect to the properties in Table 2.1, Postal concludes that the adjunct gap structures under investigation involve RNR and concludes further that all adjunct gap structures are derived via RNR (Postal 1994:80, 96, 111).

The arguments are consistent with the local conclusions Postal reaches that the dependent gap constructions under consideration do not represent parasitic gap constructions. However, as Postal (1994:fn. 32) notes, the larger conclusion that all dependent gap constructions involve RNR is not entailed by the evidence presented. It can only be concluded that it is possible for RNR to generate adjunct gap structures. The following subsections will briefly examine the properties in Table 2.1 before summarizing the results.

2.3.1.1 Categorial Restrictions

Based on parasitic gap research by Emonds (1985), É. Kiss (1985), Koster (1987), Cinque (1990), Frampton (1990), and Postal (1993), the following conditions on parasitic gaps and their antecedents are established in Postal 1994.

(38) *PG=NP*

A [parasitic gap] is an NP.

(Postal 1994:82, (61))

(39) *PG-licensing Restriction (PLR)*

The "licensing" category (the extractee from the position of the true gap) of a [parasitic gap] is an NP.

(Postal 1994:82, (63))

These conditions amount to the statement that both the parasitic gap and the element it is co-indexed with are necessarily of the category NP (or DP within the framework of this thesis following Abney (1987) among others). This is illustrated in (40) while the examples in (41) each show respectively that, in the case of leftward movements known to license parasitic gaps, the displacement of a PP, AP, and VP fails to permit an additional gap.[13]

(40) $[_{DP}$ Whose uncle$]_1$ did you offend e_1 by not recognizing pg_1?

(41) a. * That is the woman $[_{PP}$ to whom$]_1$ I gave my number e_1 without talking pg_1.

b. * $[_{AP}$ How tired$]_1$ did Kim become e_1 because the hike made her pg_1?

c. * It was $[_{VP}$ riding a bike$]_1$ that Sam hated e_1 after he tried pg_1.

The examples below in (42) demonstrate that coordinate gap structures, unlike parasitic gap constructions, are compatible with categories other than NP/DP.

[13]Postal (1994:64) notes that similar facts have been observed by Chomsky (1982), Pesetsky (1982), and Emonds (1985).

(42) a. It appeared to the first officer e_1 but did not appear to the second officer e_1 –

$[_{CP}$ that the suspect was intoxicated$]_1$.

b. They tried to speak e_1 in person but ended up only writing e_1 (letters) –

$[_{PP}$ to the official in charge of frankfurters$]_1$.

c. No one asserted that Bob e_1 or denied that Fred e_1 –

$[_{VP}$ had consumed more beer than was wise$]_1$.

d. Marsha claimed she had long been e_1

but certainly did not appear to me to be e_1 – $[_{AP}$ over 5 feet tall$]_1$.

e. He might learn when e_1 and she might learn where e_1 –

$[_{IP}$ the victims will be buried$]_1$.

(Postal 1994:101)

Consider now the following examples, which are also adapted from Postal 1994:101. These show that adjunct gap structures, like coordinate gap structures, are compatible with categories other than NP/DP. Based on the parallelism between the examples in (40) and (41), Postal (1994) concludes that the examples in (43) are not derived via the mechanism responsible for PG-licensing, but by RNR.

(43) a. Helga mentioned the first problem e_1

without mentioning the second problem e_1 –

$[_{PP}$ to the professor who taught her Greek$]_1$.

b. Helga didn't know he could e_1 before realizing he should e_1 –

$[_{VP}$ help elderly tuberculosis victims$]_1$.

c. Helga was determined to become e_1

even after being told she could never be e_1 – $[_{AP}$ extremely muscular$]_1$.

d. Helga learned when e_1 before learning where e_1 –

$[_{IP}$ the accident had occurred$]_1$.

(Postal 1994:101, (124))

2.3.1.2 The Island Condition

It was first noted by Kayne (1983) that a parasitic gap cannot be contained inside an island that is contained inside of the parasitic domain. This is illustrated by the examples in (44), which show that a parasitic gap cannot be embedded inside of a relative clause island (44a), a wh-island (44b), or an adjunct island (44c).

(44) a. * [Which sandwich]$_1$ wouldn't Sam eat e_1
[after meeting the man [who makes pg_1]]?

b. * This is the sandwich [which]$_1$ Sam won't eat e_1
[because he knows [who makes pg_1]]?

c. * It was Tim [who]$_1$ Pam hired e_1
[because the committee couldn't make a decision [after interviewing pg_1]]?

These facts can be captured by the following statement:

(45) *The Island Condition*
A [parasitic gap] "licensed" by a gap G cannot occur internal to an island Σ not containing G unless Σ is coextensive with the entire parasitic domain.
(Postal 1994:82, (59))

Coordinate-gap structures, on the other hand, were observed by Wexler & Culicover (1980:299–303) to not display the full range of island constraints that are found with familiar instances of leftward movement.[14] The following example is adapted from Wexler & Culicover 1980:301 and shows that the gap in the second conjunct can be embedded inside of a relative clause island.

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[14]This assumes that the requirement for RNR material to be rightmost in each conjunct (the *Right Edge Restriction*; Postal 1974, Wilder 1997b, 1999, Hartmann 2000, Bachrach & Katzir 2009) is satisfied. It has been argued that this requirement can also be satisfied by an application of rightward movement (Wilder 1997b, 1999, Sabbagh 2007, Kluck & de Vries 2013). The acceptability of (48), for example, is assumed to involve rightward displacement of the type shown to be possible in (i) below.

(i) They were supporting e_1 at that time – [his favorite uncle from Cleveland].

I will return to the role of this constraint for dependent gap structures in section 2.3.2.3.

(46) Mary buys e_1 and Bill knows [a man [who sells e_1]] – [pictures of Fred]$_1$.

The additional examples below show that coordinate gap structures also allow for a gap to be embedded in a wh-island (47a) or an adjunct island (47b) in the second conjunct.

(47) a. Tim wants to meet e_1 and Pam knows [who invited e_1] –
[the new deli owner]$_1$.

b. Kim still eats e_1 but Sam left [immediately after trying e_1] –
[the new potato salad]$_1$.

Postal 1994 provides the example in (48) to illustrate the point that adjunct gap structures also do not display the full range of island constraints found with leftward movement. This example in particular shows that the second gap in an adjunct gap structure can be embedded inside of a relative clause island. The additional examples in (49) illustrate further that adjunct gap structures pattern with the coordinate gap structures in generally allowing what should otherwise be a violation of a wh-island (49a) and an adjunct island (49b).

(48) John offended e_1
by not recognizing the people [who were supporting e_1 at that time] –
[his favorite uncle from Cleveland]$_1$.
(Postal 1994:88)

(49) a. Tim was able to meet e_1 because Pam knows [who invited e_1] –
[the new deli owner]$_1$.

b. Kim still ate e_1 [even though Sam left after trying e_1] –
[the new potato salad]$_1$.

Based on these observations, Postal (1994) suggests that the adjunct gap structures here, like coordinate gap structures, must be the result of RNR. Given that the distribution of parasitic gaps is otherwise clearly more restricted, this seems to indeed be true.

2.3.1.3 The Pronominal Condition

Postal (1993), expanding on a suggestion by Cinque (1990), motivates the following constraint on the distribution of parasitic gaps.[15]

(50) *Pronominal Condition*

[Parasitic gaps] cannot occur in positions incompatible with definite pronouns.

(Postal 1994:82, (64))

Postal (1994:83) provides examples to show that both pronouns and parasitic gaps are blocked from so-called "name" positions (51), from the associate position of existential-*there* constructions (52), and from the argument position of inalienable possession PPs (53), all of which also disallow pronouns.

(51) a. He named his camel [Ernie/*it].

b. * [What]$_1$ did he name his dog e_1 after naming his camel pg_1?

(Postal 1994:83, (65))

(52) a. There are [guns/*them] in the cabinet.

b. * [What]$_1$ did he look for e_1 in the closet

without knowing there were pg_1 on the table?[16]

(Postal 1994:83, (66))

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[15]Postal (1993:744–745, 1994:fn. 22) notes that this constraint should be weakened to reference only overt pronouns.

[16]Kyle Johnson (p.c.) notes that this example can be made more acceptable if the extraction gap and the parasitic gap are both in the associate position of expletive-*there* (i).

(i) [What]$_1$ is there e_1 in the cabinet because there shouldn't be pg_1 in the closet?

(53) a. They touched him on [the arm/*it].

b. * [Which arm]$_1$ did they have to immobilize e_1

after accidentally touching him on pg_1.[17]

(Postal 1994:83, (67))

Falling in line with the pattern being established are the following coordinate gap structures in (54). These examples, adapted from Postal 1994:102, suggest that RNR is not subject to the Pronominal Condition.

(54) a. They might have named their dog e_1 and certainly named their camel e_1 –

[something quite unusual]$_1$.

b. There might be e_1 in the first drawer

and there certainly are e_1 in the second drawer –

[the sort of magazines you are looking for]$_1$.

(Postal 1994:102, (125))

The examples in (55) and (56) show that adjunct gap structures, like RNR constructions, are not subject to the Pronominal Condition. The conclusion, therefore, is that they must be derived via RNR and not PG-licensing.

[17] An anonymous reviewer for *Linguistic Inquiry* reports that they do not judge example (53b) as ungrammatical. As they note, this could mean that (55c) and (56c) are not relevant data for evaluating the behavior of adjunct gap structures. An informal judgment study including 5 linguists showed responses that covered the range of "pretty good" to "double question mark" to "rule[d] out". This appears, then, to potentially be an area of variation and a more systematic investigation will be necessary to understand the facts.

(55) a. She named her youngest dog e_1 after naming her oldest camel e_1 –

[exactly what she was told to name them]$_1$.

b. He looked for e_1 in the closet without knowing there were e_1 on the table –

[the kind of magazines you were told to hide]$_1$.[18]

c. They had to immobilize e_1 for several weeks

after the nurse had unintentionally touched him on e_1 –

[the arm he hurt while skiing]$_1$.

(Postal 1994:88, (86))

(56) a. Albert might have cruelly nicknamed one student e_1

without nicknaming the other e_1 – [either Birdbrain or Airhead]$_1$.

b. There can exist e_1 in one department without existing e_1 in another –

[the sort of hostile atmosphere that prevents serious work]$_1$.

c. They might have had to bandage e_1

after touching him on e_1 quite accidentally –

[the only arm he could still use]$_1$.

(Postal 1994:102, (127))

It is not entirely clear what is behind the Pronominal Condition in (50). Postal (1993:744) notes that it is not due to a general ban on extraction out of such positions. Instead, it seems to be a particular restriction on whatever it is that parasitic gaps are. In fact, Postal (1993) takes the Pronominal Condition as evidence that parasitic gaps are pronouns. Regardless, the facts above suggest that the examples in (55) and (56) are derived via RNR, just as Postal (1994) claims.

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[18]A derivation for this structure of the type proposed by Engdahl (1983) in which HNPS licenses the gap in the adjunct clause would be independently ruled out by the inability of HNPS to strand a preposition. See section 2.3.1.6.

2.3.1.4 The Passivizabilty Condition

Postal (1990, 1993) argues for the following condition on the distribution of parasitic gaps.

(57) *The Passivizability Condition*

If an NP alternates with a [parasitic gap], then [that] NP must not be inherently unpassivizable.

(Postal 1994:83, (68))

This captures Postal's claim that environments that are incompatible with the passivization of some NP also strongly resist the presence of a parasitic gap in the position of that NP. The following examples from Postal 1994:84 illustrate.

(58) a. Jerome spoke (in) Serbian to the Turks.

b. Serbian should not be spoken (*in) to Turks.

c. [Which language]$_1$ did he sneer at e_1

shortly after speaking (*in) pg_1 for two hours?

(Postal 1994:84, (69))

(59) a. Trolls died/frolicked under that bridge.

b. That bridge has been *died/frolicked under for years by trolls.

c. [Which bridge]$_1$ did they destroy e_1

after trolls began to *die/frolic under pg_1?

(Postal 1994:84, (70))

(60) a. I watched Barbara faint.

b. * Barbara was watched faint.

c. * [Which dancer]$_1$ did they want to operate on e_1 after watching pg_1 faint?

(Postal 1994:84, (71))

Turning to the examples in (61), which have been adapted from Postal 1994:102, we see that coordinate gap structures are not subject to the Passivizability Condition. However, the

examples in (62) from Postal 1994:103 show again that adjunct gap structures pattern with coordinate gap structures in not showing the same sensitivity to the distributional properties of parasitic gaps.

(61) a. Engineers may speak in e_1 and scientists certainly can speak in e_1 –
[a variety of Western languages]$_1$.

b. Large trolls may die under e_1 and small trolls certainly do die under e_1 –
[the bridge which they built last year]$_1$.
(Postal 1994:102, (128))

(62) a. Such a student may never be permitted to speak (in) e_1
even after repeatedly asking to be permitted to speak (in) e_1 –
[that extremely demanding language]$_1$.

b. One can prove that large trolls are likely to die under e_1
without thereby proving that small trolls will die under e_1 –
[the sort of bridge you are talking about]$_1$.
(Postal 1994:103, (130))

The extent to which the judgments that are presented to support the Passivizability Condition are generalizable is unclear. My intuitions and those of an anonymous reviewer for *Linguistic Inquiry* are that the *die* variant of (59c) and (60c) are acceptable. The *in* variant of the example in (58c) I judge to be ungrammatical, but (63) shows that this sentence is covered by the Pronominal Condition, as Postal (1993:fn. 10) also points out.[19]

(63) Jerome can speak (in) Serbian, although he doesn't like to speak (*in) it.

[19]The example in (58c) could also potentially be ruled as an inability to extract from the complement position of *in* in this construction.

(i) * [Which languages]$_1$ does Jerome speak in e_1?

Moreover, it is true of the anti-pronominal contexts in (51) and (53) that they are also unpassivizable.[20] This is shown in the following examples.

(64) * [Ernie]$_1$ was named his camel e_1.

(65) * [The arm]$_1$ was touched him on e_1.

It is not clear, therefore, that the Passivizability Condition is a constraint that is separate from the Pronominal Condition.

An informal judgment study including 4 participants did little to clarify the situation. One participant accepted each of (58c), (59c), and (60c) while another rejected each of them. The remaining two participants rejected (59c) while at least marginally accepting (58c) and (60c). It would seem, then, that further and more systematic experimental work will be required here. Regardless of the results, it does not affect the argument being made here to grant that this condition exists and that the judgments presented by Postal (1993, 1994) hold. The examples in (61) and (62) would still suggest that RNR is a possible way of deriving adjunct gap structures.

2.3.1.5 The Predicate Nominal Condition

The last of Postal's (1994) conditions on the distribution of parasitic gaps and their licensing element is found in (66). Postal 1994:84–85 provides the examples in (67) and (68) as illustrations.

(66) *The Predicate Nominal Condition*

Neither a parasitic gap nor its "licensing" category can be a predicate nominal.

(Postal 1994:84, (72))

[20]Without a verb there is no passive correlate for the example in (52).

(67) a. They turned into derelicts.

b. [What kind of derelicts]$_1$ did they turn into e_1?

c. * [What kind of derelicts]$_1$ did they analyze e_1

after their children turned into pg_1?

d. * [What kind of derelicts]$_1$ did they turn into e_1

after their children analyzed pg_1?

(Postal 1994:84, (73))

(68) a. Slaves make good cannibal snacks.

b. [What kind of cannibal snacks]$_1$ did those slaves make e_1?

c. * [What kind of cannibal snacks]$_1$ did the cannibal look for e

after hearing that young slaves made pg_1?

d. * [What kind of derelicts]$_1$ were all those slaves who discussed e_1

expected to make pg_1?[21]

(Postal 1994:84–85, (74))

Providing the examples in (69), Postal (1994:103) shows that the displacement operation in coordinate gap structures is not subject to this condition.

(69) a. Melvin may have become e_1 and Jerome certainly did become e_1 –

[a highly competent linguist]$_1$.

b. She wanted to turn into e_1 and did turn into e_1 – [a ruthless executive]$_1$.

(Postal 1994:103, (131))

The examples adapted from Postal (1994:88–89) in (70) are intended to show that adjunct gap structures, too, are not subject to the Predicate Nominal Condition.

[21]This example is ruled out independently as a violation of the subject island constraint and relative clause island constraint in the case that extraction is from the first gap. In the case that extraction is from the second gap, the parasitic gap inside the subject should sill incur a violation of the relative clause island constraint.

(70) a. They only determined to analyze e_1

right after their children turned into e_1 –

[the sort of derelicts who cause such problems in our cities]$_1$.

b. They ended up turning into e_1 not long after their children analyzed e_1 –

[the sort of derelicts who cause such problems in our cities]$_1$.

c. The cannibal only decided to consume e_1

after hearing from you that certain slaves made e_1 –

[just that sort of high protein cannibal snack]$_1$.

d. Those slaves [ended] up making e_1

even though it had been denied that they ever would make e_1 –

[just that sort of high protein cannibal snack]$_1$.

(Postal 1994:88–89, (88))

Again, the nature of the Predicate Nominal Condition is not entirely clear at this time. Examples (67b) and (68b) show that it is not a ban on extraction. Whatever the source of this condition might be, the acceptability of the examples in (70), in conjunction with the behavior of coordinate gap structures in (69), suggest that RNR is able to target adjunct gap structures.

2.3.1.6 Preposition Stranding

In section 4.4 of Postal 1994, some additional facts related to observations made by Williams (1990) are discussed.[22] Most relevant for our purposes is the contrast in (71), which originally appeared in Williams 1990:267, but is adapted here from Postal 1994:104.

(71) a. * I talked to e_1 yesterday – [all the members who voted against Hinkly]$_1$.

b. I talked to e_1 without actually meeting pg_1 –

[all the members who voted against Hinkly]$_1$.

(Postal 1994:104, (135))

This contrast is interesting for the observation in Ross 1967 that Heavy-NP Shift in (71a) resists preposition stranding. However, as (71b) illustrates, the adjunct gap structures of interest do not show the same resistance to preposition stranding. The argument, then, is that we should expect to observe a resistance to preposition stranding if (71b) employs HNPS. Sine this expectation is not realized, it does not appear that (71b) is derived with an application of HNPS.

Ross (1967) also noted that coordinate gap structures involving RNR do not show this same resistance to preposition stranding (72).

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[22]The second half of section 4.4 of Postal 1994 is an argument against an Across-the-Board (ATB) extraction analysis of parasitic gaps. Because it is not immediately relevant to the points being made here, I will not include it in the present discussion. An argument presented there that is worth briefly mentioning, however, is based on the following contrast from Williams (1990:267), which has been adapted here from Postal 1994:105.

(i) a. I met e_1 yesterday without really having the chance to talk to pg_1 – [all your friends]$_1$.

b. I met e_1 yesterday – [all your friends]$_1$ without really having the chance to talk to them$_1$/*pg_1.

(Postal 1994:105, (137))

Williams (1990) takes these examples to show that ATB extraction and not Heavy-NP Shift licenses parasitic gaps. It is not made clear in Williams 1990 which theory of PG-licensing or RNR would be expected to permit such examples. Potentially a series of leftward movements as in Larson 1989, Kayne 1994, or Rochemont & Culicover 1997 would be expected to derive examples like (ib.). Regardless, as Postal 1994:105 argues, the parasitic gap variant of (ib) violates the "invariant property" of RNR that the displaced constituent must appear to the right of both gaps. For proponents of a PG-licensing analysis, the exact same thing can be said. It is simply a fact of PG-licensing that the displaced element must appear to either the left or right of both gaps. See Nissenbaum 2000:ch. 2 for a discussion and an account of such facts. I will return to these structures briefly in section 3.6.1 of chapter 3.

(72) I talked to e_1 but Kim dined with e_1 – [all the members who voted for Hinkly]$_1$.

For Williams (1990, 1995:156) and Postal (1994), this observation suggests that adjunct gap structures, too, are derived via RNR. This is as opposed particularly to a mechanism that employs HNPS.[23]

2.3.1.7 Interim Summary

At the beginning of this section, we asked whether any two linear strings schematized as below are always derived via RNR or if some other derivational mechanism, like PG-licensing, could be available for the adjunct gap structures.

(73) *Coordinate-gap structure*

$[[_{Conj} \ldots e_1 \ldots]$ and $[_{Conj} \ldots e_1 \ldots]] - \mathrm{XP}_1$

(74) *Adjunct-gap structure*

$[_{Matrix} \ldots e_1 \ldots [_{Adjunct} \ldots e_1 \ldots]] - \mathrm{XP}_1$

The data included in Postal 1994, which was reviewed in the preceding subsections does not provide the type of evidence necessary to confidently make any claims in this regard.

From the discussion of the properties included in Table 2.1, what has been demonstrated is that RNR can apparently be employed to derive adjunct gap structures like (74), partic-

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[23]The resistance that HNPS displays with regard to preposition stranding is interesting for the fact that leftward movement in English is well-known to permit preposition stranding (i).

(i) Who$_1$ did you talk $[_{PP}$ to e_1] yesterday?

This is a particularly salient difference between leftward and rightward movement that is left unaccounted for in this thesis. At present, I cannot offer any particularly revealing insights about why such a difference should exist beyond what one might find in Drummond et al. 2010 and the references provided there.

However, Rajesh Bhatt (p.c.) pointed out interesting examples like those in (ii), which I and the native speakers I have consulted judge to be acceptable.

(ii) I stood near e_1 after giving pg_1 a present – [my best friend from college]$_1$.

In light of the discussion below in section 2.3.2.3 and section 2.4, one might conclude from this example that preposition stranding is possible in the case that it results in the binding of a parasitic gap. Looking ahead even further to chapter 3, if preposition stranding is possible in the context of rightward movement particularly when this movement licenses a parasitic gap, there is reason to think that the general inability of rightward movement to strand a preposition is a symptom of the locality conditions on HNPS. That being said, the caveats proffered in section 2.5 of this chapter apply here as well.

ularly when a PG-licensing derivation is somehow precluded. The evidence necessary to make the conclusion that adjunct gap structures must be derived via RNR would be either that parasitic gaps never appear in adjunct gap structures or that RNR is the only available mechanism in the derivation of adjunct structures. In the absence of this (or some other equally sufficient) evidence, then the intended conclusion is not entailed. The following section will validate this contention by providing evidence that the configuration in (74) can be derived by a strategy other than RNR.

2.3.2 Parasitic Gap Licensing, Not Right Node Raising

Three different arguments are provided in this section that demonstrate the distinct behavior of coordinate gap structures and adjunct gap structures. The first in section 2.3.2.1 is a syntactic argument based on derived island effects discussed in Wexler & Culicover 1980. Section 2.3.2.2 provides a semantic argument regarding the possible readings of the relational adjectives *different* and *again* based on observations by Jackendoff (1977) about RNR. And, finally, the third argument in section 2.3.2.3 is phonological in nature showing differing requirements on order preservation (e.g., Wilder 1995).

Assuming that the facts and the interpretation of them presented here are correct, they require us to reject the hypothesis that adjunct gap structures and coordinate gap structures are categorically derived via a single mechanism. It must be concluded that it is in principle possible for adjunct gap structures to be derived via a mechanism other than RNR.

2.3.2.1 Derived-Island Effects

Wexler & Culicover (1980:278) observed that a DP that has undergone HNPS becomes a derived island. They attribute this to the claim that the DP has undergone movement and, as a result, is subject to their Freezing Principle, which makes it inaccessible for subextraction. This is illustrated by the contrast below. While subextraction is acceptable out of the direct object when it is in-situ (75a), subextraction becomes unacceptable once it is displaced rightward as in (75b).

(75) a. Who$_1$ did Sam steal an autographed picture of e_1 yesterday?

b. * Who$_2$ did Sam steal e_1 yesterday – [an autographed picture of e_2]$_1$?

Recall from the discussion in section 2.3.1.2 that RNR constructions have been observed to not display the full range of island constraints that are found with familiar instances of leftward movement (Wexler & Culicover 1980). The derived island effect illustrated above is another one of the island constraints that RNR is able to violate (Wexler & Culicover 1980:299–300).[24] In (76), even with the rightward displacement of the direct object, subextraction out of it is still possible.

(76) Who$_2$ did Kim steal e_1 and Pam buy e_1 – [an autographed picture of e_2]$_1$?

Interestingly, adjunct gap structures pattern with HNPS and not RNR with respect to the derived island constraint. The relevant contrast is between (76) and (77) below.[25] The examples in (78) and (79) serve to show that this is a general pattern.

(77) * Who$_2$ did Kim steal e_1 because she couldn't afford e_1 –
[an autographed picture of e_2]$_1$?

(78) * Who$_2$ did Pam develop e_1 in order to display e_1 –
[an embarrassing picture of e_2]$_1$?

(79) * Who$_2$ did Tim burn e_1 after finding e_1 – [an incriminating picture of e_2]$_1$?

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[24]See Bachrach & Katzir (2009) for a discussion and an account of the variability of derived island effects observed in Right Node Raising configurations.

[25]Note that the source example for (77) is grammatical with the exception of the decrease in acceptability that results from the repeated-name penalty associated with having two instances of the same DP. This effect can be ameliorated by placing contrastive focus (indicated by capital letters) on the verb in each conjunct.

(i) Who$_1$ did Kim STEAL an autographed picture of e_1
because she couldn't AFFORD an autographed picture of e_1.

Because (77)–(79) display the properties associated with HNPS and not with RNR, we can conclude at least that they are not derived via RNR. Because they show properties consistent with HNPS, there is reason to think this could be the responsible mechanism.[26]

2.3.2.2 Relational Adjectives

Carlson (1987) describes a relational adjective like *same* or *different* as providing an implicit comparison between two things. Always available is a reading of these adjectives sketched in (80a) in which they establish a so-called *sentence-external* point of comparison. When a relational adjective can take some distributively interpreted NP or VP in its semantic scope, a "sentence-internal" point of comparison becomes available (80b) (cf. *Sam read the same book*).[27]

(80) Sam and Kim read the same book.

a. *sentence-external*

[Sam read [the same book *x*] and Kim read [the same book *x*]]

'Sam and Kim read the same book that someone else read.'

b. *sentence-internal*

[the same book *x*] [Sam read *x* and Kim read *x*]

'Sam and Kim read the same book that the other one read.'

Jackendoff (1977:192–194) observes that a sentence-internal reading is available for a relational modifier in the displaced DP of a coordinate gap structure (81).[28] This is

[26]It has recently come to my attention that Nakamura (1993) looks at similar effects. Unfortunately, because this paper is in Japanese, I am unable to read it and can only report it as cited by Mimura (2009).

[27]See Beck (2000) and Barker (2007) and the references therein for further discussion of the general phenomenon.

[28]These facts have also been discussed by Hartmann (2000), Abels (2004), Sabbagh (2007), and Ha (2008), among others. See Hartmann (2000) in particular for discrepancies with the judgments reported here for coordinate gap structures and different conclusions.

independent of the shape of the modified NP and, as Sabbagh (2007:370) notes, despite the fact that this reading is absent from the source structure in (82).

(81) Sam bought e_1 and Kim bought e_1 – [a different book about Bengal tigers]$_1$.

'Sam and Kim each bought a different book about Bengal tigers than the other.'

(82) Sam bought a different book about Bengal tigers and Kim bought a different book about Bengal tigers.

$\neq$ 'Sam and Kim each bought a different book about Bengal tigers than the other.'

Turning now to adjunct gap structures, we find that they pattern differently from coordinate gap structures with respect to relational modifiers. The examples below permit only the sentence-external reading of the relational modifier in the displaced DP.

(83) Sam bought e_1 after Kim bought e_1 – [a different book about Bengal tigers]$_1$.

a. *sentence-external*

'a book different than the book someone else bought.'

b. * *sentence-internal*

'a book different than the book the other bought.'

(84) Pam didn't make e_1 so that Tim could make e_1 – [the same dessert for the party]$_1$.

a. *sentence-external*

'a dessert the same as the one someone else made'

b. * *sentence-internal*

'the same dessert that the other one made'

(85) Al wore e_1 because Pat wore e_1 – [a different safari hat]$_1$.

a. *sentence-external*

'a hat different than the hat someone else wore'

b. * *sentence-internal*

'a hat different than the hat the other one wore'

Because the examples in (83)–(85) display different behavior than coordinate gap structures, we are licensed to conclude that adjunct gap structures and coordinate gap structures are not categorically derived via the same mechanism.

2.3.2.3 Dative Extraction Asymmetry

Finally, it has often been claimed that RNR is subject to a constraint that requires the displaced element to be the rightmost element in each conjunct before RNR can apply (Postal 1974, Wilder 1995, 1997b, 1999, Hartmann 2000). This constraint has come to be formalized as the Right Edge Restriction, which is provided in (86).

(86) *Right Edge Restriction*

In the configuration:

$[_A \ldots X \ldots] \ldots [_B \ldots X \ldots]$

X must be rightmost within *A* and *B* before *X* can undergo RNR.

(adapted from Sabbagh 2007:355)

Wilder (1995:288–289) argues that this constraint accounts for the contrast we find in (87). These examples pivot on the argument structure of the ditransitive verb in the second conjunct. With the PP frame in (87a), the gap position in each conjunct is rightmost, meaning that the Right Edge Restriction can be satisfied and RNR is licensed. Given the double-object frame (87b), however, the Right Edge Restriction is not satisfied and RNR results in ungrammaticality.[29]

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[29] An anonymous reviewer for *Linguistic Inquiry* points out that a few of the examples provided by Postal 1994 are potentially problematic for the claim that RNR is constrained by the Right Edge Restriction in (86). The most promising counter-example can be found in example (125c) of Postal 1994:102 (a similar example is also found in example (99c) on page 91). I have chosen to suppress this example until this point so that it could be discussed in the appropriate theoretical context, but it is provided now in (i). Important for us is that this example is presented as grammatical in Postal 1994 but it does not satisfy the Right Edge Restriction.

(i) The doctor might have touched him on e_1 accidentally
and the nurse certainly did touch him on e_1 deliberately –
$[$his injured but still functional right arm$]_1$.
(Postal 1994:102, (125c))

(87) a. Tim met e_1 and gave a present to e_1 – [his best friend]$_1$.

b. * Tim met e_1 and gave e_1 a present – [his best friend]$_1$.

Turning to adjunct gap structures again, we find that the contrast between the two ditransitive frames in (88) is significantly reduced if not entirely lost.

(88) a. Tim met e_1 in order to give a present to e_1 – [his best friend]$_1$.

b. Tim met e_1 in order to give e_1 a present – [his best friend]$_1$.

Most revealing is the contrast between (87b) and (88b). In neither example is it the case that both gap positions are rightmost in their respective domains as the Right Edge Restriction requires. Yet, the adjunct gap structure in (88b) is grammatical while the coordinate gap structure in (87a) is ungrammatical. The additional examples in (89) and (90) are intended to establish the generality of this pattern. They show the same contrast between adjunct gap structures and coordinate gap structures when the relevant gap is in a double-object frame.[30]

Moreover, working under the hypothesis that movement can feed RNR (Sabbagh 2007, Kluck & de Vries 2013), the contrast in (ii) suggests that there is not a licit instance of rightward movement that would result in the satisfaction of the Right Edge Restriction. As we saw in section 2.3.1.6, rightward DP-movement resists preposition stranding and does so in this example as well.

(ii) a. The nurse touched e_1 deliberately – [his injured but still functional right arm]$_1$

b. * The nurse touched him on e_1 deliberately – [his injured but still functional right arm]$_1$

In an informal judgment study including 6 linguists, every participant reported the contrast presented in (ii). Every participant also reported that (i) strongly contrasts with the control in (iii) below and noted that (i) is in fact ungrammatical.

(iii) The doctor might have touched e_1 accidentally
and the nurse certainly did touch e_1 deliberately – [his injured but still functional right arm]$_1$

These results suggest that (i) is not a counter-example to the Right Edge Restriction. Instead, the contrast that we observe between (i) and (iii) actually provides evidence for the Right Edge Restriction and the claim that it can be fed by rightward movement. When HNPS of the type observed in (iia.) is available, RNR is licensed (iii). When such movement is unavailable (iib.), RNR is not possible (i).

[30] An anonymous reviewer for *Linguistic Inquiry* notes that they do not find any of the adjunct gap structures in (88b), (89b), or (90b) to be grammatical. I acknowledge that such examples are degraded in isolation. They are complex sentences with specific information-structural requirements that are difficult to accommodate in out-of-the-blue contexts. It is for this reason that the argument must be evaluated on the basis of the minimal pair that each forms with its coordinate gap counterpart. I have found in informal judgment studies that linguists and non-linguists clearly perceive the contrast reported here. Furthermore, those who originally

(89) a. * Sam interviewed e_1 and showed e_1 his secret laboratory – [the new graduate students]$_1$.

b. Sam interviewed e_1 before showing e_1 his secret laboratory – [the new graduate students]$_1$.

(90) a. * Kim surprised e_1 and offered e_1 a raise – [every new employee]$_1$.

b. Kim surprised e_1 by offering e_1 a raise – [every new employee].

I interpret this contrast as evidence that coordinate gap structures are subject to the Right Edge Restriction but adjunct gap structures are not. This provides another case in which adjunct gap structures and coordinate gap structures display distinct behavior. This case is especially informative as a constraint (viz., the Right Edge Restriction) believed to limit the application of RNR is not operative in the generation of adjunct gap structures. This suggests that all coordinate gap structures are derived via RNR but that at least some adjunct gap structures are not derived via RNR.

Before ending this subsection it is worth addressing the observation by Wilder (1997b, 1999), Sabbagh (2007), and Kluck & de Vries (2013) that rightward movement is able to feed the Right Edge Restriction. In light of this, one concern with the argument being presented might be that an application of HNPS internal to the adjunct clause in the adjunct gap structures above is feeding an application of RNR. One reason to think that this is not the case lies in an observation that goes back to at least Ross (1967:59) that HNPS is unable to target the first object of the double-object construction (91).

(91) * Sam gave e_1 a present yesterday – [his best friend]$_1$.

It is this fact that both blocks the application of RNR in coordinate gap structures and rules out its application in adjunct gap structures.

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reject the adjunct gap structures invariably accept them after exposure to the coordinate gap structures. In the next section we will see experimental evidence that confirms the intuitions reported here.

2.4 Experiment 1: The Domain of the Right Edge Restriction

It was noted briefly in footnote 30 above that the judgments surrounding the constructions of interest are delicate, at the very least. The constructions we are examining in the previous section and which we will examine later in the thesis are relatively rare and complex structures. Furthermore, their felicity depends on relatively poorly understood discourse requirements. (Although see section 2.6.2 below.) It seems to be true more generally in the domain of rightward displacement that native speaker intuitions are variable and sometimes difficult. Judgments about rightward displacement constructions more often fall on a continuum of relative acceptability or preference as opposed to fitting into categorical bins of grammaticality and ungrammaticality.

This fact exacerbates the potential challenge the theoretical linguist faces when building grammatical models on the basis of intuitive judgements. As Gibson & Fedorenko (2013) argue, we run the risk of developing theories on the basis of false generalizations or false empirical claims unless we embrace more systematic quantitative methods. This is not to say that there is no place for intuitions. In a response to Gibson & Fedorenko 2013 Sprouse & Almeida (2013) argue that intuitive judgments have largely proven to be a reliable source of empirical data for grammatical theorizing.[31] However, given both the theoretical importance of the empirical claims regarding the Right Edge Restriction in section 2.3.2.3 and the particular delicacy of the judgments regarding the constructions of interest, this section will present the quantitative results of an experimental investigation. In this way, we may be more confident moving forward that we have properly described the data and that the subsequent theorizing in chapter 3 is not misguided.

An acceptability judgment study was designed to test the hypothesis that coordinate dependent gap structures are derived via RNR and adjunct dependent gap structures may be derived via separate mechanisms. If this is correct, we predict in the same way as above that

[31] Gibson et al. (2013) provide a reply to Sprouse & Almeida 2013. See the references cited in each of these works for further relevant discussion.

coordinate dependent gap structures, but not adjunct dependent gap structures, are sensitive to the Right Edge Restriction. The empirical predictions follow the same logic that we saw in the previous subsection. We expect to find that a dependent gap in the double-object frame, but not in the PP frame, will result in a greater decrease in acceptability given a coordination structure than it will given an adjunction structure as in (87b) and (88b). As we will see below, this experiment was also designed to ensure that this pattern, if observed, could be attributed to the creation of a dependent gap site. The experiment included a set of control condition in which there is no rightward displacement. We should expect to observe in these control conditions that the contrast between ditransitive frames in coordination and adjunct structures is neutralized.

2.4.1 Participants

Sixty-four native speakers of English were recruited for the study using Amazon Mechanical Turk, a web-based service for crowd-sourcing tasks.[32] Only participants with a minimum 95% success-rate on a minimum of 100 tasks were accepted for participation. To prevent evaluating data from non-native speakers, participation was restricted to IP addresses in the United States and participants were asked to report their language abilities. Three participants reported a native language other than English. The data from these participants were removed and replaced. Another participant's data was replaced on suspicion of not properly attending to the task. Participants ranged in age from 18 to 73 with an average age of 36.0 years and a median age of 32.0 years. Of the 64 participants, 42% were female and 58% were male.

2.4.2 Materials

The materials consisted of 16 items distributed across 8 lists in a fully crossed $2\times2\times2$ design that included the factors *Structure*, *Frame*, and *Situ*. A full example item is provided

[32] Amazon Mechanical Turk can be accessed at: https://www.mturk.com

in (92) and a full list of the experimental items can be found in Appendix A. The factor Structure refers to whether the item had an adjunct dependent gap structure (92a) or a coordinate dependent gap structure (92c). Items differing on the dimension of Frame had the dependent gap position presented in either the Double-Object (DO) frame (92a) or the Prepositional Phrase (PP) frame (92b). Finally, the factor Situ provided a set of controls that presented the shared DP either Ex-situ (92a) or In-situ (92e).

(92) a. *Adjunction / Double-Object / Ex-situ*

No judge should contact, in order to give his scoresheet,

the contestants in this month's competition.

b. *Adjunction / Prepositional Phrase / Ex-situ*

No judge should contact, in order to give his scoresheet to,

the contestants in this month's competition.

c. *Coordination / Double-Object / Ex-situ*

No judge should contact, and give his scoresheet,

the contestants in this month's competition.

d. *Coordination / Prepositional Phrase / Ex-situ*

No judge should contact, and give his scoresheet to,

the contestants in this month's competition.

e. *Adjunction / Double-Object / In-situ*

No judge should contact the contestants in this month's competition,

in order to give his scoresheet.

f. *Adjunction / Prepositional Phrase / In-situ*

No judge should contact the contestants in this month's competition,

in order to give his scoresheet to.

g. *Coordination / Double-Object / In-situ*

No judge should contact the contestants in this month's competition,

and give his scoresheet.

h. *Coordination / Prepositional Phrase / In-situ*

No judge should contact the contestants in this month's competition,

and give his scoresheet to.

All experimental items included commas setting off the second conjunct or adjunct phrase in exactly the way shown in (92). This was intended to relieve on-line processing difficulty and to help participants assign the intended prosody.

A concern with this experimental design was that it does not guarantee for the DO conditions in particular that participants would not interpret the adjunct clause or the second conjunct as a parenthetical with an implicit Goal/Recipient argument.[33] This strategy would effectively provide a means for bypassing any requirement to assign a dependent gap interpretation to these structures (viz., the Revised Larson's Generalization and Ross's (1967) *Coordinate Structure Constraint*) and complicate the interpretation of the results; any effects that are observed could not confidently be attributed to the creation of a dependent gap. Several steps were taken to discourage participants from this type of alternative analysis.

First, the ditransitive verb was always either *give* or *tell*, which were distributed equally among the 16 items. These verbs were chosen for their general relative dispreference for appearing with an implicit Goal/Recipient as well as their strong bias toward appearing in the DO frame. According to the corpus database of ditransitive constructions compiled by Bresnan et al. (2007), *give* appears in the DO frame in %84.6 of its 1,666 occurrences and *tell* appears in the DO frame in %95.3 of its 128 occurrences. These properties were

[33]See Dubinsky (2007) for argumentation that parasitic gaps are not licensed in parenthetical material by $\overline{\text{A}}$-movement in the matrix clause.

intended to encourage participants to incorporate a displaced DP into the potential gap position and, thus, posit a dependent gap when possible.[34]

The second step was an attempt to block the possibility of treating the adjunct clauses and second conjuncts as a parenthetical. To do this, the theme argument in the adjunct clause or second conjunct always contained a variable that was intended to be bound by a quantificational matrix subject (e.g., *No judge … his scoresheet* in (92)). The example in (93), which has been adapted from Potts (2002:664), demonstrates that variable-binding into a parenthetical is not possible.

(93) * No hiker$_1$ was, as she$_1$ admitted, prepared for the freezing temperatures.

Additionally, a negative quantifier was always used in the experimental items given their general inability for telescoping.

Finally, the In-situ conditions were added to act as controls for the Ex-situ conditions. Presumably, participants would not posit a dependent gap in the adjunct clause or second conjunct of these structures seeing as this is disallowed by the grammar. In as far as the In-situ conditions are acceptable, participants would be required to posit an implicit Goal/Recipient. Therefore, In-situ conditions will reveal the acceptability patterns that we should observe in the case that participants are not constructing dependent gap structures in the Ex-situ conditions. It is from this that we get the prediction that, if the relevant interaction between Structure and Frame emerges, we should find it only in the Ex-situ conditions.

2.4.3 Procedure

After providing informed consent, participants clicked on a link that took them to the on-line experiment presentation tool Ibex Farm where the experimental items were pre-

[34] Although, within an eye-tracking paradigm Staub et al. (2006) demonstrate for HNPS that participants would only form an early expectation for an HNPS structure when a verb that obligatory takes a direct object is followed by something other than a DP.

sented.[35] Participants were told that they would be reading sentences and evaluating their acceptability as sentences of English. They then received a short guided practice for using a 7-point Likert-scale where 1 corresponded to “Completely Unacceptable” and 7 corresponded to “Completely Acceptable”.

The items were presented in a Latin-square design and were randomly distributed among 38 filler items. The filler items had a large proportion of sentences with a non-canonical word order including passive and cleft constructions. A total of 6 items were designed to be ungrammatical by including an island violation, a case assignment problem, a violation of a selectional restriction, or having non-English word-order. The Likert-scale with the corresponding scale values were presented along with each item, which was always presented on a single line. The experiment took an average of approximately 14 minutes to complete and participants received $0.50 in compensation upon completing the task.

2.4.4 Results

The mean naturalness rating for each condition is presented graphically in Figure 2.1 and numerically in Table 2.2.

[35] Ibex Farm was developed by Alex Drummond and can be accessed at: http://spellout.net/ibexfarm/.

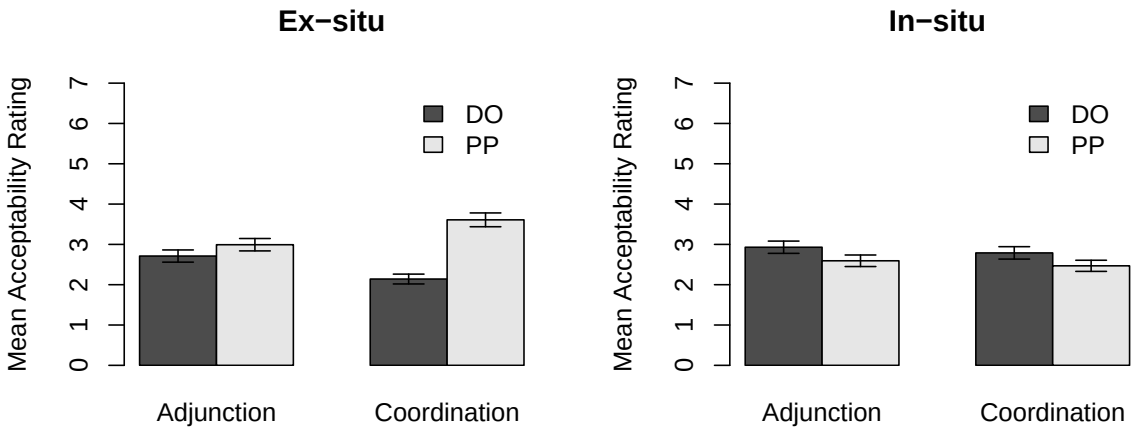

Figure 2.1. Mean acceptability by condition with standard error bars for Exp. 1

	Ex-situ		In-situ	
	Adjunction	Coordination	Adjunction	Coordination
DO	2.72 (0.15)	2.11 (0.12)	2.84 (0.15)	2.84 (0.16)
PP	2.93 (0.15)	3.54 (0.17)	2.65 (0.14)	2.44 (0.14)

Table 2.2. Mean acceptability by condition with standard error for Exp. 1

The data were analyzed using a linear mixed-effects (LME) regression model (Baayen et al. 2008) with the `lme4` package (Bates et al. 2014) in the statistical computing environment R, version 3.2 (R Core Team 2015). The fixed effects of Structure, Frame, and Situ, as well as their interactions, were included as predictors and centered around 0 (Adjunction/DO/Ex-situ = 1). Both subjects and items, as well as the predictors and their interactions, were assigned random slopes. The model that was evaluated is provided in (94).

(94) $$\text{Rating} \sim \text{Structure} \times \text{Frame} \times \text{Situ} + (\text{Structure} \times \text{Frame} \times \text{Situ} + 1|\text{subject}) + (\text{Structure} \times \text{Frame} \times \text{Situ} + 1|\text{item})$$

This model yielded the results summarized in Table 2.3. Significance at the traditional $\alpha = 0.05$ level was determined by an absolute t-value greater than 2.00.

	$\hat{\beta}$	Std. Error	t
(Intercept)	2.758	0.135	20.50
Structure	0.027	0.045	0.60
Frame	-0.131	0.045	**-2.93**
Situ	0.066	0.080	0.83
Structure×Frame	0.127	0.047	**2.70**
Structure×Situ	-0.027	0.059	-0.46
Frame×Situ	-0.279	0.050	**-5.59**
Structure×Frame×Situ	0.178	0.056	**3.19**

Table 2.3. Model results with estimate, standard error, and t-value for Exp. 1

With this criterion a significant main effect was revealed for the fixed effect Frame and significant interactions were observed for Structure×Frame and Frame×Situ. Importantly, there was a significant effect of the three-way interaction term Structure×Frame×Situ. From the pattern of the means shown in Figure 1, we see that the three-way interaction reflects a large effect of the choice of ditransitive Frame for Coordination/Ex-situ structures, compared to the small or non-existent effect of Frame for all other conditions.

2.4.5 Discussion

It is the Structure×Frame×Situ interaction that we are particularly interested in. I interpret the observation that the choice of ditransitive frame effects acceptability only in coordinate dependent gap structures with a displaced DP to mean that it is only coordinate dependent gap structures that are subject to the Right Edge Restriction. The absence of an effect of the choice of ditransitive frame in adjunct dependent gap structures in turn suggests that these structures are *not* subject to the Right Edge Restriction. This strongly suggests that adjunct dependent gap structures can be derived via a mechanism distinct from RNR.[36]

[36] An anonymous reviewer for *Lingua* points out that one might be tempted to conclude that, regardless of the results, the experimental items are nonetheless ungrammatical given their remarkably low ratings. To assuage such concerns I would note first that no *a priori* predictions were made regarding the estimate of the mean for any of the experimental conditions because these values will necessarily be an artifact of the experimental design and the particular fillers that were used. Thus, as the anonymous reviewer notes, it is

With this being said, there is a complication in the data that is worth addressing. Recall that there was a concern that participants might treat the intended DO dependent gap structures as parentheticals with an implicit Goal/Recipient argument. Looking again at the observed condition means one might object to the interpretation of the results that have been endorsed above on then contention that the Adjunction/DO/Ex-situ condition are so similar to the Adjunction/DO/In-situ condition. One might contend specifically that the Adjunction/DO/Ex-situ mean is inflated as a result of participants positing an implicit Goal/Recipient argument, which they also managed to do for the DO/In-situ conditions.

There are at least two reasons to think that this was not the case. First, there is no principled reason why this alternative strategy would have been available to inflate the Adjunction/DO/Ex-situ mean, but participants then failed to employ it specifically in the Coordination/DO/Ex-situ conditions. Second, if such a strategy were available, we would expect to find a significant positive linear relationship between items in their Adjunction/Ex-situ and Adjunction/In-situ conditions with respect to their acceptability of containing an implicit argument. That is, an item that more readily permits an implicit argument analysis should do so in both Ex-situ and In-situ conditions and, thus, it should be possible to predict one from the other. A post-hoc examination of the data investigated this expectation.

The acceptability metric was quantified by calculating for each item the difference between the estimated mean of the DO and PP conditions in the Adjunction/Ex-situ conditions (92a)–(92b) and the Adjunction/In-situ conditions (92e)–(92f). Fitting a linear model to predict the Ex-situ conditions from the In-situ conditions produced a non-significant linear

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entirely plausible that we are observing a floor effect. There is very good reason to think that is precisely the case. Recall that the experimental items that the participants were asked to judge involve a relatively rare and complex construction and were presented without supporting context to motivate the non-canonical word order. Moreover, these constructions require participants to locate and posit multiple gap positions for which there is only indirect evidence (Staub et al. 2006). Thus, not only are these constructions difficult to accommodate, but they are difficult to parse in the first place. In addition to these factors, unlike the examples presented in (87) and (88), the experimental items also contained an intended quantifier-variable binding relationship that is headed by a negative quantifier. It is likely that these factors, in addition to relatively acceptable fillers, are responsible for the particularly low estimates.

function in which only 11% of the variation in the Ex-situ conditions is explained by the In-situ conditions ($r^2 = 0.11,\ \hat{\beta} = -0.25,\ \%95\text{CI}\ [-0.65, 0.16],\ t = -1.32,\ p < 0.25$). This provides no evidence for claiming that the acceptability ratings of the Adjunction/DO/Ex-situ and the Adjunction/DO/In-situ conditions are correlated and, thus, no evidence that the same strategy was employed in each case.

To summarize the discussion and the subsection, the evidence presented here supports the argument made above that RNR is not the only mechanism responsible for deriving adjunct dependent gap structures. The acceptability judgment study provided evidence that coordinate dependent gap structures are subject to the Right Edge Restriction while adjunct dependent gap constructions are not. This constitutes strong evidence that some alternative mechanism must also be available for licensing a dependent gap in an adjunct clause. Following Engdahl (1983) and Nissenbaum (2000), and based on the argumentation in the previous subsection and the following, I will continue to treat this alternative mechanism as rightward DP-movement and the licensing of a parasitic gap.

2.5 Two Notes on Competition

Three cases were presented in section 2.3.2 that were intended to demonstrate the distinct behavior of adjunct gap structures and coordinate gap structures with respect to supposed properties of RNR. We saw that, while RNR structures permit derived island violations (section 2.3.2.1) and internal readings of relational adjectives (section 2.3.2.2), adjunct gap structures do not. We also saw that the Right Edge Restriction, a constraint on RNR derivations, is not operative in the derivation of adjunct gap structures (section 2.3.2.3). That adjunct gap structures display this distinct behavior strongly suggests that adjunct gap structures do not necessarily involve the same mechanism responsible for the creation of RNR structures.

If those arguments hold, then given Postal's (1994) observations in section 2.3.1, we are left to conclude that adjunct gap structures can be derived via either RNR or some alter-

native mechanism.[37] The question that immediately comes to mind concerns the identity of this alternative mechanism. Recalling the properties listed in Table 2.1, the evidence reviewed showed that RNR is available for the derivation of adjunct gap structures precisely in those instances when PG-licensing is somehow precluded. This strongly implicates PG-licensing as the alternative mechanism. Furthermore, the derived-island effects in section 2.3.2.1, revealed that adjunct gap structures behave in a way consistent with a structure that employs HNPS: a rightward displaced DP becomes opaque for subextraction. Based on these observations, I have argued, following Engdahl (1983) and Nissenbaum (2000), that the alternative mechanism for generating adjunct gap structures involves HNPS and the licensing of a parasitic gap in the adjunct clause.

This leads to a new question now regarding the nature of the relationship between RNR and PG-licensing in the context of adjunct gap structures. One of two things could be true at this point. It could be the case that RNR and PG-licensing are in free variation. In this scenario, any given adjunct gap structure would be inherently ambiguous. If, however, employing a particular mechanism would ensure convergence, one could assume that the appropriate mechanism was employed. Alternatively, the two mechanisms could be in a sort of competition. In this scenario, one of the mechanisms is in some way preferred and the other applies only when the preferred mechanism is blocked.

The data that we have examined seem to be pointing to a competition based relationship. When the particular impediments to PG-licensing in Table 2.1 are removed, we were able to identify derivations that necessarily employed PG-licensing. Consider the example in (75) again, which is repeated below. Looking at the source structure for this example in (95), we would expect that the rightward displacement could be achieved via RNR. The fact that derived island effects are still induced by extraction out of the rightward displaced

[37] It remains a possibility given the evidence and argumentation being presented that more than one alternative mechanism is available to derive adjunct gap structures. In the absence of evidence for this particular conclusion, I will assume that adjunct gap structures are derived via RNR and a single alternative mechanism.

element, contrary to what we saw with coordinate gap structures in section 2.3.2.1, suggests that RNR in fact cannot be employed here.

(75) * Who$_2$ did Kim steal e_1 because she couldn't afford e_1 –

[an autographed picture of e_2]$_1$?

(95) Kim stole e_1 because she couldn't afford e_1 –

[an autographed picture of Jonathan Frakes]$_1$.

The same point can be made with the examples from (81) repeated below. A sentence-internal readings of the relational adjective fails to surface even though nothing *prima facie* precludes the RNR derivation necessary to derive this interpretation.

(81) Sam bought e_1 after Kim bought e_1 – [a different book about Bengal tigers]$_1$.

a. *sentence-external*

"a book different than someone else's book."

b. * *sentence-internal*

"a book different than the book the other read."

If the two mechanisms were equally available (i.e., PG-licensing and RNR were in free variation), we would expect RNR to be employed to derive the intended meaning for this string. Because RNR is supposedly available but cannot save these examples, we could conclude that the grammar in some way prefers to employ PG-licensing and will do so even to its own detriment.

Any conclusion concerning the relationship between PG-licensing and RNR that we wish to base on the evidence made available here should be made tentatively, however. It is not at all clear what exactly it would mean for these two mechanisms to be in competition and for PG-licensing to be the preferred mechanism. The issue is complicated by the fact that there is no true consensus about what is involved in the derivation of RNR constructions. As noted at the beginning of this section, analyses for RNR include Across-the-Board extraction, backward deletion/ellipsis, and multidomination. If RNR is a collection of right-

ward displacement operations (Barros & Vicente 2011, but cf. Larson 2012), it could be that only a subset of those operation are employed to derive adjunct gap structures. In this case, PG-licensing would be preferred or dispreferred to one or more specific operations and not necessarily to RNR as a phenomenon.

Moreover, whether or not one interprets the data above as revealing that PG-licensing is preferred will be influenced by one's analysis of RNR. For instance, if RNR is treated as either multidomination or ellipsis, the RNR'ed material will in a very real sense still be interpreted inside the adjunct clause. The example in (96) presents a backward deletion/ellipsis analysis for (95) whereby the first occurrence of the RNR'ed material is deleted under identity with a second occurrence in the second conjunct.

(96) Kim stole ~~[an autographed picture of Jonathan Frakes]~~
because she couldn't afford [an autographed picture of Jonathan Frakes].

Subextracting from the DP *an autographed picture of Jonathan Frakes* in an ATB fashion in this type of representation would involve extraction from an adjunction clause. It would therefore be expected to incur an island violation in the same way that ATB extraction in non-RNR environments incurs island violations (97).[38]

(97) * [Who]$_1$ did Kim steal [an autographed picture of e_1]
because she couldn't afford [an autographed picture of e_1]

Thus, the data point in (75) does not obviously help us decide whether PG-licensing or RNR is employed to derive rightward displacement as both are potentially able to provide an account for an inability to subextract from the displaced DP. For this reason, the same caveat must be made for the data point in (81). In the absence of an explicit understanding of what gives rise to relational adjectives it is not clear precisely what conclusions are validated by the data at hand.

[38]See Bachrach & Katzir (2009) for similar data that contribute to a line of argumentation concluding that RNR necessarily involves multidomination.

In addition to the question of exactly how to model the relationship between PG-licensing and RNR in adjunct gap structures, we are also left with the larger issue of why dependent gap structures involving leftward extractions do not show a similar variability in the mechanisms available to derive them. Postal (1993, 1994:104–107) presents an interesting comparative examination of Across-the-Board (ATB) extractions (98) and PG-licensing by leftward extractions (99).

(98) *Across-the-Board Extraction*

a. [Whose uncle]$_1$ did you see e_1 and immediately recognize e_1?

b. XP$_1$ [[$_{Conj}$ ... e_1 ...] and [$_{Conj}$ ... e_1 ...]]

(99) *(Leftward) PG-licensing*

a. [Whose uncle]$_1$ did you offend e_1 by not immediately recognizing pg_1?

b. XP$_1$ [$_{Matrix}$ ... e_1 ... [$_{Adjunct}$ ... pg_1 ...]]

Postal argues, contra Pesetsky (1982), Huybregts & van Riemsdijk (1985), Haïk (1985) and in particular Williams (1990), that distinct mechanisms necessarily underlie these two structures.[39] The argument, much like the one in section 2.3.2 of this chapter, is that known restrictions on PG-licensing, some of which are included in Table 2.1, do not constrain the distribution of ATB gaps. The conclusion, then, is that the mechanism responsible for ATB extraction cannot be the same mechanism employed for PG constructions. ATB, therefore, is restricted to coordination structures while PG-licensing is restricted to adjunction structures. The question, which is already being asked, is what is special about RNR that allows it to apply in a larger set of environments than the other dependent gap mechanisms. Given the results here and those in Postal 1994, the answer might be found by more closely examining the properties of RNR that emerge particularly in adjunct gap structures.

[39] See Hornstein & Nunes (2002) for a proposed account of the asymmetries between ATB extractions and PGs induced by leftward extraction.

2.6 Towards Modelling Heavy-NP Shift

At the beginning of this chapter we saw two approaches to deriving HNPS configurations that were divided on the employment of rightward movement. The traditional analysis asserts that the non-canonical word order in (100) involves movement of the displaced DP and right adjunction (Ross 1967). Alternative analyses assert that what appears to be rightward displacement in (100) is in fact the effect of one or more leftward movements (Larson 1988, Kayne 1994, Rochemont & Culicover 1997).

(100) Sam bought on the way home $[_{\text{DP}}$ the documentary about tigers$]$.

I argued in section 2.2 that the rightward movement approach to rightward DP displacement should be preferred because it is this type of analysis that provides a more satisfactory account of the parasitic gap configurations we find in examples like (101).

(101) Sam bought e_1 because he loved pg_1 –

$[_{\text{DP}}$ the documentary about tigers $]$

In section 2.3 and section 2.4 we addressed a response to this argument which would assert that what we see in (101) is not a parasitic gap construction but is instead the output of RNR. We found that there are constructions that cannot be claimed to be derived via RNR. These include constructions such as (86b) with a double-object construction in the parasitic gap domain. Recall from section 2.3.2.3 that these examples cannot satisfy the Right Edge Restriction—a known constraint on RNR—but are nonetheless grammatical.

(86) b. Tim met e_1 in order to give e_1 a present – $[\text{his best friend}]_1$.

Based on these arguments I will pursue a rightward movement approach to the HNPS phenomenon. We should hope to establish a few specific pieces of information to claim at least a rudimentary theory of HNPS. First, we should like to know what position this movement operation targets. We should also hope to have an explanation of why this

movement takes place. Most importantly, perhaps, we need a theory of the constraints on this movement operation.[40] Let us consider these issues in turn.

2.6.1 The Locus of HNPS

We will start by treating standard instances of HNPS like in (102) as an operation involving rightward movement of the DP (Ross 1967:56).

(102) Sam bought e_1 on the way home [the documentary about tigers]$_1$.

Under our conception of the operation responsible for movement, a copy of the displaced DP will be adjoined to the verbal spine and linearized to the right.

I will begin by following Bresnan (1976), Stowell (1981), and Johnson (1985) and treat HNPS as an operation that targets the edge of *v*P. We can recall the data from Johnson (1985) supporting this claim.

(7) a. * Eleanor bought e_1 apparently [$_{DP}$ brand new drapes for the whole house]$_1$.

b. * Vern left e_1 angry [$_{DP}$ that store where service is so slow]$_1$.

c. * Julie didn't buy e_1 until it became available [$_{DP}$ that book on Venus]$_1$.

(Johnson 1985:85, (28))

A way to capture these facts is as a difference in the attachment height between the adverbials in (7) and those adverbials that can be crossed by HNPS. Let it be the case that speaker-oriented, subject-oriented, and temporal adverbials of the type in (7) are adjoined outside the *v*P while *on the way home* in (102), *to a short circuit* in (6), and *to Bill* in (13) are adjoined inside the *v*P. It is possible now to understand the ability of a shifted DP to cross these different sets of adverbials by simply limiting the locality of HNPS to the edge

[40] Of course, we should demand to know why a given movement operation is linearized in the way that we observe. As discussed in the introduction, this is not a question that I can satisfactorily answer at present. However, I will return to the issue in the summary of chapter 3.

of *v*P. In other words, it is a property of HNPS that it targets a position only as high as the *v*P-layer.

The strength of this argument relies on one's willingness to accept that the relevant adverbials are indeed attached outside the *v*P. Andrews (1982) argues that subject-oriented depictive modifiers including *nude* and *singing* behave as if they were part of the *v*P with respect to constituency diagnostics employing deletion, replacement, and movement processes. The *v*P-fronting examples in (103), for example, suggest that these adverbials must be contained within the fronted *v*P constituent. Their inability to escape the fronting operation suggests that they cannot be adjoined to any higher position.

(103) a. [Eat the meat nude/singing]$_1$ though John did e_1,
nobody thought he was crazy.
(Andrews 1982:313, (2a))

b. * [Eat the meat]$_1$ though John did e_1 nude/singing,
nobody thought he was crazy.

Additionally, Culicover (2001) argues that DPs can be displaced rightward over at least some subject-oriented depictives such as *fully clothed* in (104).

(104) Mary entered fully clothed [$_{DP}$ the room across the hall].

It is not straightforwardly clear, then, that the ungrammaticality of (7a) must necessarily be attributed purely to a locality constraint on HNPS.

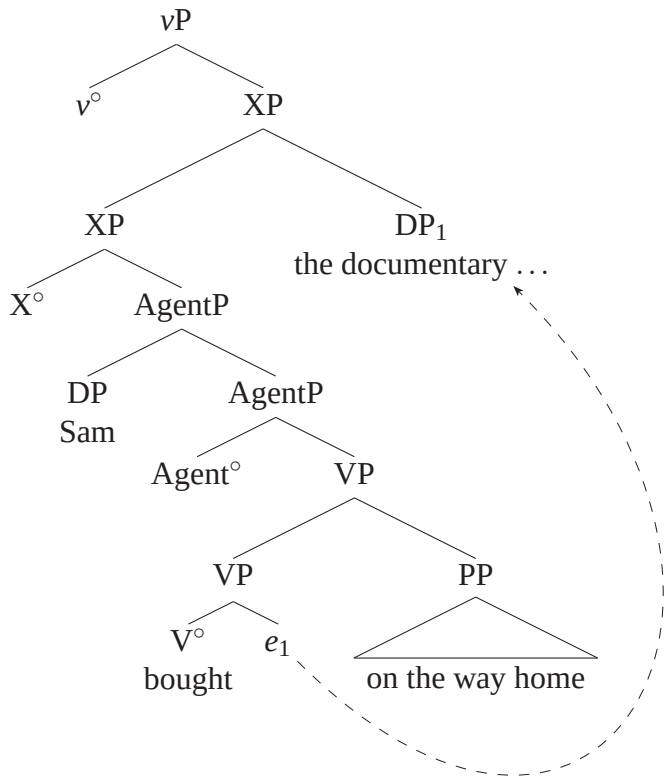
My intuitions are that the subject-oriented depictives under discussion here are part of the *v*P on the basis of the fronting diagnostic in (103). I do not, however, share the intuition reported in Culicover 2001 regarding (104). This example has the same status of ungrammaticality as the variants in (105) which contains the other subject-oriented depictives.

(105) * Mary entered *angry*/*nude*/*singing* [$_{DP}$ the room across the hall].

Regardless of the success of this particular argument, I will present additional evidence in section 3.2 of chapter 3 in favor of this view that HNPS is a relatively local movement

operation that targets the edge of *v*P. To remain consistent with our finding that HNPS can cross some but not all types of adverbials that appear *v*P-internally, we can adopt an articulated view of the *v*P of the sort we find in Larson 1988, Marantz 1993, Kratzer 1996, Belletti 2001 and Merchant 2013. We might suppose, for instance, that HNPS targets some functional projection XP within this articulated *v*P as opposed to a position at the outer edge of the *v*P (106).

(106)



On this analysis we expect to find that there are adverbials that will behave as if they were part of the *v*P but cannot be crossed by HNPS. These will include speaker-oriented adverbials, (at least some) subject-oriented depictives, and, as we will soon see in the following chapter, certain clausal adjuncts.

2.6.2 The Force of HNPS

Concerning the identity of the XP that is targeted by HNPS, I will start from the observation by Rochemont (1986), Rochemont & Culicover (1990), and Ward & Birner (1996) that the position occupied by the shifted DP in an HNPS configuration seems to be re-

served for “new” or “non-given” information, roles played by focused elements. This can be demonstrated with the following question-answer pairs in (107) and (108), which have been adapted from Rochemont & Culicover 1990:24.

(107) Q: What did John purchase for his wife?

A: John purchased for his wife – a brand new fur coat.

(Rochemont & Culicover 1990:24)

(108) Q: For whom did John purchase a brand new fur coat?

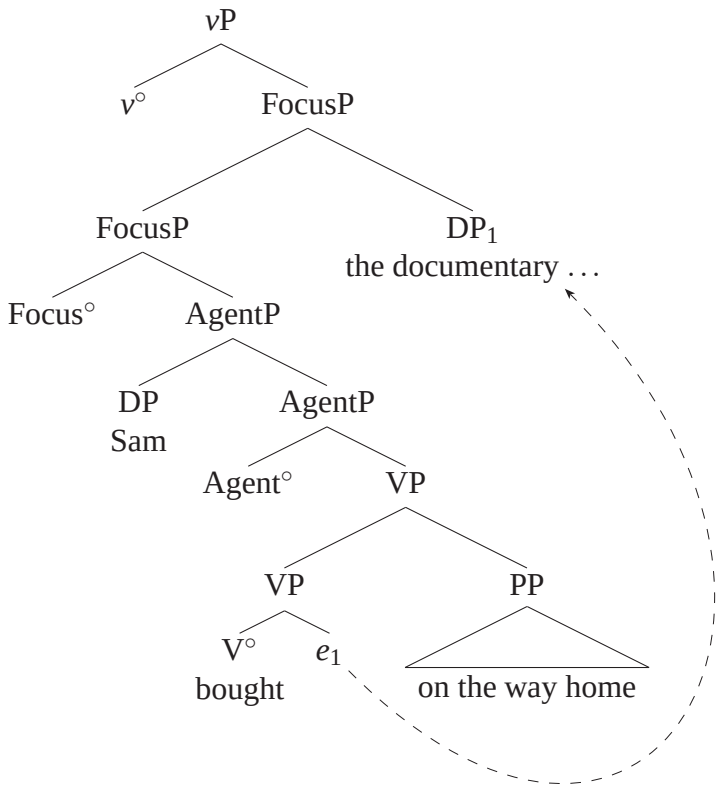
A: # John purchased for his wife – a brand new fur coat.

(Rochemont & Culicover 1990:24)

We see from these examples that a HNPS configuration provides a felicitous answer to the question in (107) but not to the question in (108). Asserting that the peripheral HNPS position is reserved for “new” or “non-given” information, we can understand why it is that the relevant information for a *wh*-question can appear in this position (107). On the other hand, as part of the questioned material in (108), *a brand new fur coat* is in the conversational background. For this reason, it cannot play the role of focused material and is incompatible with the information-structural requirements on this peripheral position.

On the basis of these observations, I will treat HNPS as a discourse-configurational structure (e.g., É. Kiss 2002) and assume that discourse roles like Focus can be represented in the syntax (e.g., Rizzi 1997). This makes standard instances of HNPS an instance of focus-driven movement whereby the displaced DP moves to a focus dedicated position in an articulated *v*P layer. The sentence in (102), then, will have the partial representation in (109).

(109)



The standard treatment that we saw in the introduction for this instance of movement would propose that it is driven by the need for a formal feature on the shifted DP to check a formal feature on the head Focus° (Chomsky 1995, 2001). Specific versions of a feature-driven approach to focus movement have been presented by Brody (1995) and Horvath (2007).[41] Alternative analyses, such as the one offered by Szendröi (2003), suggest that focus movement is prosodically-driven. For a theory of focus movement that relies on the satisfaction of requirements at LF, see É. Kiss (2009). Exploring all of these options is, unfortunately, beyond what is possible in this dissertation. For this reason, I will remain intentionally vague with regard to how we might precisely encode the idea that HNPS is a focus-driven movement. That being said, nothing that is presented in this thesis in incompatible with the standard feature-checking approach to this instance of movement.

[41] See Williams (2003:33–36) for an argument against a feature checking approach to HNPS. The argument is based largely on the observation that the focused material can be either a subset or a superset of the shifted material.

Finally, I charged us with developing an understanding of what constrains HNPS. This is exactly the discussion that we will take up in the following chapter. In brief, we will find that rightward movement can target positions outside the *v*P when doing so ensures convergence at LF. This suggests that the usual locality constraints on rightward movement can be cast in the same light. That is, rightward movement of a DP is licensed only as far as is required to ensure LF convergence. What we learn from our investigation here is that LF convergence can be assured by satisfying the requirements necessary for a focus interpretation which can be accomplished at a position in the periphery of an articulated *v*P.

2.7 Summary

The purpose of this chapter has been to provide evidence in favor of an approach to HNPS that employs rightward movement of the displaced DP. The argument was primarily based around the claim that rightward movement approaches to HNPS provide a better account of parasitic gap configurations than leftward movement approaches do. I suggested in section 2.2 that the former preserves the properties of parasitic gap constructions that are observed in the context of other movements without unmotivated stipulations.

Sections 2.3 and 2.4 addressed the recurrent claim based on evidence from Williams (1990, 1995, 2003) and Postal (1993, 1994) that RNR is the mechanism responsible for apparent parasitic gaps licensed by HNPS. Our findings in those sections serve as counter-examples to this claim. This does not mean, however, that we must give up the empirical ground gained by Postal (1994). The observations reported in 2.3.1 showed that RNR can indeed be employed to derive both coordinate gap and adjunct gap structures. Instead, in light of the discussion there, we need only weaken the conclusion to say that adjunct gap structures and coordinate gap structures are both possibly, but not necessarily, derived via the same mechanism.

Having found that a rightward movement approach to the rightward displacement of a DP will be necessary, section 2.6 took steps towards formalizing an analysis. I suggested

that HNPS targets a position in the periphery of an articulated *v*P that is reserved for focused material. As we move forward into the following chapter we will see that rightward DP movement can proceed further than the *v*P and even beyond its containing clause, provided that it is properly motivated to do so.

CHAPTER 3

THE LOCALITY OF HEAVY-NP SHIFT

Continuing our investigation of the rightward displacement of DPs, in this chapter we will further push the idea that HNPS involves rightward syntactic movement. We will see evidence that the rightward displacement of a DP influences not only the linear string but it also shows its effects on the semantic interpretation. I will also suggest that the relatively restricted locality conditions on this instance of movement can ultimately be attributed to the ability of this movement to produce a representation that is convergent at the interfaces. Rightward movement will be blocked in exactly those cases when it is not order preserving or when it is does not contribute to producing a representation that converges at LF.

Our primary source of evidence will be pairs of sentences like those in (1), which have their origin in Engdahl 1983.

(1) a. I offended e_1 by not recognizing pg_1 immediately –
[my favorite uncle from Cleveland]$_1$.

b. * I offended e_1 by not recognizing my aunt immediately –
[my favorite uncle from Cleveland]$_1$.

The observation that the parasitic gap is required in the above examples comes from Larson (1989). Nissenbaum (2000) captures the pattern with the generalization provided in (2).

(2) *Larson's Generalization*

HNPS cannot appear to the right of a *v*P-adjunct unless that adjunct contains a PG.

(Nissenbaum 2000:60)

In section 3.2 I will argue for a slightly revised version of this generalization. The revision will be based on an argument that the clausal adjuncts that are subject to the necessity for a parasitic gap are adjoined on the verbal spine to a position above the locus for standard HNPS. This means that what we are observing in examples like (1a) is in fact an instance of movement beyond the standard HNPS operation. The empirical generalization we will work to derive, then, can be stated as in (3).

(3) *Revised Larson's Generalization*

Rightward displacement of a DP beyond standard HNPS must result in the binding of a parasitic gap by the displaced DP.

The formalization of the Revised Larson's Generalization will be inspired by an account of parasitic gap licensing in German by Heck & Müller (2000). I will suggest that the need to license the parasitic gap in turn licenses what is otherwise exceptional movement.

In section 3.3 we will further investigate this supposedly exceptional rightward movement driven by the need to license a parasitic gap. We will find that rightward DP-movement that results in the binding of a parasitic gap is potentially unbounded in the way that Sabbagh (2007) argues can be true for coordinate RNR constructions and as is generally thought to be the case for more familiar leftward $\overline{\text{A}}$-movements. By examining clausal adjuncts at various heights along the verbal spine, we will observe that rightward DP-movement can be licensed by the need to bind parasitic gaps in adjunct clauses adjoined beyond the edge of *v*P, beyond sentential negation, and even beyond the DP's containing clause (cf. the *Right Roof Constraint*; Ross 1967, Grosu 1973).

Section 3.4 then presents a formal analysis for the observations represented by the Revised Larson's Generalization as well as the additional observations that are gathered in section 3.3. The analysis I present draws from the account for parasitic gaps that we get from Nissenbaum (2000:ch. 2). I adopt this basic representation for parasitic gap structures and suggest a number of modifications for how such structures are derived. The alternative theory I provide has the benefit of permitting composition of the parasitic gap domain and

the matrix clause via a more standard method that employs Functional Application instead of Predicate Modification (Heim & Kratzer 1998). Essentially, the cyclic (as opposed to counter-cyclic) merger of the parasitic gap domain produces a structure that cannot be interpreted at LF via standard methods of composition (e.g. Heim & Kratzer 1998). I suggest that it is the ability of the rightward DP-movement to ensure convergence of the syntactic structure in the LF component that provides the necessary motivation for DP-movement beyond what is possible with standard HNPS.

The main force of this analysis comes from the idea that the parasitic gap provides a semantic trigger for the syntactic movement. I formalize this idea by adopting a trans-derivational economy condition that privileges structures that converge at the LF interface and do so with as few applications of movement as possible. The form of this condition resembles the more general economy of derivation condition from Chomsky (1993) as it is discussed in the relevant context by Reinhart (2006).

(4) *Economy of Movement Metric (EMM)*

If a derivation D_1 of a spell-out domain α converges without some movement operation, then D_1 blocks a derivation D_2 of α that includes that movement operation.

Put very simply, the EMM will see the need to bind a parasitic gap as a condition for a structure's convergence at LF. The ability of an instance of rightward movement to satisfy this condition will license the movement. In the absence of a parasitic gap, convergence will not depend on the aforementioned movement and it will consequently become redundant and ruled out by the EMM.

In section 3.5 we turn to a second puzzle that is identified by Nissenbaum (2000). He notes that a parasitic gap is required in every clausal adjunct that is crossed by rightward movement.

(5) a. Kim promoted e_1 without calling $[pg_1]$

because she wanted to give $[pg_1]$ a raise –

$[\text{the guy with great references}]_1$.

b. * Kim promoted e_1 without calling [management]

because she wanted to give $[pg_1]$ raise –

$[\text{the guy with great references}]_1$.

These data are particularly puzzling for the analysis outlined above. If movement over a clausal adjunct is licensed by a transderivational economy constraint that recognizes the need to provide a binder for a parasitic gap, something must be said for why (5b) is not possible. It seems that we should expect the parasitic gap in the higher *because*P in this example to license movement over the lower *without*P. I will suggest that the contrast between these examples comes down to the fact that the movement in (5a) proceeds successive-cyclically through positions above each clausal adjunct as part of licensing the parasitic gap domain. In the absence of a parasitic gap in the *without*P, successive-cyclic movement will not be possible in (5b) and the syntactic structure will ultimately fail to converge at PF.

I adopt the basics of the theory the theory of Cyclic Linearization and the principle of Order Preservation developed by Fox & Pesetsky (2005) to formalize this idea. In short, we will find that the ability to undergo successive-cyclic applications of movement will allow the rightward displaced DP to continuously be ordered rightmost in the phrase marker. In this way the movement avoids producing contradictory linearization statements relative to the clausal adjuncts. Once successive-cyclic movement is no longer possible given the absence of a parasitic gap, one of the clausal adjuncts will be ordered rightmost in the phrase marker. This effectively prevents any subsequent movement regardless of the presence of a parasitic gap. This leaves us with an interesting view of the grammar presented by Bobaljik & Wurmbrand (2012) whereby economy conditions like the EMM place derivations in competition to derive representation that are convergent specifically at LF. This representation is then handed off for an optimal interpretation at PF.

In section 3.6 we will look at a third and final puzzle. Both Engdahl (1983) and Larson (1989) point out that a parasitic gap is optional in the context of leftward movement.

(6) a. Who$_1$ did I offend e_1 by not recognizing pg_1 immediately?

b. Who$_1$ did I offend e_1 by not recognizing my aunt immediately?

I argue that the presence or absence of Larson's Generalization effects come down to independently stated locality constraints on each type of movement. While the presence of a parasitic gap is responsible for licensing rightward movement beyond its normal position at the edge of the *v*P domain, *wh*-movement is required to take scope at the level of the CP domain independent of a parasitic gap. Thus, regardless of whether or not a *wh*-phrase stops to license a parasitic gap, further movement beyond the clausal adjunct will be independently licensed. The ultimate effect of this difference is that there are two possible derivational paths available for producing constituent questions: one involving movement that licenses a parasitic gap and one that does not.

Section 3.7 will conclude by summarizing the arguments and discussing some of the implications of the results. In as far as the analyses and arguments presented here are correct, we are beginning to get a handle on the difference between leftward and rightward movements. However, we will also see a number of question that are left unanswered.

3.1 Some Parasitic Gap Puzzles

The puzzle we are interested in begins with the observation by Larson (1989) that, in the case of rightward displacement, a parasitic gap is obligatory in a clausal adjunct that has been crossed by the rightward movement operation. This is illustrated by the contrast in (7) below.

(7) a. I offended e_1 by not recognizing pg_1 immediately –

[my favorite uncle from Cleveland]$_1$.

b. * I offended e_1 by not recognizing my aunt immediately –

[my favorite uncle from Cleveland]$_1$.

The requirement for a parasitic gap in a clausal adjunct that has been crossed by the rightward displacement of a DP is a general phenomenon in English. In addition to the *by*-clause in (7), the pattern holds for *because*-clauses (8), rationale clauses (9), and temporal adverbial clauses (10).[1]

(8) a. Sam bought e_1 because he enjoyed pg_1 – [the documentary about tigers]$_1$.

b. * Sam bought e_1 because he enjoyed the cinematography –

[the documentary about tigers]$_1$.

---

[1] I have encountered three ways in which the (b) variants of the examples in (7)–(10) have been reported to be made more acceptable. Adrian Staub (p.c.) notes that there might be contrast between (i) and (**??**) and that this may be a function of the transitivity bias of the matrix verb. The intuition is that (i), which has the optionally transitive *recover* is more acceptable without a parasitic gap domain than the obligatorily transitive *offend* in (7).

(i) I recovered e_1 by not recognizing my aunt immediately – [my favorite uncle from Cleveland].

I have not investigated systematically whether or not the transitivity bias of the matrix predicate reliably yields such contrasts. However, this provides a potentially interesting manipulation for future research investigating Larson's Generalization and the revised version introduced below.

The second way of improving examples like (7), which represents the shape of the original examples from Larson (1989), is to put a pronoun in place of the full DP in the adjunct clause. Two anonymous reviewers for *Lingua* provide the following examples for which I have suppressed any judgments.

(ii) I offended e_1 by not recognizing him$_1$ – [my favorite uncle from Cleveland]$_1$.

(iii) I offended e_1 by not recognizing him$_1$ – [every team member of the Red Socks]$_1$.

Finally, the relevant examples can be made more acceptable as a function of the prosody assigned to the adjunct clause. The more phonologically reduced that the adjunct phrase is and the larger that the intonational boundaries around the adjunct clause are, the more parenthetical and the more acceptable the example seems to become.

These, too, are issues that warrant much more attention than I am able to afford them now. However, the experiment reported in section 2.4 attempted to control for the ability to treat the adjunct clause as a parenthetical. I will also return briefly to the examples in (ii) and (iii) in section 3.4.2 where I speculate on their potential grammaticality. As one anonymous reviewer suggests, we might be observing a resumption strategy in the parasitic gap domain. Alternatively, we might extend the formal analysis presented in that section to permit movement that produces otherwise unavailable LF representations (e.g. Fox 2000, Reinhart 2006, Takahashi 2006).

(9) a. Tim brought e_1 in order to show Pam pg_1 –

[some pictures from his vacation]$_1$.

b. * Tim brought e_1 in order to show Pam the quality of his camera –

[some pictures from his vacation]$_1$.

(10) a. Kim burned e_1 after reading pg_1 – [each article on parasitic gaps]$_1$.

b. * Kim burned e_1 after reading the abstracts – [each article on parasitic gaps]$_1$.

In his work on this same paradigm, Nissenbaum (2000) formulates the generalization shown in (11) to capture the rightward displacement pattern in (7)–(10).

(11) *Larson's Generalization*

HNPS cannot appear to the right of a *v*P-adjunct unless that adjunct contains a PG.

(Nissenbaum 2000:60)

I will delay a discussion of Nissenbaum's (2000) approach to these data until we can establish the appropriate background. For the time being, though, we can use this generalization to help us formulate a couple of research questions. First, we should ask why the rightward movement of the DP over these clausal adjuncts is contingent on the presence of a parasitic gap.

But the puzzle goes even deeper it turns out. The generalization in (11) is formulated to also account for what I will refer to as *Nissenbaum's Paradigm*. Nissenbaum (2000:64) notes of data like those in (12) that a parasitic gap is required in each clausal adjunct that is crossed by the rightward movement operation.

(12) a. Kim promoted e_1 without calling [pg_1]
because she wanted to give [pg_1] a raise –
[the guy with great references]$_1$.

b. * Kim promoted e_1 without calling [management]
because she wanted to give [pg_1] raise –
[the guy with great references]$_1$.

c. * Kim promoted e_1 without calling [pg_1]
because she wanted to give [someone] a raise –
[the guy with great references]$_1$.

d. * Kim promoted e_1 without calling [management]
because she wanted to give [someone] a raise –
[the guy with great references]$_1$.

Given the two clausal adjuncts we see in the examples above—the *without*P and that *because*P—movement to the right edge is licensed only when there is a parasitic gap in each individual adjunct clause.[2] Our account of Larson's Generalization should also aim to capture Nissenbaum's Paradigm.

To make things more interesting, both Engdahl (1983) and Larson (1989) point out that we do not observe the same requirement for a parasitic gap in a clausal adjunct in the context of leftward displacement. The parasitic gaps in (13)–(16) are optional at some level.

[2]Nissenbaum (2000:92) suggests that a gap is not necessary in each clausal adjunct when they modify different clauses. However, I do not share this judgment.

(i) a. Sam thinks [$_{CP}$ that you promoted e_1 without interviewing pg_1]
because he saw you give pg_1 a raise – [the guy with great references]$_1$.

b. * Sam thinks [$_{CP}$ that you promoted e_1 without interviewing Kim]
because he saw you give pg_1 a raise – [the guy with great references]$_1$.

(13) a. Who$_1$ did I offend e_1 by not recognizing pg_1 immediately?

b. Who$_1$ did I offend e_1 by not recognizing my aunt immediately?

(14) a. [Which film]$_1$ did Sam buy e_1 because he enjoyed pg_1?

b. [Which film]$_1$ did Sam buy e_1 because he enjoyed the cinematography?

(15) a. [Which pictures]$_1$ did Tim bring e_1 in order to show Pam pg_1?

b. [Which pictures]$_1$ did Tim bring e_1 in order to show Pam the quality of his camera?

(16) a. [Which articles]$_1$ did Pam burn e_1 after reading pg_1?

b. [Which articles]$_1$ did Pam burn e_1 after reading the abstract?

The natural follow-up question, then, is why we do not observe something like Larson's Generalization in the context of leftward movement. Whatever our analysis of Larson's Generalization is, it should help us understand why it is that parasitic gaps are obligatory with rightward movement, but optional with leftward movement.

We will see that a proper account of Larson's Generalization can provide a very natural way of understanding the asymmetry between leftward and rightward movement as an effect of the criteria responsible for licensing each type of movement. Before we do this, however, we will motivate a revision to the formulation of Larson's Generalization that we have in (11).

3.2 Revising Larson's Generalization

The goal of this section is to argue for the following empirical generalization of the basic rightward movement data that we saw in (7)–(10).

(17) *Revised Larson's Generalization*

Rightward displacement of a DP beyond standard HNPS must result in the binding of a parasitic gap by the displaced DP.

The revision will be motivated in part by an argument that the displacement of the DP in those cases that result in the binding of a parasitic gap is actually exceptional rightward movement. I will provide evidence in section 3.2.1 for the claim that clausal adjuncts that are subject to Larson's Generalization are adjoined to a position that is relatively high on the verbal spine. Section 3.2.2 suggests that the inability for rightward movement of a DP to cross a clausal adjunct in the absence of a parasitic gap can be reduced to the claim that rightward movement of a DP is restricted to targeting a position that is lower than the relevant clausal adjuncts. Following a claim made by Heck & Müller (2000), I suggest that it is the presence of the parasitic gap that is licensing otherwise impossible movement.

3.2.1 Low Adjuncts and High Adjuncts

The rightward displacement of a DP, as we know, is not categorically contingent on the presence of a parasitic gap. Our investigation in chapter 2 showed us that HNPS is almost defined as the displacement of a DP to the right of some PP or AdvP like in (18)–(21). Let us refer to these examples in which a DP is displaced rightward over a phrasal adverbial as cases of "standard" HNPS.

(18) a. Sam met the members of his bowling team in the parking lot.

b. Sam met e_1 in the parking lot – [the members of his bowling team]$_1$.

(19) a. Pam closed the window in the children's bedroom softly.

b. Pam closed e_1 softly – [the window in the children's bedroom]$_1$.

(20) a. Tim wiped the grill they pulled out of the shed clean.

b. Tim wiped e_1 clean – [the grill they pulled out of the shed]$_1$.

(21) a. Kim gave a photo collage of their trip to Argentina to her best friend.

b. Kim gave e_1 to her best friend – [a photo collage of their trip to Argentina]$_1$.

There is an interesting observation we can make concerning the ordering restrictions that exist between the set of phrasal adverbials in (18)–(21) and the set of clausal adjuncts

in (7)–(10) that are subject to Larson's Generalization. Given a member from each of these sets, the phrasal adverbial must precede the clausal adjunct (22)–(25).

(22) a. Sam met his team members [in the parking lot] [after getting fajitas].

b. * Sam met his team members [after getting fajitas] [in the parking lot].

(23) a. Pam closed the window [softly] [in order to let the children sleep].

b. * Pam closed the window [in order to let the children sleep] [softly].

(24) a. Tim wiped the grill [clean] [because he was going to use it].

b. * Tim wiped the grill [because he was going to use it] [clean].

(25) a. Kim gave a photo collage [to her best friend] [by ordering one online].

b. * Kim gave a photo collage [by ordering one online] [to her best friend].

One way to interpret these facts is along the lines suggested by Reinhart (1983) and Ernst (1999, 2002) whereby we are seeing a difference in the attachment height of the elements in each set. In particular, the data suggest that clausal adjuncts that are subject to Larson's Generalization are adjoined to a position on the verbal spine that is structurally higher than the position of the phrasal adverbials that are not.

The idea that these two sets of elements are distinguished based on their structural height has been argued for previously by Larson (1988) and Nissenbaum (2000). We can find additional support from the *though*-movement diagnostic in Baltin 1981 and also employed by Andrews (1982). In the examples in (26)–(29) below we see that the phrasal adverbials that can be crossed by standard HNPS resist being stranded by the *though*-movement operation. This suggests that they must be part of a constituent that includes the verb and which can be targeted for movement.

(26) a. [Meet his team members in the parking lot]$_1$ though he will e_1,
Sam is still going to get fajitas first.

b. * [Meet his team members]$_1$ though he will e_1 in the parking lot,
Sam is still going to get fajitas first.

(27) a. [Close the window softly]$_1$ though she did e_1,

something still managed to wake the children.

b. * [Close the window]$_1$ though she did e_1 softly,

something still managed to wake the children.

(28) a. [Wipe the grill clean]$_1$ though he did e_1,

Tim still managed to ruin the burgers.

b. * [Wipe the grill]$_1$ though he did e_1 clean,

Tim still managed to ruin the burgers.

(29) a. [Give a photo collage to her best friend]$_1$ though she may e_1,

Kim is keeping the t-shirts.

b. * [Give a photo collage]$_1$ though she may e_1 to her best friend,

Kim is keeping the t-shirts.

The clausal adjuncts that are subject to Larson's Generalization, on the other hand, behave differently with respect to this diagnostic. The examples in (30)–(33) show us that these clausal adjuncts do not necessarily need to be part of the constituent targeted for the fronting operation.

(30) a. [Meet his team members before going to practice]$_1$

though he will e_1, Sam is still going to get fajitas first.

b. [Meet his team members]$_1$ though he will e_1

before going to practice, Sam is still going to get fajitas first.

(31) a. [Close the window in order to let them sleep]$_1$

though she did e_1, something still managed to wake the children.

b. [Close the window]$_1$ though she did e_1 in order to let them sleep,

something still managed to wake the children.

(32) a. [Wipe the grill clean because he needed to use it]$_1$

though Tim did e_1, he still managed to ruin the burgers.

b. [Wipe the grill clean]$_1$ though Tim did e_1

because he needed to use it, he still managed to ruin the burgers.

(33) a. [Give a photo collage to her best friend by ordering one online]$_1$

though she may e_1, Kim is keeping the t-shirts.

b. [Give a photo collage to her best friend]$_1$ though she may e_1

by ordering one online, Kim is keeping the t-shirts.

Collectively these data are consistent with the claim that the clausal adjuncts which are subject to Larson's Generalization adjoin to a position on the verbal spine that is higher than where the phrasal adverbials under investigation are capable of adjoining. If we accept this idea we are able to account for the *though*-movement facts above by asserting that the phrasal adverbials from (18)–(21) are necessarily adjoined below the node that is being targeted by the fronting operation. This is the reason that they cannot be stranded by the fronting operation as shown in (26)–(29). From the examples in (30)–(33), it seems that the clausal adjuncts that are subject to Larson's Generalization are able to adjoin to a position either above or below the node targeted for the fronting operation. However, as the ordering facts in (22)–(25) reveal, even the lowest point of attachment for these clausal adjuncts will be higher than the highest point of attachment of the phrasal adverbials.

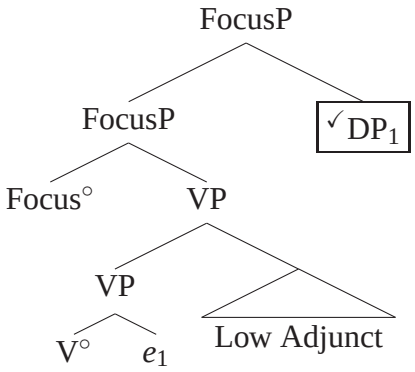
3.2.2 Larson's Generalization as a Function of Height

Distinguishing phrasal adverbials and the relevant set of clausal adjuncts on the basis of their height of attachment puts us in a position to provide an account for why Larson's Generalization holds. In other words, we can understand why it is that standard HNPS can cross the phrasal adverbials from (18)–(21) but, under normal circumstances, cannot cross the set of clausal adjuncts that are subject to Larson's Generalization. The ability of a rightward moving DP to cross a given element can be understood as a function of the

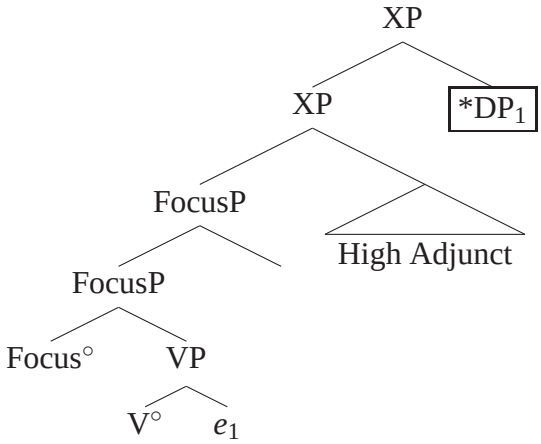
structural height of that element, just as we concluded in section 2.6.2 of chapter 2 on the basis of data presented by Johnson (1985).

Following (Bresnan 1976, Stowell 1981, Johnson 1985) and on the basis of the results of chapter 2, we will continue to work under the hypothesis that there is a position at the edge of *v*P that hosts a DP that undergoes HNPS. Let us place the phrasal adverbials from (18)–(21) into a category of Low Adjuncts that have a position on the verbal spine that is necessarily lower than the position targeted by standard HNPS. It is because of the relatively low position of this class of elements that they can be freely crossed by HNPS as roughly illustrated in (34). The clausal adjuncts for which Larson's Generalization holds will be made members of an opposing class of High Adjuncts. They are necessarily adjoined to some XP on the verbal spine that is higher than the locus of HNPS, as shown roughly in (35).[3] It is because of their relatively high position that they are simply unable to be crossed by an instance of standard HNPS.

(34) *HNPS over a Low Adjunct*



(35) *HNPS over a High Adjunct*



[3]The higher attachment of clausal adjuncts is arguably conceptually intuitive as clausal adjuncts including *because*-clauses, rationale clauses, conditionals, temporal adjunct clauses, etc., seem to describe a relationship between two events/situations or things of a propositional nature. This basic intuition was spelled out in some detail by Johnston (1994).

This picture of the acceptability of rightward DP-movement is reminiscent of what Grosu (1973) calls the *Right Roof Constraint*. This constraint has come to represent the exceptional locality of rightward movement following Ross' (1967:307) original claim that all rightward movement is clause-bounded. Subsequent research, though, has gradually strengthened the locality conditions on rightward displacement phenomena to suggest that rightward movement of some object is in fact bound to the edge of the first cyclic node that dominates that element (e.g., Akmajian 1975, Baltin 1981, McCloskey 1999). Assuming that at least *v*P is a cyclic node (e.g., Chomsky 2001), this is precisely the state of affairs that the discussion presented here has lead us to. HNPS cannot displace a DP beyond the edge of *v*P. We derive the effects of the Right Roof Constraint by setting the necessary locus of standard HNPS as the edge of *v*P.

This height-based account of the data provides a rather interesting way of thinking about Nissenbaum's (2000) version of Larson's Generalization that was presented in (11). We are finding that an instance of exceptional rightward movement that is to a position that is otherwise inaccessible to standard HNPS is being licensed in the event that the movement results in the binding of a parasitic gap. A more accurate description of the relevant paradigm, then, would be as shown in (36).

(36) *Revised Larson's Generalization*

Rightward displacement of a DP beyond standard HNPS must result in the binding of a parasitic gap by the displaced DP.

The empirical generalization that is represented by this formulation of Larson's Generalization differs from the preliminary version in (11) in that rightward movement now does not always require the creation of a parasitic gap to cross a clause. The Revised Larson's Generalization in (36) posits that the necessity of the parasitic gap is contingent on the structural height of the embedded clause.

A prediction, then, is that rightward DP-movement over a clause that is *v*P-internal, and therefore below the locus of HNPS, should not require an additional gap. This prediction

is borne out with subject-gap purpose clauses (37), which are commonly thought to be *v*P-internal (Faraci 1974, Bach 1982, Huettner 1989, Jones 1991), as well as with rationale clauses that modify the embedded clause of a Raising-to-Object predicate (38).[4]

(37) a. Kim [$_{VP}$ gave Pam$_1$ the camera [PRO$_1$ to take pictures of the birds]].

b. Kim [$_{VP}$ gave Pam$_1$ e_2 [PRO$_1$ to take pictures of the birds]] – [the camera with a telescopic lens]$_2$.

(38) a. Tim expects the guy in the corner [to be a jerk in order to impress people].

b. Tim expects e_1 [to be a jerk in order to impress people] – [the guy in the corner on his phone]$_1$.

To summarize, the rightward displacement operation's contingency on a parasitic gap is itself contingent on the structural height of the adjunct being crossed. It is only when the displaced DP crosses a clausal adjunct that is adjoined above the locus of standard HNPS that an additional gap becomes necessary.

This characterization of the rightward movement data is similar to a proposal made by Heck & Müller (2000). They suggest that the binding of a parasitic gap licenses otherwise impossible movements in German. Heck & Müller (2000:11) present the examples in (39) to demonstrate that scrambling of *wh*-indefinites in German is a generally banned movement. With the examples in (40) they also demonstrate that scrambling becomes possible in the presence of a parasitic gap. The contrast between (40a) and (40b) further illustrates that the scrambling operation is in fact obligatory in the presence of a parasitic gap.

(39) a. dass sie dem Fritz was zurückgegeben hat
that she ART Fritz$_{dat}$ something$_{acc}$ returned has

b. * dass sie was$_1$ dem Fritz t_1 zurückgegeben hat
that she something$_{acc}$ ART Fritz$_{dat}$ returned has

[4]See Postal (1974) and Bresnan (1976) for further discussion of the ability to target the shared argument of Raising-to-Object predicates for HNPS.

(40) a. dass die Maria was$_1$ [$_{CP}$ ohne e_1 zu lesen] dem Fritz t_1
that ART Maria something$_{acc}$ without to read ART Fritz$_{dat}$
zurückgegeben hat
returned has

b. * dass die Maria [$_{CP}$ ohne e_1 zu lesen] dem Fritz was$_1$
that ART Maria without to read ART Fritz$_{dat}$ something$_{acc}$
zurückgegeben hat
returned has

This exactly mirrors the paradigm that is represented by the Revised Larson's Generalization. In both English and German, the need to provide a binder for a parasitic gap is necessitating DP-movement that is otherwise not possible.

For the English data that fall under the Revised Larson's Generalization, I will argue in what follows that an instance of movement beyond standard HNPS is indeed being licensed by the presence of a parasitic gap. In the following section we will look at some evidence for the claim that the rightward movement involved in the Revised Larson's Generalization is exceptional movement targeting a position beyond what is possible for standard HNPS. Section 3.4 will then provide a formal analysis for the empirical generalization represented by the Revised Larson's Generalization.

3.3 Potentially Unbounded Rightward DP-Movement

I suggested above, following a proposal by Heck & Müller (2000), that the need to provide a binder for a parasitic gap licenses rightward movement beyond the standard locus of rightward DP-movement. In this section, I provide further evidence that this rightward movement, given common conceptions, is in fact exceptional. We will see that the need to bind a parasitic gap licenses movement beyond the *v*P and in fact beyond the containing clause. This in turn suggests that rightward movement is in fact potentially unbounded, just like its leftward counterparts.

To the best of my knowledge it was first observed by Lakoff (1970) that the scope of a *because*-clause is ambiguous with respect to negation in cases like (41).

(41) Sam didn't leave because he was tired.

a. CAUSE $>$ $\neg$

'Because Sam was tired, it's not the case that he left.'

b. $\neg$ $>$ CAUSE

'It's not the case that, because Sam was tired, he left.'

Relevant to the point being made here is that a parasitic gap in a *because*-clause interpreted above negation can license movement of a DP as in (42). This example has been designed to be biased towards the wide-scope interpretation of the *because*-clause and to block a RNR derivation with a double-object construction (see section 2.3.2.3). Furthermore, we can note that the parasitic gap is necessary to license the movement.

(42) Tim didn't [$_{v\text{P}}$ invite e_1] because he would have to give [pg_1/*everyone] a gift – [the guy who throws great parties]$_1$.

"Because Tim would have to give [him/everyone] a gift, he didn't invite the guy who throws great parties."

I am assuming that because the adjunct clause is interpreted above negation it was generated there. This means that the movement of the DP past this clausal adjunct has not only taken the DP beyond the edge of *v*P, but even beyond sentential negation.

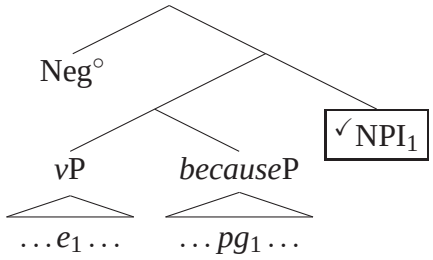
We can demonstrate that this is indeed what we are observing by placing a negative polarity item (NPI) inside the rightward displaced DP. First, note that an NPI such as *any* remains licensed in a DP that has undergone standard HNPS (43). This is consistent with our findings above that standard HNPS targets the first dominating *v*P.

(43) a. Tim doesn't invite any of his superiors to parties.

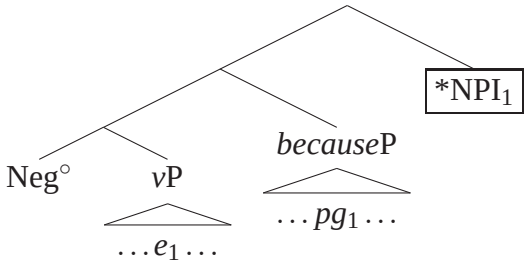
b. Tim doesn't invite e_1 to parties – [any of his superiors]$_1$.

Let us simply assume for the moment that the movement licensed by a parasitic gap targets a position immediately above the parasitic gap domain.[5] Given the available attachment sites for the *because*-clause either above or below negation, it should be possible to predict when a negative polarity item will be licensed following movement that is driven by a parasitic gap.[6] If the *because*-clause takes scope below negation (44), *any* should in principle be licensed in the derived position above the adjunct clause.[7] On the other hand, if the *because*-clause takes scope above negation (45), *any* should fail to be licensed following the displacement operation as its derived position will be outside the scope of negation.

(44) *Movement over a low* because-*clause*



(45) *Movement over a high* because-*clause*



[5]What follows will support this assumption. Basically, I am assuming the basic derivation for parasitic gaps proposed in Nissenbaum 2000:ch. 2, which will be discussed in more detail in section 3.4.

[6]Also relevant to the discussion here is the observation by Mayr & Spector (2010) that (potentially string-vacuous) HNPS may result in otherwise unavailable wide-scope readings of a universal quantifier with negation. This is a potential counter-example to the claim that HNPS targets a relatively low position in the structure. However, given their basic analysis for these observations based on *Scope Economy* principles (Fox 2000), the facts are not incompatible with the system being built here. Thus, a similar argument to the one here could be made whereby it is predicted that a parasitic gap in an adjunct clause above negation forces a wide-scope reading for a universal quantifier. Because these judgments are more involved and less stable, they are not included here. Instead, I thank Jeremy Hartman (p.c.) for suggesting that I use the NPI diagnostic that is presented.

[7]It is sometimes claimed that NPIs are simply unlicensed in the matrix clause given a low-scope *because*-clause (Johnston 1993, Chierchia 2004, Hsieh 2009). The usual account comes from Linebarger's *Immediate Scope Constraint* which asserts that an NPI and its licensor must not be separated by another logical element. However, as Linebarger (1987:339–340) and Guerzoni (2006:372–374) note, the acceptability of examples like (46a), which is based on examples in Partee 1993, is predicted by allowing the negative polarity item to be licensed by covertly raising to a position between negation and the *because*-clause and avoiding a violation of the Immediate Scope Constraint. The key, as (46a) will show, is that these readings require a partitive/specific interpretation of the shifted quantificational DP (e.g. Enç 1991, Diesing 1992). It is interesting to note that this is exactly the configuration and interpretation achieved by the rightward displacement operation illustrated in (44).

These predictions are borne out in (46) and (47) respectively. The (a) variants provide the source example and its interpretation while the (b) variants provide the string that results from rightward movement and the licensing of a parasitic gap. The example in (46) contains a *because*-clause biased towards scoping below negation. With this interpretation, the rightward displaced NPI remains licensed in (46b), which suggests that its derived position is below negation as diagrammed in (44). The more interesting case for our purpose is in (47). Here, like in (42), the *because*-clause is biased towards taking scope over negation. Rightward displacement of the DP with this interpretation of the *because*-clause, though, is now no longer acceptable. This is expected if this sentence necessarily has the structural configuration in (45) where the NPI has moved above the *because*-clause and, therefore, outside of negation.

(46) *Context*: Tim wants to give his new superiors in the department presents if they come to his parties. But, it's not for this reason that he invites any of them to his parties.

a. Tim doesn't invite any of his new superiors because he wants to give them a present.

$\neg\exists x[\text{superior}(x) \wedge \textsc{cause}(\text{invite}(x,\text{Tim}), \text{give-them-a-present}(\text{Tim}))]$

'It's not the case that there is an *x* such that *x* is his new superior and because Tim wants to give them a present, he invites them.'

b. Tim doesn't invite e_1 because he wants to give pg_1 a present –

[any of his new superiors]$_1$.

(47) *Context*: Tim has to give his new superiors in the department a present if they come to his parties. For this reason, he doesn't invite any of them to his parties.

a. Tim doesn't invite any of his new superiors because he has to give them a present.

CAUSE($\neg\exists x$[superior(x) $\wedge$ invite(x,Tim)], give-them-a-present(Tim))

"Because Tim has to give them a present, it's not the case that there is an x such that x is his superior and Tim invites x."

b. * Tim doesn't invite e_1 because he has to give pg_1 a present – [any of his new superiors]$_1$.

The next example in (48) is adapted from Nissenbaum 2000:89. Here we see a rationale clause modifying the matrix predicate *claim* but the rightward displaced DP has its base position as the complement of the embedded verb *like*. As expected from the Revised Larson's Generalization, a parasitic gap in the rationale clause is necessary to license the movement of the DP.

(48) I claimed [$_{CP}$ that I liked e_1] in order to get you to rent [pg_1/*a VHS cassette] – [that movie with Fred Astaire and Audrey Hepburn]$_1$.

(Nissenbaum 2000:89, (3a))

Examples like this suggest that, contra Ross 1967, rightward movement is not necessarily clause-bounded. The structurally similar example below in (49) shows that the same pattern emerges when a Right Node Raising derivation is blocked with the double-object construction.

(49) Sam thinks [$_{CP}$ that you like e_1]

because he saw you give [pg_1/*someone] a present – [a new co-worker]$_1$.

These observations demonstrate that rightward DP-movement can target positions beyond the immediate *v*P that contains the relevant DP and even positions external to that DP's containing clause. This naturally suggests that a DP could be rightward moved a the-

oretically unbounded distance from its base-generated position. Doing so, though, requires that the movement is appropriately licensed, which I have argued can be achieved by the need to bind a parasitic gap.

3.4 Licensing Rightward DP-Movement

This section presents a formal account of the Revised Larson's Generalization, which has been repeated from (17) for convenience.

(17) *Revised Larson's Generalization*

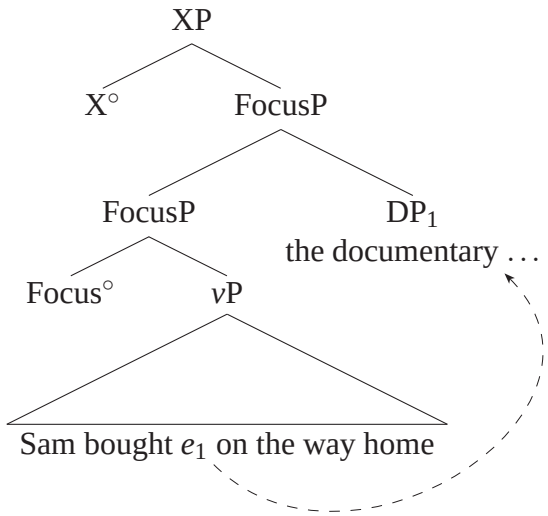
Rightward displacement of a DP beyond standard HNPS must result in the binding of a parasitic gap by the displaced DP.

In section 3.4.1 I will provide a formalization of the constraint that generally blocks rightward movement from targeting a position above clausal adjuncts. This will take the shape of an economy condition that favors fewer movement operations over the course of a derivation. Section 3.4.2 adapts the mechanics for parasitic gap configurations developed by Nissenbaum (2000:ch. 2) to provide a formal analysis for those instances where a parasitic gap licenses what is otherwise impossible rightward movement. In short, the exceptional movement of the DP ensures compositionality between the matrix clause and the parasitic gap domain.

3.4.1 When Heavy-NP Shift Is Unlicensed

Let us start by simplifying the basic picture of HNPS that we established in section 2.6 of chapter 2. For the purposes of this section, it will be enough to work with the partial representation in (50). This structure presents the low FocusP projection within the edge of an articulated *v*P-layer. It is the specifier of FocusP that is targeted by HNPS.

(50)



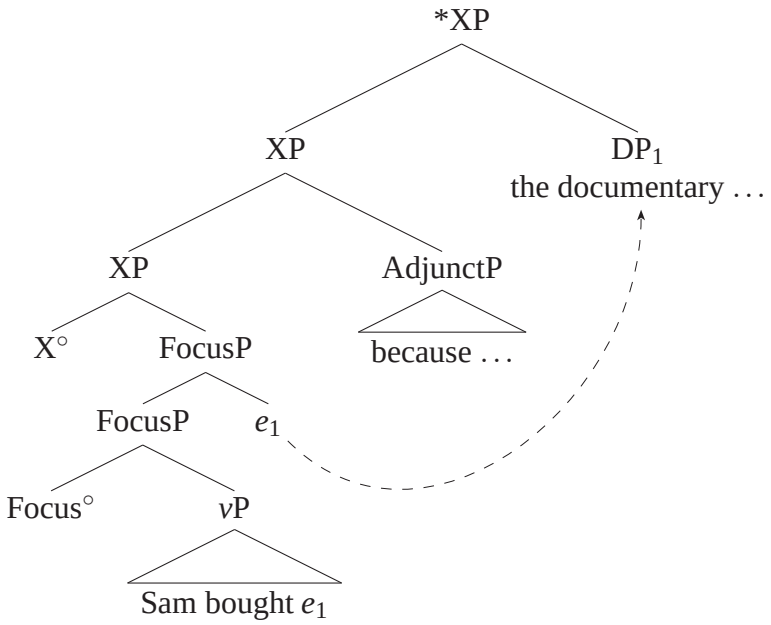
The node XP in the structure above represents some additional extended verbal projection (see Grimshaw 1991, 1993). This position necessarily dominates the low FocusP that hosts standard HNPS and, for us, represents the lowest available point of attachment for a clausal adjunct that is subject to the Revised Larson's Generalization. Because standard HNPS beyond Spec,FocusP is unlicensed, and because clausal adjuncts necessarily adjoin above FocusP, we derive the fact that rightward displacement of a DP that is moving solely for focus will be unable to target a position above a clausal adjunct that is subject to the Revised Larson's Generalization.

Consider the sentence in (51) and its simplified partial representation in (52) to see this. Much like we saw in the tree in (53) in section 3.2.2, movement of the direct object that is purely for the purpose of focus is licensed as far as Spec,FocusP. An operation of movement that takes the DP any further, including over this particular clausal adjunct, is unlicensed.

(51) * Sam bought e_1 because he loved the cinematography –

[the documentary about tigers]$_1$.

(52)



Let us take this opportunity to formalize the evaluation metric that determines the movement to Spec,XP in (52) to be unlicensed movement. We will be assuming with Bresnan (1971), Uriagereka (1999), Chomsky (2000), and Epstein & Seely (2002) that derivations proceed cyclically via multiple spell-outs of the syntactic object under construction. The application of an instance of movement in a given spell-out domain will be subject to the following economy constraint in (53), which I have adapted from Chomsky 1993 cited in Reinhart 2006.

(53) *Economy of Movement Metric (EMM)*

If a derivation D_1 of a spell-out domain α converges without some movement operation, then D_1 blocks a derivation D_2 of α that includes that movement operation.

For the types of cases we have been examining, the EMM says that, if the derivation of a spell-out domain containing a clausal adjunct converges without an application of rightward movement (i.e., a parasitic gap would not go unbound), then rightward movement is disallowed in the derivation of that spell-out domain. I will return to what it means for a derivation to converge in the following section. The idea to start with is the Minimalist as-

sertion that a derivation converges if the result is a representation that is interpretable at the PF interface and the LF interface (e.g., Chomsky 2004). Under the assumptions that I have adopted for this thesis, the syntactic component will generate a single representation that must be interpretable at each of PF and LF (Brody 1995, Bobaljik 1995, Groat & O'Neil 1996). If XP in (53) is treated as a spell-out domain, the derivation of XP will converge without the additional rightward movement beyond HNPS. This is so given the absence of a parasitic gap in the *because*P. Thus, movement over this clausal adjunct to Spec,XP is blocked according to our EMM.

3.4.2 When Rightward DP-Movement Ensures Compositionality

We turn now to why it is that further rightward movement beyond Spec,FocusP and past the relevant clausal adjuncts is permitted in the presence of a parasitic gap. I will suggest that it is the ability to ensure convergence of the spell-domain that contains the clausal adjunct with a parasitic gap that is satisfying the EMM and licensing exceptional rightward movement. More specifically, movement of the DP will ensure composition of the parasitic gap domain with the matrix clause.

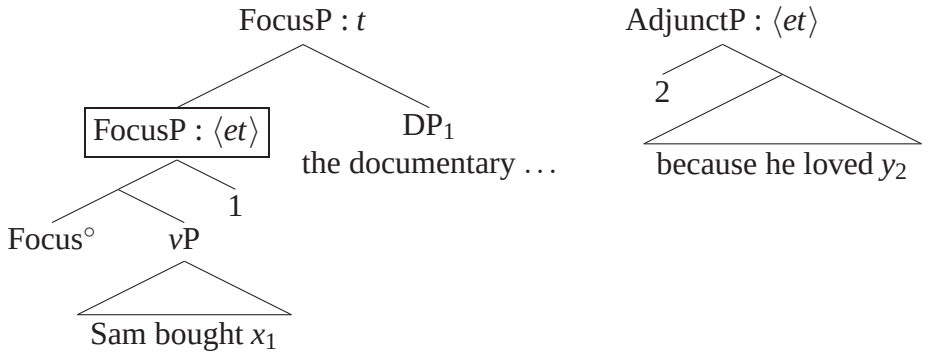
I will ultimately be adapting the analysis that was proposed by Nissenbaum (2000:ch. 2) for parasitic gap licensing in examples like (54).

(54) Sam bought e_1 because he loved pg_1 – [the documentary about Bengal tigers]$_1$.

Nissenbaum, like Contreras (1984), Chomsky (1986), and Browning (1987), treats the parasitic gap as the tail of a null-operator chain inside the adjunct clause. One piece of evidence for this comes from Kayne's (1983) observation presented in section 2.3.1.2 of chapter 2 that we witness island effects within the parasitic gap domain. The mechanics of this analysis employ the notion of multiple derivational workspaces (for instance, see Chomsky 2000) whereby multiple syntactic objects can be constructed in parallel. In the derivation of (54), there will be a point when the two syntactic objects shown in (55) will have been constructed. The syntactic object on the left is the matrix clause following HNPS of the

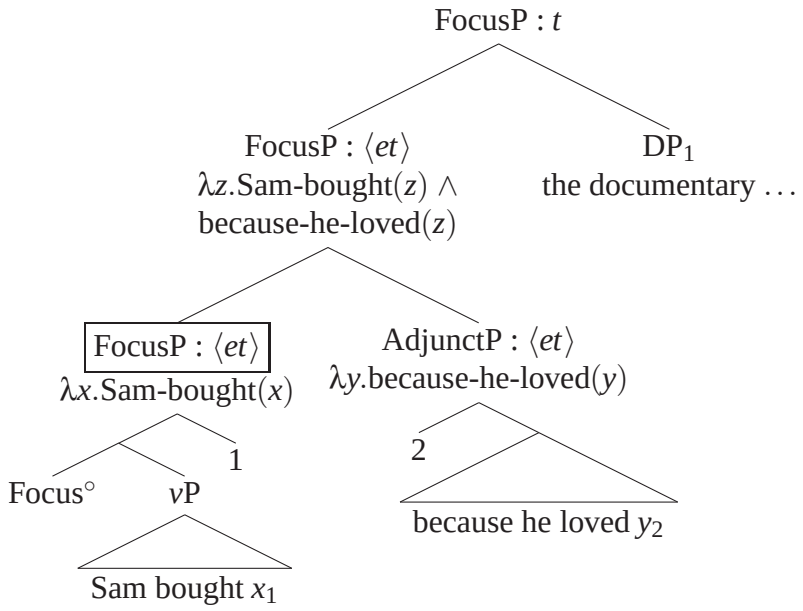
DP from its verb-adjacent position. The syntactic object on the right is the adjunct clause complete with a null-operator chain. (Following Nissenbaum (2000) I will suppress any event/situation variables for expository purposes. For a discussion of their potential import see Nissenbaum (2000:47, fn. 22).)

(55)



As a null-operator structure, the parasitic gap domain will be interpreted as a type $\langle et \rangle$ abstraction over entities. Merging this AdjunctP with the type t FocusP will ultimately present the standard methods of composition (Heim & Kratzer 1998) with a type mismatch. The insight that we get from Nissenbaum (2000:45–46) is that the HNPS operation effectively licenses the parasitic gap by creating a derived predicate in the matrix clause with which the parasitic gap domain could be interpreted via *Predicate Modification* (Heim & Kratzer 1998). To capitalize on this observation, Nissenbaum suggests that the parasitic gap domain in fact must be merged counter-cyclically below the displaced DP with the type $\langle et \rangle$ $\boxed{\text{FocusP}}$. The result is the representation below in (56). Counter-cyclically merging the parasitic gap domain creates an intermediate piece of structure that is interpreted as another predicate of individuals which takes the displaced DP as its argument.

(56)



While this analysis accounts for many of the properties of parasitic gap constructions,[8] it is not straightforwardly compatible with the observations from the previous sections. Recall the arguments from section 3.2 that HNPS cannot target a position on the verbal spine that is higher than the lowest point of attachment for adjunct clauses that are subject to the Revised Larson's Generalization. I suggested instead that the need to bind a parasitic gap is licensing exceptional rightward movement. We also saw evidence in section 3.3 that this rightward movement is indeed targeting positions well beyond the reach of standard HNPS. These observations suggest that it is not the HNPS operation that is responsible for licensing a parasitic gap. Instead, as also suggested by Heck & Müller (2000) for German *wh*-scrambling, it is the parasitic gap that is licensing the movement.

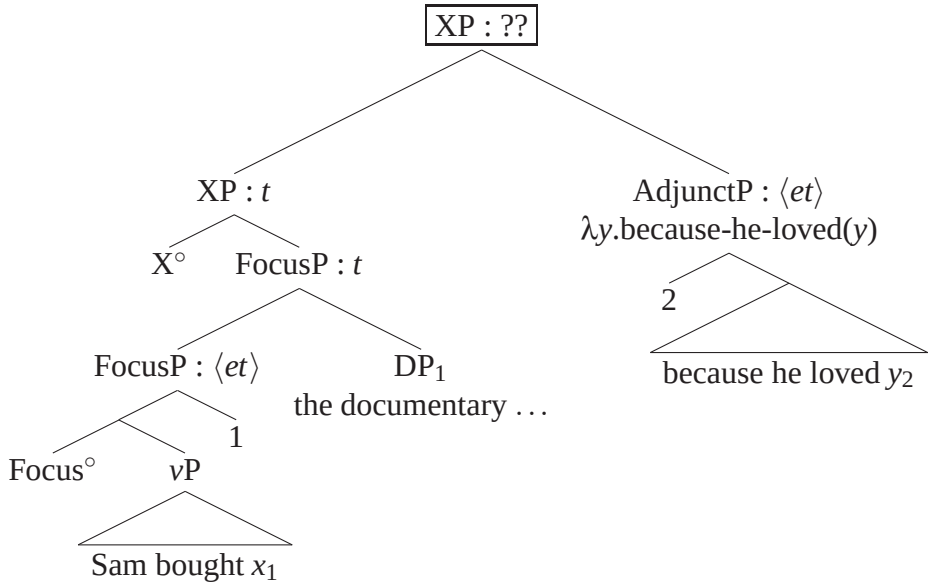
A second issue, which is recognized by Nissenbaum (2000) and addressed in his footnote 22 on page 47, concerns how the structure in (56) is actually being interpreted. In typical cases of clausal adjunction, rationale clauses, temporal adverbial clauses, *because*-clauses, etc. are often thought to combine with the matrix clause via a predication operation

[8]See Nissenbaum (2000:ch. 2) and Culicover 2001 for an extensive discussion of the properties of parasitic gaps constructions.

as opposed to predicate modification.[9] In what follows I will present a theory of parasitic gap licensing with a few revisions to the derivation proposed by Nissenbaum (2000) alongside a few other assumptions, which I will gradually introduce below and over the next few subsections. Despite the derivational differences, this alternative theory will ultimately generate something that resembles Nissenbaum's (2000) representation for parasitic gap configurations but permits composition without predicate modification.

First, instead of forcing the parasitic gap domain to merge counter-cyclically below the locus of HNPS, we will allow the parasitic gap domain to merge cyclically above the locus of HNPS, just as it would under more standard circumstances. The result is shown below in (57) where the *because*P has been adjoined to an extended verbal functional projection XP that dominates the DP that has undergone HNPS.

(57)



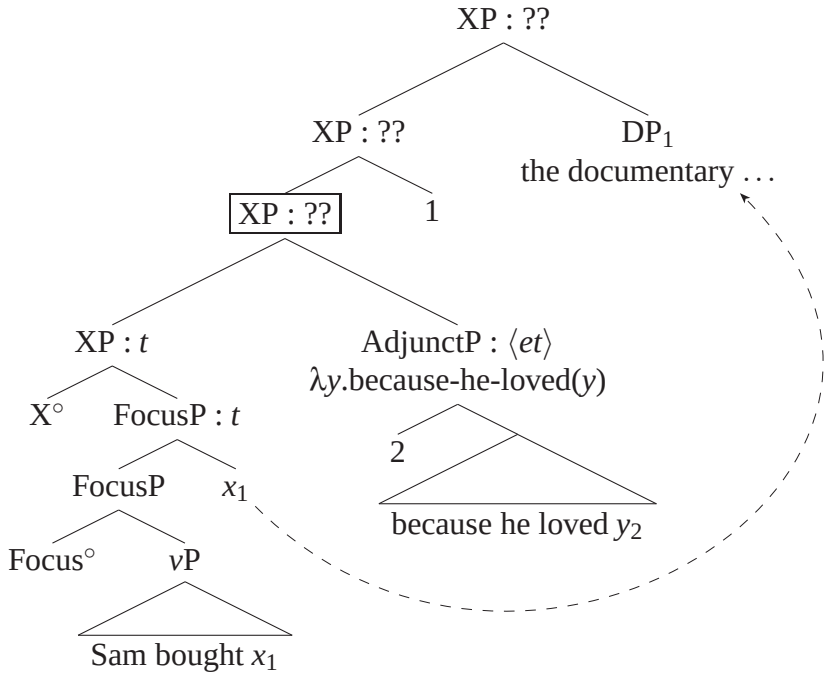
The problem we encounter with this representation—and the one that Nissenbaum (2000) works to avoid—is that it will ultimately result in a type mismatch that renders the $\boxed{\text{XP}}$ node uninterpretable by the standard methods of composition from Heim & Kratzer (1998).

[9]For instance, see Beaver & Condoravdi (2003) on temporal adverbials, von Fintel & Iatridou (2005) and Nissenbaum (2005) on rationale clauses, and the baseline analysis for *because* comes from Lewis (1973).

Assume that at least one of the conditions for the convergence of a derivation is that the representation is entirely compositionally interpretable. According to the EMM, then, an application of movement that could permit interpretation of the $\boxed{\text{XP}}$ node in (57) would be licensed.

I suggest that the rightward displacement of the DP over the adjunct clause does exactly this. I will argue that the DP *the documentary* ... undergoes an exceptional instance of rightward movement beyond HNPS and over the clausal adjunct to a position adjoined to the $\boxed{\text{XP}}$ node and this has the effect of binding the parasitic gap and permitting composition of the adjunct clause with the matrix clause. A few words will be necessary here to see exactly how the composition of $\boxed{\text{XP}}$ is supposed to be ensured by this movement operation. If we consider the result of the proposed movement in (58) below, then we find that the standard treatment of movement from Heim & Kratzer (1998) will not actually help here. The binder index that is inserted along with movement will appear immediately below the landing site of the displaced DP. This would serve to create a derived predicate immediately above the $\boxed{\text{XP}}$ node, but it would do nothing to facilitate composition of the $\boxed{\text{XP}}$ node itself.

(58)



To remedy this situation, we require a means for permitting composition of the adjunct clause and the matrix clause at the $\boxed{\text{XP}}$ node. One way to make this happen would be to allow the semantic component of the grammar to ignore the binder index introduced by the creation of the null-operator chain in the adjunct clause. The method I would like to pursue in order to permit such a thing is inspired by the proposal from Lasnik & Saito (1984) that it is possible to delete movement traces at LF when (i) they do not contribute to semantic interpretation and (ii) when they are locally c-commanded by their binder. The precise details of that analysis can be set aside for our purposes, but I would like to suggest that, in a similar way, it is possible to delete the material associated with links in a movement chain at LF so long as doing so does not inhibit compositionality or produce an interpretation that would otherwise be unavailable. For the case at hand, I propose that it is possible, under the right conditions, to delete the binder index introduced by the movement of the null-operator in the adjunct clause. I will refer to this process as *Index Deletion* and suggest that it applies at the LF interface.

By looking ahead to the structures in (62) and (63) below one can see how this would serve as a solution to the problem of composition in (58), but let us look more closely at how this is supposed to work. To start formalizing the idea that the need to apply Index Deletion is motivating exceptional rightward movement, I will assert that its application is subject to the condition in (59).

(59) *Condition on Index Deletion (CID)*

In the configuration:

$[\ n\ [\ \ldots\ x_n\ \ldots\ ]\ ]$

where n is a numerical binder index and x_n is a variable bound by n, Index Deletion can delete n iff x_n would remain bound.

This condition states that Index Deletion is possible only if the responsibility for binding the relevant variable can be passed on to another available binder. I assume that available binders are defined by the conditions on semantic binding (Heim & Kratzer 1998, Büring

2005). At a minimum, this means that there must be a DP in a c-commanding position which carries the same index as the variable. Therefore, it is by virtue of licensing Index Deletion and, as we will see, ultimately permitting composition of the adjunct and matrix clauses, that movement beyond standard HNPS to a position above the clausal adjunct will be licensed.[10]

The CID can also be viewed as the enforcer of the stipulation that Index Deletion is not licensed to alter semantic interpretation. By requiring that an alternative binder be available, the CID will prevent Index Deletion from turning a bound variable into a free variable and picking up the direct object or some other entity as its referent in this way. This means that we correctly rule out a structure such as the one in (60) where a null-operator chain is formed within an adjunct clause but no viable binder is supplied for the resultant variable. Given the CID, it will not be possible for Index Deletion to delete the binder index 2 (indicated by ~~strikethrough~~) for the variable *y* and allow its treatment as a free variable.

(60) * I met all your friends [~~2~~ without having the chance to talk to y_2].

This illuminates a potential issue for the analysis of parasitic gaps being developed here. As of now, there is currently nothing that guarantees that a parasitic gap will carry the same index as the rightward shifted DP. This is a necessary condition on parasitic gap licensing seeing as it is a property of such constructions that a parasitic gap necessarily refers to the DP whose movement licenses its presence. This is also a natural consequence of the system developed by Nissenbaum (2000) given the compositional tools that analysis employs. Regardless of the indices assigned to the shifted DP or the null-operator, it is because the matrix clause and the parasitic gap domain are composed via predicate modification that

[10]This analysis shares the problem of most theories of parasitic gap licensing that it must simply be stipulated that neither A-movement nor movement of the subject licenses a parasitic gap in a clausal adjunct. See Nunes (2001) for a sideward movement theory of parasitic gap licensing that is claimed to derive these facts.

the movement gap and the parasitic gap will necessarily be bound by the same DP (see (56)).

In the present system as it currently stands, if the variable in the *pg* site carries an index other than the index carried by the licensing DP, the CID will necessarily be violated by deleting the binder index in the adjunct clause. In this situation, the conditions on binding cannot be satisfied since the variable and the potential binder carry different indices. The variable in the *pg* site would fail to remain bound in violation of the CID. Generally speaking, this is a desirable result of the CID for the same reason as above; we want to preclude the possibility of spuriously allowing treatment of a bound variable as a free variable. Nonetheless, we require a way to ensure that the null-operator caries the same index as the DP that licenses the parasitic gap.

One way of doing this is inspired by the sideward movement account of parasitic gap licensing that is presented by Nunes (2001). For Nunes (2001), the parasitic gap is the trace of the licensing DP, which has been moved *sideward* out of its base-position in the adjunct clause and into the matrix clause before it undergoes further movement to a position that c-commands the adjunct clause. An argument against this exact type of approach can be made on the basis of the asymmetric reconstruction facts attributed to Kearny (1983) and further discussed in Nissenbaum 2000 and Culicover 2001. As (61) shows, a reflexive anaphor can be reconstructed into the matrix clause, but not into the adjunct clause.

(61) a. [Which pictures of himself$_2$]$_1$ did John$_2$ sell e_1
before Mary had a chance to look at pg_1?

b. * [Which pictures of himself$_2$]$_1$ did Mary sell e_1
before John$_2$ had a chance to look at pg_1?

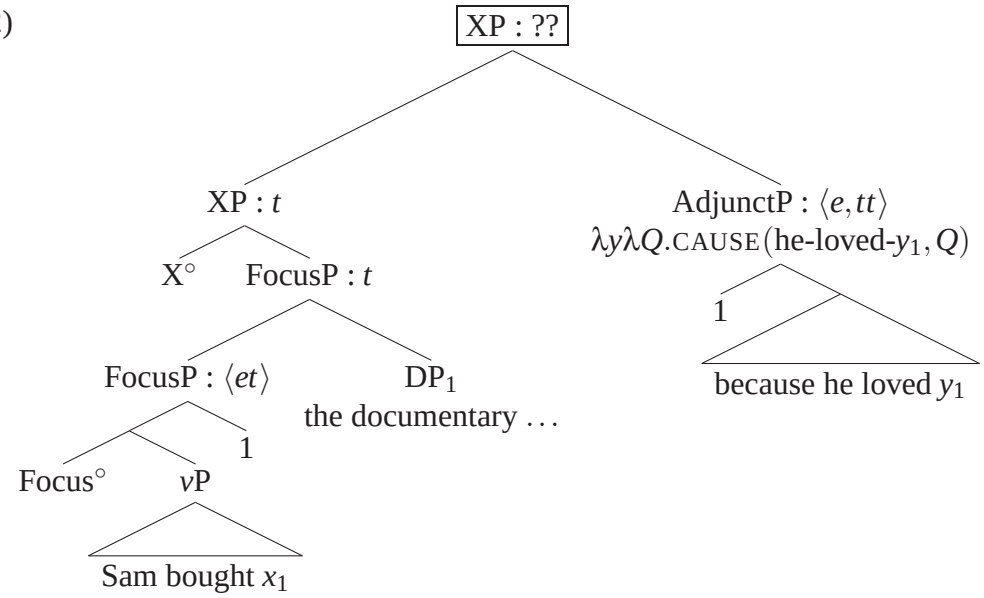
(Nissenbaum 2000:30, (14))

This is an observation that is captured naturally by a null-operator analysis of parasitic gap whereby null-operators are content-less objects. In addition to being content-less, let it also be a property of null-operators that they cannot be assigned their own binder index. Instead,

a null-operator must inherit its binder index from some other full DP in the derivation. It is by copying the binder index of the DP whose movement licenses the parasitic gap onto the null-operator that the appropriate binder index ends up on the variable in the parasitic gap site. As noted above, the CID ensures that it is the DP whose binder index was inherited by the null-operator that ultimately ends up as an available binder for the variable in the parasitic gap site. Otherwise, the relevant variable ends up going unbound and violating the CID.

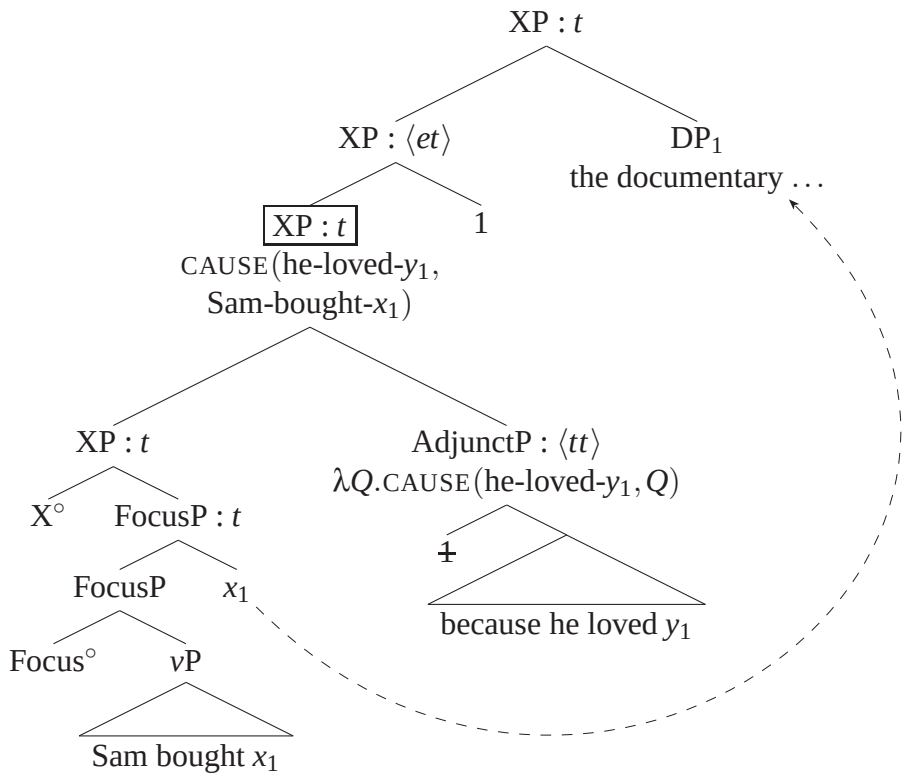
With these pieces in place, we can now see precisely how exceptional rightward movement of the DP ensures composition on the parasitic gap domain with matrix clause. Still abstracting away from event/situation variables, let us adopt a naïve lexical entry for *because* as a type $\langle t, tt \rangle$ function that combines with two propositions and asserts that the first is the cause for the second: $\lambda P_t \lambda Q_t.\textsc{cause}(Q, P)$. The structure in (62) below shows the point in the derivation in which the adjunct clause with its null-operator structure has been merged cyclically with the matrix clause. The null-operator inherited the binder index 1 from the DP *the documentary* and, subsequent to its movement, inserted this index at the edge of the AdjunctP. This constituent now is a derived predicate of individuals and we encounter the problem for composition that we saw in (58).

(62)



At this point, an additional application of movement beyond HNPS can repair the type mismatch at the $\boxed{\text{XP}}$ node and ensure compositionality by producing the appropriate configuration for an application of Index Deletion. This step is shown below in (63), where movement has targeted a position immediately above $\boxed{\text{XP}}$.[11] Deletion of the binder index at the edge of the AdjunctP is licensed given the now available DP *the documentary* as a binder for the variable in the parasitic gap site. Deleting this binder index now permits the semantic component to interpret the $\boxed{\text{XP}}$ node in the "normal" way as type $\langle tt \rangle$ and composing it with the matrix clause via Functional Application (Heim & Kratzer 1998) to return a type t proposition. Finally, the index 1 introduced by the exceptional application of rightward movement will serve as the binder for both the variable y in the parasitic gap and the variable x in the source position of *the documentary*.

(63)



[11] I will address the locus of this instance of movement immediately below in section 3.5.

One particular benefit of this analysis is its generalizability. For any type of clausal adjunct that can host a parasitic gap, this system would allow that clausal adjunct to compose with the matrix clause by way of the standard methods of composition. We do not need to posit any special rules of composition or assume that clausal adjuncts behave differently in the presence of a parasitic gap than they would otherwise.

Before concluding, let us return briefly to a pair of examples that were introduced in footnote 1. I have provided these examples in (64) and (65) below and I have suppressed any grammaticality judgments for them.

(64) I offended e_1 by not recognizing him$_1$ – [my favorite uncle from Cleveland]$_1$.

(65) I offended e_1 by not recognizing him$_1$ – [every team member of the Red Socks]$_1$.

According to a number of native speakers that I have consulted, these examples are an improvement over examples like (54), which I repeat below. The difference is whether the potential parasitic gap site is filled with the pronominal *him* or the full DP *my aunt*.

(54) * I offended e_1 by not recognizing my aunt immediately –
[my favorite uncle from Cleveland]$_1$.

Both of the anonymous reviewers for *Lingua* point out that the acceptability of such examples would not obviously follow directly from the account that I provided in section 3.2 or from the formal analysis that I have provided here.

Assuming that these examples are acceptable, one reviewer notes that they can be made to fit with the proposed analysis if *him* is taken to be indicative of a type of resumption strategy employed inside the adjunct clause. In the same way that a binder must be supplied for a parasitic gap, so too could a binder be necessary for this pronounced version of a parasitic gap. The marginality and dialectal variation that I have observed with these examples, then, could be attributed to a speaker's ability to spell-out a parasitic gap as an overt pronoun.

Another possibility is that there is more than one path to licensing exceptional rightward movement. Assume with Fox (1995, 2000), Reinhart (1995, 2006) and Takahashi (2006) that movement can be licensed in the case that the result is an LF that produces a semantic interpretation that would have otherwise been unavailable. Continue to assume that pronoun binding is a semantic phenomenon achieved when a pronoun carries a binding index that matches the binding index of a c-commanding DP (Heim & Kratzer 1998, Büring 2005). A possibility to be entertained is that exceptional movement of a DP past one of the relevant clausal adjuncts is licensed in the case that the result is an LF in which a new binding possibility is introduced. Basically, by virtue of creating an LF with a semantic interpretation that would otherwise not be available, movement of the DPs in (64) and (65) would be licensed. This analysis would also correctly rule out examples like (54) with the full DP *my aunt*. Moving over the adjunct clause in this case would not result in an LF that produces a semantic interpretation distinct from the interpretation that results from movement to a lower position. This is precisely the type of analysis that I will propose for our parasitic gap cases. The true success or failure of this application of such an idea will ultimately depend on distinguishing the cases in (64) and (65) from other crossover phenomena where we find that movement over a pronoun resists allowing coreference between the moved element and the pronoun.

To conclude this subsection, it is interesting to note that the ultimate effect of this analysis is that the exceptional rightward movement of the DP becomes an instance of overt type-driven movement. Thus, it is analogous in ways to the independently argued for covert operation of quantifier raising (May 1977, 1985, Rooth 1985). In the same way that a quantificational DP of type $\langle et, t \rangle$ must undergo an application of movement in order to avoid the problem of a type mismatch with the type $\langle et \rangle$ verb, so will the additional step of movement at the point in the derivation shown in (63) repair a type mismatch and permit composition of the adjunct clause and the matrix clause. It is this ability to ensure the

convergence of the spell-out domain that, according to the EMM, licenses what we have seen is otherwise illicit rightward movement.

We will return to the EMM and its application in more detail in section 3.6, but, assuming this analysis to be the correct one, we are led to an interesting conclusion about the EMM, which is repeated below.

(53) *Economy of Movement Metric (EMM)*

If a derivation D_1 of a spell-out domain α converges without some movement operation, then D_1 blocks a derivation D_2 of α that includes that movement operation.

The EMM as formulated is a transderivational economy constraint. For us its reference set contains derivations that involve rightward movement beyond standard HNPS and derivations that do not. Because this exceptional movement is type-driven, the metric on which these derivations are being evaluated is not found in the syntax or in the derivations themselves. Instead, whether or not a spell-out domain converges is being determined by the ability to interpret the LF representation of that spell-out domain. The reference set computation performed by the EMM, then, must have access to the LF component in order to determine whether an instance of movement affects convergence.

3.5 Potentially Successive-Cyclic Rightward DP-Movement

Having seen up to this point that rightward DP-movement is potentially unbounded when licensed by the presence of a parasitic gap domain, the next question that arises is how this movement proceeds to its final landing site. It could proceed by way of successive-cyclic operations of movement, as is often thought to be the case for leftward movements (e.g., Chomsky 1973, 1977), or it could proceed via a single long-distance step, as Sabbagh (2007) argues is possible for instances of RNR of a DP that are amenable to an Across-the-Board extraction analysis.

In section 3.5.1 we will turn our attention to Nissenbaum's Paradigm. Recall that this represents the observation by Nissenbaum (2000) that constructions with multiple clausal adjuncts adjoined to the verbal spine require a parasitic gap in each clausal adjunct that is crossed by rightward movement. I argue that this observation should be interpreted as evidence that the rightward displacement operation can and sometimes must involve successive applications of movement. Subsection 3.5.2 addresses some seemingly contradictory results of this section and section 3.4.

3.5.1 Multiple Parasitic Gap Domains

Repeated below are the representative examples of Nissenbaum's Paradigm that we saw in (12).

(12) a. Kim promoted e_1 without calling $[pg_1]$
because she wanted to give $[pg_1]$ a raise –
$[\text{the guy with great references}]_1$.

b. * Kim promoted e_1 without calling [management]
because she wanted to give $[pg_1]$ raise –
$[\text{the guy with great references}]_1$.

c. * Kim promoted e_1 without calling $[pg_1]$
because she wanted to give [someone] a raise –
$[\text{the guy with great references}]_1$.

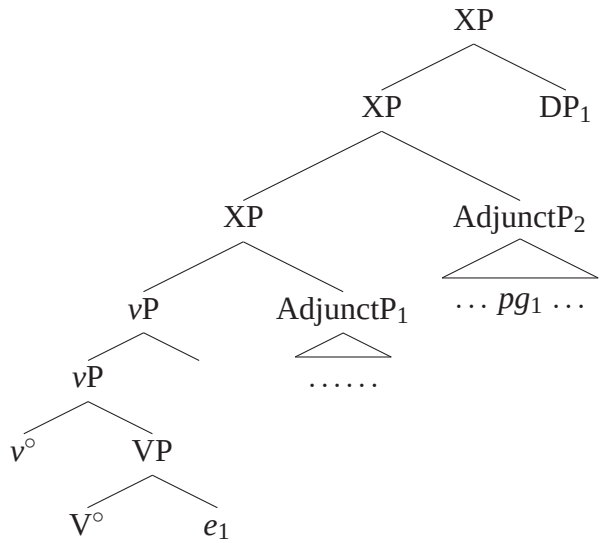
d. * Kim promoted e_1 without calling [management]
because she wanted to give [someone] a raise –
$[\text{the guy with great references}]_1$.

Nissenbaum notes of such examples with multiple adjunct clauses that a parasitic gap is required in each adjunct that has been crossed by the displaced DP. For Nissenbaum (2000:61–64), this paradigm is a consequence of a requirement to counter-cyclically adjoin clausal adjuncts to a position above the binder index introduced by the standard HNPS

operation. This effectively forces any and all clausal adjuncts that appear to the left of the rightward shifted DP to compose with a type $\langle et \rangle$ node ($\boxed{\text{FocusP}}$ in (55)). This in turn requires that the adjunct clauses themselves be a type $\langle et \rangle$ parasitic gap domain. It is in this way, in fact, that Nissenbaum accounts for the preliminary version of Larson's Generalization in (11).

In light of the claim that it is the presence of a parasitic gap domain that is licensing exceptional rightward DP movement, then the paradigm in (12) can be seen as revealing that this exceptional instance of displacement does not always proceed via a single application of movement. If this were the case, and movement of a DP to a position where it could provide a binder for a parasitic gap were freely available from the point of view of the EMM, it would be predicted that movement over an adjunct clause without a parasitic gap would be licensed by the presence of a parasitic gap in a higher adjunct clause. More concretely, in a structure like the one sketched in (66), the presence of the parasitic gap in AdjunctP_2 should be able to motivate the exceptional step of movement over AdjunctP_1, which lacks a parasitic gap.

(66)



The contrast between (12a) and (12b) suggests instead that each instance of movement over each adjunct clause must be independently licensed. In terms of the analysis being built

here, there appears to be a requirement for the displaced DP to move through a position above each individual parasitic gap domain.

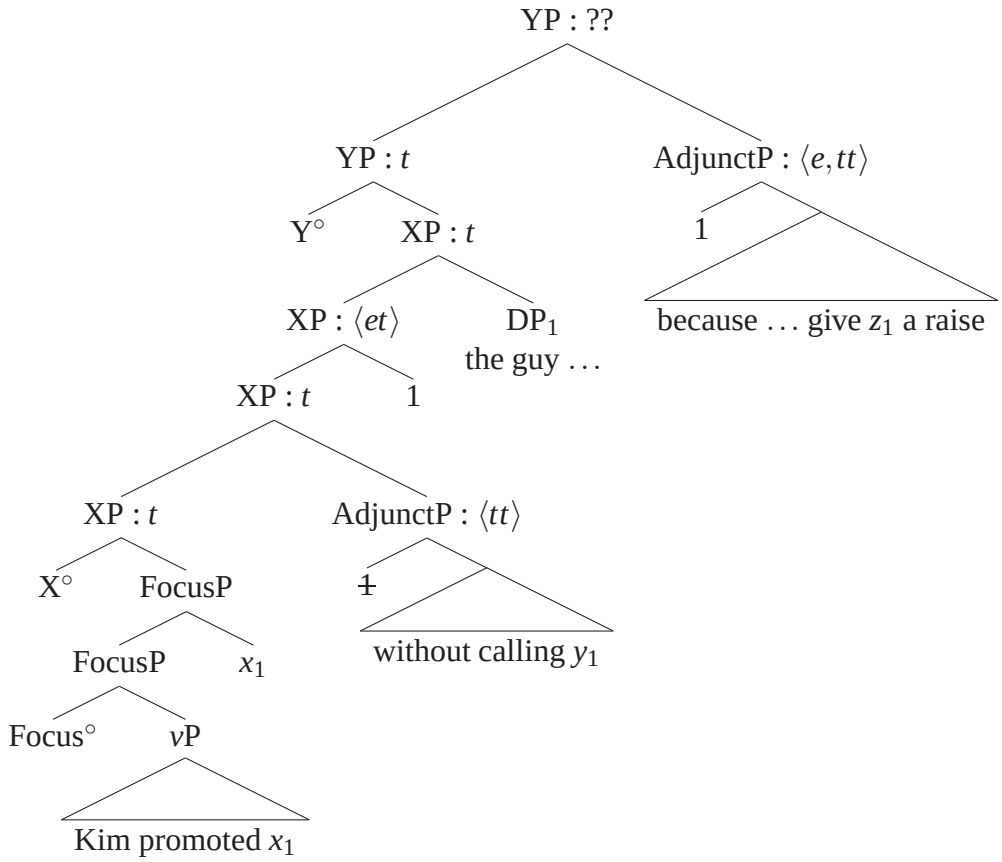
Still accepting that the derivation of a syntactic object involves multiple spell-outs, we can begin to formalize this requirement by assuming that there is an enriched inventory of spell-out domains that lie between and also include *v*P and CP (cf. Chomsky 2000, 2001). We can then assert that the adjunct clauses that are subject to the Revised Larson's Generalization necessarily reside in separate spell-out domains.[12] The effect is that the EMM will be invoked multiple times in a configuration with multiple clausal adjuncts. It will evaluate an application of movement once in the spell-out domain containing the lower adjunct clause and again in the spell-out domain containing the higher adjunct clause. This means that in a configuration with multiple parasitic gap domains, movement of the displaced DP will by licensed by providing a means for each clausal adjunct to compose with the matrix clause. To see this let us look closer at (12a) which is provided below as (67).

(67) Kim promoted e_1 [without calling pg_1]
[because she wanted to give pg_1 a raise] –
[the guy with great references]$_1$.

We can pick up the derivation of this example at the point shown in (68). In the lower spell-out domain XP, the DP$_1$ *the guy* ... underwent an instance of exceptional movement to the edge of XP immediately above the *without*P. In the same way as we saw in section 3.4.2, the EMM will have determined that the movement of DP$_1$ in the derivation of XP was licensed by virtue of repairing the resulting type-mismatch between the *without*P, which contains a parasitic gap, and the matrix clause.

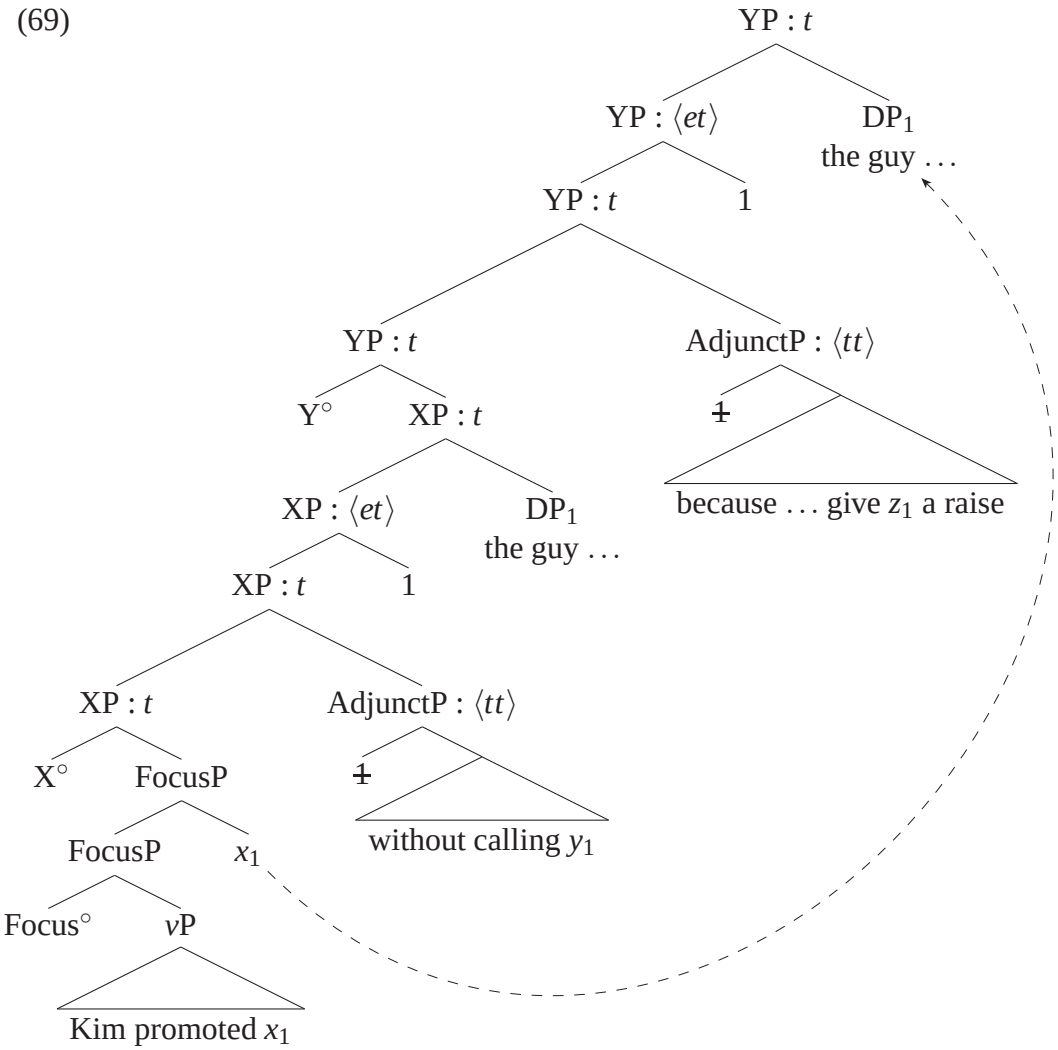
[12] I will remain intentionally vague with regard to precisely how these ideas should be formalized. However, in section 3.4.2 below, I will adopt the idea that spell-out is triggered whenever the derivation produces a representation that would be convergent at the interfaces (Obata 2006, Narita 2011) and, specifically, when it is convergent at the LF interface. Alternatively, one might pursue the idea that every phrase constitutes a spell-out domain (e.g. Müller 2011) or even that every syntactic object produced in the course of a derivation is a spell-out domain (Epstein & Seely 2002).

(68)



The *because*P has been merged into the structure above as part of a higher spell-out domain YP. Recall that this will be required by our constraint against the two AdjunctPs both being merged into the same spell-out domain XP. The situation now is a familiar one. An additional application of movement of DP$_1$ to Spec,YP is licensed in the derivation of YP according to the EMM. It is this movement that will ensure composition of the *because*P and the matrix clause and, thus, ensure convergence of YP. The result is illustrated by the example in (69) where we see the relevant partial representation for the sentence in (67).

(69)



While the present system will account for (67), we will still require something more than what we have gathered up to this point in order to entirely account for the ungrammaticality of (12b), which has been provided below as (70).

(70) * Kim promoted e_1 without calling [management]
because she wanted to give [pg_1] a raise –
[the guy with great references]$_1$.

Appropriately augmenting the present system will be the purpose of the following subsection. However, observe that we correctly rule out a derivation of (70) whereby the displaced DP moves successive-cyclically through the edge of the lower spell-out domain containing

the *without*P. Recall from the discussion surrounding (51) in the previous subsection that, according to the EMM, movement over an adjunct clause that is subject to the Revised Larson's Generalization is unlicensed in the absence of a parasitic gap. It is for the same reason that movement to the edge of the lower spell-out domain containing the *without*P that is illustrated by (68) will be unmotivated and, therefore, unavailable in the derivation of (70).

3.5.2 An Apparent Contradiction

The remaining problem that we face when it comes to accounting for (70) above is that nothing as of yet tells us why movement of the DP cannot simply be delayed until the introduction of the higher adjunct clause with a parasitic gap. Waiting to move until this point would essentially provide a means for circumventing the EMM violation incurred by moving in the lower spell-out domain and would provide a possible derivation for the string. To completely rule out (70), it would appear that we paradoxically require some way of forcing successive-cyclic movement against the will of the EMM.

The problem is slightly more serious once we recall Nissenbaum's example of long-distance rightward movement in (48) above and the modified example in (49). These examples are showing us that the need to permit the composition of a parasitic gap domain licenses movement of a DP out of its containing clause. This is not actually predicted under our current set of assumptions. I have taken it to be the case that derivations involve multiple spell-outs of the syntactic object under construction and that an application of movement in a given spell-out domain is blocked in the case that it is deemed by the EMM to be unnecessary for convergence. It was in this exact way that I suggested we rule out a derivation of (70) that employed successive-cyclic movement. Now, if we continue to assume that at least CP constitutes a spell-out domain, then there does not appear to be a non-stipulative way to satisfy the EMM and license movement of the DP beyond the standard HNPS operation to the edge of the embedded CP in examples (48) and (49). On the

basis of these data we should wish not to force successive-cyclicity but to instead allow long-distance non-successive-cyclic movement.

It appears, then, that the examples in (48) and (49) and the example in (70) are placing contradictory requirements on the system that has been constructed thus far. The contradiction is only apparent, however, as both of these requirements can be accommodated by following the claim in Abe (1993:173–176) and Fox & Pesetsky (2005) generally, as well as Sabbagh (2007) with respect to rightward movement in particular, that $\overline{\text{A}}$-movement need not necessarily proceed successive-cyclically.[13] Instead, independent principles of the grammar may require that certain instances of movement proceed successive-cyclically via local applications of movement. Based on the discussion that has preceded, we would expect that requirements for LF convergence may lead to successive-cyclic applications of movement. I will show here that this assumption about movement, in addition to maintaining the EMM, provides a way of accounting for these seemingly contradictory data.

Let us begin by following Sabbagh's 2007 analysis of RNR and adopting the basic framework of Cyclic Linearization proposed by Fox & Pesetsky (2005). This system starts with the proposal we have already adopted that derivations proceed cyclically via multiple spell-outs of the syntactic object under construction. We will follow Ko (2007) in particular in taking (at least) *v*P and CP to constitute spell-out domains. When one of these phrases has been completely built, it is sent to the phonological component where it is fed into a linearization algorithm *Lin*. This algorithm will establish the relative linear order of the syntactic elements and compile the information as a list. As each new spell-out domain is spelled out, another set of linear ordering statements is established and compiled. As per the principle below, linear ordering statements can only be added to the list.

[13]See also den Dikken (2009) and references therein for a discussion of the non-existence of successive-cyclic movement through Spec,CP.

(71) *Order Preservation*

Information about linearization, once established at the end of a given Spell-out domain, is never deleted in the course of a derivation.

(Fox & Pesetsky 2005:6)

Because ordering statements cannot be deleted, then if it should be the case that an ordering statement established in one instance of spell-out contradicts an ordering statement established in a preceding instance of spell-out, linearization would fail. An unambiguous (or *antisymmetric* following Kayne (1994)) ordering of the syntactic elements involved could not be produced. This means that no PF representation could be assigned to the syntactic object and it would therefore be illicit.

To briefly illustrate, assume that α and β in (72) are spell-out domains. At the point in the derivation when the first spell-out domain α has been completely constructed (72a), it will be spelled out and among the list of linearization statements collected will be $A < X$ (read as A precedes X). If in the derivation of the higher spell-out domain β (72b), X moves out of α over A into β, then X will precede α and everything in it at the spell-out of β. The linearization algorithm then will produce the ordering statement $X < A$, which contradicts the ordering of these two elements that was previously established. This makes β an illicit syntactic object as it cannot be assigned a legitimate PF representation.

(72) a. $[_{\alpha}\ \mathrm{A}\ \mathrm{X}\ ]$

$Lin(\alpha)$: $\mathrm{A} < \mathrm{X}$

b. $*\ [_{\beta}\ \mathrm{X}\ [\ \mathrm{B}\ [_{\alpha}\ \mathrm{A}\ \cancel{\mathrm{X}}\ ]]]$

$Lin(\alpha)$: $\mathbf{A} < \mathbf{X}$

$Lin(\beta)$: $\mathbf{X} < \mathrm{B} < \mathbf{A}$

Movement out of spell-out domains is of course possible and is permitted in this theory by requiring that X moves to the edge of α before spell-out (73a). In this case, the ordering statement $X < A$ is established at the spell-out of α. Further movement of X into β now does not contradict the previously established ordering statement at the spell-out of β (73b).

(73) a. $[_{\alpha}\ \mathrm{X}\ [\ \mathrm{A}\ \cancel{\mathrm{X}}\ ]]$

$Lin(\alpha)$: $\mathrm{X} < \mathrm{A}$

b. $[_{\beta}\ \mathrm{X}\ [\ \mathrm{B}\ [_{\alpha}\ \cancel{\mathrm{X}}\ [\ \mathrm{A}\ \cancel{\mathrm{X}}\ ]]]]$

$Lin(\alpha)$: $\mathbf{X} < \mathbf{A}$

$Lin(\beta)$: $\mathbf{X} < \mathrm{B} < \mathbf{A}$

In this way, it is the requirement for order preservation that forces movement to proceed successive-cyclically through the edge of a spell-out domain. For any given instance of movement, the need for successive-cyclic movement through an edge position only arises in the case that movement will alter the linear order of the syntactic elements.

With this in mind, observe that rightward movement of X out of α will not necessarily need to move through the edge of α. Consider (74) in which the linear order $A < X$ collected at the spell-out of α will be preserved at the spell-out of β regardless of whether or not X moves through the edge of α. As Sabbagh (2007:581–582) argues, it is true for RNR, as it is for any instance of movement, that non-successive-cyclic long-distance movement should in principle always be possible given that there are "no other specific constraints on [that instance of] movement."

(74) a. $[_{\alpha}\ \mathrm{A}\ \mathrm{X}\ ]$

$Lin(\alpha)$: $\mathrm{A} < \mathrm{X}$

b. $[_{\beta}\ [\ [_{\alpha}\ \mathrm{A}\ \cancel{\mathrm{X}}\ ]\ \mathrm{B}\ ]\ \mathrm{X}\ ]$

$Lin(\alpha)$: $\mathbf{A} < \mathbf{X}$

$Lin(\beta)$: $\mathbf{A} < \mathrm{B} < \mathbf{X}$

This is exactly how we account for the vanilla examples of rightward movement and parasitic gap licensing from section 3.4.2 as well as the examples of long-distance rightward movement, including (49) which has been repeated below. When there is only a single parasitic gap licensing movement, it will in principle be possible for this movement to proceed non-successive-cyclically a potentially unbounded distance as nothing forces it to make any intermediate stops.

(49) Sam thinks $[_{\mathrm{CP}}$ that you like $e_1]$

because he saw you give $[pg_1$/*someone] a present –

$[$a new co-worker$]_1$.

Let us consider the derivation of this example in (75) below while still assuming that minimally *v*P and CP constitute spell-out domains. The first stage in the derivation, which is shown in (75a), has the embedded vP_1 constructed and spelled-out. The next two stages of the derivation, which are both represented by (75b), will see the embedded CP_1 and the matrix vP_2 constructed and spelled-out. At this point, DP_1 will have remained inside the embedded vP_1 seeing as there has been no motivation provided to do otherwise according to the EMM. In (75c) we reach the point in the derivation when the parasitic gap domain is adjoined to the matrix clause. Even though movement of DP_1 was not licensed when the EMM was consulted at the previous instance of spell-out, the EMM will permit movement of DP_1 at the current stage in order to provide a binder for the parasitic gap and ensure convergence of CP_2. Furthermore, because DP_1 had not previously been ordered with respect to the *because*-clause, the two may freely permute so long as no other ordering statements are contradicted in the process.

(75) a. $[_{vP_1}$ you like $[_{DP}$ a new co-worker ... $]_1$]

Lin(vP_1): you $<$ like $<$ DP_1

b. $[_{vP_2}$ Sam thinks $[_{CP_1}$ that you $[_{vP_1}$ like $[_{DP}$ a new co-worker ... $]_1$]]]

Lin(vP_1): you $<$ like $<$ DP_1

Lin(CP_1): that $<$ you $<$ like $<$ DP_1

Lin(vP_2): Sam $<$ thinks $<$ that $<$ you $<$ like $<$ DP_1

c. $[_{CP_2}$ Sam $[_{vP_2}$ thinks $[_{CP_1}$ that you $[_{vP_1}$ like e_1]]]

because he saw you give pg_1 a present [a new co-worker $]_1$]

Lin(vP_1): you $<$ like $<$ DP_1

Lin(CP_1): that $<$ you $<$ like $<$ DP_1

Lin(vP_2): Sam $<$ thinks $<$ that $<$ you $<$ like $<$ DP_1

Lin(CP_2): Sam $<$ thinks $<$ that $<$ you $<$ like $<$ *because*P $<$ DP_1

Of course, this type of long-distance non-successive-cyclicity is not compatible with the common treatment of movement as a result of an Agree relationship (Chomsky 2000, 2001). It is typically thought that Agree is a necessarily local operation that is unable to target elements across *v*P and CP layers (e.g., the *Phase Impenetrability Condition*; Chomsky 2001). However, as I noted at the end of section 3.4.2, this rightward movement operation, which we have thus far treated as being motivated by the need to bind the parasitic gap, can be viewed as an instance of type-driven movement as opposed to feature-driven movement. Thus, the step of movement over the adjunct clause need not be triggered by an Agree relationship and should not necessarily be subject to the same locality conditions that constrain the trigger for what are considered feature-driven movements.

We are now finally in a position to account for the ungrammaticality of (66), which is repeated again below.

(66) * Kim promoted e_1 without calling [management]
because she wanted to give [pg_1] raise –
[the guy with great references]$_1$.

Given the new technology that we have gained in this section, what goes wrong in this example lies in the earlier assertion that adjunct clauses that are subject to the Revised Larson's Generalization reside in separate spell-out domains between *v*P and CP along with an assumption regarding the nature of the trigger for spell-out. Let it be the case, following Obata (2006) and Narita (2011), that spell-out is triggered immediately whenever a structure is built that would produce a convergent LF. The intended effect is that if a clausal adjunct that is subject to Larson's Generalization is merged into the derivation without a parasitic gap, spell-out will immediately be triggered before the derivation proceeds. Important for the present discussion is that spell-out will be triggered prior to movement since the resulting structure will converge according to the EMM. What this means for (66) is that the rightward movement of DP$_1$ will be properly licensed by the presence of the parasitic

gap in the *because*-clause, but the movement will result in the production of contradictory linearization statements in the course of the derivation.

Consider the derivation of (66) below to see how this is the case. The first step of the derivation in (76a) shows the point at which the *v*P has been built and spelled out. The stage of the derivation in (76b) is the point at which the spell-out domain XP containing the lower adjunct clause has been built. Because there is no parasitic gap in the *without*P requiring a binder, the EMM deems rightward movement of DP_1 over the *without*P unlicensed at this point and it will remain in the *v*P. At spell-out, then, a linearization statement will be gathered stating that DP_1 precedes the *without*P. The example in (76c) shows the point at which the spell-out domain YP containing the higher adjunct clause has been built. The *because*P is a parasitic gap domain and, therefore, rightward movement of the DP is both licensed and required to a position above the *because*P. However, because this movement will result in a linearization statement which says that the *without*P precedes the DP, contradictory linearization requirements arise and the structure is rendered unpronounceable and, therefore, ungrammatical.

(76) a. $[_{v\text{P}}$ Kim promoted $[_{\text{DP}}$ the guy ... $]_1]$

Lin(*v*P): Kim $<$ promoted $<$ DP_1

b. $[_{\text{XP}}$ $[_{v\text{P}}$ Kim promoted $[_{\text{DP}}$ the guy ... $]_1]$ without calling management $]$

Lin(*v*P): Kim $<$ promoted $<$ DP_1

Lin(XP): Kim $<$ promoted $<$ DP_1 $<$ *without*P

c. * $[_{\text{YP}}$ $[_{\text{XP}}$ $[_{v\text{P}}$ Kim promoted $e_1]$ *without*P $]$

because she wanted to give pg_1 a raise $[_{\text{DP}}$ the guy ... $]_1]$

Lin(*v*P): Kim $<$ promoted $<$ DP_1

Lin(XP): Kim $<$ promoted $<$ $\mathbf{DP}_1$ $<$ ***without*P**

Lin(YP): Kim $<$ promoted $<$ ***without*P** $<$ *because*P $<$ $\mathbf{DP}_1$

In short, by not being able to move to the edge of the spell-out domain containing the lower adjunct clause (given the lack of a parasitic gap) a set of contradictory ordering statements are produced by any subsequent rightward movement.

The preceding discussion has employed several aspects of the system that has been developed over the past few subsections. I have argued that applications of movement are evaluated at the level of each spell-out domain. This has been formalized as the EMM in (53). I have also proposed that spell-out has a rolling trigger that sends the syntactic object off for interpretation at the interfaces whenever the result would converge at LF and, furthermore, that the adjunct clauses that are subject to the Revised Larson's Generalization cannot occupy the same spell-out domain. Looking back, we can see these pieces working together in the acceptability of (67), which contained multiple parasitic gap domains that license successive-cyclic movement. The rightward movements over each adjunct clause illustrated in (68) and (69) are appropriately licensed by the presence of a parasitic gap in each of them. The result is that the displaced DP moves through the edge of each spell-out domain containing an adjunct clause. At each instance of linearization, then, the rightward moving DP will continuously be linearized to the right of the elements being merged into the structure and, in this way, it avoids being involved in contradictory linearization statements.

We arrive at point, then, where the rightward DP-movement of interest is not inherently successive-cyclic, but will proceed successive-cyclically when this is made necessary by independent requirements in the grammar. What we have seen in particular is that this rightward movement might proceed successive-cyclically in order to produce a convergent LF and, as an effect, this facilitates the linearization of the displaced element.

This raises an interesting issue regarding the architecture of the grammar. If the analysis presented here is correct, then we are finding that syntactic movement can be licensed to ensure convergence at LF but movement cannot be licensed to ensure convergence at PF. Contra Fox & Pesetsky (2005), we have failed to observe successive-cyclic movement

purely for the purposes of producing a pronounceable string. This is suggestive of an asymmetric model of the grammar in which the syntax prioritizes the needs of the LF component over those of the PF component. This is very much like the "LF First" organization of the grammar proposed by Bobaljik & Wurmbrand (2012). Put very simply, in that system derivations compete to provide a single most economical representation for interpretation at LF. The most economical candidate from this set of competitors then serves as the input to PF, which then works to most economically translate the representation for the articulatory-phonetic interface. This idea is also represented in the idea we have adopted that spell-out is triggered precisely when LF convergence would be guaranteed.

In terms of the analysis that we have seen over the past few sections, movement is employed in the most economical way possible to produce convergent LFs. When the most economical derivation for producing a representation that converges at LF can be properly linearized at PF, we get a fully convergent derivation (75). When the most economical derivation for producing a representation that converges at LF *cannot* be properly linearized at PF, we get a derivation that fails to fully converge and, as a result, is ungrammatical (76).

3.6 The Difference in Licensing Conditions

Part of the puzzle that was laid out in section 3.1 asked why it should be the case that we observe a constraint like the Revised Larson's Generalization in the context of rightward movement, but not leftward movement. This is the contrast we observe between pairs like (7) and (13), which have been repeated below. The parasitic gap in the rightward movement configuration in (7) is obligatory, but a parasitic gap is optional with *wh*-movement in (13).

(7) a. I offended e_1 by not recognizing pg_1 immediately –
[my favorite uncle from Cleveland]$_1$.

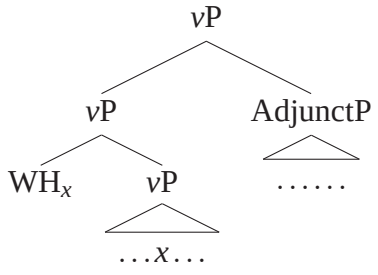
b. * I offended e_1 by not recognizing my aunt immediately –
[my favorite uncle from Cleveland]$_1$.

(13) a. [Who]$_1$ did I offend e_1 by not recognizing pg_1 immediately?

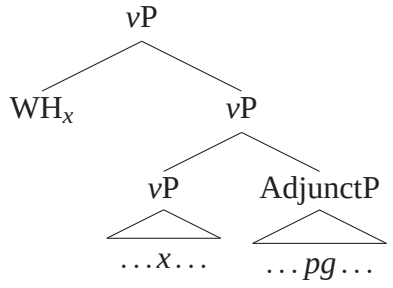
b. [Who]$_1$ did I offend e_1 by not recognizing my aunt immediately?

On the account of parasitic gap licensing that we find in Nissenbaum 2000, *wh*-movement targets a position at the edge of the *v*P that is comparable to the position targeted by HNPS. This makes the presence or absence of a parasitic gap in the context of leftward movement similarly dependent on whether the adjunct is born as a null-operator structure and is merged counter-cyclically below the moved *wh*-phrase (77) or whether it was born as a proposition that is merged cyclically above the moved *wh*-phrase (78).

(77)



(78)

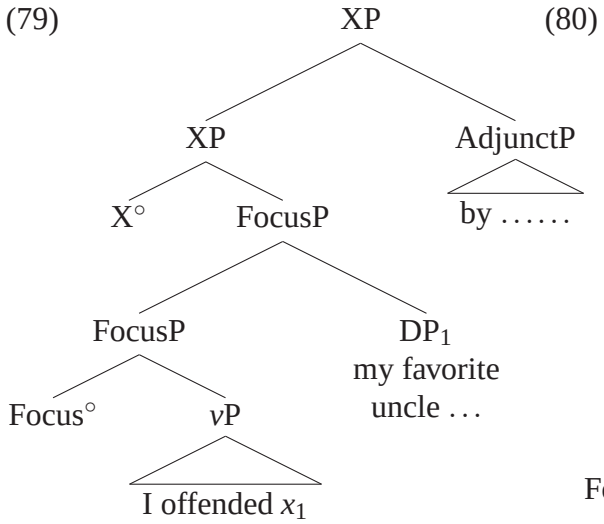


The account that I will propose for these data lies in the difference between the licensing conditions that we can ascribe to each type of movement. Both HNPS and movement of a *wh*-phrase can be licensed by their ability to license a parasitic gap in exactly the same way as we have seen above. What makes a parasitic gap necessary or not comes down to how far HNPS and *wh*-movement are able to move a DP independent of a parasitic gap. HNPS is focus-driven only as far as an inner projection of the *v*P domain. It is the parasitic gap domain that is responsible for any further movement. On the other hand, wh-movement is driven beyond the *v*P domain to the CP domain entirely independent of a parasitic gap. By making the reference set computation for the EMM sensitive to this distinction, the apparent optionality of a parasitic gap becomes an issue of whether movement past a clausal adjunct can ever be part of the most optimal derivation. We will look at how this will work for rightward movement and *wh*-movement in section 3.6.1 and section 3.6.2 respectively.

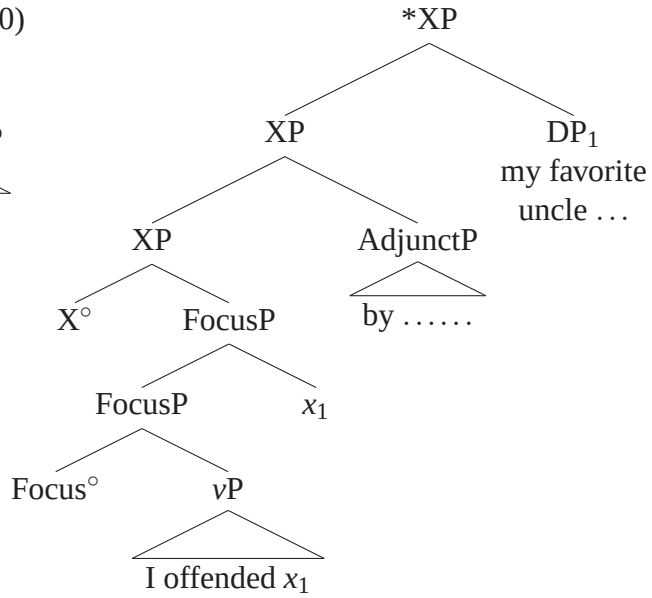
3.6.1 The Dependence of Rightward Movement

We asserted previously that the particular clausal adjunct in (7) is a member of a group of High Adjuncts that appear no lower than some XP that necessarily dominates the locus of standard HNPS. It was for this reason that HNPS is unable to cross a clausal adjunct under normal circumstances. This is the basic picture that is presented by the pair of structures in (79) and (80).

(79)



(80)



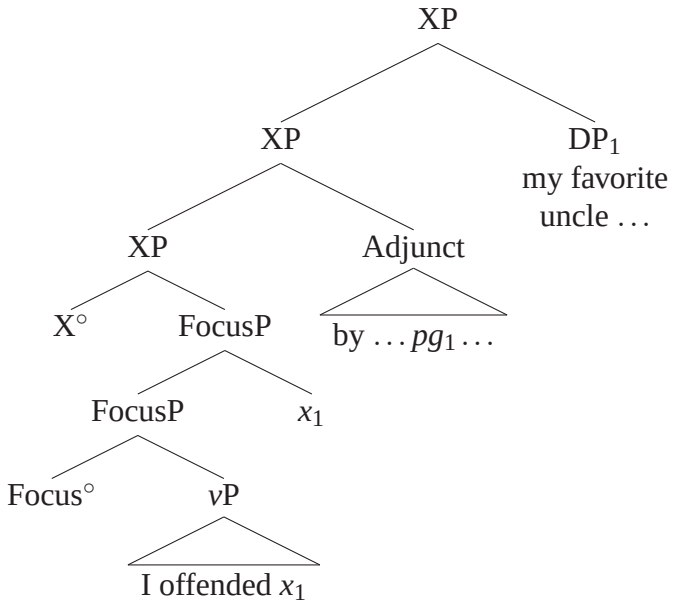
Still working under the idea that HNPS serves to indicate presentational focus, the EMM provides a way to capture this claim.

The idea is basically that HNPS produces an LF that converges on a particular interpretation and we are observing that this interpretation can be achieved in the position that we have labelled FocusP. Any further applications of movement which are not required to produce a convergent LF representation with the intended interpretation will necessarily be blocked. This means specifically that the reference set for the EMM will contain both the structure in (79) and the structure in (80). It is important to note that a structure with a parasitic gap will necessarily be missing from this reference set. Either by requiring an LF with a unique interpretation (Fox 2000, Reinhart 2006, Takahashi 2006:e.g.,) or by starting

from different numerations (Chomsky 1995:e.g.,), these structures cannot be directly compared with structures that do not contain a parasitic gap. Between the structure (79) and the structure in (80), it is (79) that provides the most economical application of movement towards producing a convergent LF with the intended interpretation. For this reason, it is (79) which will always block (80) and effectively keep HNPS from targeting a position above FocusP under normal circumstances. at

The exceptional rightward movement of the DP beyond FocusP in structures like we've seen in (81) below was argued in section 3.2 and 3.4 to be licensed by the need to repair the type-mismatch induced by the presence of the parasitic gap in the clausal adjunct.

(81)



What makes the rightward movement in this example exceptional, of course, is that standard HNPS is unable to target a position above FocusP. From the point of view of the EMM, what makes this case different from the examples without a parasitic gap like in (80) is that there is no structure in the reference set that competes with (81) and which does not move the DP beyond FocusP. All such derivations would fail to produce a representation that would converge at LF and meet the intended interpretive goals related to licensed

the parasitic gap. The absence of such structures from the reference set computation has two consequences.

First, we expect that the examples from Williams (1990), in which we observe rightward movement that does not target a position above the adjunct clause will not be possible. These examples, like in (79), avoid an application of movement in the derivation of the XP containing the clausal adjunct. However, the resulting representation would not converge at LF seeing as the type-mismatch between the parasitic gap domain and the matrix clause would not be repaired and and would render the structure uninterpretable.

(82) * I [$_{v\mathrm{P}}$ met e_1 yesterday [all your friends]$_1$]
without really having the chance to talk to pg_1.
(Williams 1990:267)

Second, in the presence of a parasitic gap, there will be no structures that are more economical than those that involve movement beyond FocusP to a position above the parasitic gap domain. In other words, we correctly predict that once the parasitic gap has been licensed, the rightward displaced DP will not continue to undergo movement. A relevant example is (12c) from Nissenbaum's Paradigm, which I have provided in (83) for convenience.

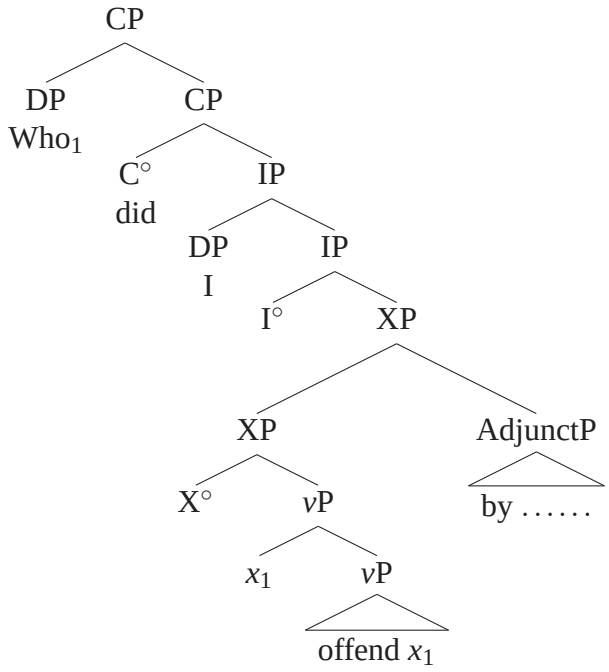
(83) * Kim promoted e_1 without calling [pg_1]
because she wanted to give [someone] a raise –
[the guy with great references]$_1$.

In exactly the same way as above, the application of movement over the *because*P here will not be necessary to produce a representation that converges at LF with the intended interpretation. Part of what it means for the presence of a parasitic gap to license otherwise unavailable movement, then, is that this movement operation necessarily becomes part of the most economical structure available.

3.6.2 The Independence of Leftward Movement

Thinking along the same lines as above, we can observe a significant distinction between HNPS and the *wh*-movement. Whereas the interpretation of HNPS is achieved at the low FocusP, the interpretation of the constituent question we have in (13) relies on moving the *wh*-phrase to a position where it takes scope over the asserted content of the utterance at the level of a CP. This is what we see in (84).

(84)



Importantly, this means that *wh*-movement in English will always be independently licensed to move past the relevant clausal adjuncts. Consequently, the instance of movement that takes a *wh*-phrase past a clausal adjunct will be entirely independent of a parasitic gap. From the point of view of the EMM, producing a convergent LF with the intended interpretation of a constituent question requires an application of movement that targets a position that is higher than the clausal adjuncts that are subject to the Revised Larson's Generalization.

Let us continue to assume that spell-out has a rolling trigger that results in various nodes on the verbal spine acting as spell-out domains over the course of a derivation. I suggested

in section 3.5 that structures that are interpretable at the level of LF will serve as spell-out domains. These minimally include *v*P as well as the extended verbal projections that house our clausal adjuncts of interest. Given the assertions of Cyclic Linearization that we adopted in section 3.5.2, a *wh*-phrase in direct object position like in (13), which is repeated below, will need to move to the edge of the *v*P to avoid gathering contradictory linearization statements following further movement to Spec,CP. This is what we see illustrated roughly in (85). If the *wh*-phrase were to remain in-situ as in (86), it could not subsequently be re-ordered with respect to the other *v*P-internal material.

(13) Who$_1$ did I offend e_1 by not recognizing [pg_1/my aunt] immediately?

(85) $[_{\text{CP}}$ Who$_1$ [C$^\circ$ ... $[_{v\text{P}}$ $\cancel{\text{Who}_{\text{T}}}$ [I offend $\cancel{\text{Who}_{\text{T}}}$]]]]

Lin(vP): Who $<$ I $<$ offend

Lin(CP): Who $<$ C$^\circ$ $<$ I $<$ offend

(86) * $[_{\text{CP}}$ Who$_1$ [C$^\circ$ ... $[_{v\text{P}}$ I offend $\cancel{\text{Who}_{\text{T}}}$]]]]

Lin(vP): **I** $<$ **offend** $<$ **Who**

Lin(CP): **Who** $<$ C$^\circ$ $<$ **I** $<$ **offend**

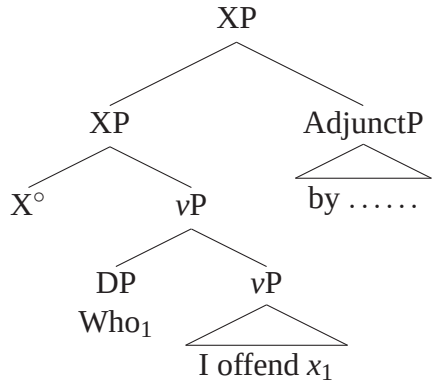
The motivation for the intermediate step of movement of the *wh*-element to Spec,*v*P is relatively straightforward for Fox & Pesetsky (2005). This is a step of movement that is made necessary by the need to produce a representation that converges at PF. However, I denied this as a possible motivation for movement in section 3.5.2. Recall that we found that movement cannot be motivated purely to facilitate interpretability at PF. Thus, we lose the ability to explain the need for successive-cyclic *wh*-movement through the edge of *v*P with the theory of Cyclic Linearization.

There are many ways we could imagine making up for this loss in explanatory power, however. An intermediate step of movement of a *wh*-element (or any element) could be driven by the need to check an intermediate occurrence of a similar or underspecified feature (Collins 1997, Müller 1999, Chomsky 2001, McCloskey 2002). Alternatively, there

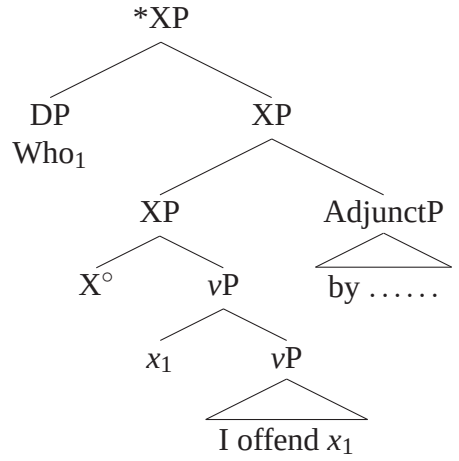
may be a pressure for the *wh*-element to evacuate the direct object position due to a feature mismatch between the *wh*-element and its local environment (e.g., *Survive*; Stroik 1999, 2009) or due to an inability to interpret the *wh*-element in-situ due to its quantificational nature (viz., QR). All that is required to remain consistent with the picture presented here is that the need to move in some way ensures LF-convergence. The result, in the same was as we observed for rightward movement in section 3.5.2, will be that linearization is facilitated.

The relevant question now is going to be whether or not the *wh*-phrase will also take a step of movement through the edge of the XP on its way to Spec,CP. These two options are presented in (87) and (88).

(87)



(88)



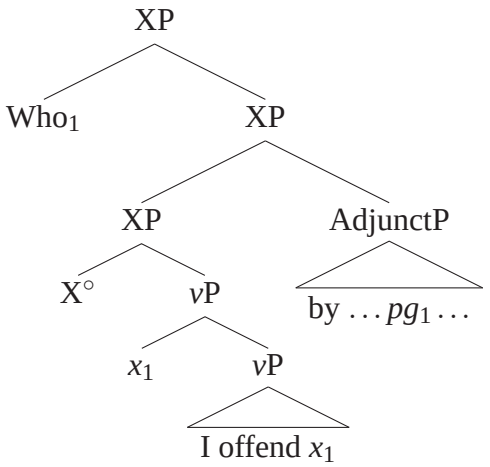
In the absence of a parasitic gap, there will be no need for the *wh*-phrase to undergo an application of movement at this point in the derivation. The derivation of XP will produce a structure that converges at LF without an application of movement of the *wh*-phrase. In terms of economy, the structures in (87) and (88) will be part of the same reference set computation. The representation in (87), however, will necessarily block the representation in (88). The derivation that generates (87) does so without an instance of movement that is redundantly employed in the derivation for (88).

This case of leftward movement is superficially very similar to the case of rightward movement in section 3.6.1 above. Movement to the edge of the spell-out domain contain-

ing the clausal adjunct is unmotivated in the absence of a parasitic gap. Basically, there will always be a more economical structure in the reference set that doesn't involve this movement. What crucially separates the leftward movement case from the rightward movement case, as noted above, is that the leftward movement is independently required to move beyond the clausal adjunct into Spec,CP. Thus, while we saw that the lack of a parasitic gap traps a rightward moved DP in a low position, the *wh*-phrase is guaranteed a second chance to continue movement beyond the *v*P domain. Being afforded this second chance provides the means to move past the clausal adjunct in the absence of a parasitic gap exactly as we saw in (84).

When there is a parasitic gap in the clausal adjunct, the situation becomes familiar again. The parasitic gap domain will not be able to compose with the matrix clause by way of our standard methods of composition. In the same way as we saw for rightward movement in section 3.4, movement of the *wh*-phrase to the edge of the XP containing the parasitic gap domain provides a way to produce a syntactic representation such as (89) which will avoid a type mismatch and converge at LF.

(89)



Since it is only by moving to the edge of XP that XP will be a convergent structure at LF, then the reference set computation will only have access to structures that move the

wh-phrase to XP. In this sense, the parasitic gap is again licensing movement that would otherwise be blocked by economy considerations.

What appears to be optionality of a parasitic gap in a single configuration, can really be reduced the availability of two non-competing derivational paths for creating a constituent question. It is the independent requirement to interpret a *wh*-phrase in the CP domain that makes possible either of the two derivations in (87) or (89).

3.7 Summary

The primary goal of this chapter was to provide an account for the observation by Larson (1989) that rightward DP-movement past particular clausal adjuncts requires a parasitic gap. As I argued in section 3.2, this rightward movement is exceptional in that rightward DP-movement is not otherwise able to target a position above these particular adjuncts. Inspired by an observation from Heck & Müller (2000), I suggested that the exceptional movement is licensed in the presence of a parasitic gap. Using the basic analysis of parasitic gap constructions developed by Nissenbaum (2000) as the groundwork, I formalized this analysis in section 3.4 in terms of the ability of the exceptional movement to permit composition of the matrix clause and the adjunct clause at the level of LF. This led us to an interesting picture of the grammar in which, from the perspective of syntactic movement, convergence at LF is prioritized over convergence at PF.

This analysis also comes with the benefit of allowing us to provide an account for the fact that leftward movement over the same adjunct clauses does not necessitate a parasitic gap. The reason for the asymmetry can be attributed to the difference in licensing conditions. Whereas rightward DP movement beyond *v*P is exceptionally licensed to ensure composition of a parasitic gap domain, *wh*-movement will independently be licensed to a position where the *wh*-phrase takes scope over the asserted content. In English, this will license movement to Spec,CP and will do so entirely independent of the presence of a clausal adjunct or a parasitic gap.

It was also argued in sections 3.3 and 3.5 that rightward movement and the licensing of parasitic gaps is similar to certain cases of RNR of DPs according to Sabbagh (2007). Both can in principle be seen as unbounded movement operations and may be forced to proceed successive-cyclically by a confluence of constraints enforced at interface components. The emerging picture from these two studies on rightward movement is that they may not in principle differ from analogous types of leftward DP-movement. The Revised Larson's Generalization and the unique locality conditions can be viewed as superficial differences that happen to be reflexes of the principles of linearization and the EMM. If the analysis presented here turns out to be the correct one, the real difference between leftward and rightward DP-movement does not obviously lie in the actual mechanism that is responsible for movement. Instead the observable differences may be attributable to the particular factors that license and constrain any given instance of movement, leftward or rightward.

However, this still leaves us with a major question: why are particular movements linearized rightward and others leftward? The answer, I would like to speculate, may be found in the correlation that exists, at least in English, between the direction of an instance of $\overline{\text{A}}$-movement and the domain it targets. Leftward $\overline{\text{A}}$-movements are those movements that target a CP layer. The instance of rightward movement examined here, on the other hand, is an instance of $\overline{\text{A}}$-movement targeting the *v*P domain (under standard circumstances). If we can understand this behavior as an effect of the interpretation-dependent version of the EMM explored in section 3.6, we can reframe this question in an interesting way: why are short movements (HNPS) being linearized to the right, while long movements (*wh*-movement) are being linearized to the left?

A promising line of research could start from the idea that there is a strong pressure to preserve the linear order of the elements in the *v*P domain (Müller 2001, 2004, Williams 2003, Fox & Pesetsky 2005). The failure to preserve the order of the *v*P we could understand as a conflict with information-structural constraints on the presentational order of particular discourse referents in higher domains such as the CP-layer.

CHAPTER 4

MODELLING EXTRAPOSITION FROM NP

This is the first of the chapters that turn our attention to Extraposition from NP (EXNP) configurations. Our primary concern here is to understand the derivation of such structures. At stake in particular is where the extraposed material is generated. There are analyses of EXNP suggesting that the extraposed material is generated in the usual position inside the host and some additional mechanism, either in the syntax or at PF, results in the discontinuous constituency (e.g., Ross 1967, Chomsky & Lasnik 1977, Fox & Nissenbaum 1999, de Vries 2002). Other analyses argue that the extraposed material is generated outside of the host in a position adjoined to the verbal spine (e.g. Rochemont & Culicover 1990, Koster 2000, Webelhuth et al. 2013). It is fair to say that recent work on EXNP has largely begun to converge on the idea that extraposed material is generated in a position external to its host.

We will probe the issue by proposing and investigating a new connectivity diagnostic. With a focus on the extraposition of relative clauses from direct objects, we will find that the extraposed material can be interpreted as if it were inside its host. The argument is based around the finding that a negative polarity item (NPI) licensed in the restrictor argument of a host headed by *every* remains licensed in an extraposed position (1).

(1) a. We took $[_{DP}$ every guest $[_{CP}$ who ate *any* of the potato salad $]]$ to the hospital.

b. We took $[_{DP}$ every guest $]_1$ to the hospital

$[_{CP}$ who ate *any* of the potato salad $]_1$.

Given that NPIs are otherwise not licensed when they are contained in the nuclear scope of *every*, a tight relationship between the extraposed material and the host is implicated in

the licensing of the NPI. I will argue below that this finding is most naturally accounted for in theories of EXNP that generate the extraposed material in the restrictor argument of the host.

The chapter is organized as follows. In section 4.1 I will first briefly outline the major representatives of the two competing classes of analyses for EXNP mentioned above as well as the predictions they make with respect to the ability to interpret the extraposed material inside the host. I will propose to distinguish between classes of analyses of EXNP on the basis of where the extraposed material generated. This *inside*/*outside* dichotomy gives us the following two classes:

I. *Host-External Analyses*

   Extraposed material is generated external to its host DP.

II. *Host-Internal Analyses*

   Extraposed material generated internal to its host DP.

Section 4.2 establishes the licensing pattern for various NPIs in the restrictor argument of the quantifier *every* and introduces the phenomenon as a connectivity diagnostic for an extraposed relative clause. Of particular consequence will be the observation that *every* is incapable of licensing an NPI in material that is adjoined to the verbal spine regardless of the configuration. NPIs are only licensed in material that is generated in the restrictor argument of the host. In section 4.3 we will see the results of an acceptability judgment study that tested the predictions made by the different classes of analyses and the intuitions reported in (1). This study reveals that participants reliably detect the contrast between NPIs in extraposed material that are licensed or unlicensed by the head of the host. Based on these results, I argue that extraposed material can be interpreted as if it were in the restrictor argument of its host and, furthermore, that this is the state of affairs predicted *a priori* by the Host-Internal analyses of EXNP.

In light of the experimental data presented in section 4.3, section 4.4 evaluates the available Host-Internal analyses. I ultimately suggest that the theory of EXNP proposed by Fox & Nissenbaum (1999), whereby extraposition is parasitic on covert movement of the host, most adequately accounts for the range of facts that we will see. Given the amount of support that Host-External analyses have accumulated, section 4.5 presses the investigation slightly further to ask whether the derivation of EXNP configurations might employ either a Host-Internal or Host-External mechanism. I argue that this same Host-Internal analysis from Fox & Nissenbaum (1999) may on its own provide sufficient empirical coverage with respect to the data examined here. Finally, section 4.6 summarizes and concludes.

4.1 Two Competing Models of Extraposition from NP

One way of carving up the logical space for possible analyses of EXNP is with regard to the proposed relationship between the extraposed material and the host.[1] Accounts may also differ with respect to whether the host is interpreted in-situ or ex-situ or perhaps with respect to precisely where the extraposed material is spoken.[2] For the time being, these are issues that can be treated as orthogonal to the question at hand. We will initially be concerned with the distinction between what I refer to as *Host-External* and *Host-Internal* analyses of EXNP.

---

[1]Recent overviews and critiques of EXNP analyses can be found in Baltin (2005) and Webelhuth et al. (2013).

[2] A set of analyses, which I will not directly address here are the non-syntactic analyses of EXNP. These analyses suggest that the extraposed word order is the result of a post-syntactic reordering process (e.g., Chomsky & Lasnik 1977, Rochemont 1978, Göbbel 2013, Hunter & Frank 2014). The results of the investigation reported in section 4.2 and 4.3 are compatible with analyses. However, I will argue in section 4.4 they should be dispreferred to syntactic approaches to EXNP. In addition to the arguments presented there, I would point to a number of syntactic and semantic effects that have been identified with extraposition operations (e.g., Williams 1974, Guéron 1980, Taraldsen 1981, Guéron & May 1984, Rochemont & Culicover 1990, Fox & Nissenbaum 1999, Fox 2002, Bhatt & Pancheva 2004) to suggest that at least some instances of EXNP, including those considered in this thesis, are syntactic.

4.1.1 Host-Internal Approaches to EXNP

4.1.1.1 Subextraction: Ross 1967

I will refer to those analyses of EXNP which suggest that the extraposed material is generated inside the host as Host-Internal analyses.[3] The initial formulation of the EXNP operation by Ross (1967) is among the Host-Internal class of approaches to EXNP. On this analysis EXNP is an operation that extracts the extraposed material out of its host and right adjoins it to what Ross called the first cyclic node (2).

(2) I met $[_{DP}$ a linguist e_1 $]$ this morning $[_{CP}$ who is from East Africa $]_1$.

For Ross, the only cyclic node was CP. However, Baltin (1978, 1981) and Guéron (1980) and later Rochemont & Culicover (1990) observed that the extraposed material does not always behave as if it were adjoined to CP. The contrasting grammaticality patterns in examples (3) and (4), which have been adapted from Baltin (1981:269), suggest that the height of the extraposed material correlates with the height of the host. The contrast in (3) can be taken to show that a relative clause extraposed from a DP in direct object position cannot be stranded by a VP-fronting operation and so must be part of the VP constituent. The contrast in (4), on the other hand, suggests that the opposite is true of a relative clause extraposed from a DP in subject position. The extraposed relative clause cannot be treated as part of the VP constituent with respect to a VP-fronting operation.

(3) a. $[_{VP}$ Invite $[_{DP}$ someone $]_1$ tomorrow $[_{CP}$ who is from East Africa $]_1$ $]_2$ though we may e_2, ...

b. * $[_{VP}$ Invite $[_{DP}$ someone $]_1$ $]_2$ though we may e_2 $[_{CP}$ who is from East Africa $]_1$, ...

[3] A major Host-Internal analysis of EXNP that I will not directly address in this section is the stranding approach that was pursued initially by Kayne (1994). Variations on this type of account can be found in Rochemont & Culicover 1997. I refer the reader to research by Wilder (1995), Büring & Hartmann (1997), Rochemont & Culicover (1997), Koster (2000), de Vries (2002), Vicente (2003), Sheehan (2010), and Webelhuth et al. (2013) for arguments addressing the untenability of such accounts of EXNP.

(4) a. * $[_{VP}$ Invited $[_{CP}$ who is from East Africa $]_1$ $]_2$

though $[_{DP}$ someone $]_1$ may have been e_2, ...

b. $[_{VP}$ Invited $]_2$ though $[_{DP}$ someone $]_1$ may have been e_2

$[_{CP}$ who is from East Africa $]_1$, ...

From these facts Baltin (1981) suggests that a phrase extraposed from a direct object cannot target a position above VP while a phrase extraposed from the subject must target a position above VP and, for Baltin, even above the subject's surface position.

4.1.1.2 QR+Late-Merge: Fox & Nissebaum 1999

Fox & Nissenbaum (1999) and later Fox (2002) argue for a Host-Internal analysis of EXNP that capitalizes on the Copy-Theory of movement (Chomsky 1995) and a single-output model of grammar (Bobaljik 1995, Brody 1995, Groat & O'Neil 1996). For them, the host DP first undergoes an application of Quantifier Raising (QR) to the edge of VP as shown in (5a) below. The extraposed material is subsequently late-merged into the higher copy of the host (as in Lebeaux 1988), which will be the copy of movement that is deleted at PF (5b).[4]

(5) a. $[_{VP}$ $[_{VP}$ I met $[_{DP}$ a linguist $]$ this morning $]$ $[_{DP}$ a linguist $]$ $]$

b. $[_{VP}$ $[_{VP}$ I met $[_{DP}$ a linguist $]$ this morning $]$ $[_{DP}$ ~~a linguist~~

$[_{CP}$ who is from East Africa $]]$ $]$

4.1.1.3 Asyndetic Coordination: de Vries 2002

A non-movement approach to EXNP of the Host-Internal variety is offered by de Vries (2002:ch.7). Following Koster's (2000) theory of *Parallel Construal*, which we will see in the following section, the extraposed material is part of a phrase projected from a null Boolean operator and is conjoined with the matrix clause (i.e., asyndetic coordination).

[4]More accurately, Fox & Nissenbaum (1999) argue that this method for EXNP is restricted adjuncts. As Lebeaux (1988) points out, complements seem to resist late-merge.

For de Vries (2002), the second conjunct of the asyndetic coordination phrase (&:P) contains not only the extraposed material but also a second occurrence of the matrix clause coordinate (6).

(6) I [$_{\&:P}$ [$_{VP}$ met a linguist this morning]

[$_{\&:P}$ &: [$_{VP}$ ~~met~~ [$_{DP}$ ~~a linguist~~ [$_{CP}$ who is from East Africa]] ~~this morning~~]]]

As illustrated with strikethrough text, the EXNP word order is the result of targeting everything in the second conjunct with ellipsis except for the extraposed material.

4.1.2 Host-External Approaches to EXNP

4.1.2.1 Complementation: Rochemont & Culicover 1990

An alternative set of analyses, which I will refer to as Host-External analyses, suggest that the extraposed material is base-generated in a position that is external to the host. Host-External analyses can be traced back to a suggestion about PP-extraposition from NPs by Guéron (1980:642) that was subsequently applied by Guéron & May (1984:sec. 2) to result-clause and relative clause extraposition.[5] For Guéron & May, the extraposed material is extracted from its host and right adjoined to the verbal spine. The entire NP host subsequently undergoes an application of QR at LF to a position where it governs the extraposed material. It is by establishing this government relationship at LF that Guéron &

[5]Outside of Transformational analyses of EXNP, which I focus on in this thesis, Kiss (2005) provides a base-generation analysis of EXNP within the theory of Head-Driven Phrase Structure Grammar (HPSG). See Webelhuth et al. (2013) for a discussion of this system and Crysmann (2013) in the same collection for an extension of it. Put very simply, there is an index on the host, represented as the feature ANCHOR, which can percolate up the tree. Relative clauses are actively looking for an ANCHOR feature in order to identify a position to join with the structure. It is the local percolation of the ANCHOR feature that licenses the base-generation of a relative clause to the verbal spine and outside of the host.

At present it is difficult to fairly evaluate this analysis on par with the others as analyses of NPI-licensing in HPSG have emerged only relatively recently (e.g., Tonhauser 2001, Richter & Soehn 2006, Sailer 2007). It is not entirely clear to me exactly what the predictions of any given analysis would be concerning the licensing of NPIs in a relative clause be it in-situ or ex-situ. It is for this reason that I must set such analyses aside for the time being. However, an anonymous reviewer for *Lingua* points out that the research in the unpublished dissertation by Heike Walker completed at Goethe-Universität am Main provides a Host-External analysis of EXNP that interprets the relative clause as if it were in the restrictor argument of its host.

May propose the extraposed material can be interpreted as if it were a complement to its host NP and interpretation would proceed as normal.

Culicover & Rochemont (1990) and Rochemont & Culicover (1990) adapt this idea to suggest that material extraposed from an NP is simply base-generated in an extraposed position that would achieve the same result. Rochemont & Culicover (1990:32–36) formulate the *Complement Principle* in (7), which encodes the requirement that the extraposed material is construable as a complement to the host NP (or DP, following Abney (1987)) for interpretive purposes and that this relationship is established under government.

(7) *Complement Principle*

β is a potential complement of α (α, $\beta = X^{max}$) only if α and β are in a government relation.

(adapted from Rochemont & Culicover 1990:35)

The Complement Principle in conjunction with the *Principle of Full Interpretation* (Chomsky 1986) essentially forces material extraposed from an NP to be adjoined to a position on the verbal spine that is governed by the host in order to be properly interpreted. The ultimate result is that an extraposed relative clause adjoins to the first VP or IP that dominates the host roughly in accordance with the constituency facts seen in (4) and (5).[6]

4.1.2.2 Asyndetic Coordination: Koster 2000

Another base-generation analysis for EXNP of the Host-External variety is couched within the theory of *Parallel Construal* proposed by Koster (2000). Koster (2000) proposes employing the type of asyndetic coordination adopted by de Vries (2002). However, what Koster (2000:22) calls a Colon Phrase (:P) conjoins only the extraposed material with some

[6]To be precise, Culicover & Rochemont (1990:30–35) argue that EXNP from a direct object targets the edge of VP, EXNP from a subject targets the edge of IP or optionally VP, and EXNP from a fronted *wh*-element targets the edge of CP. Along with a custom definition of government, it is these facts specifically that the Complement Principle is intended to account for.

XP in the matrix clause that contains the acting host. For concreteness, I have chosen in (8) to conjoin the extraposed material with VP.

(8) I $[_{:P}$ $[_{VP}$ met $[_{DP}$ a linguist] this morning] $[_{:P}$: $[_{CP}$ who is from East Africa]]]

The method for interpreting such a structure that is suggested by Koster (2000:22–23, 25) is that the extraposed material can be semantically interpreted as giving "further specification" to the acting host DP via "set intersection".

4.1.3 Interpretive Predictions

As we have seen from the discussion above, these two sets of approaches to EXNP differ on where they assert the extraposed material is base-generated. Because of this, they also lead to different *a priori* predictions about where it is possible to interpret the extraposed material.

The Host-Internal analyses presented above predict that extraposed material should behave as if it were at some point in the restrictor argument of its host. A failure to observe any such behavior should be interpreted as a short-coming for this class of analyses. On the other hand, the Host-External analyses above lead us to expect the extraposed material to behave as if it were always adjoined to the verbal spine and never in the restrictor argument of its host. Observing that the extraposed material *does* behave as if it were in the restrictor argument of its host should be seen as a short-coming for this class of analyses. The following section will introduce exactly the type of phenomenon that could be used to test these predictions.

4.2 A New Connectivity Diagnostic: NPIs in the Restrictor of *Every*

Several connectivity diagnostics have been explored in the literature as they relate to EXNP. Taraldsen (1981), for example, observed that the disjoint reference effect between the indirect object pronoun *her* and the R-expression *Kim* in the relative clause in (9a) is ameliorated in the context of EXNP (9b). Rochemont & Culicover (1990) go further to

show that the disjoint reference effect persists when the pronominal form appears in subject position (10).

(9) a. * I showed her$_2$ [$_{DP}$ a picture [$_{CP}$ that Kim$_2$ thought I lost]] this morning.

b. ? I showed her$_2$ [$_{DP}$ a picture]$_1$ this morning [$_{CP}$ that Kim$_2$ thought I lost]$_1$.

(10) a. * She$_2$ was shown [$_{DP}$ a picture [$_{CP}$ that Kim$_2$ thought I lost]] this morning.

b. * She$_2$ was shown [$_{DP}$ a picture]$_1$ this morning [$_{CP}$ that Kim$_2$ thought I lost]$_1$.

These facts are interesting in that they can be interpreted as showing that material extraposed from a direct object is generated above the indirect object but below the subject. While they potentially tell us something about the height of the base-generated position of the extraposed material, they do not help us decide whether this position is internal or external to the host. The same can be said for the data in (11) that has been adapted from Guéron (1980:650). These examples suggest that the extraposed material with the minimizer *slightest* is in a position within the scope of sentential negation, but they do not tell us whether it was generated inside or outside of its host. (See Linebarger (1980) and especially Uribe-Etxevarria (1994:ch. 2) for relevant discussion of these and other data.)

(11) a. * Mary thinks that [$_{DP}$ the extraposition transformation
[$_{CP}$ which has *the slightest* effect on LF]] hasn't been found yet.

b. Mary thinks that [$_{DP}$ the extraposition transformation]$_1$
hasn't been found yet [$_{CP}$ which has *the slightest* effect on LF]$_1$.

A more relevant diagnostic, which also employs the disjoint reference affects associated with Condition C, comes from Büring & Hartmann (1997:9–11). They observe from examples similar to the ones in (12) that the disjoint reference effect observed between *his* in the host DP and the R-expression *John* in a clausal complement of the noun is not bled by EXNP.

(12) a. * Mary mentioned [$_{DP}$ his$_1$ claim [$_{CP}$ that John$_1$ is intelligent]] yesterday.

b. * Mary mentioned [$_{DP}$ his$_1$ claim]$_2$ yesterday [$_{CP}$ that John$_1$ is intelligent]$_2$.

This suggests both that an extraposed complement clause is generated inside its host and that it must be interpreted in a position inside its host.

The NPI-licensing diagnostics we will see in this section, as a connectivity diagnostic that is observable as grammaticality, will provide the opportunity in sections 4.4 and 4.5 to further explore EXNP configurations in a way otherwise not afforded by Condition C effects.

4.2.1 Ladusaw's Generalization

Among the class of NPIs originally discussed at length by Klima (1964) are elements like *any* and *ever*. Since at least Ladusaw 1979 it has been recognized that such NPIs are licensed in the restrictor argument of the universal quantifier *every* but not in its nuclear scope. This is illustrated in (13a) where the NPI *any* is licensed in a relative clause modifying *guest*, but goes unlicensed while in the matrix clause in (13b).[7]

(13) a. Every [$_{NP}$ guest who ate *any* of the potato salad] [$_{VP}$ became ill].

b. * Every [$_{NP}$ guest who became ill] [$_{VP}$ ate *any* of the potato salad].

The examples in (14)–(17) below are intended to help establish the generality of this pattern. In addition to the NPIs *any* and *ever*, so-called "minimizers" like *the slightest bit* and *so much as (a dime)* are also licensed in the restrictor argument of *every*. The contrasts in the (a.) and (b.) variants are between sentences with *every* and sentences with *some*, which Ladusaw (1979) noted does not license NPIs. These contrasts suggest that there is in fact something special about *every* that is responsible for licensing an NPI.[8]

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[7] I will regularly use *any* in a partitive construction in an extra effort to block the free-choice reading of *any*, which is also licensed in the restrictor argument of *every* (e.g., Hoeksema 2012), but which would only introduce an additional complicating factor to the investigation in this chapter. According to Dayal (2009), *any* in a partitive construction tends to resist a free-choice interpretation unless it appears in the semantic scope of a possibility modal.

[8] NPIs are also licensed in the restrictor of the universal *all (of)*, but not *each* or *both*, and they are licensed in the restrictor argument of proportional *most (of)* and *few (of)*. In what follows I will focus on the use of *every*. See Heim (1984) for a discussion of some interesting felicity conditions for the licensing of NPIs in

(14) a. We met [$_{DP}$ every biker [$_{CP}$ who has *ever* ridden on these trails]].

b. * We met [$_{DP}$ some bikers [$_{CP}$ who have *ever* ridden on these trails]].

(15) a. The company considered

[$_{DP}$ every applicant [$_{CP}$ who was from *any* of the local temp agencies]].

b. * The company considered

[$_{DP}$ some applicants [$_{CP}$ who were from *any* of the local temp agencies]].

(16) a. The bank contacted

[$_{DP}$ every customer [$_{CP}$ who was in *the slightest bit* of debt]].

b. * The bank contacted

[$_{DP}$ some customers [$_{CP}$ who were in *the slightest bit* of debt]].

(17) a. Sam stole [$_{DP}$ every bag [$_{CP}$ that had *so much as a dime* inside]].

b. * Sam stole [$_{DP}$ some bags [$_{CP}$ that had *so much as a dime* inside]].

The examples below in (18)–(21) show that it is crucial for the NPI to be in the restrictor argument of the universal quantifier. The licensing pattern observed in these examples suggests that NPIs that are in a phrase that is simply adjoined to the matrix clause cannot be licensed by *every*.[9]

(18) a. We met every biker [$_{CP}$ while riding on these trails].

b. * We met every biker [$_{CP}$ while *ever* riding on these trails].

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the restrictor of *every* and Hoeksema (2012) for a discussion of the types of NPIs that do and do not appear in the restrictor of universals.

For the purposes of the present discussion, I will set aside the issue of how to properly model the formal properties of *every* that are responsible for licensing NPIs in its restrictor argument. However, I would direct the reader to Giannakidou (1998) and Hoeksema (2012) for challenges faced by both the standard monotonicity analysis of weak NPIs (Ladusaw 1979, von Fintel 1999) and the Anti-Additivity analysis of strong NPIs (Zwarts 1998) with respect to licensing NPIs in the restrictor argument of *every*. It will be enough for the argument being made here to work purely with the empirical facts observed in this section.

[9] Note that it is a property of certain connectives including *if*, *without*, *instead of*, and *before* that they independently license NPIs in their complements.

(19) a. The company considered every applicant

[$_{CP}$ because they were from one of the local temp agencies].

b. * The company considered every applicant

[$_{CP}$ because they were from *any* of the local temp agencies].

(20) a. The bank contacted every customer

[$_{CP}$ after they were in some amount of debt].

b. * The bank contacted every customer

[$_{CP}$ after they were in *the slightest bit* of debt].

(21) a. Sam stole every bag [$_{CP}$ because they had some money inside].

b. * Sam stole every bag [$_{CP}$ because they had *so much as a dime* inside].

Moreover, as we have already seen from the contrast in (13), it is not enough for the NPI to fall within the scope of the phrase headed by *every*. The examples below go further to show that *every* still fails to license an NPI in its nuclear scope even when a configuration is forced in which that NPI is in the syntactic and semantic scope of the phrase headed by *every*. In both (22) and (23), a quantificational DP in subject position binds a variable in the phrase containing the NPI and, therefore, presumably occupies a position in which the NPI is in that DP's syntactic and semantic scope. The contrast between the (a.) and (b.) variants suggest that, even under these conditions, the NPI fails to be licensed *every*.

(22) a. [$_{DP}$ Every girl]$_1$ leaves early because she$_1$ becomes bored.

b. * [$_{DP}$ Every girl]$_1$ leaves early because she$_1$ *ever* becomes bored.

c. [$_{DP}$ No girl]$_1$ leaves early because she$_1$ *ever* becomes bored.

(23) a. [$_{DP}$ Every boy]$_1$ worked while someone was watching him$_1$.

b. * [$_{DP}$ Every boy]$_1$ worked while *any*one was watching him$_1$.

c. [$_{DP}$ No boy]$_1$ worked while *any*one was watching him$_1$.

The (c.) variants of (22) and (23) substitute the quantifier *no*, which licenses NPIs in its restrictor argument as well as its nuclear scope. These examples are intended to

provide assurance that the culprit for the relevant unacceptability observed in (18)–(23) is not necessarily a violation of the locality constraints on NPI-licensing.[10] The observation that *no* is able to license the NPIs in these clausal adjuncts suggests that it is indeed a failure to satisfy a configurational requirement that is responsible for the inability of *every* to license NPIs in material adjoined to the verbal spine.

This characterization of the conditions on the licensing of NPIs by *every* is consistent with the consensus in a portion of the literature that the conditions on NPI-licensing are at least in part syntactic. In particular, it has been argued by Linebarger (1980, 1987), Uribe-Etxevarria (1994), de Swart (1998), and Guerzoni (2006) that NPIs are licensed by virtue of being interpreted in the scope of their licensor at LF. For the time being, I will assume the same, but we will see relevant evidence in section 4.4 that this is correct. Given this particular conception of the conditions on NPI-licensing, it is possible to capture the distribution of NPIs in the data above with the generalization in (24).

(24) *Ladusaw's Generalization*

An NPI is licensed by *every* only if that NPI is generated in the restrictor argument of *every*.

This condition on NPI-licensing ensures that there will be some means available for interpreting an NPI in the restrictor of *every* at LF. It also provides a straightforward way to evaluate the two sets of analyses outlined previously in section 4.1. Finding that an NPI remains licensed by *every* following the extraposition operation would suggest that the extraposed material is base-generated in the restrictor argument of the host. This is naturally captured by the Host-Internal analyses. If we find that an NPI is no longer licensed following the extraposition operation, we would have evidence for claiming that the extraposed

[10]It has been recognized at least since Fauconnier (1975) and Linebarger (1980) that the licensing of certain NPIs may show sensitivity to the types of island constraints discussed in Ross (1967), including certain adjunct islands. See Guerzoni (2006) for a recent discussion and other relevant references.

material is not base-generated in the restrictor argument of the host. The Host-External theories would more naturally account for this state of affairs.

4.2.2 The Test Cases

The examples in (25) represent one of the relevant data points to be evaluated. A relative clause containing the NPI *any* is intended to be interpreted as a modifier for a non-adjacent host, *guest* in this case. The contrast in acceptability that arises from the alternation between *every* in (25a) and *some* in (25b) suggests that *every* is capable of licensing the NPI in the extraposed material.

(25) a. They took $[_{DP}$ every guest $]_1$ to the hospital
$[_{CP}$ who ate *any* of the potato salad $]_1$.

b. * They took $[_{DP}$ some guests $]_1$ to the hospital
$[_{CP}$ who ate *any* of the potato salad $]_1$.

The additional examples in (26)–(29) are variations of the examples above and are intended to help establish the robustness of this pattern. The (a.) variants present the NPI *ever* and minimizers in relative clauses that have been extraposed from a host headed by *every*. The (b.) variants provide the relevant contrast with the quantifier *some*.

(26) a. We met $[_{DP}$ every biker $]_1$ yesterday
$[_{CP}$ who had *ever* ridden on these trails $]_1$.

b. * We met $[_{DP}$ some bikers $]_1$ yesterday
$[_{CP}$ who had *ever* ridden on these trails $]_1$.

(27) a. The company considered $[_{DP}$ every applicant $]_1$ last month
$[_{CP}$ who was from *any* of the local temp agencies $]_1$.

b. * The company considered $[_{DP}$ some applicants $]_1$ last month
$[_{CP}$ who were from *any* of the local temp agencies $]_1$.

(28) a. The bank contacted $[_{DP}$ every customer $]_1$ today

$[_{CP}$ who is in *the slightest bit* of debt $]_1$.

b. * The bank contacted $[_{DP}$ some customers $]_1$ today

$[_{CP}$ who are in *the slightest bit* of debt $]_1$.

(29) a. Sam stole $[_{DP}$ every bag $]_1$ last night

$[_{CP}$ that had *so much as a dime* inside $]_1$.

b. * Sam stole $[_{DP}$ some bags $]_1$ last night

$[_{CP}$ that had *so much as a dime* inside $]_1$.

Intuitively, the EXNP structures here follow the same licensing pattern observed with the in-situ structures in the previous section. The acceptability of an NPI in the extraposed relative clauses seems to be dependent on the presence of *every* as opposed to *some*. This contrast suggests that *every* is capable of licensing an NPI even when the NPI appears in an extraposed relative clause.[11]

At this point we might be tempted to conclude that the predictions of the Host-Internal analyses are borne out. However, the crucial comparison to be made is between sets of

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[11]The data in (i) are cited by Akmajian & Lehrer (1976:fn. 8) who credit Bresnan (1973) for identifying the contrast. Similar data are also cited by Guéron (1980:fn. 17). I have not myself seen Bresnan 1973, but such data are presented in Guéron (1980) as evidence that EXNP is a syntactic operation that feeds LF rules for interpretation.

(i) a. $[_{DP}$ The best friend $[_{CP}$ that I *ever* had]] is gone.

b. * $[_{DP}$ The best friend $]_1$ is gone $[_{CP}$ that I *ever* had $]_1$.

These data are relevant for the fact that the NPI *ever* in (ia.) is licensed by the superlative *best* when the relative clause is in-situ but is not licensed in the EXNP configuration in (ib.). It does not appear, though, that superlative adjectives are entirely incapable of licensing NPIs in extraposed material.

(ii) a. Sam wrote $[_{DP}$ the longest title $[_{CP}$ that I had *ever* seen on a paper]] last year.

b. Sam wrote $[_{DP}$ the longest title $]_1$ last year $[_{CP}$ that I had *ever* seen on a paper $]_1$.

Understanding what separates examples (i) and (ii) goes beyond the scope of the argument being made here and so the issue must be set aside for now. It is, however, worth pointing out an observation by Kyle Johnson (p.c.) that we may be observing something of a subject/object asymmetry. The superlative *best* seems to be more willing to license an NPI in an extraposed relative clause when in direct object position (iii).

(iii) a. I called $[_{DP}$ the best friend $[_{CP}$ that I *ever* had]] last night.

b. ? I called $[_{DP}$ the best friend $]_1$ that I $[_{CP}$ that I *ever* had $]_1$.

sentences like in (2), which has been repeated below. Recall that it is whether or not the NPI remains licensed in the extraposed position that provides a window into the derivation of EXNP structures.

(2) a. We took $[_{DP}$ every guest $[_{CP}$ who ate *any* of the potato salad $]]$ to the hospital.

b. We took $[_{DP}$ every guest $]_1$ to the hospital

$[_{DP}$ who ate *any* of the potato salad $]_1$.

Evaluating such pairs using our native-speaker intuitions, though, is not as straightforward as it was made to seem in the introduction. Independent of the licensing of the NPI, there are additional influencing factors to be considered. These might include, for example, the effect of EXNP on acceptability and possibly the increased difficulty in licensing an NPI that this additional complexity might introduce. The following section reports on an experiment designed to test the intuitions reported here and the predictions in section 2.3 while taking these additional factors into account.

4.3 Experiment 2: NPI-Licensing in Extraposed Relative Clauses

A judgment study was conducted to evaluate the acceptability of NPIs in both in-situ and extraposed relative clauses. Based on the claims in the previous sections, we should expect to find that sentences with an NPI in a relative clause that modifies the restrictor argument of *every* are perceived as more acceptable or more natural than when the same relative clause modifies the restrictor argument of *some*. Finding that this contrast disappears when there is no NPI in the relative clause would be a confirmation of Ladusaw's (1979) claim that *every*, but not *some*, licenses NPIs in its restrictor argument.

Moreover, this experiment was designed so as to identify any difference in the ability of *every* to license an NPI in an in-situ or extraposed relative clause. If it is the case that an NPI is licensed in both in-situ and extraposed relative clauses, then we should expect to see the asymmetry between *every* and *some* that arises in the presence of an NPI regardless of the position of the relative clause. Conversely, if it is the case that an NPI fails to be

licensed in extraposed material, we expect to observe the above quantifier asymmetry with an in-situ relative clauses but the asymmetry should be significantly reduced or effectively neutralized with an extraposed relative clause.

4.3.1 Participants

Sixty-four native speakers of English were recruited for the study using Amazon's Mechanical Turk, a web-based service for crowd-sourcing tasks.[12] Only participants with a minimum 95% success-rate on task completion (minimum of 100 tasks) were accepted for participation. To prevent evaluating data from non-native speakers, participation was restricted to IP addresses in the United States and participants were asked to report their language abilities. Only a single participant reported a first language other than English. This participant's data was removed and another participant was recruited to replace the lost data. Participants ranged in age from 18 to 73 with an average age of 36.33 years and a median age of 33 years. Of the 64 participants, 53% were female and 47% were male.

4.3.2 Materials

The materials consisted of 16 items distributed across 8 lists in a fully crossed $2\times2\times2$ design that included the factors *Extraposition*, *Host*, and *Polarity*. A full example item is provided in (30). Items differing on the nature of the Host, had either the NPI-licensing *every* (30a) or the non-NPI-licensing *some* (30b). The dimension Polarity had items vary between having an NPI in the relative clause (30a) or some other non-polarity-sensitive element (30c). Varying items on the dimension of Extraposition provided an in-situ control for each of the ex-situ configurations.

[12] Amazon's Mechanical Turk can be accessed https://www.mturk.com.

(30) a. *Ex-situ / Every / NPI*

Park rangers removed every camper yesterday who was at any of the sites with significant flooding.

b. *Ex-situ / Some / NPI*

Park rangers removed some campers yesterday who were at any of the sites with significant flooding.

c. *Ex-situ / Every / Other*

Park rangers removed every camper yesterday who was at one of the sites with significant flooding.

d. *Ex-situ / Some / Other*

Park rangers removed some campers yesterday who were at one of the sites with significant flooding.

e. *In-situ / Every / NPI*

Yesterday park rangers removed every camper who was at any of the sites with significant flooding.

f. *In-situ / Some / NPI*

Yesterday park rangers removed some campers who were at any of the sites with significant flooding.

g. *In-situ / Every / Other*

Yesterday park rangers removed every camper who was at one of the sites with significant flooding.

h. *In-situ / Some / Other*

Yesterday park rangers removed some campers who were at one of the sites with significant flooding.

In all cases the NPI in the extraposed relative clause was *any*. In the same way as noted in footnote 7, the NPI sometimes appeared in a partitive construction in an attempt to dis-

courage a possible free-choice reading. The non-NPI counterparts did not always contain a partitive construction as they do in (30). For the purpose of grammaticality or coherence, a simple indefinite or other non-polarity-sensitive element was used instead.[13] A full list of the experimental items can be found in appendix A.2.

4.3.3 Procedure

Once agreeing to participate, participants clicked a link that took them to the on-line experiment presentation tool Ibex Farm where the experimental items were presented.[14] Participants were told that they would be reading sentences and evaluating their naturalness as sentences of English. After providing informed consent they then received a short guided practice for using a 7-point Likert-scale where 1 corresponded to "Completely Unnatural" and 7 corresponded to "Completely Natural".

The items were presented in a Latin-square design and were presented randomly among 38 filler items. The filler items had a large number of non-canonical word orders including passive and cleft constructions. A total of 4 items were designed to be ungrammatical by including an island violation, a case assignment problem, or a violation of a selectional restriction. The Likert-scale with the corresponding scale values were presented along with each item. The experiment took an average of approximately 15 minutes to complete and participants received $0.50 in compensation upon completing the task.

4.3.4 Results

The mean naturalness rating for each condition is presented numerically in Table 4.1 and graphically in Figure 4.1.

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[13]One might note that these issues could be avoided entirely by using an NPI like *ever* or a minimizer instead of *any*. Minimizers were avoided because the experimental design did not make it possible to be sure that participants were not interpreting the minimizer under a literal interpretation. The reason *any* was preferred to *ever* is that this experiment is part of a larger study that is also investigating the extraposition of PPs from NP and *ever* is not possible in PPs.

[14] Ibex Farm was developed by Alex Drummond and can be accessed at: http://spellout.net/ibexfarm/.

	Ex-Situ		In-situ	
	Every	Some	Every	Some
NPI	4.60 (0.13)	3.87 (0.14)	4.96 (0.13)	3.98 (0.14)
Other	5.14 (0.11)	5.13 (0.12)	5.23 (0.13)	5.44 (0.12)

Table 4.1. Mean naturalness by condition with standard errors for Exp. 2

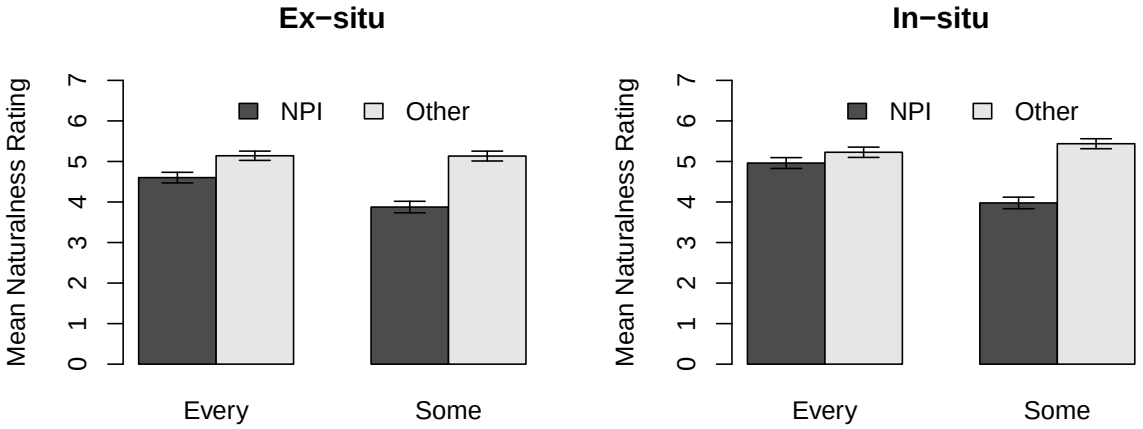


Figure 4.1. Mean naturalness by condition with standard error bars for Exp. 2

The data were analyzed using a linear mixed-effects (LME) regression model (Baayen et al. 2008) with the `lme4` package (Bates et al. 2014) in the statistical computing environment R, version 3.2 (R Core Team 2015).[15] The fixed effects of Extraposition, Host, and Polarity, as well as their interactions, were included as predictors and centered around 0 (Ex-situ,Every,NPI = 1). Both subjects and items as well as the predictors and their interactions were assigned random slopes. The model that was evaluated is provided in (31).

(31) $$\text{Rating} \sim \text{Extraposition} \times \text{Host} \times \text{Polarity} + (\text{Extraposition} \times \text{Host} \times \text{Polarity} + 1|\text{subject}) + (\text{Extraposition} \times \text{Host} \times \text{Polarity} + 1|\text{item})$$

[15]The statistical computing package R can be accessed at: http://www.r-project.org/.

Pointwise comparisons and 95% Confidence Intervals (95% CI) were calculated with two-tailed t-tests of the subject means.

The LME model yielded the results summarized in Table 4.2. Significance at the conventional level $\alpha = 0.05$ was determined by an absolute t-value greater than 2.00.

	$\hat{\beta}$	Std. Error	t
(Intercept)	4.793	0.128	37.26
Extraposition	-0.105	0.043	**-2.45**
Host	0.190	0.048	**3.99**
Polarity	-0.438	0.084	**-5.23**
Extraposition×Host	-0.006	0.039	-0.15
Extraposition×Polarity	-0.010	0.045	-0.23
Host×Polarity	0.237	0.062	**3.85**
Extraposition×Host×Polarity	-0.055	0.048	-1.16

Table 4.2. Model results with estimate, standard error, and t-value for Exp. 2

A significant main effect was revealed for each of the fixed effects Extraposition, Host, and Polarity. Additionally, a significant interaction was observed for the type of Host and the Polarity sensitivity of the extraposed material, reflecting a significantly larger effect of Polarity for conditions with the host *some* than for the conditions for the host *every*. In particular, collapsing over the factor Extraposition, we find that there was overall a significantly greater penalty in naturalness for replacing a non-NPI with an NPI in the relative clause when the host was *some* ($\Delta_{\hat{\mu}} = 1.36,\ 95\%\ \text{CI}\ [1.09, 1.63]$) than there was when the host was *every* ($\Delta_{\hat{\mu}} = 0.40,\ 95\%\ \text{CI}\ [0.18,\ 0.62]$).

The LME model did not detect a significant effect of the three-way interaction term. Looking closely at the *every* conditions in Table 4.1 and Figure 4.1, though, it does seem that numerically there was some additional penalty in naturalness observed for having an NPI in an extraposed relative clause compared to having an NPI in an in-situ relative clause. For this reason, a set of post-hoc analyses were designed to further investigate the effect.

First, examining only those conditions with an NPI in the relative clause, a comparison of the confidence intervals for the difference between the estimate of the mean for each Host

condition in an Ex-situ construction (30a)/(30b) ($\Delta_{\hat{\mu}} = 0.73,\ 95\%$ CI $[0.35,\ 1.11]$) and the difference between the estimate of the mean for the same two conditions In-situ (30e)/(30f) ($\Delta_{\hat{\mu}} = 0.98,\ 95\%$ CI $[0.69,\ 1.27]$) failed to indicate a significant effect of Extraposition on naturalness ratings. A pair of by-participants (F_1) and by-items (F_2) repeated-measures ANOVAs were also performed on the NPI conditions. These analyses, like the LME model, showed a significant effect of both Extraposition ($F_1(1,63) = 6.09, p < 0.05; F_2(1,15) = 4.91, p < 0.05$) and the type of Host ($F_1(1,63) = 48.8, p < 0.01; F_2(1,15) = 31.7, p < 0.01$). However, this analysis, too, failed to observe a significant interaction between Extraposition and Host($F_1(1,63) = 1.22, p < 0.30; F_2(1,15) = 0.99, p < 0.35$).

The same analyses were also performed over only those conditions with *every* as the host. Comparing the confidence intervals for the difference between the estimate of the mean for the two Polarity conditions ex-situ (30a)/(30c) ($\Delta_{\hat{\mu}} = 0.54,\ 95\%$ CI $[0.22,\ 0.85]$) and the same conditions in-situ (30e)/(30g) ($\Delta_{\hat{\mu}} = 0.27,\ 95\%$ CI $[-0.04,\ 0.57]$) again did not indicate a significant effect of Extraposition on naturalness ratings. In the repeated-measures ANOVAs, Polarity was significant by-participants and by-items ($F_1(1,63) = 14.2, p < 0.01; F_2(1,15) = 5.64, p < 0.05$) while Extraposition was significant by-participants and marginally significant by-items ($F_1(1,63) = 4.55, p < 0.05; F_2(1,15) = 3.43, p < 0.10$). The interaction of Extraposition and Polarity failed to reach significance ($F_1(1,63) = 1.45, p < 0.25; F_2(1,15) = 1.46, p < 0.25$).

4.3.5 Discussion

The main effect of Extraposition found in the LME model is not particularly surprising. We can understand the lower acceptability ratings for Ex-situ structures to be a reflection of the fact that EXNP is a marked structure in out-of-the-blue contexts. The main effect observed for each of Host and Polarity in the LME model do not follow directly from any *a priori* predictions made here. However, we might imagine that the main effect of the presence or absence of an NPI in the relative clause reflects the additional cost in processing

related to licensing an NPI. The main effect of the type of Host, and perhaps even some of the main effect of Polarity, seems to be carried by the significant interaction between these two factors. From the direction of this interaction, which is apparent in the graph in Figure 1, we see that NPI conditions with the host *every* consistently received higher ratings than the NPI conditions with the host *some*. This is a clear reflection of the intuition that NPIs are licensed by *every* but are not licensed by *some*.[16]

Concerning the three-way interaction, we were looking for this effect as a sign that the sensitivity of an NPI in a relative clause to the type of host is affected by whether or not that relative clause has been extraposed. Finding that EXNP neutralizes the effect of the type of host would suggest that NPIs are not licensed in extraposed material. Interestingly, this three-way interaction between factors was not detected in the LME model. In the absence of this interaction there is no evidence that the magnitude of the additional decrease in perceived naturalness that results from having an NPI in a relative clause with a universal host is different based on whether or not the relative clause is in-situ or extraposed. This means that we are unable to reject the null-hypothesis that NPIs are equally licensed by the presence of *every* in-situ and ex-situ.

The post-hoc analyses also failed to reject this null-hypothesis. The lack of evidence that Extraposition interacts with the Host conditions given an NPI in the relative clauses means that we are unable to say that the observed licensing asymmetry between *every* and *some* differs given the position of the relative clause. The inability to identify an interaction between Extraposition and the Polarity conditions when the host was headed by *every* means we cannot conclude that the observed ability of *every* to license an NPI

[16]The anonymous reviewers for *Lingua* point out that the relatively high condition means and the relatively small difference between the levels of Host in the NPI conditions fail to meet the expectations developed based on the discussion in section 4.2. Specifically, one might expect to observe lower response means for the NPI conditions with *some* as part of the claim by Ladusaw (1979) that *some* does not license NPIs. It is important to keep in mind that there are no *a priori* predictions made regarding the estimates of the means for the experimental conditions. The values of the estimates for the true means of these conditions will necessarily be an artifact of the design of this particular experiment. For this reason, we are only interested in interpreting the predictors and their interactions that are included in the model in (31).

differed as a function of the position of the relative clause. Something extra must be said, then, concerning the additional penalty that seems to be present numerically when an NPI is in extraposed material. A potential explanation that one might pursue is that this effect is an off-line reflection of some additional increase in on-line processing effort that is associated with licensing an NPI either across a greater distance or in the face of greater structural complexity. The current study was not designed to speak to either of these possibilities, thus the issue must be left for future research.

To summarize briefly, we saw a significant interaction of the factors Host and Polarity such that NPIs were reliably perceived as less natural when the host quantifier was *some* compared to when the host quantifier was *every*. We also failed in both the planned and post-hoc comparisons, to identify any evidence that this licensing pattern is interrupted by EXNP. These results are consistent with the intuitions that were reported above: NPIs licensed in a relative clause by *every* remain licensed following EXNP. Returning to the predictions made by the two sets of analyses for EXNP discussed in section 3.1, these results show the predictions of Host-Internal analyses borne out. Although a relative clause has been extraposed, with respect to NPI-licensing it behaves as if it were generated in the restrictor argument of the DP that hosts it.

4.4 Towards Modelling EXNP

Let us start by considering the subextraction analysis of Ross (1967) again. Recall that on this analysis of EXNP, the extraposed relative clause has been extracted out of its host and right-adjoined to the verbal spine. On this analysis, it will be necessary to reconstruct the extraposed material back into the restrictor argument of *every*. Only in this way will it be possible to satisfy the configurational condition that an NPI be interpreted in the scope of its licensor at LF.[17]

[17]Independent of the discussion here, any need to reconstruct the extraposed material is arguably a weakness of this analysis. I would refer the reader to Williams (1974), Taraldsen (1981), Rochemont & Culicover

To see that reconstruction of the material containing the NPI will be necessary, we can consider the following examples, which have been adapted from Linebarger (1980:225-228). Equivalent examples are discussed in this same context by Uribe-Etxevarria (1994:ch. 2). It is interesting to note first that the existentially quantified subject in (32) is scopally ambiguous with respect to sentential negation. The truth of the surface scope reading in (32a) requires a context in which there is a particular doctor that was not available. The inverse-scope reading in (32b) requires a situation in which there are no doctors that are available.

(32) A doctor wasn't available.

a. $\exists > \neg$

Context : Tim and Pam are doctors. Only Tim wasn't available.

'There is a (certain) doctor *x* such that *x* was not available.'

b. $\neg > \exists$

Context : Tim and Pam are doctors. Both Tim and Pam weren't available.

'It is not the case that there is a doctor *x* such that *x* was available.'

What is interesting for our purpose is the observation that the scope of the subject and sentential negation is disambiguated given a relative clause containing an NPI. The string in (33) strongly resists the surface scope reading in (33a) but is compatible with the inverse scope reading in (33b).

(1990), Fox & Nissenbaum (1999), Fox (2002), and Bhatt & Pancheva (2004) for interpretive evidence that extraposed material must be interpreted in its extraposed position.

(33) A doctor who knows *any*thing about acupuncture wasn't available .

a. * $\exists > \neg$

Context : Tim and Pam are doctors who know about acupuncture. Only Tim wasn't available.

'There is a (certain) doctor *x* such that *x* knows about acupuncture and it is not the case that *x* was available.'

b. $\neg > \exists$

Context : Tim and Pam are doctors who know about acupuncture. Both Tim and Pam weren't available.

'It is not the case that there is a doctor *x* such that *x* knew about acupuncture and *x* was available.'

A way to make sense of these facts is to assert that the relative clause that contains the NPI must be interpreted at LF in a position that is within the scope of sentential negation. Taking it to be the case that logical scope relations are determined at LF (e.g. May 1985), then the obligatory low scope of the subject would follow from something along the lines of the Principle of Full Interpretation, which requires that every element in a syntactic representation be appropriately interpreted at the interfaces (e.g., Chomsky 1986). While the subject and its relative clause may be spoken outside the scope of negation, if they are not interpreted together in a position where the relative clause can be construed as a modifier of the subject, the resulting structure could not be interpreted appropriately and would consequently not be a legitimate linguistic representation.

In short, the data above in (33) suggest that NPI-licensing affects logical scope relations, which in turn suggests that NPI-licensing is itself determined at LF. It is from this conclusion that we formulate the expectation that it will be necessary to reconstruct the extraposed material back into the restrictor argument of *every* in order to satisfy the configurational constraints on NPI-licensing. Given this, we can formulate a very specific prediction regarding when NPI-licensing by *every* will be possible. On the Ross-style analysis, NPI-

licensing by *every* should no longer be possible if there is some independent requirement to interpret the extraposed material in its extraposed position at LF. The resulting conflict over where to interpret the extraposed material is predicted to result in ungrammaticality.

A requirement of the relevant type for testing this prediction comes in the form of Antecedent-Contained Deletion (ACD). An example is provided in (34).

(34) I $[_{VP}$ bought every book $]_1$ yesterday $[_{CP}$ that I was told to Δ_1].

Based on the observations in Sag (1976) and Williams (1977) and following May (1985), the relative clause containing the ellipsis site must evacuate the antecedent VP. It is in this way that the LF-identity relationship that is required for deletion can be established between the ellipsis site and the antecedent VP without falling into the problem of infinite regress. Baltin (1987) proposes an EXNP-by-extraction analysis of ACD intended to do exactly this. For him, the relative clause in (34) is extracted from its host *every book* and adjoined to the VP. By allowing movement to only optionally leave a trace (e.g. Pesetsky 1982, Lasnik & Saito 1984), the ellipsis site can be resolved under LF-identity with the antecedent VP.[18] Basically, then, it is because the extraposed material is interpreted in its extraposed position at LF that ACD is licensed.

Because on this analysis of EXNP the choice to satisfy either the conditions on ACD-licensing or the conditions on NPI-licensing would necessarily violate the conditions of the other, we should observe ungrammaticality in a sentence with both an instance of ACD and an NPI licensed by *every*. As the contrast in (35) demonstrates, this expectation is not borne out. The extraposed relative clause can simultaneously contain an ACD site and an NPI licensed by *every*.

[18]See Larson & May (1990) and Fox (2002) for further discussion of the analysis presented in Baltin 1987.

(35) a. Kim $[_{VP}$ bought every book $]_1$ yesterday

$[_{CP}$ that she had *ever* been told to Δ_1].

b. * Kim $[_{VP}$ bought some books $]_1$ yesterday

$[_{CP}$ that she had *ever* been told to Δ_1].

Given the particular beliefs about ACD that have been adopted here, I interpret the grammaticality of (35a) as indicating that reconstruction is not necessary for the licensing of NPIs in extraposed material. It can, therefore, be taken as evidence against subextraction analyses of EXNP like those proposed by Ross (1967), Baltin (1978, 1981), and Guéron & May (1984).

We can also note that (35a) resists a non-syntactic analysis of the EXNP operation. Assume that NPI-licensing in an extraposed relative clause with a host headed by *every* is possible because the EXNP operation involves constituent reordering at PF (e.g. Hunter & Frank 2014). Such an analysis falls into the Host-Internal variety of analyses seeing as the extraposed material is generated in the restrictor argument of its host. It would also straightforwardly account for the ability of the host to license an NPI in extraposed material because the extraposed material in fact never leaves the host and could be interpreted in its restrictor argument at LF. The issue that this analysis faces is that EXNP can be observed to feed ACD.

Building on data from Larson & May (1990), Tiedeman (1995) observes contrasts like the one between (36a) and (36b). The example in (36a) shows that a relative clause contained in the subject of an embedded finite clause cannot be interpreted in a position where the ACD site can be resolved to the matrix VP. What (36b) reveals is that an application of EXNP will produce the structural configuration required to properly resolve the ACD site. As the bracketing of this examples illustrates, this can be achieved if the extraposed relative clause targets a position outside the matrix VP.[19] The example in (36c) that replaces *every*

[19]See Fox (2002) for further relevant discussion of such examples.

with *some* provides the relevant contrast with (36b) to show that *every* is licensing the NPI in the extraposed relative clause.

(36) a. * I [$_{VP}$ claimed that [$_{DP}$ every movie [$_{CP}$ that you *ever* did Δ_1]] was awful]$_1$.

b. I [$_{VP}$ claimed that [$_{DP}$ every movie] was awful]$_1$ [$_{CP}$ that you *ever* did Δ_1].

c. * I [$_{VP}$ claimed that [$_{DP}$ some movies] were awful]$_1$ [$_{CP}$ that you *ever* did Δ_1].

The contrast between (36a) and (36b) is unexpected on the view that the mechanism responsible for EXNP operates at PF. Finding that EXNP shows its influence both on the linear string and on the semantic interpretation suggests that we are observing a syntactic operation. The contrast between (36b) and (36c), then, is showing us that an NPI licensed by *every* remains licensed following the syntactic operation that is responsible for EXNP. I take this to be evidence against a purely non-syntactic analysis of the EXNP mechanism and the NPI-licensing phenomenon.

This leaves us to consider two remaining Host-Internal analyses: the QR analysis in Fox & Nissenbaum 1999 then Fox 2002 and the asyndetic coordination analysis in de Vries 2002. Both of these analyses are suited to handle the facts in (35) and (36). For each analysis, the extraposed material is in the restrictor argument of its host and the host is in a position external to the antecedent VP. This is precisely the type of configuration required to simultaneously license an NPI with *every* and properly resolve an ellipsis site in the extraposed material.

In choosing between these two remaining analyses, we can note that the asyndetic coordination analysis suffers from a general interpretive problem. Webelhuth et al. (2013:38) point out that, given a quantificational head, the phrases being coordinated could potentially have different truth conditions. The issue is more serious for the universally quantified structures that we have been considering in this chapter. We in fact get the wrong truth conditions. For example, the postulated conjuncts for the structure in (37) would respec-

tively mean *x took every guest to the hospital* and *x took every guest who ate any potato salad to the hospital*.

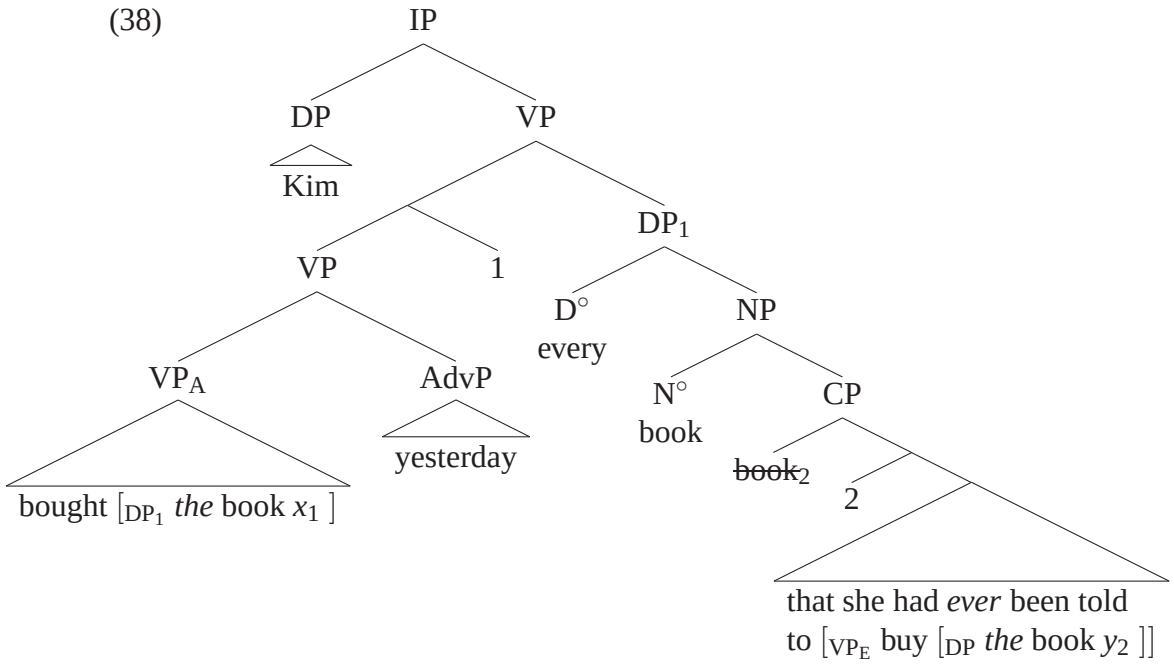
(37) They [$_{\&:P}$ [$_{VP}$ took every guest to the hospital] [$_{\&:P}$ &:

[$_{VP}$ ~~took~~ [$_{DP}$ ~~every guest~~ [$_{CP}$ who ate *any* of the potato salad]] ~~to the hospital~~]]]

Because the truth conditions of the first conjunct entail the truth conditions of the second, the conjunction of the two is expected to be equivalent to *x took every guest to the hospital*. However, this example, in which the extraposed relative clause is intended to serve as a restrictive modifier, has only the interpretation in which a subset of all the guests, namely those who ate the potato salad, were taken to the hospital.

This interpretive problem is not an issue for the QR analysis, which is designed to interpret the relevant quantifier only once. Fox (2002) suggests that, for extraposition structures to be interpretable, the lower copy of the host must be turned into the kind of object at LF that can be bound by the higher copy. Following Engdahl (1980) and Sauerland (1998), Fox (2002:67) formulates an operation called *Trace Conversion* which effectively turns the lower copy into a definite description with a variable. The variable that is introduced by this operation can then be bound by the binder index introduced as part of the movement of the host in the way suggested by Heim & Kratzer (1998). This is illustrated in (38), which is a rough partial representation of the LF for the example in (35a).

(38)



The direct object *every book* here has undergone an instance of QR to the edge of the matrix VP. The lower copy of the direct object in the matrix antecedent VP_A has undergone Trace Conversion, which replaced the lower instance of *every* with a null variant of *the* and inserted the variable *x* to yield *the book x*. The relative clause containing both the NPI *ever* and the elided VP_E, which was merged counter-cyclically, is present only in the higher copy of QR'ed direct object. The NPI is licensed in this configuration by virtue of being interpreted in the restrictor argument of *every*. The identity relationship between VP_E and VP_A required for deletion of VP_E can also be satisfied in this configuration as VP_E is not contained in VP_A. Along with the additional assumption that relative clauses can employ a head-internal matching analysis,[20] the lower copy of the movement dependency in the relative clause will undergo Trace Conversion to yield *the book y*. Modulo the names of the variables, the LF representations of these VPs are identical and ellipsis is licensed.

The QR-based analysis of EXNP directly accounts for the licensing of NPIs in extraposed material while simultaneously accounting for the additional data presented here.

[20]Fox (2002) cites Kayne (1976), Cinque (1981–82), Sauerland (1998), Cresti (2000) and Kennedy (2000).

On the basis of these results, I would suggest that it is this analysis that we get from Fox & Nissenbaum (1999) and Fox (2002) that is best suited for modeling instances of EXNP that call for a Host-Internal approach.

4.5 On Maximizing Empirical Coverage

While the data that have been presented in the preceding discussion support the conclusion that a Host-Internal mechanism for deriving EXNP is generally available, they do not force us to conclude that EXNP configurations can only be derived via Host-Internal means. It remains to be shown that, in the absence of the need to employ a Host-Internal strategy, there is no Host-External means for deriving EXNP configurations.

The same point can be raised with respect to the types of data that are typically put forward in support of Host-External analyses. Perhaps the strongest evidence for the necessity of a Host-External approach to EXNP includes the observation that EXNP is not subject to the full range of island constraints that we find with leftward movements (e.g., Rochemont & Culicover 1990) and the possibility for split antecedents (Perlmutter & Ross 1970). We will look at each of these in turn below, but it is worth noting at this point that, while such data may suggest the need for some Host-External analysis of EXNP, they do not force us to the conclusion that EXNP configurations can only be derived via some Host-External mechanism.

This state of affairs places us in a position to employ the investigative logic that has recently been applied to Right Node Raising configurations by Barros & Vicente (2011) and Larson (2012). In what follows we will examine sentences that simultaneously contain a suspected requirement to employ a Host-External strategy and our new suspected requirement to employ a Host-Internal strategy. If we find, in the form of ungrammaticality, that these contradictory requirements on the derivation cannot be simultaneously accommodated, we can conclude that both types of mechanisms are available to the grammar and necessary to derive EXNP configurations. However, if we find that such sentences

do not result in ungrammaticality, we would have evidence that one or both of these two approaches is no longer needed. Assuming that these two approaches—either *inside* or *outside* the host—exhaust the logical possibility space, we are licensed to make the stronger conclusion that one approach in particular could be dispensed with.

On the basis of the particular English data that we examine below, I will suggest that only a single strategy is necessary and that the QR-based analysis of EXNP is able to provide sufficient empirical coverage. We will see in the same way as above that the virtue of this analysis is ultimately its combination of the benefits of Host-Internal and Host-External analyses. The extraposed material is simultaneously generated inside of its host and in its extraposed position.

4.5.1 Island-Violating EXNP

The example in (39), which is adapted from Rochemont & Culicover (1990:33), provides an example of a relative clause extraposed from a DP in subject position.

(39) $[_{DP}$ A man $]_1$ came into the room $[_{CP}$ that no one knew $]_1$.

Examples such as this are often noted to represent an exception to the *Subject Condition*, which is presented in (40).

(40) *Subject Condition*

A DP in Spec,IP is opaque for subextraction.

The examples in (41) illustrate. Leftward subextraction from a DP serving as the grammatical subject (41a) is significantly degraded relative to subextraction from the same DP that is in the associate position of expletive-*there* (41b) or in the direct object position (41c).[21]

[21] See Haegeman et al. (2014) for a discussion of ameliorating effects for the Subject Condition.

(41) a. * This is [the animal]$_2$ that [a documentary about e_2]$_1$ was reviewed e_1 last week.

b. ? This is [the animal]$_2$ that there was [a documentary about e_2]$_1$ reviewed e_1 last week

c. This is [the animal]$_2$ that they reviewed [a documentary about e_2] last week.

Rochemont & Culicover (1990) interpret this state of affairs as strong evidence against a movement analysis of EXNP and in favor of a Host-External base-generation analysis, which at the time was the major competing approach.

In as far as EXNP from a DP in subject position does indicate the use of a Host-External strategy and NPI-licensing by the host indicates a Host-Internal strategy, we should find that the two phenomena are mutually incompatible. As explained above, the contradictory requirements placed on the derivation of a such a sentence should result in ungrammaticality. This is not what we find, however, in the examples that we have already seen in (36) and the pair of examples below in (42). The contrast between these examples suggests that the NPI in the extraposed relative clause is licensed by *every* even when EXNP targets a DP in subject position.

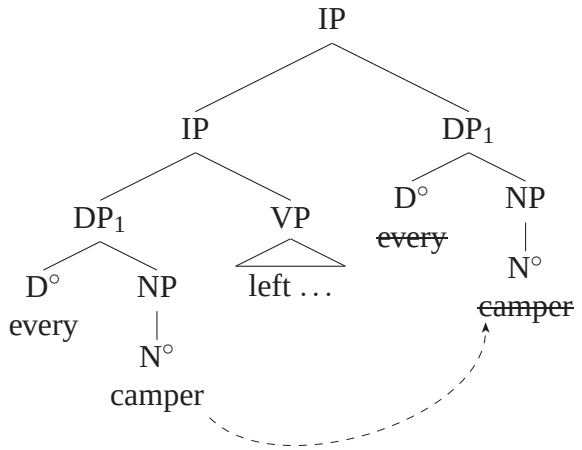
(42) a. [$_{DP}$ Every camper]$_1$ left this morning [$_{CP}$ who was at *any* of the sites with significant flooding]$_1$.

b. * [$_{DP}$ Some campers]$_1$ left this morning [$_{CP}$ who were at *any* of the sites with significant flooding]$_1$.

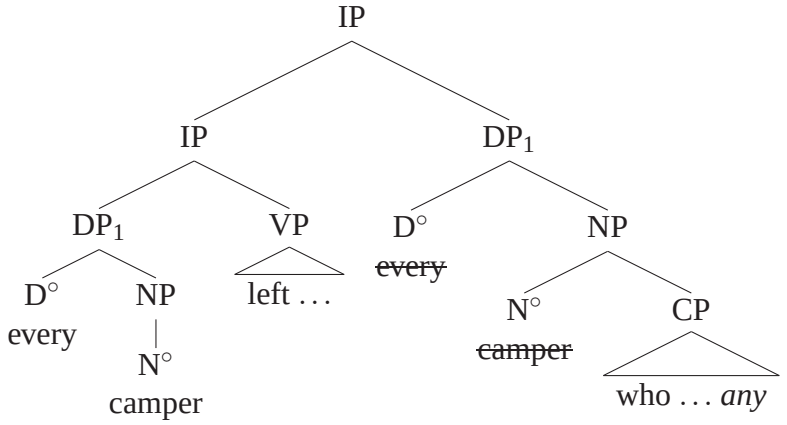
It is the acceptability of (42a) specifically which suggests that either a Host-Internal or Host-External approach is sufficient to account for these data on its own. Still taking it to be the case that NPI-licensing by *every* strongly supports the need for a Host-Internal approach, the strategy I will take is to sketch a way in which (42a) could be derived via Fox & Nissenbaum's (1999) QR-based analysis of EXNP. Recall that on this analysis the host will first undergo an instance of covert movement and the extraposed material will

be introduced counter-cyclically into the higher copy. As illustrated in (42), this strategy provides a means for rightward displacement without incurring a violation of the Subject Condition.

(43) i. *Covert Movement*



ii. *Late-Merger*



Note that the extraposed material is not subextracted on this derivation. Instead, the island domain is itself picked up and moved. By late-merging the relative clause into the higher copy, the Subject Condition is effectively circumvented.[22]

[22]Strunk & Snider (2013) also present a series of corpus and experimental studies that they interpret as showing that EXNP of a relative clause is not subject to a categorical constraint against extraction out of a complex NP (see Chomsky 1973). They conclude further from this observation that EXNP is not subject to a categorical syntactic locality constraint such as Subjacency. If this is the correct interpretation of those data,

While this analysis provides an account for the apparently exceptional cases of subextraction above, Webelhuth et al. (2013:23–24) argue that it "creates great problems for the theory". Covert DP-movement is being employed to account for EXNP from a position that otherwise disallows overt DP-movement. We have seen above that EXNP is possible from subject position, but as Postal (1974:83–84) observed DPs cannot be rightward moved out of Spec,IP in English. This is illustrated by the contrast in (44), which modifies the examples from above.

(44) a. This morning, $[_{DP}$ every camper $]_1$ left
$[_{CP}$ who was at any of the sites with significant flooding $]_1$.

b. * This morning, e_1 left
$[_{DP}$ every camper who was at any of the sites with significant flooding $]_1$.

Webelhuth et al. (2013) also observe that EXNP is permitted from the first object in a double object construction (45) and from the object of a preposition (46). We have already seen in chapter 3 that rightward DP-movement is not possible from either of these positions (Ross 1967).

(45) a. On Valentine's Day, we will give $[_{DP}$ all those couples $]_1$ a free meal
$[_{CP}$ that come to our restaurant $]_1$.
(Webelhuth et al. 2013:23, (72))

b. * On Valentine's Day, we will give e_1 a free meal
$[_{DP}$ all those couples that come to our restaurant $]_1$.
(Webelhuth et al. 2013:23, (71))

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then we might hope to extend the analysis sketched here to those examples. We will look at such examples in slightly more detail in section 5.1 of the following chapter.

(46) a. We will talk to $[_{DP}$ all those couples $]_1$ about their food preferences $[_{CP}$ that come to our restaurant $]_1$.

(Webelhuth et al. 2013:24, (78))

b. * We will talk to e_1 about their food preferences $[_{DP}$ all those couples that come to our restaurant $]_1$.

(Webelhuth et al. 2013:24, (77))

The contention for Webelhuth et al. (2013) is that the QR-based theory of EXNP makes the wrong predictions about when EXNP should be possible. If EXNP is driven by an instance of DP-movement, we should only find EXNP in environments where DP-movement is possible. Furthermore, accounting for these discrepancies between EXNP and DP-movement would "require a multitude of construction-specific stipulations" about when an instance of movement must be covert and when it can be overt.

What goes overlooked in this discussion is that covert movement of the first object in a double-object construction and covert movement of prepositional objects is possible entirely independent of EXNP. This is illustrated in (47) and (48) respectively by the availability of an inverse-scope reading with a DP in subject position.

(47) Someone will give every couple a free meal.

'For every *x* such that *x* is a couple, there is some person *y* such that *y* will give *x* a free meal.'

(48) Someone will talk to every couple about their food preferences.

'For every *x* such that *x* is a couple, there is some person *y* such that *y* will talk to *x* about *x*'s food preferences.

The general clause-boundedness of QR makes this difficult to demonstrate for subjects. That aside, we can interpret the examples above to be demonstrating that, entirely independent of EXNP, we are already faced with a puzzle of why certain types of DP-movement out of certain positions must be covert. This is not a puzzle that is produced by the analysis

we get in Fox & Nissenbaum 1999, it is simply a puzzle that is further illuminated by this analysis.

The actual puzzle that I would claim that we are left with—and a puzzle that is not entirely unfamiliar to us—is why $\overline{\text{A}}$-movement that does not independently target the CP-layer is either covert or linearized rightward. Presumably, whatever factor or factors are found to be responsible for this fact can be circumvented by material that is late-merged. This is what we learn from the analysis provided by Fox & Nissenbaum (1999).

4.5.2 Split Antecedents

EXNP is famously compatible with so-called *split antecedents*. The original observation comes from (Perlmutter & Ross 1970) and is exemplified by sentences like in (49), which is adapted from their example (3).

(49) $[_{\text{DP}}$ A man $]_1$ entered the room and $[_{\text{DP}}$ a woman $]_1$ went out $[_{\text{CP}}$ who were quite similar $]_1$.

The problem that these examples present can be seen by trying to reconstruct the source sentence. One finds that neither DP is capable of hosting a relative clause of this particular shape.

(50) a. * $[_{\text{DP}}$ A man who were quite similar $]$ entered the room and $[_{\text{DP}}$ a woman $]$ went out.

b. * $[_{\text{DP}}$ A man $]$ entered the room and $[_{\text{DP}}$ a woman who were quite similar $]$ went out.

This observation has been interpreted by a number of researchers as strong evidence against a movement analysis of EXNP and in favor of some Host-External base-generation analysis (Perlmutter & Ross 1970, Gazdar 1981, Rochemont & Culicover 1990, Webelhuth et al. 2013).

With this, we can probe for the necessity of both Host-External and Host-Internal analyses of EXNP in the same way as we did above. In as far as NPI-licensing requires a

Host-Internal mechanism and split antecedence requires a Host-External mechanism, we should expect ungrammaticality in a sentence that must simultaneously satisfy both requirements. The pair of examples in (51) below suggests, contrary to these expectations, that an NPI can be licensed in the extraposed material even given split antecedence.

(51) a. $[_{DP}$ Every intern $]_1$ left and $[_{DP}$ every employee $]_1$ quit
$[_{CP}$ who were in *any* of the basement offices $]_1$.

b. * $[_{DP}$ Some interns $]_1$ left and $[_{DP}$ some employees $]_1$ quit
$[_{CP}$ who were in *any* of the basement offices $]_1$.

The acceptability of (51a) suggests that either a Host-Internal or Host-External approach alone is sufficient to account for the data at hand. Again, I would suggest that the QR-based analysis of Fox & Nissenbaum (1999) provides a way to think about these data that will accommodate the ability to have split antecedents and have those antecedents license an NPI in the extraposed relative. However, having seen that the extraposed material can be traced back to just one of the host DPs, we will require something extra to make this work.

As a hint for what this extra something might be, we can take note that (49) displays what Yatabe (2003) and Grosz (2015) refer to as *summative agreement* and which Postal (1998) observed in known instances of Right Node Raising (RNR). The example below has been adapted from Postal (1998:173).

(52) The pilot claimed that the first nurse e_1 and
the sailor proved that the second nurse e_1 – $[$were spies$]_1$

In the same way as (43) above, the example in (52) does not find an obvious source in either conjunct, as demonstrated by (53). The morphological shape of the displaced predicate *were spies* is not determined singularly by the subject of either conjunct but instead cumulatively by the subject of both conjuncts.

(53) * The pilot claimed that the first nurse [were spies] and
the sailor proved that the second nurse [were spies].

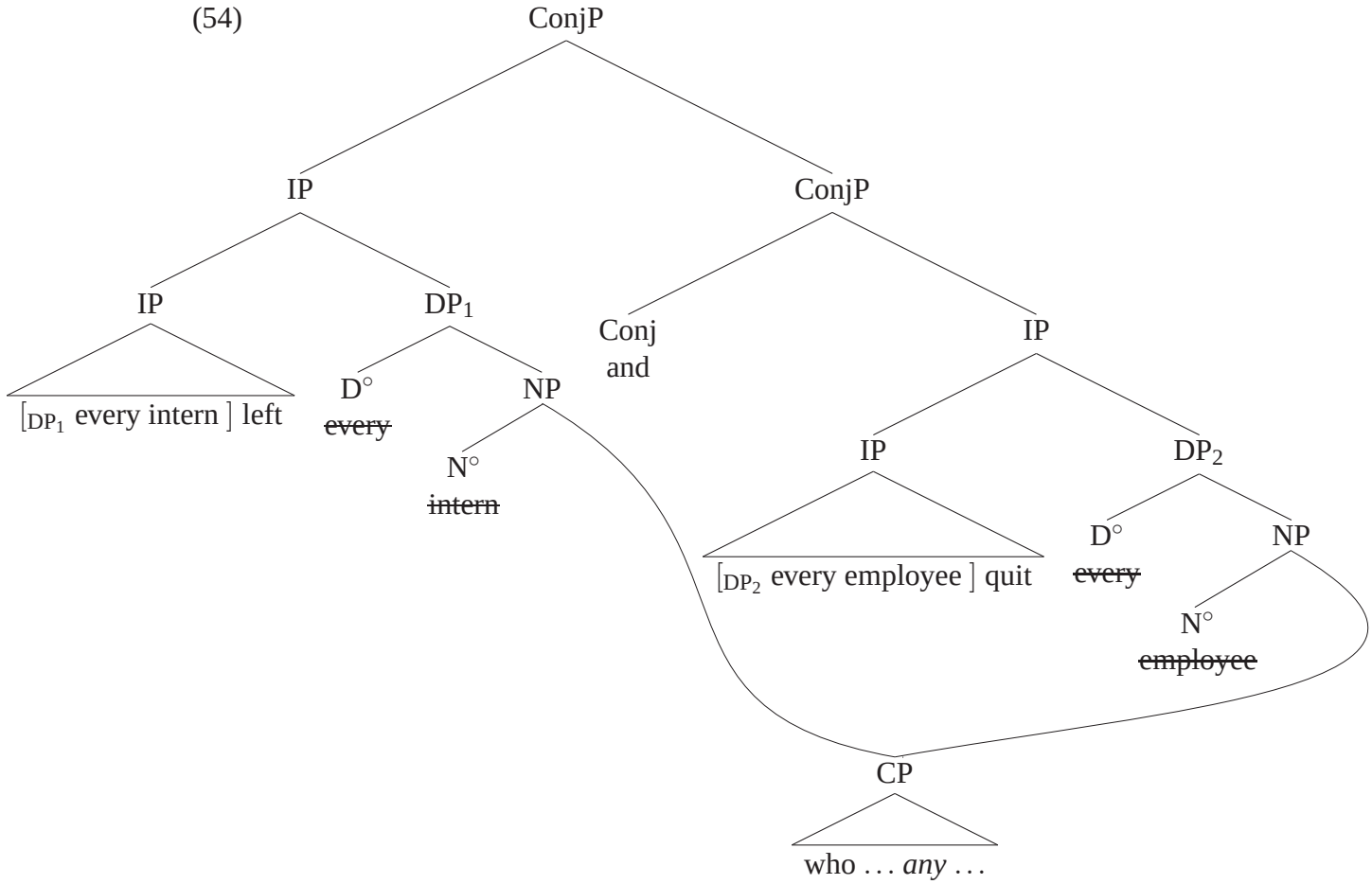
On the basis of this observation, I would like to expand on a suggestion made by Grosz (2015) that EXNP configurations that show split antecedence like (49) and (51a) involve multidominance-based RNR (e.g. McCawley 1982). As we will see immediately below, this means that the extraposed material is shared by the host in each conjunct. Still building on Grosz (2015) and following Kluck & de Vries (2013) specifically, I would suggest that the relevant mechanism for EXNP feeds the application of RNR.[23] On this view of split antecedence, sentences like (49) in fact do not reveal anything about the mechanics of the EXNP operation itself. However, by adopting the QR-based analysis of EXNP, it is possible to model the observation that in (51a) an NPI is licensed in extraposed material that has split antecedents headed by *every*.

We can imagine a derivation of (51a) that proceeds as follows to produce the representation in (54) below. Separate applications of movement (or further multidomination) will covertly displace *every intern* and *every employee* to the edge of their respective conjuncts. The resulting configuration will permit the late-merger of the relative clause into both conjuncts simultaneously. Looking at (54) we see a representation for a relative clause with split antecedents very much like the one proposed by McKinney-Bock (2013). The relative clause is simultaneously in the restrictor argument of each host. By permitting the type of multiple agreement and feature sharing between the hosts and the relative clause operator that we find in Grosz 2015, an explanation of summative agreement begins to emerge. Specifically, it is the features on the relative clause operator that are triggering summative agreement inside the relative clause. By being interpreted in the restrictor argument of a

[23] I am imagining, in particular, that the output of EXNP satisfies the *Right Edge Restriction*, which represents a constraint on the application of RNR that requires the shared material to be rightmost in both conjuncts (e.g. Postal 1974, Wilder 1997b, Hartmann 2000, Sabbagh 2007).

DP headed by *every*, we expect an NPI to be licensed in the extraposed material in the same way as above.

(54)



This, however, is merely a sketch of an approach to the problem. It remains to be shown that this type of structure can be both properly linearized and properly interpreted. Moreover, this approach differs in non-trivial ways from other recent analyses for split antecedence. Baltin (2005) and Fox & Johnson (2015) propose different methods of achieving an Across-the-Board style QR operation that results in coordinating the two hosts in a position outside of what I have represented above as ConjP.[24] On both accounts, the extraposed material is functionally late-merged with the coordinated hosts. Zhang (2007)

[24]See Fox & Johnson (2015) for an explicit way of interpreting the representation that results from their treatment.

presents an account that is essentially the inverse. The hosts begin as the conjuncts of a nominal coordinate phrase that is conjoined above my ConjP and each move sideward (e.g. Nunes 2001) into their respective conjuncts. Filling the gaps present in the analysis sketched around (54) and choosing among the available alternative analyses must be left as challenges to future research.[25]

4.6 Summary

The novel connectivity diagnostic that we developed in section 4.2 and that we investigated experimentally in section 4.3 revealed that NPIs in relative clauses in extraposition to the direct object are licensed by the head of the host. I argued that this observation is best modeled by a Host-Internal analysis of EXNP, which treats the extraposed material as being generated internal to the restrictor argument of its host. Host-External analyses claiming that the extraposed material is adjoined to the nuclear scope of the host do not predict *a priori* the possibility of NPI-licensing in such configurations.

Based on additional evidence presented in section 4.4, I suggested further that the QR analysis of EXNP in Fox & Nissenbaum 1999 is best suited to account for the observed NPI-licensing facts. In section 4.5 I also argued that this analysis may account for a range of data that are commonly taken to support Host-External analyses and which otherwise present puzzles for a movement-based approach to EXNP. Moving forward, we will continue to examine and work with this model of EXNP.

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[25]We might also hope to see that this analysis could be extended or adapted to account for relative clause constructions with coordinated heads (Vergnaud 1974, Jackendoff 1977, Link 1984), which are also compatible with EXNP configurations.

(i) a. $[_{DP}$ Every intern and every employee $]_1$ quit $[_{CP}$ who were in any of the basement offices $]_1$.
b. * $[_{DP}$ Some interns and some employees $]_1$ quit $[_{CP}$ who were in any of the basement offices $]_1$.

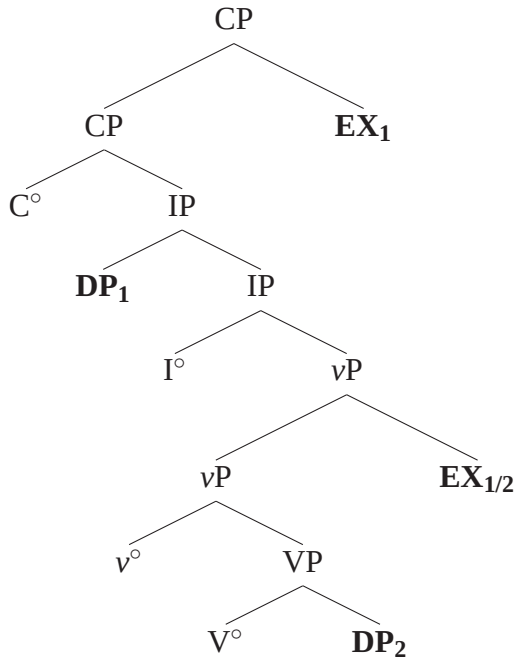
CHAPTER 5

THE LOCALITY OF EXTRAPOSITION FROM NP

This chapter turns to an investigation of the locality conditions on EXNP. A review of the previous literature will reveal that EXNP is a strictly local operation. However, a range of evidence from quantifier scope and Antecedent-Contained Deletion suggests that an extraposed relative clause can be interpreted higher than its extraposed position. While such facts initially suggest that the locality conditions on EXNP are potentially violable, we will see a range of data that suggest this is not the case. Instead, we will find that there can be disconnect between where extraposed material is interpreted and where it must be spoken. I propose an account of these facts that relies on the successive-cyclicity of QR and I try to illuminate some outstanding problems raised by the data.

In section 5.1 we will examine evidence for subclausal locality constraints on EXNP. In particular we will look at standard arguments presented by Baltin (1978, 1981), Guéron (1980) and Rochemont & Culicover (1990) that provide the picture for the locality conditions on EXNP that are illustrated in (1). Briefly, this tree diagram captures the generalization that EXNP from direct objects targets the edge of *v*P and EXNP from subjects targets either the edge of *v*P or the edge of CP.

(1) *Locality Conditions on EXNP*



Section 5.2 introduces some puzzling data which initially suggest that the Locality Conditions on EXNP are violable. We will observe data supporting a stronger version of a generalization credited to Williams (1974), which says that the host of an extraposed relative clause is interpreted at least as high as the adjoined position of the extraposed relative. We will be led to the generalization in (2) which states that the host and extraposed relative clause are interpreted at the exact same position, just as Bhatt & Pancheva (2004) conclude for comparative clause extraposition.

(2) *Extraposition-Scope Generalization*

When a phrase β is extraposed from a host α, the scope of α is exactly as high as the attachment site of β.

(adapted from Bhatt & Pancheva 2004:21, (39))

With this interpretive correlation in hand, it will be somewhat puzzling to observe that the host of an extraposed relative clause and the relative clause itself may behave interpretively as if they were in positions higher than predicted by the Locality Conditions on EXNP.

Even under such circumstances however, we will find that, with respect to pronunciation, an extraposed relative clause cannot violate the locality conditions represented by (1).

Based on the results of the previous chapter, I will continue to treat EXNP as the product of covert movement of the host DP and late-merger of the extraposed relative clause. I argue that the results of section 5.2 can be understood by adopting a view of covert movement, and Quantifier Raising in particular, as a successive-cyclic movement (e.g., Nissenbaum 2000, Cecchetto 2004, Hulsey & Sauerland 2006, Takahashi 2006). I then propose a constraint on EXNP that requires extraposed material to be late-merged with its host within the first cycle of QR.

(3) *Condition on EXNP*

In an EXNP configuration, extraposed material must be merged with the host in the first cycle of QR.

Given the nature of QR, subsequent cycles will be unable to alter the pronunciation of the chain. This will provide a way to force extraposed relative clauses to be spoken in their low position, but allow subsequent applications of QR to widen their semantic scope.

In section 5.4 we will see that certain cases of Antecedent-Contained Deletion (ACD) present a similar puzzle regarding where extraposed material can be spoken and where it can be interpreted. We will be particularly interested in instances of ACD that require EXNP. A well-known example of this comes from a contrast identified by Tiedeman (1995) and presented in (4).

(4) a. * I expect that [everyone that you do ⟨ ~~expect *e* will visit Mary~~ ⟩]

will visit Mary.

(Larson & May 1990:107, (21a))

b. I expect that [everyone]$_1$ will visit Mary

[that you do ⟨ ~~expect *e* will visit Mary~~ ⟩]$_1$.

In the same way as section 5.2, we will observe that the extraposed material in (4) behaves as if were still within the embedded *v*P. This is so despite the fact that the ellipsis site is resolved to the matrix *v*P and given the requirement for EXNP. These examples are particularly interesting, however, because they reveal the potential unboundedness of the instance of movement that is responsible for EXNP. Thus, we find that the instance of movement that is responsible for EXNP is potentially unbounded and successive cyclic, just like HNPS and leftward movement, but its apparently exceptional locality constraints can be attributed to an independent constraint on late-merge of the extraposed material (3).

Section 5.5 concludes by summarizing and discussing the relevant questions and puzzles that remain. In brief, it is not straightforwardly obvious why a constraint on EXNP like (3) should hold. If HNPS can be proceed in an unbounded fashion as part of ensuring LF-convergence, we might expect the same to be true of EXNP. Second, we will see that is is rather mysterious that EXNP should be obligatory in (4) given that it does not target a position outside the antecedent to the ellipsis site.

5.1 Sub-Clausal Locality Conditions on EXNP

We have seen in both chapter 1 and chapter 4 that EXNP displays unexpected locality conditions relative to leftward displacement operations. Recall that, for Ross (1967:307), all rightward movement targets the edge of its first containing clause. This accounts for the data in (8), which illustrates that EXNP can extrapose a relative clause within an embedded clause (5a), but cannot extrapose a relative clause from an embedded clause into the matrix clause (5b).

(5) a. Sam said $[_{CP}$ that he bought [some coffee $]_1$ for his co-workers $[_{CP}$ that they serve in the library $]_1$].

b. * Sam said $[_{CP}$ that he bought [some coffee $]_1$] to his co-workers $[_{CP}$ that they serve in the library $]_1$.

We can observe the clause boundedness of EXNP from subjects in (6). While a relative clause can be extraposed from the embedded subject in (6a), it cannot appear to the right of an adverbial phrase modifying the matrix clause (6b).

(6) a. Sam said $[_{CP}$ that [everyone $]_1$ is upset at Kim
[who ever bought one of her cars $]_1$].

b. * Tim said $[_{CP}$ that [everyone $]_1$ is upset] to Kim
[who ever bought one of her cars $]_1$.

Akmajian (1975:119–121) proposes to strengthen the locality conditions on EXNP by arguing that DP also counts as a cyclic node for the application of movement rules. This is based on examples like (7) adapted from Akmajian 1975:118, fn. 3, which he takes to show that a PP can only be extraposed over a single DP node.

(7) a. $[_{DP}$ A photograph of $[_{DP}$ a book about French cooking]]]
was published last year.

b. $[_{DP}$ A photograph e_1] was published last year
$[_{PP}$ of $[_{DP}$ a book about French cooking $]]_1$.

c. * $[_{DP}$ A photograph of $[_{DP}$ a book e_1]] was published last year
$[_{PP}$ about French cooking $]_1$.

(Akmajian 1975:118, fn. 3, (i)–(iii))

The statement in (8), which I will call *Akmajian's Right Roof Constraint*, represents the general bounding condition on extraposition posited in Akmajian 1975:119 based on the data above.

(8) *Akmajian's Right Roof Constraint*

No element may be extraposed more than one cycle up from the cycle containing it, where CP and DP are cyclic nodes.

This constraint says that extraposed material can cross its containing DP node, but not its containing clausal node. As Akmajian (1975:120) notes, this simply amounts to a "special

case" of Subjacency (cf. Chomsky 1973) in that it sets a restriction on the number of cyclic nodes movement may cross. The difference is that while an extraposed element can cross a single cyclic node, it cannot then cross another in a second application of movement.[1]

In a series of experimental and corpus studies on English and German Strunk & Snider (2013) argue contra Akmajian (1975) that EXNP can in fact span multiple DP nodes. Strunk & Snider hypothesize that Subjacency is not a relevant factor determining the acceptability of EXNP structures. Examining pairs of sentences like those in (9), which are disambiguated by the shape of the relative clause operator, one predicts that a relative clause extraposed from DP_1 (9a) should be perceived as significantly more acceptable than a relative clause extraposed from the embedded DP_2 (9b) if EXNP configurations are subject to Subjacency and all else were equal. Interestingly, Strunk & Snider (2013) failed to observe any difference between these sentences.

(9) I consulted $[_{DP_1}$ the diplomatic representative of
$[_{DP}$ a small country with $[_{DP_2}$ border disputes $]]]$ early today ...

a. $[_{CP}$ who threatens to cause a hugely disastrous war $]_1$.

(Strunk & Snider 2013:119, (32))

b. $[_{CP}$ which threaten to cause a hugely disastrous war $]_2$.

(Strunk & Snider 2013:119, (33))

They interpret this lack of an effect to indicate that this instance of EXNP is not constrained by something resembling Subjacency. They conclude further, based on the additional results from other judgment studies and corpus investigations, that there is no hard subclausal

[1]Note that the same paradigm in (7) emerges for leftward movement. It would seem that a PP cannot be extracted from an embedded NP regardless of the direction of the movement.

(i) a. They published $[_{DP}$ a photograph of $[_{DP}$ a book about French cooking $]]]$ last year.
b. $[_{PP}$ Of $[_{DP}$ what$]]_1$ did they publish $[_{DP}$ a photograph e_1 $]$ last year?
c. * $[_{PP}$ About $[_{DP}$ what $]]_1$ did they publish $[_{DP}$ a photograph of $[_{DP}$ a book e_1 $]]$ last year?

Therefore, it is not clear that the paradigm in (7) shows us anything that is exceptional about the locality constraints on rightward movement as compared to leftward movement.

locality constraint on EXNP. Instead, in as far as such a constraint manifest itself, Strunk & Snider propose that it is a soft (violable) constraint and one that might actually represent constraints on sentence processing.

The connectivity diagnostic introduced in the previous chapter actually provides a different way to ask whether EXNP is subject to a locality constraint that prohibits EXNP from a DP embedded inside another DP. By comparing examples like those in (10), it could be possible to determine whether an NPI can be licensed by the quantifier *every* if it heads an embedded DP as in (10b).

(10) a. I met $[_{DP_1}$ every representative for $[_{DP_2}$ a country $]]$ today $[_{CP}$ who *ever* threatened to start a war $]_1$

b. I met $[_{DP_1}$ a representative for $[_{DP_2}$ every country $]]$ today $[_{CP}$ which *ever* threatened to start a war $]_2$

I have suppressed my own judgments for these examples. If it is observed that (10b) is relatively acceptable, it would provide further support for the claim presented in Strunk & Snider (2013) that EXNP can target embedded DPs. In the case that (10b) is judged as relatively unacceptable, it would suggest that EXNP cannot target embedded DPs.

These arguments aside, a number of diagnostics have been identified which do indicate that there is a subclausal upper-bound on where an extraposed relative clause can be spoken and interpreted. Guéron (1980:640–642), Baltin (1981:266–270), and also Rochemont & Culicover (1990:34–36) provide evidence that material extraposed from a DP does not behave as if it were always adjoined to CP. Instead, there is a correlation between the height of attachment of the extraposed material and the grammatical role of its host DP. The following examples adapted from Baltin (1981:267) show that a relative clause extraposed from a subject NP may be outside the *v*P as it is able to escape *v*P-ellipsis (*v*PE).

(11) Although nobody would $[_{vP}$ ride with Fred $]_2$ who knew just him,

people would Δ_2 who knew his brother.

(Baltin 1981:267, (22))

Taking *v*P-fronting to represent the same sort of facts, Baltin (1981:269) then provides the examples in (12) to illustrate that material extraposed from an object NP, on the other hand, behaves as if it were part of the targeted *v*P constituent and, therefore, *v*P-internal.

(12) a. $[_{vP}$ Call people up who are from Boston $]_1$ though he may e_1,

he's generally pretty cheap about long-distance calls.

b. * $[_{vP}$ Call people up $]_1$ though he may e_1 who are from Boston,

he's generally pretty cheap about long-distance calls.

(Baltin 1981:269, (29))

Baltin (1981) attempts to subsume Akmajian's Right Roof Constraint under a general theory of Subjacency that is relativized to the direction of movement. For instance, it is possible to make sense of the different results that we attain from (11) and (12) by asserting that *v*P also counts as a cyclic node for rightward movement.[2] What we might call *Baltin's Right Roof Constraint* can be stated as in (13).

(13) *Baltin's Right Roof Constraint*

No element may be extraposed more than one cycle up from the cycle containing it, where CP, *v*P, and DP are cyclic nodes.

Thus, extraposition from a direct object can cross the containing DP to adjoin to *v*P and extraposition from a subject can cross the containing DP to adjoin to CP.

Rochemont & Culicover (1990) and Culicover & Rochemont (1990) argue that Condition C effects corroborate this picture of EXNP. Taraldsen (1981) observed that EXNP

[2]Baltin (1981) argues that, in fact, *all* maximal projections count for evaluating Subjacency in instances of rightward movement. An immediate problem for this specific claim, which is discussed at length by Baltin (2005), is that it incorrectly predicts that extraposition cannot target material embedded in a PP: *We looked at a book last week about French cooking*.

from a direct object ameliorates the disjoint reference effect between an R-expression in the extraposed relative clause and a pronominal indirect object.

(14) a. * I showed her$_1$ [$_{DP}$ a picture [$_{CP}$ that Kim$_1$ thought I lost]] this morning.

b. ? I showed her$_1$ [$_{DP}$ a picture] this morning [$_{CP}$ that Kim$_1$ thought I lost].

This contrast suggests that the extraposed material is adjoined to, and interpreted in, a position that is higher than the indirect object. Rochemont & Culicover (1990) found that the disjoint reference effect persists, however, when the R-expression in the extraposed relative clause is co-indexed with a pronominal subject (15). Observing that EXNP is otherwise acceptable in this configuration (16), the examples in (15) suggest that EXNP cannot target a position above the subject.

(15) a. * She$_1$ was shown [$_{DP}$ the picture [$_{CP}$ that Kim$_1$ thought I lost]] this morning.

b. * She$_1$ was shown [$_{DP}$ the picture] this morning [$_{CP}$ that Kim$_1$ thought I lost].

(16) Pam was shown [$_{DP}$ the picture] this morning [$_{CP}$ that Kim thought I lost].

The above facts from ellipsis, movement, and Condition C are consistent with the claim that EXNP is subject to some set of subclausal locality constraints. In particular, these facts characterize the locality constraints on EXNP that are promoted in Baltin 1981: EXNP from a direct object targets the edge of VP and EXNP from a subject targets the edge of IP.

With regard to EXNP from a subject, Culicover & Rochemont (1990) argue that the picture is slightly more complex. Specifically, they argue that EXNP from a subject may also target a position at the edge of *v*P. Culicover & Rochemont (1990:31–35) argue extensively, contra Baltin (1981), that material extraposed from a subject can be part of the constituent targeted by *v*PE (17).

(17) Although none of [$_{DP}$ the MEN]$_1$ did ⟨ ~~go to the concert [$_{CP}$ who were visiting from Boston~~]$_1$⟩, several of [$_{DP}$ the WOMEN]$_2$ went to the concert [$_{CP}$ who were visiting from Boston]$_2$.

(Culicover & Rochemont 1990:30, (16))

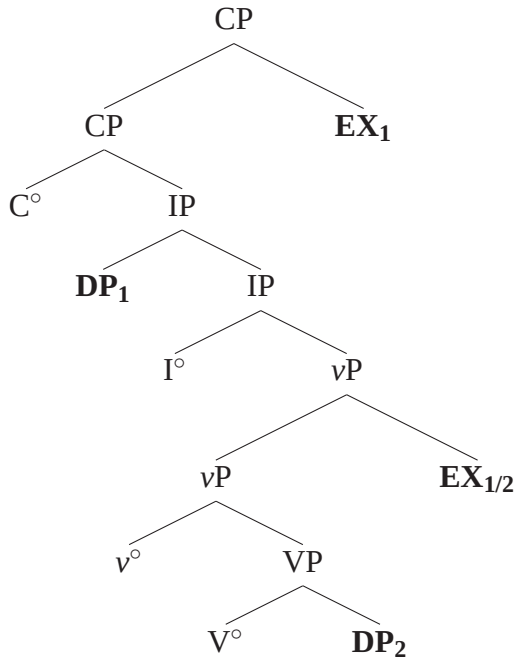
Independent of the success of this argument, we can find corroborating evidence from NPI-licensing. The example below in (18) from Linebarger (1980), which is discussed by Uribe-Etxevarria 1994:60–63 reveals that sentential negation can license an NPI in a relative clause extraposed from a subject. This is consistent with the claim that the extraposed material is adjoined to and interpreted in a position at the edge of *v*P. We will discuss this example in more detail in the following section where we will see that this is the correct interpretation of this data point.

(18) [A doctor]$_1$ wasn't available [$_{CP}$ who knows *any*thing about acupuncture]$_1$.

(Linebarger 1980:228, (23a))

Putting these pieces together produces the generalization in (19). Material extraposed from a direct object is not able to target a position higher than the *v*P-layer. Material that is extraposed from the subject may target one of two positions. This may be inside or outside the *v*P-layer. To establish a parallelism with EXNP from a direct object, I will assume that when material extraposed from a subject is adjoined outside the *v*P-layer, it is in a position within the CP-layer.

(19) *Locality Conditions on EXNP*



The question that arises in light of the research by Strunk & Snider (2013) and some additional facts that we see below, is whether these locality conditions on EXNP are violable constraints. The following sections will turn us to this issue.

5.2 Potential Locality Violations

In this section we will see some initial evidence suggesting that the locality constraints on EXNP that were identified in the previous section are violable. In particular, we will be led to the conclusion that a direct object host and an extraposed relative clause can be interpreted outside their containing *v*P. However, we will also make the contradictory discovery that even in such cases the extraposed relative clause does not otherwise behave as if it were in a position outside the *v*P.

5.2.1 The Scope of the Host

To understand the nature of the problem we must start with the observation by Williams (1974) that an extraposed result-clause or comparative-clause marks the semantic scope of

its host. Fox & Nissenbaum (1999) and Fox (2002) argue that the same holds for EXNP configurations (22).

(20) *Williams's Generalization* (Fox 2002:72)

When an adjunct β is extraposed from a "source DP" α, the scope of α is at least as high as the attachment site of β (the extraposition site)

To illustrate, Fox (2002) makes use of the ambiguity discussed by Sag (1976) and Williams (1977) that exists in the example in (21). This sentence has either the LF in (21a) or (21b).

(21) Sam read every book before you did Δ.

a. Sam $[_{vP}$ $[_{vP_A}$ every book $\lambda 1$ read x_1 $]]$

before you did $[_{vP_E}$ every book $\lambda 1$ read x_1 $]$ $]$

b. Sam $[_{vP}$ every book $\lambda 1$ $[_{vP}$ $[_{vP_A}$ read x_1 $]$ before you did $[_{vP_E}$ read x_1 $]$ $]]$

In (21a), *every book* has undergone short QR to a position below the *before*-clause. In this position it remains part of the antecedent vP_A for the elided vP_E in the *before*-clause. The interpretation this LF yields is one in which there is a set of books and Sam read the entire set before you read the entire set. The other LF in (21b) is the result of *every book* undergoing QR to a position above the *before*-clause where it is outside vP_A and binds a variable in vP_E. The interpretation here is one in which it is the case for each book that Sam read it before you read it.

The following examples are adapted from Fox (2002) to illustrate the effect of EXNP on the above ambiguity. As one may expect, the ambiguity persists with an in-situ relative clause (22). Of interest to us here is the observation consistent with (20) that the ambiguity is resolved for the high scope reading of the universal quantifier given EXNP in (23).

(22) I read $[_{DP}$ every book $[_{CP}$ that Kim had recommended $]]$ before you did Δ.

a. *before* $>$ $\forall$: Sam read the entire set before you read the entire set.

b. $\forall$ $>$ *before* : Sam read each book before you read it.

(Fox 2002:72, (22a))

(23) Sam read $[_{DP}$ every book $]$ before you did Δ $[_{CP}$ that Kim had recommended $]$.

a. * *before* $>$ $\forall$: Sam read the entire set before you read the entire set.

b. $\forall$ $>$ *before* : Sam read each book before you read it.

(Fox 2002:72, (22b))

This observation that EXNP disambiguates the scope of the host in favor the $\forall$ $>$ *before* reading supports the claim that the host of an EXNP configuration is interpreted at least as high as the extraposed material.

It can be shown that Williams' Generalization in (20) is in fact too weak. Building off of the ambiguity in example (33) from section 4.4 of chapter 4 and the work in Linebarger (1980:225–228), Uribe-Etxevarria (1994:60–63) discusses the fact that the scope of the subject and sentential negation is disambiguated given an extraposed relative clause containing an NPI that is licensed by sentential negation. The string in (24) is reproduced from (18) above. It is interesting to note that this example is compatible only with the inverse scope context in (24b).

(24) $[$ A doctor $]_1$ wasn't available $[_{CP}$ who knows *any*thing about acupuncture $]_1$.

a. * $\exists$ $>$ $\neg$

Context : Tim and Pam are doctors who know about acupuncture. Only Tim wasn't available.

'There is a (certain) doctor *x* such that *x* knows about acupuncture and it is not the case that *x* was available.'

b. $\neg$ $>$ $\exists$

Context : Tim and Pam are doctors who know about acupuncture. Both Tim and Pam weren't available.

'It is not the case that there is a doctor *x* such that *x* knew about acupuncture and *x* was available.'

We can understand these facts by asserting first that the extraposed relative clause can sit in a position at the edge of *v*P (following the constituency facts that are established by Rochemont & Culicover (1990)) and, therefore, under negation. This will necessarily be the case in (24) if *any* is to be licensed. Similar to the discussion of (33) from section 4.4, the obligatory low scope of the subject would then follow from the Principle of Full Interpretation (Chomsky 1986), which will require that the relative clause and the host be interpreted together.

This is effectively a restatement of the more restrictive version of *William's Generalization* that is presented in Bhatt & Pancheva (2004) and provided in (25). The scope of the host of an EXNP configuration is exactly as high as the extraposed relative clause.[3]

(25) *Extraposition-Scope Generalization*

When a phrase β is extraposed from a host α, the scope of α is exactly as high as the attachment site of β.

(adapted from Bhatt & Pancheva 2004:21, (39))

5.2.2 The Scope of the Extraposed Relative Clause

Let us now consider the examples in (26) and (27) which show an EXNP configuration in which the host is the negative polarity item (NPI) *any* and the positive polarity item (PPI) *some*, respectively.

(26) Tim didn't invite $[_{DP}$ any people $]_1$ to the party $[_{CP}$ who work in his office $]_1$.

(27) Tim didn't invite $[_{DP}$ some people $]_1$ to the party $[_{CP}$ who work in his office $]_1$.

Supposing that the extraposed relative clause is adjoined under negation at the edge of VP, the NPI host in (26) is expected to be licensed. However, assuming that the PPI *some* must

[3]The Extraposition-Scope Generalization is a property of relative clause EXNP that follows naturally from the QR-based theory of EXNP proposed by Fox & Nissenbaum (1999). We will see how this is the case in the following section.

be interpreted above sentential negation, the acceptability of (27) is interesting for revealing that the host in an EXNP configuration can be interpreted in a position higher than *v*P.

A vague quantifier like *many* and a numeral quantifier like *five* reveal the same thing. The scope ambiguity with respect to negation that is shown by *many* in (28a) and *five* in (29a) persists in conjunction with EXNP in their respective (b) variants. Thus, we find another case in which the EXNP host can be interpreted in a position outside the *v*P.

(28) a. Sam didn't invite many people to the party.

i. $\neg > \textit{many}$: Sam invited only a few people.

ii. $\textit{many} > \neg$: There are many people that Sam did not invite.

b. Sam didn't invite $[_{\text{DP}}$ many people $]_1$ to the party $[_{\text{CP}}$ who had an interest in coming $]_1$.

i. $\neg > \textit{many}$: Sam invited only a few people with an interest in coming.

ii. $\textit{many} > \neg$: There are many people with an interest in coming that Sam did not invite.

(29) a. Sam didn't invite five people to the party.

i. $\neg > 5$: Sam invited only four or fewer people.

ii. $5 > \neg$: There is a group of five people that Sam did not invite.

b. Sam didn't invite $[_{\text{DP}}$ five people $]$ to the party $[_{\text{CP}}$ who had an interest in coming $]$.

i. $\neg > 5$: Sam invited only four or fewer people with an interest in coming.

ii. $5 > \neg$: There is a group of five people with an interest in coming that Sam did not invite.

The puzzle begins now with the examples in (30) and (31) below. These examples are modified from (26) and (27) respectively by placing the NPI *ever* inside the extraposed relative clause. On the basis of the discussion we saw in section 5.2.1, if the NPI *ever* is to

be licensed by sentential negation, the extraposed relative clause will need to be interpreted in a position below sentential negation. Knowing this, the contrast between (30) and (31) seems to be revealing that it is not always the case that a relative clause extraposed from a direct object is interpreted below sentential negation.

(30) Sam didn't invite $[_{DP}$ any people $]_1$ to the party $[_{CP}$ who have *ever* teased him $]_1$.

(31) * Sam didn't invite $[_{DP}$ some people $]_1$ to the party $[_{CP}$ who have *ever* teased him $]_1$.

In (30) where the host is an NPI, and is therefore interpreted below negation, *ever* is licensed in the extraposed relative clause. On the other hand, when the host is a PPI and interpreted above negation as in (31), we find that it is no longer possible to license an NPI in the extraposed relative clause. Given the acceptability of (26) and (27) above, this suggests that when the host is interpreted above negation, so too is the extraposed relative clause. This is exactly what one would expect from the Extraposition-Scope Generalization (20).

A similar result is obtained again with the vague quantifier *many* in (32) and the numeral quantifier *five* in (33). An NPI in the extraposed relative clause is licensed only on the reading in which *many* or *five* is interpreted below negation as in the (a) variants. Again, this suggests that when the host is interpreted above negation as in (31) above, the extraposed relative clause must also interpreted above negation.

(32) Sam didn't invite $[_{DP}$ many people $]_1$ to the party $[_{CP}$ who have *ever* teased him $]_1$.

a. $\neg > \textit{many}$: Sam invited only a few people who have teased him.

b. * $\textit{many} > \neg$: There are many people who have teased him that Sam did not invite.

(33) Sam didn't invite $[_{DP}$ five people $]_1$ to the party $[_{CP}$ who have *ever* teased him $]_1$.

a. $\neg > \textit{many}$: Sam invited only four or fewer people who have teased him.

b. * $5 > \neg$: There is a group of five people who have teased him that Sam did not invite.

With these data in hand, examples like (27) and others in which the host and extraposed relative clause are interpreted outside the *v*P are potential counter-examples to the the Locality Conditions on EXNP. It may be that the Locality Conditions on EXNP can be violated precisely when the host and extraposed relative clause are interpreted in a position outside *v*P. If this were the case, we would expect the extraposed relative clause to no longer behave as part of the *v*P. For instance, if the extraposed relative clause were adjoined outside *v*P when the host is interpreted above negation, we would expect to find that, in precisely these instances, they are able to escape *v*PE.

Turning to the examples in (34)–(36) we see that this prediction is not borne out. The example in (34) contains the PPI *some*, which we know is interpreted above negation, but the extraposed relative clause is still unable to escape *v*PE (34b). Similarly, the sentences in (35b) with the vague quantifier *many* and (36b) with the numeral quantifier *five* are ungrammatical.

(34) a. Sam didn't $[_{VP}$ invite $[_{DP}$ some people $]$ to the party $]_1$
$[_{CP}$ who work in his office $]$ and Kim didn't Δ_1 either.

b. * Sam didn't $[_{VP}$ invite $[_{DP}$ some people $]$ to the party $]_1$
$[_{CP}$ who work in his office $]$ and Kim also didn't Δ_1
$[_{CP}$ who work in her office $]$.

(35) a. Sam didn't $[_{VP}$ invite $[_{DP}$ many people $]$ to the party $]_1$
$[_{CP}$ who work in his office $]$ and Kim didn't Δ_1 either.

b. * Sam didn't $[_{VP}$ invite $[_{DP}$ many people $]$ to the party $]_1$
$[_{CP}$ who work in his office $]$ and Kim also didn't Δ_2
$[_{CP}$ who work in her office $]$.

(36) a. Sam didn't $[_{VP}$ invite $[_{DP}$ three people $]$ to the party $]_1$
$[_{CP}$ who work in his office $]$ and Kim didn't Δ_2 either.

b. * Sam didn't $[_{VP}$ invite $[_{DP}$ three people $]$ to the party $]_1$
$[_{CP}$ who work in his office $]$ and Kim also didn't Δ_1
$[_{CP}$ who work in her office $]$.

To summarize briefly, the observations discussed here leave us with paradoxical conclusions regarding the syntactic and semantic scope of the extraposed relative clause. On one hand, we observe that an extraposed relative clause and its host are interpreted together in the extraposed position and this can be outside *v*P. However, with respect to where the extraposed relative clause can be spoken, we find that it must be spoken in a position inside the *v*P regardless of where it is interpreted. The next section discusses how we might handle these seemingly contradictory results.

5.3 Successive-Cyclic QR and the Condition on EXNP

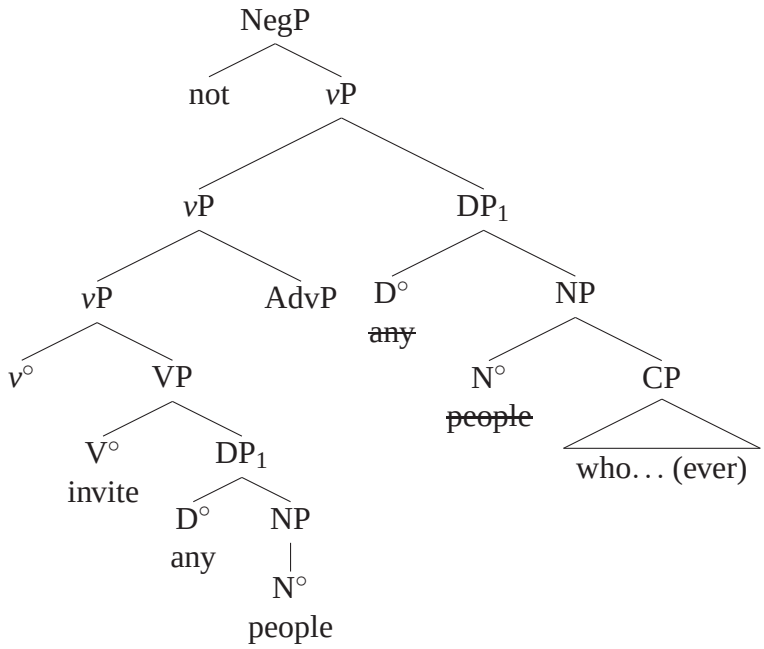
In this section I will present the proposal for resolving the puzzle from the previous section. I will suggest that the apparently conflicting results are best understood by preserving our view of the Locality Conditions on EXNP and extending the analysis of EXNP proposed in Fox & Nissenbaum (1999). We will see that by requiring the QR to proceed successive-cyclicity, we can formulate a condition on EXNP that requires late-merge of an extraposed relative clause to take place within the first cycle of movement. The output of the EXNP operation may then feed additional applications of QR. This will allow us to

separately control where an extraposed relative clause must be spoken and where it can be interpreted.

5.3.1 Local Extraposition

The QR-based analysis of EXNP provided by Fox & Nissenbaum (1999) and argued for in chapter 4 comes with the basic machinery required to account for the puzzle from section 5.2. The EXNP operation under this analysis will generate representations like the one shown in (37). The host DP_1 has undergone QR to the edge of the first dominating *v*P, as per the Locality Conditions on EXNP in (19). The extraposed relative clause has been late-merged into the higher copy of the host. As an instance of QR, which is a covert movement, only the material in the lower copy of the host will be spoken and the higher copy will be deleted at the PF-interface. Because the relative clause has been late-merged into the higher copy of the host, it will necessarily be interpreted in this position at both PF and LF. This means that it will be spoken in the position occupied by the higher copy of the host. In conjunction with the principle of Full Interpretation, this also derives the Extraposition-Scope Generalization. The relative clause in this configuration can only be interpreted at the edge of *v*P and, for this reason, so must the host in order to assure that they are properly interpreted at the LF interface.

(37)



This is the type of representation that is responsible for the examples from section 5.2 in which the host and the extraposed relative clause are interpreted together below negation. The structure in (37), then, represents a partial representation for each of the examples that are repeated below.

(28) Tim didn't invite $[_{DP}$ any people $]_1$ to the party [who work in his office $]_1$.

(30b-i) Sam didn't invite $[_{DP}$ many people $]_1$ to the party $[_{CP}$ who had an interest in coming $]_1$.

$\neg > \textit{many}$: Sam invited only a few people with an interest in coming.

(31b-i) Sam didn't invite $[_{DP}$ five people] to the party $[_{CP}$ who had an interest in coming].

$\neg > 5$: Sam invited only a four or fewer people with an interest in coming.

(32) Sam didn't invite $[_{DP}$ any people $]_1$ to the party $[_{CP}$ who have *ever* teased him $]_1$.

(34a) Sam didn't invite $[_{DP}$ many people $]_1$ to the party $[_{CP}$ who have *ever* teased him $]_1$.

$\neg > many$: Sam invited only a few people to the party who have ever teased him.

(35a) Sam didn't invite $[_{DP}$ five people $]_1$ to the party $[_{CP}$ who have *ever* teased him $]_1$.

$\neg > 5$: Sam invited only four or fewer people to the party who have ever teased him.

Looking closely at (37), an NPI in the extraposed relative clause is licensed because the relative clause is interpreted below negation. As noted above, this means that the host is interpreted below negation and the NPI host *any* will be licensed (but not the PPI host *some*) and the quantifiers *many* and *five* will necessarily be interpreted below negation.

5.3.2 Subsequent QR

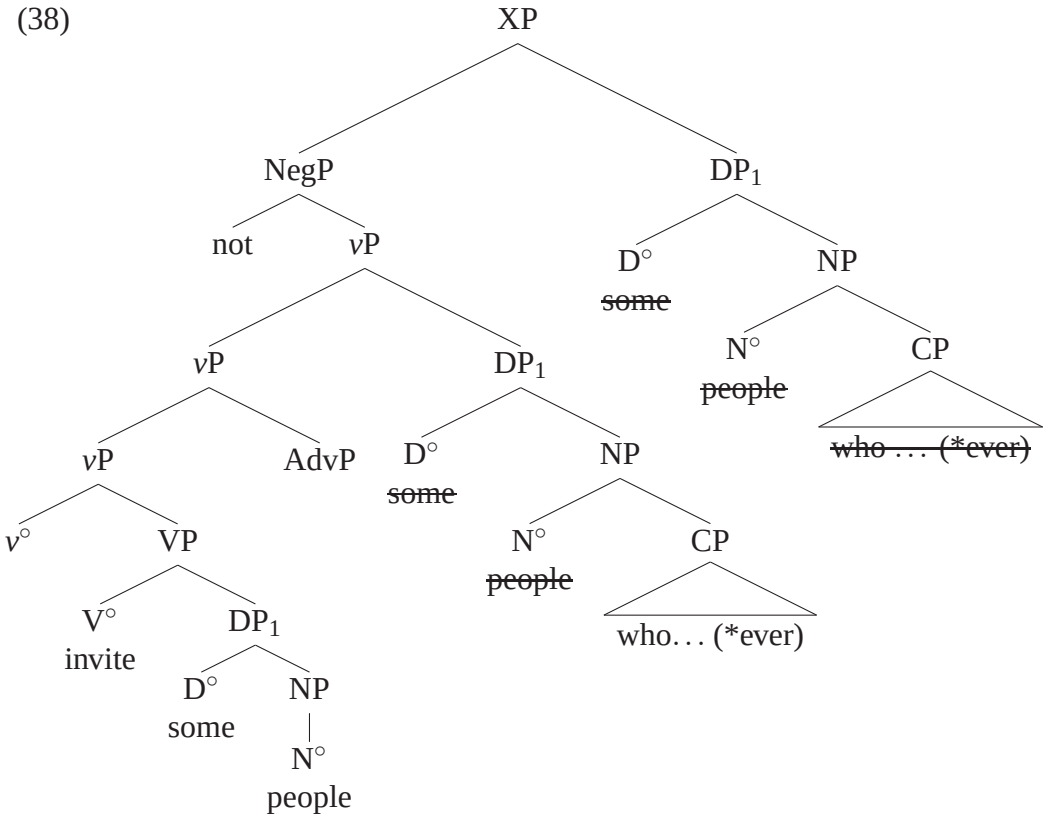
What this analysis of EXNP cannot account for in its present state are those examples in which the host and extraposed relative clause are interpreted in a position higher than where the relative clause is spoken. If EXNP were always derived directly by a single application of QR, there would be no reason to expect the Locality Conditions on EXNP to hold. That is, it should be possible to QR the host to the *v*P-external position above negation where it and the late-merged relative clause can be interpreted. Therefore, I suggest that we extend the proposal in Fox & Nissenbaum 1999 by adopting a view of covert movement, and of QR in particular, that permits its successive-cyclic application (Nissenbaum 2000, Cecchetto 2004, Hulsey & Sauerland 2006).

To model this idea, we will continue to operate under the assumptions regarding spell-out domains that were sketched in chapter 3. Specifically, we will treat spell-out as the result of a rolling trigger that sends the syntactic representation to the PF and LF interface components whenever it would converge at LF. Let us assume that it is in accordance with the Economy of Movement Metric from section 3.4 of chapter 3 that the instance of QR

that repairs the type mismatch between the direct object and the verb (May 1977, 1985, Rooth 1985) targets the edge of *v*P. This means that, in the case that a direct object takes scope above negation, the direct object will be compelled to move through the edge of *v*P before moving to a position above negation.

This will make it possible to generate structures such as the one in (38) below. The direct object has undergone QR to the edge of the *v*P at which point the extraposed relative clause was late-merged into the higher copy. The host and relative clause have then been targeted by a subsequent application of QR in a higher cycle that has placed them together in a position where they are interpreted above negation.

(38)



What is still missing from this analysis is something that forces the extraposed relative clause to be spoken in the copy of the host that resides at the edge of *v*P. Recall from the previous section that, even when the relative clause is interpreted outside the *v*P, it cannot

be spoken outside the *v*P. We can make this fact follow from the normal properties of QR if we accept the following condition on EXNP.

(39) *Condition on EXNP*

In an EXNP configuration, extraposed material must be merged with the host in the first cycle of QR.

The Condition on EXNP essentially requires that the late-merger of an extraposed relative clause occurs before spell-out of the *v*P. In other words, the structure in (37) is a necessary step in the derivation of (38). Considering now the instance of QR that generates (38), we should expect it to behave like any other instance of QR. In particular, we correctly predict that this instance of movement will widen the semantic scope of the host and the relative clause at LF, but will not affect where either are pronounced at PF.

The representation in (38), therefore, underlies those examples from section 5.2 in which the host and the extraposed relative clause are interpreted above negation. For convenience, I have provided these below.

(29) Tim didn't invite $[_{DP}$ some people $]_1$ to the party $[_{CP}$ who work in his office $]_1$.

(30b-ii) Sam didn't invite $[_{DP}$ many people $]_1$ to the party $[_{CP}$ who had an interest in coming $]_1$.

many $> \neg$: There are many people with an interest in coming that Sam did not invite.

(31b-ii) Sam didn't invite $[_{DP}$ five people $]$ to the party $[_{CP}$ who had an interest in coming $]$.

$5 > \neg$: There is a group of five people with an interest in coming that Sam did not invite.

(33) * Sam didn't invite $[_{DP}$ some people $]_1$ to the party $[_{CP}$ who have *ever* teased him $]_1$.

(34b) * Sam didn't invite $[_{DP}$ many people $]_1$ to the party

$[_{CP}$ who have *ever* teased him $]_1$.

many $> \neg$: There are many people who have teased him that Sam did not invite.

(35b) * Sam didn't invite $[_{DP}$ five people $]_1$ to the party $[_{CP}$ who have *ever* teased him $]_1$.

$5 > \neg$: There is a group of five people who have teased him that Sam did not invite.

The host will be interpreted above negation and, therefore, can be the PPI *some* (but not the NPI *any*). This is also the configuration that gives a wide-scope interpretation to the vague quantifier *many* and the numeral quantifier *five*. Because the relative clause is interpreted above sentential negation as well, an NPI cannot be licensed in an relative clause extraposed from a PPI or a host interpreted above negation.

At present, it is not clear precisely what is responsible for the Condition on EXNP. This makes EXNP different in a rather fundamental way from how I framed HNPS in chapter 3. It is tempting to attempt formulate the Condition on EXNP instead as a condition on the application of late-merge or counter-cyclicity, but it is not obvious that is desirable. The anti-reconstruction effects observed by Lebeaux (1988) that motivate an operation like late-merge in *wh*-questions suggests that late-merge need not apply in the first cycle. In order for late-merge to be a viable means for bleeding the Condition C violation in (40), it must be possible to introduce the PP *near Tim* with the offending R-expression after the *wh*-phrase has escaped the *v*P and the scope of the pronominal subject.

(40) [Which town near $\text{Tim}_1]_2$ does he_1 visit e_2 most?

The Condition on EXNP, therefore, represents the first of our puzzles regarding EXNP. Future research will hopefully be able to illuminate why it is that the late-merge operation associated with EXNP is restricted to the first cycle of QR.

5.4 Evidence from Antecedent-Contained Deletion

In this section we turn our focus to a specific class of Antecedent-Contained Deletion (ACD) configurations in which the host is generated in an embedded clause, but the ellipsis site is resolved to the matrix clause. In section 5.4.1 we will identify cases where there is a clear requirement for EXNP in order to resolve the ACD site to the matrix clause. This type of example presents another potential violation of the Locality Conditions on EXNP. However, we will see in section 5.4.2 that these extraposed relative clauses—even though they are resolved to the matrix *v*P—still behave as if they are adjoined to a position in the embedded *v*P. Thus, these examples are interesting for providing evidence that, while late-merge of the relative clause is necessarily very local, QR is a potentially unbounded operation that can continue to widen the scope of the extraposed relative clause.

5.4.1 When ACD Requires EXNP

The examples in (41) and (42) from Larson & May (1990) are cases of ACD in which the embedded subject of a non-finite complement clause contains an ACD site that is resolved to the matrix *v*P. Following Wilder (2003), I will refer generally to such cases where an ACD site in an embedded host is resolved to the matrix *v*P as a wide scope ACD (WS-ACD) configurations.[4]

(41) I expect $[_{DP}$ everyone you do $\langle$ ~~expect *e* to visit Mary~~ $\rangle]$ to visit Mary.

(Larson & May 1990:107, (21b))

(42) John believed $[_{DP}$ everyone you did $\langle$ ~~believe *e* to be a genius~~ $\rangle]$ to be a genius.

(Larson & May 1990:107, (23b))

Larson & May (1990) observe the interesting contrast between the examples above and (43) and (44) below. In these examples, the WS-ACD site is hosted by the subject of a

[4]Unless otherwise noted, I will use angled brackets $\langle \ldots \rangle$ and ~~strikethrough~~ text to identify the elided constituent and its content.

finite complement clause. These examples are ungrammatical on an interpretation where the ellipsis site is resolved to the matrix clause.

(43) * I expect that $[_{DP}$ everyone that you do $\langle$ ~~expect *e* will visit Mary~~ $\rangle]$ will visit Mary.

(Larson & May 1990:107, (21a))

(44) * John believed that $[_{DP}$ everyone you did $\langle$ ~~believe *e* is a genius~~ $\rangle]$ is a genius.

(Larson & May 1990:107, (23a))

The account that Larson & May (1990) offer for this contrast relies on a constraint on the QR operation responsible for licensing ACD. If we take QR to be unable to cross finite-clause boundaries, then the host *everyone* cannot be raised to a position where the WS-ACD site could be resolved. Tiedeman (1995), however, made the well-known observation that the subject of an embedded finite clause can host a WS-ACD site on the condition that it is part of an EXNP configuration. This is demonstrated by the examples in (45) and (46) below.

(45) I expect that $[_{DP}$ everyone $]_1$ will visit Mary $[_{CP}$ that you do $\langle$ ~~expect *e* will visit Mary~~ $\rangle]_1$.

(46) John believed that $[_{DP}$ everyone $]_1$ is a genius $[_{CP}$ that you do $\langle$ ~~believe *e* is a genius~~ $\rangle]_1$.

These examples are interesting for revealing that it is possible to resolve an embedded ACD site to the matrix *v*P. Given the necessity of EXNP, though, these configurations can be seen as potential violations of the Locality Conditions on EXNP. In fact, Fox (2002) interprets these data as evidence for the claim that ACD always requires an application of EXNP. That is, the necessity of EXNP suggests that it is only by late-merging the relative clause in a position at the edge of the matrix *v*P that the ACD site can be resolved.[5]

[5]See Baltin (1987) and Larson & May (1990) for further relevant discussion regarding the link between ACD and EXNP.

Similar although more controversial cases of WS-ACD have been identified in which the host of the ACD site is generated as the direct object of the embedded clause. Kennedy (1997) provides the example in (47) to show that an ACD site hosted by the direct object of a non-finite complement clause can be resolved to the matrix *v*P. Wilder (1997a, 2003) provides examples like in (48) to show that the direct object of a finite complement clause can contain an ACD site resolved to the matrix *v*P.

(47) Tim wants to visit $[_{DP}$ every city Bill does $\langle$ ~~want to visit *e*~~ $\rangle]$.

(Kennedy 1997:671, (22))

(48) John thought that the fire destroyed

$[_{DP}$ every book that Bill did $\langle$ ~~think the fire destroyed *e*~~ $\rangle]$.

(adapted from Wilder 2003:93, (49a))

It is interesting now to observe the paradigm in (49) from Jacobson (2008:43). These examples shows that a WS-ACD site hosted by an embedded object cannot be resolved to the matrix clause unless it is spoken phrase-finally. This can be achieved by either HNPS (49b) or EXNP (49c). The examples in (50) show that we observe the same pattern given WS-ACD in a non-finite complement.

(49) a. * John said that Mary put $[_{DP}$ every book

that Bill also did $\langle$ ~~say that Mary put *e* on the shelf~~ $\rangle]$ on the shelf.

(Jacobson 2008:43, (18))

b. John said that Mary put e_1 on the shelf

$[_{DP}$ every book that Bill also did $\langle$ ~~say that Mary put *e* on the shelf~~ $\rangle]_1$.

(Jacobson 2008:43, (19))

c. John said that Mary put $[_{DP}$ every book $]_1$ on the shelf

$[_{CP}$ that Bill did $\langle$ ~~say that Mary put *e* on the shelf~~ $\rangle]_1$.

(Jacobson 2008:43, (20))

(50) a. * John expects Mary to put $[_{DP}$ every book

that Bill does ⟨ ~~expect Mary to put *e* on the shelf~~ ⟩ on the shelf.

b. John expects Mary to put e_1 on the shelf

$[_{DP}$ every book that Bill does ⟨ ~~expect Mary to put *e* on the shelf~~ ⟩$]_1$.

c. John expects Mary to put $[_{DP}$ every book $]_1$ on the shelf

$[_{CP}$ that Bill does ⟨ ~~expect Mary to put *e* on the shelf~~ ⟩$]_1$.

Like the examples provided by Tiedeman (1995), the requirement for EXNP in these examples seems to suggest that the relative clause is being placed in a position outside of its antecedent clause in order to resolve the WS-ACD site.

In light of the claims made in section 5.3 that a relative clause can be interpreted in a position higher than where it is spoken, this is a particularly puzzling state of events. Looking again at the contrast presented by Tiedeman (1995), we would expect it to be possible to speak the string in (51a) but interpret the relative clause as if it had been carried by QR to the position in the matrix clause where it is interpreted in (51b).

(51) a. * I expect that $[_{DP}$ everyone $[_{CP}$ that you do ⟨ ~~expect *e* will visit Mary~~ ⟩ $]_1$

will visit Mary.

b. I expect that $[_{DP}$ everyone $]_1$ will visit Mary

$[_{CP}$ that you do ⟨ ~~expect *e* will visit Mary~~ ⟩$]_1$.

The ungrammaticality of (51a), however, suggests that this is not possible. In fact, Johnson (2012) argues that this contrast in (51) shows precisely that it is not possible to interpret a relative clause in a position higher than where it is spoken. This requirement for EXNP in (51b)—and presumably in (49) and (50)—seems to indicate that the Locality Condition on EXNP, and the Right Roof Constraint, can be violated as part of resolving a WS-ACD site.

It is possible that this is exactly what we are seeing. I argued in chapter 3 that rightward DP-movement over clause boundaries is possible precisely when it is to ensure LF-convergence. Thus, we could imagine that there are instances in which exceptional EXNP

is licensed when it would ensure LF-convergence by permitting the resolution of a WS-ACD. We can determine whether this is what we are seeing in the same way that we did in section 5.2. If we are observing exceptional EXNP given the need to accommodate a WS-ACD site, we would expect to observe that the extraposed relative clause that contains the WS-ACD site will behave as if it were adjoined outside of the embedded clause. The data that we will see in the following subsection suggests that, even under these conditions, the Locality Conditions on EXNP are not violable.

5.4.2 ACD Does Not License Exceptional EXNP

Wilder (2003) presents examples like (52) below to demonstrate that, even with a WS-ACD site, an extraposed relative clause hosted by the subject of a finite clause cannot be spoken to the right of an adverbial modifying the matrix clause. This suggests that the EXNP operation is not displacing the relative clause over a finite clause boundary. The example in (53) shows the same result but replaces the adverbial *yesterday* with *to Sue*, which serves as an argument for the matrix predicate.

(52) * John said [that [everyone]$_1$ is a genius] yesterday

[that you did ⟨ ~~say *e* is a genius~~ ⟩].

(Wilder 2003:92, (44a))

(53) * Bob said [that [everyone]$_1$ is a genius] to Sue

[that you did ⟨ ~~say *e* is a genius to Sue~~ ⟩]$_1$.

Using the same technique, Bachrach & Katzir (2007) provide the example in (54) to illustrate that an extraposed relative clause hosted by a direct object also fails to behave as if it were adjoined to a position in the matrix clause despite the presence of a WS-ACD site.[6] As (55) shows, the extraposed relative also fails to follow an argument of the matrix predicate.

[6]Bachrach & Katzir (2007) interpret this as evidence that ACD is not dependent on EXNP, contra Baltin (1987) and Fox (2002).

(54) * John will claim [that the fire destroyed $[_{DP}$ every book $]_1$] tomorrow

$[_{CP}$ that I will ⟨ ~~claim that the fire destroyed *e*~~ ⟩$]_1$

(adapted from Bachrach & Katzir 2007:5, (18))

(55) * Kim said [that the fire destroyed $[_{DP}$ every book $]_1$] to Bill

$[_{CP}$ that Tom did ⟨ ~~say that the fire destroyed *e*~~ ⟩$]_1$.

We observe the same pattern with Jacobson's (2008) examples as well. Even when EXNP is required to license the WS-ACD site contained in an embedded object, the extraposed relative clause does not behave as if it were in the matrix clause.

(56) * John said [that Mary will put $[_{DP}$ every book $]_1$ on the shelf] yesterday

$[_{CP}$ that Tom did ⟨ ~~say that Mary will put *e* on the shelf~~ ⟩$]_1$.

(57) * John said [that Mary will put $[_{DP}$ every book $]_1$ on the shelf] to Sue

$[_{CP}$ that Tom did ⟨ ~~say that Mary will put *e* on the shelf~~ ⟩$]_1$.

The judgments are not as clear with non-finite complement clauses, but this technique seems to yield the same results in this domain. The examples provided in (58) and (59) are intended to show that EXNP of a relative clause with a WS-ACD site from the subject of an non-finite complement clause does not license a violation of the EXNP Locality Conditions.

(58) * Kim believed [$[_{DP}$ everyone $]_1$ to live in Vermont] this afternoon

$[_{CP}$ that you did ⟨ ~~believe *e* to live in Vermont~~ ⟩$]_1$.

(59) * Tim wanted [(Pam) to live in $[_{DP}$ every city $]_1$] this afternoon

$[_{DP}$ that Bill did ⟨ ~~want (Pam) to live in *e*~~ ⟩$]_1$.

The familiar *v*PE diagnostic from Baltin (1978, 1981) and Guéron (1980) confirm these results. In fact, we will see that the Locality Conditions on EXNP are strictly adhered to. Relative clauses with WS-ACD sites that are extraposed from embedded direct objects still

fail to escape deletion of the embedded *v*PE.[7] If it were the case that WS-ACD licensed EXNP to a position where the ACD site was no longer antecedent-contained, we should expect that the relative clause containing the ACD site will, at a minimum, not behave as if it were part of the embedded *v*P.

To start, recall from section 5.1 that a relative clause extraposed from a subject is able to escape *v*PE. This is the case also in examples like (60) in which a relative clause containing a WS-ACD site has been extraposed from an embedded subject. Just as we might expect, the relative clause can be stranded by embedded *v*PE in the second conjunct.

(60) I thought $[_{DP}$ everyone $]_1$ would help $[_{CP}$ that Bob did $\langle$ ~~think *e* would help~~ $\rangle]_1$ and you thought $[_{DP}$ everyone $]_2$ would $\langle$ ~~*e* help~~ $\rangle$ $[_{CP}$ that Kim did $\langle$ ~~think *e* would help~~ $\rangle]_2$.

Examples like this should assure us that a relative clause containing a WS-ACD site is not incapable of escaping *v*PE.

For cases of WS-ACD that are hosted by the direct object of a finite complement clause, the relative clause containing the WS-ACD site must be treated as part of the embedded *v*P despite the fact that the WS-ACD site is resolved to the matrix clause. In (61) we see examples modeled on those in Jacobson 2008 with an obligatorily extraposed relative clause. We find in (61a) that the relative clause containing the WS-ACD site can be interpreted in the ellipsis site. With the variant in (61b), we find that the relative clause containing the WS-ACD cannot escape ellipsis even of the embedded *v*P.

[7]Note that we cannot use these diagnostics to examine WS-ACD configurations with embedded subjects. Even if it were the case that a relative clause extraposed from embedded subject adjoined to a position at the edge of the matrix *v*P, we should expect it not to behave as if it were outside this *v*P.

(61) John said Mary should put $[_{DP}$ every book $]_1$ on the shelf

$[_{CP}$ that Tom did $\langle$ ~~say Mary put *e* on the shelf~~ $\rangle]_1$ ...

a. ... and then he said Sue should $\langle$ ~~put $[_{DP}$ every book $]_1$ on the shelf~~

~~$[_{CP}$ that Tom did $\langle$ say Mary put *e* on the shelf $\rangle]_1$~~$\rangle$.

b. * ... and then he said Sue should $\langle$ ~~put $[_{DP}$ every book $]_1$ on the shelf~~ $\rangle$

$[_{CP}$ that Tom did $\langle$ ~~say Mary put *e* on the shelf~~ $\rangle]$.

We make the exact same discovery in (62) for WS-ACD sites hosted by the direct object of an embedded non-finite clause. The relative clause containing the WS-ACD site cannot be treated as if it were outside the embedded *v*P with respect to the *v*PE diagnostic.

(62) Tim wants to visit $[_{DP}$ every city that Kim does $\langle$ ~~want to visit *e*~~ $\rangle]$ ...

a. ... and Sam also wants to

$\langle$ ~~visit $[_{DP}$ every city that Kim does $\langle$ want to visit *e* $\rangle]$~~$\rangle$.

b. * ... and Bob wants to

$\langle$ ~~visit $[_{DP}$ every city $]_1$~~ $\rangle$ $[_{DP}$ that Sue does $\langle$ ~~want to visit *e*~~ $\rangle]$.

The data presented above ultimately characterize the Locality Conditions on EXNP: material extraposed form direct objects cannot escape *v*PE but material extraposed from subjects can. Given the acceptability of (60), we can attribute the unacceptability of the object conditions above to the inability of EXNP to displace relative clauses to a position in which they could escape *v*PE. This is true even when the relative clause contains a WS-ACD site.

The conclusion I reach on the basis of these data is similar to the conclusion reached in section 5.2. The Locality Conditions on EXNP represent hard constraints on the phonological displacement of extraposed material. However, the fact that WS-ACD is possible suggests that an extraposed relative clause and its host are being interpreted higher than where they can be spoken. To account for these observations, we can appeal to the same analysis that was offered in section 5.3. QR applies successive-cyclically and can widen

the scope of extraposed material. As per the Condition on EXNP in (39), though, an extraposed relative clause must be introduced within the first cycle of QR, which has the effect of forcing it to be pronounced low in the structure. What we learn from these examples of WS-ACD is that the QR operation that EXNP is parasitic upon, can subsequently cross a clause boundary to target a position where the host and relative clause can be interpreted outside the antecedent constituent of a WS-ACD site.

On this analysis, whereby QR may proceed successive-cyclically over a potentially unbounded distance to widen the scope of a relative clause, the Extraposition-Scope Generalization predicts that it should also be possible to interpret the host outside of its containing clause. As noted above, it is often thought that QR is unable to cross clausal-boundaries for the purposes of taking scope over another quantificational element. I have not provided the relevant evidence in this section to determine if this is in fact the case.

Interestingly, Cecchetto (2004) argues that otherwise unavailable inverse-readings between a matrix subject and an object embedded in the infinitival complement of the non-restructuring subject control verb becomes available in the context of the Italian correlate of WS-ACD. Recently, Syrett (2015) has argued for English that inverse-scope between the matrix subject and the direct object of an embedded finite clause is possible precisely in the context of WS-ACD. Syrett (2015) reports on a truth-value judgment task suggesting that undergraduate participants were able to access the relevant inverse-scope reading on a wide-scope interpretation of an ACD site. In this experiment, participants were shown an image and heard a story corresponding to the target scenario. At the end of the story, the narrator delivered the target sentence and asked the participant about the accuracy of the statement. A sample target sentence is provided in (63a) with its intended interpretation in (63b).

(63) a. Someone said he could jump over every frog that Jessie did.

b. 'For every frog *x* such that Jessie said she could jump over *x*, there was someone who said he could jump over that frog.'

(Syrett 2015:586)

These types of facts lend support the system being advocated here whereby QR is successive-cyclic and potentially unbounded when provided the appropriate motivation.

In addition to the puzzle of why we observe the Condition on EXNP, the discussion here has brought a second puzzle to light. Given the proposed ability to interpret a relative clause in a position higher than where it is spoken, the contrast in (51) from Tiedeman (1995) was rather puzzling. The system sketched in section 5.3 does not predict cases of obligatory EXNP. Assuming that the observations in this section and their interpretation are accurate, then contrasts like (51) become all the more puzzling. We are observing instances of obligatory EXNP to resolve WS-ACD sites, but the instances of EXNP we are observing do not actually target positions outside the antecedent constituent. The question, therefore, is why EXNP is needed at all in these configurations.

Two possible answers have been offered in the literature. First, Fox (2002), building on Baltin (1987), argues that ACD simply requires EXNP. However, this does not help us to understand the fact that the EXNP that is involved in the resolution of WS-ACD sites does not target a position outside the antecedent constituent. Furthermore, there is reason to think that EXNP is not required for the resolution of ACD. The examples in (64) and (65) respectively show that A-movement and $\overline{\text{A}}$-movement may be sufficient means for permitting the resolution of an ACD site.[8]

(64) $[_{\text{DP}}$ Every bike that could be $\langle$ ~~repaired *e*~~ $\rangle]_1$ was repaired e_1

(65) $[_{\text{DP}}$ The articles you asked me to $\langle$ ~~burned *e*~~ $\rangle]_1$ I burned e_1.

[8]These examples are perfectly compatible with an analysis of ACD-resolution that asserts that the relative clause must be late-merged. The point made by the examples in (64) and (65) is only that EXNP, in the sense of a QR+Late-Merge operation, is not always necessary.

Second, Wilder (2003) argues for a constraint that militates against string-containment in addition to the usual constraint against containment in the antecedent constituent at LF. It is possible, however, to find counter-examples to the claim that string-containment is not possible. Among the cases explicitly discussed by Wilder (2003) is the example in (66) where the ACD site precedes *two dollars* but permits in interpretation as part of the elided material.

(66) John gave [whoever he could ⟨ ~~give two dollars~~ ⟩] two dollars.

The analysis that Wilder (2003:sec. 6) offers to account for these examples asserts that the material to the right of the ACD site does not actually correspond to material that is deleted by the *v*PE operation. The idea is that the relative clause in (66) actually contains a pseudogapping constructions in which the pseudogapped material is elided under identity with the corresponding string in the matrix clause. This is illustrated in (67).

(67) John gave [whoever he could ⟨ ~~give *e* e_{I}~~ ⟩ ~~[two dollars]~~$_{\mathrm{I}}$] two dollars.

(Wilder 2003:106, (99b))

There is an empirical issue for this analysis that arises from the claim that string-containment is possible only when pseudogapping is possible. This predicts that an ACD site will not be able to proceed a constituent that is interpreted in the ellipsis site, but cannot be targeted for pseudogapping. To test this prediction, we can start with an observation that resultative secondary predicates strongly resist being stranded by the *v*PE ellipsis. This suggests that resultatives cannot be the remnant of pseudogapping.

(68) * Sam painted the door red and Kim ⟨ ~~painted the door~~ ⟩ black.

We expect now to find that a string-final resultative will fail to be interpreted as part of the ACD site. As example (69) shows, this expectation is not realized.

(69) I painted [$_{\mathrm{DP}}$ everything you wanted me to ⟨ ~~paint *e* red~~ ⟩] red.

This data point resists a pseudogapping explanation and for this reason constitutes counter-evidence to the claim that ACD sites cannot be string-contained.

Thus, it is not clear that either of these answers could provide viable a viable solution to the question of why EXNP is required in examples like (51). These examples, then, continue to present an interesting direction for future research.

5.5 Summary

This chapter has largely been in service of examining the locality constraints on EXNP and presenting two outstanding puzzles. I argued in section 5.1 that EXNP is subject to subclausal locality constraints that force an extraposed relative clause to be spoken within the first dominating *v*P or CP. We also saw in section 5.2 that it is possible to interpret the host of an EXNP configuration and an extraposed relative clause in positions higher than expected on the basis of these locality conditions. While these cases presented potential counter-examples to the subclausal locality conditions on EXNP, the extraposed relative clause did not otherwise behave as if it were adjoined to a position higher than expected.

I modeled this disconnect between where extraposed material is spoken and where it is interpreted in section 5.3 with an extended version of the QR-based system for EXNP proposed by Fox & Nissenbaum (1999). I adopted a system that assumes the successive-cyclicity of QR and postulated the Condition on EXNP that restricts the late-merger of extraposed relative clauses to the first cycle of QR. This allowed us to independently control where extraposed material will be interpreted. The fact that the extraposed relative clause is pronounced in its lowest copy was suggested to follow from the usual properties of QR.

Section 5.4 examined instances of wide scope ACD configurations that provided another example of the ability to interpret an extraposed relative clause in a position higher than expected given the Locality Conditions on EXNP. These constructions were particularly interesting because they presented cases in which EXNP was obligatory in order to achieve the intended interpretation. Familiar diagnostics revealed that, even in these instances, EXNP failed to violate the Locality Conditions on EXNP.

This investigation left us with two questions that will guide future research. First, it is not entirely clear why we should observe a constraint like the Condition on EXNP given that HNPS is potentially unbounded. The second question was borne out of the observation that EXNP is obligatory in the resolution of at least some ACD configurations, yet those instances of EXNP did not by themselves resolve antecedent-containment. Given the analysis outlined in section 5.3, it is not clear how or why EXNP should be involved in the resolution of the relevant ACD sites.

To conclude, we can take note again that the Condition on EXNP presents a clear difference between HNPS and EXNP that warrants further investigation. However, it is interesting to consider that we did not observe that positions beyond the first *v*P or CP are inaccessible to extraposed material and its host. We observed only that extraposed material and its host cannot be spoken in these position. Thus, the relevant difference in locality that we observe between these two rightward displacement operations is in their locality of pronunciation. Based on the acceptability of WS-ACD and the evidence presented by Cecchetto (2004) and Syrett (2015), the two constructions display the same locality of movement. Like leftward movement, both HNPS and the QR operation that drives EXNP are potentially unbounded and successive-cyclic movement operations.

APPENDIX

EXPERIMENTAL ITEMS

A.1 Experiment 1 Items

(1) a. No judge should contact, in order to give his scoresheet (to), the contestants in this month's competition.

b. No judge should contact, and give his scoresheet (to), the contestants in this month's competition.

c. No judge should contact the contestants in this month's competition, in order to give his scoresheet (to).

d. No judge should contact the contestants in this month's competition, and give his scoresheet (to).

(2) a. No woman could meet, in order to give her yearbook (to), the person she roomed with in college.

b. No woman could meet, and give her yearbook (to), the person she roomed with in college.

c. No woman could meet the person she roomed with in college, in order to give her yearbook (to).

d. No woman could meet the person she roomed the in college, and giver her yearbook (to).

(3) a. No fireman should befriend, in order to give his groceries (to), the homeless people outside the station.

b. No fireman should befriend, and give his groceries (to), the homeless people outside the station.

c. No fireman should befriend the homeless people outside the station, in order to give his groceries (to).

d. No fireman should befriend the homeless people outside the station, and give his groceries (to).

(4) a. No nurse could save, after giving her blanket (to), the victims of the most recent tornado.

b. No nurse could save, and give her blanket (to), the victims of the most recent tornado.

c. No nurse could save the victims of the most recent tornado, after giving her blanket (to).

d. No nurse could save the victims of the most recent tornado, and give her blanket (to).

(5) a. No landlady should evict, after giving her key (to), the tenants causing trouble around the building.

b. No landlady should evict, and give her key (to), the tenants causing trouble around the building.

c. No landlady should evict the tenants causing trouble around the building, after giving her key (to).

d. No landlady should evict the tenants causing trouble around the building, and give her key (to).

(6) a. No boss would punish, by giving his work (to), the interns who regularly show up late.

b. No boss would punish, and his work (to), the interns who regularly show up late.

c. No boss would punish the interns who regularly show up late, by giving his work (to).

d. No boss would punish the interns who regularly show up late, and give his work (to).

(7) a. No officer could calm, because he gave his warning (to), the people who were parking in the street illegally.

b. No officer could calm, and give his warning (to), the people who were parking in the street illegally.

c. No officer could calm the people who were parking in the street illegally, because he gave his warning (to).

d. No officer could calm the people who were parking in the street illegally, and give his warning (to).

(8) a. No man would thank, before giving his car (to), the valets working outside this restaurant.

b. No man would thank, and give his car (to), the valets working outside this restaurant.

c. No man would thank the valets working outside this restaurant, before giving his car (to).

d. No man would thank the valets working outside this restaurant, and give his car (to).

(9) a. No women could contact, before telling her mission (to), the undercover spy that the company hired.

b. No women could contact, and tell her mission (to), the undercover spy that the company hired.

c. No women could contact the undercover spy that the company hired, before telling her mission (to).

d. No women could contact the undercover spy that the company hired, and tell her mission (to).

(10) a. No chef would fire, after telling his recipe (to), the people that were hired to help in the kitchen.

b. No chef would fire, and tell his recipe (to), the people that were hired to help in the kitchen.

c. No chef would fire the people that were hired to help in the kitchen, after telling his recipe (to).

d. No chef would fire the people that were hired to help in the kitchen, and tell his recipe (to).

(11) a. No captain would rescue, because he told his destination (to), the sailors that were found stranded at sea.

b. No captain would rescue, and tell his destination (to), the sailors that were found stranded at sea.

c. No captain would rescue the sailors that were found stranded at sea, because he told his destination (to).

d. No captain would rescue the sailors that were found stranded at sea, and tell his destination (to).

(12) a. No inspector should interrogate, after telling his technique (to), the person suspected to be guilty of the crime.

b. No inspector should interrogate, and tell his technique (to), the person suspected to be guilty of the crime.

c. No inspector should interrogate the person suspected to be guilty of the crime, after telling his technique (to).

d. No inspector should interrogate the person suspected to be guilty of the crime, and tell his technique (to).

(13) a. No boy should annoy, by telling his hobbies (to), the girls who sit next to him on the bus.

b. No boy should annoy, and tell his hobbies (to), the girls who sit next to him on the bus.

c. No boy should annoy the girls who sit next to him on the bus, by telling his hobbies (to).

d. No boy should annoy the girls who sit next to him on the bus, and tell his hobbies (to).

(14) a. No librarian should scare, by telling her penalty (to), the people who keep books past the return date.

b. No librarian should scare, and tell her penalty (to), the people who keep books past the return date.

c. No librarian should scare the people who keep books past the return date, by telling her penalty (to).

d. No librarian should scare the people who keep books past the return date, and tell her penalty (to).

(15) a. No salesman should encourage, before telling his motive (to), the people who are unsure about buying a car.

b. No salesman should encourage, and tell his motive (to), the people who are unsure about buying a car.

c. No salesman should encourage the people who are unsure about buying a car, before telling his motive (to).

d. No salesman should encourage the people who are unsure about buying a car, and tell his motive (to).

(16) a. None of the sergeants could gather, in order to tell his strategy (to), the commanding officers in charge of protecting the city.

b. None of the sergeants could gather, and tell his strategy (to), the commanding officers in charge of protecting the city.

c. None of the sergeants could gather the commanding officers in charge of protecting the city, in order to tell his strategy (to).

d. None of the sergeants could gather the commanding officers in charge of protecting the city, and tell his strategy (to).

A.2 Experiment 2 Items

(1) (Yesterday) park rangers removed [every/some] camper(s) (yesterday) who was/were at [any/one] of the sites with significant flooding.

(2) (Last night) the boys stole [every/some] bag(s) (last night) that had [any/a few] credit cards inside.

(3) (Last night) we invited [every/some] neighbor(s) (last night) who had [any/some] interest in building a park.

(4) (Yesterday) citizens ousted [every/some] politician(s) (yesterday) who had [any/many] connection(s) to pirates.

(5) (Last month) the bank contacted [every/some] customer(s) (last month) who had [any/some] outstanding credit card debt.

(6) (Last year) the company considered [every/some] job applicant(s) (last year) who was/were from [any/one] of the local temp agencies.

(7) (Last week) the press criticized [every/some] representative(s) (last week) who is/are from [any/one] of the Republican districts.

(8) (Last week) the police monitored [every/some] witness(es) (last week) who was/were in [any/some] danger from the local mafia.

(9) (This afternoon) Greg removed [every/some] rosebush(es) (this afternoon) that was/were in [any/some] of the temporary pots.

(10) (This month) Kara promoted [every/some] employee(s) (this month) who was/were in [any/one] of the top accounting divisions.

(11) (This morning) the doctors examined [every/some] patient(s) (this morning) who is/are on [any/some] of the new experimental pain medications.

(12) (Last week) the government quarantined [everyone/someone] (last week) who was on [any/one] of the cruises in the Caribbean.

(13) (Last night) someone stole [every/some] bike(s) (last night) that was/were on [any of/∅] the bike rack(s) behind the building.

(14) (Today) Sarah sold [every/some] book(s) (today) that was/were in [any/one] of the national book review journals.

(15) (Next season) teams will recruit [every/some] athlete(s) (next season) who is/are at [any of the/a] universities/university with a recent championship.

(16) (Last semester) Allen tutored [every/some] student(s) (last semester) who was/were on [any/one] of the intramural basketball teams.

BIBLIOGRAPHY

Abe, Jun. 1993. Binding conditions and scrambling without A/A′ distinction. Doctoral Dissertation, University of Connecticut, Storrs, CT.

Abels, Klaus. 2004. Right node raising: Ellipsis or across the board movement. In *Proceedings of NELS 34*, ed. Keir Moulton & Matthew Wolf. Amherst, MA: GLSA.

Abels, Klaus. 2007. Towards a restrictive theory of remnant movement. *Linguistic Variation Yearbook* 7:53–120.

Abels, Klaus, & Ad Neeleman. 2012. Linear asymmetries and the LCA. *Syntax* 15:25–74.

Abney, Steven. 1987. The English noun phrase in its sentential aspect. Doctoral Dissertation, MIT, Cambridge, MA.

Akmajian, Adrian. 1975. More evidence for an NP cycle. *Linguistic Inquiry* 6:115–129.

Akmajian, Adrian, & Adrienne Lehrer. 1976. NP-like quantifiers and the problem of determining the head of an NP. *Linguistic Analysis* 2:395–413.

Andrews, Avery. 1982. A note on the constituent structure of adverbials and auxiliaries. *Linguistic inquiry* 13:313–317.

Arnold, Jennifer E., Anthony Losongco, Thomas Wasow, & Ryan Ginstrom. 2000. Heaviness vs. newness: The effects of structural complexity and discourse status on constituent re-ording. *Language* 76:28–55.

Baayen, R. Harald, Douglas J. Davidson, & Douglas M. Bates. 2008. Mixed-effects modeling with crossed random effects for subjects and items. *Journal of Memory and Language* 59:390–412.

Bach, Emmon. 1982. Pupose clauses and control. In *The nature of syntactic representation*, ed. Pauline Jacobson & Geoffrey K. Pullum, 33–57. Reidel.

Bachrach, Asaf, & Roni Katzir. 2007. *Antecedent-contained deletion as VP sharing*. Talk given at the 26th West Coast Conference on Formal Linguisics, University of California Berkley.

Bachrach, Asaf, & Roni Katzir. 2009. Right-node raising and delayed spellout. In *Interphases: Phase-theoretic investigations of linguistic interfaces*, ed. Kleanthes K. Grohmann. Oxford University Press.

Baltin, Mark. 1978. Toward a theory of movement rules. Doctoral Dissertation, MIT, Cambridge, MA.

Baltin, Mark. 1981. Strict bounding. In *The logical problem of language acquisition*, ed. C. L. Baker & J. McCarthy. Cambridge, Massachusetts: MIT Press.

Baltin, Mark. 1987. Do antecedent-contained deletions really exist? *Linguistic Inquiry* 18:579–595.

Baltin, Mark. 2005. Extraposition. In *The blackwell companion to syntax*, ed. Martin Everaert, Henk van Riemsdijk, Rob Goedemans, & Bart Hollebrandse, 237–271. Blackwell.

Barker, Chris. 2007. Parasitic scope. *Linguistics and Philosophy* 30:407–444.

Barros, Matthew, & Luis Vicente. 2011. Right node raising requires both ellipsis and multidomination. In *University of pennsylvania working papers in linguistics*, volume 17, 1–9.

Bates, Douglas, Martin Maechler, Ben Bolker, & Steven Walker. 2014. *`lme4`: : Linear mixed-effects models using eigen and s4*. URL `http://CRAN.R-project.org/package=lme4`, r package version 1.1-7.

Beaver, David, & Cleo Condoravdi. 2003. A uniform analysis of "before" and "after". In *Proceedings of SALT XIII*, ed. Robert B. Young & Yuping Zhou, 37–54. Cornell University, Ithaca, NY: CLC Publications.

Beck, Sigrid. 2000. The semantics of "different": Comparison operator and relational adjective. *Linguistics and Philosophy* 23:101–139.

Belletti, Adriana. 2001. Inversion as focalization. In *Subject inversion in Romance and the theory of Universal Grammar*, ed. Aafke Hulk & Jean-Yves Pollock, 60–90. New York: Oxford University Press.

Bhatt, Rajesh, & Rumi Pancheva. 2004. Late merge of degree clauses. *Linguistic Inquiry* 35:1–45.

Blevins, James. 1990. Syntactic complexity: Evidence for discontinuity and multidomination. Doctoral Dissertation, University of Massachusetts at Amherst.

Bobaljik, J. 1995. Morphosyntax: The syntax of verbal inflection. Doctoral Dissertation, MIT, Cambridge, MA.

Bobaljik, Jonathan. 2002. A-chains at the PF-interface: copies and 'covert' movement. *Natural Language and Linguistic Theory* 20:197–267.

Bobaljik, Jonathan, & Susi Wurmbrand. 2012. Word order and scope: Transparent interfaces and the $^{3}/_{4}$ signature. *Linguistic Inquiry* 43:371–421.

Bošković, Željko. 2004. *Two notes on right node raising*. Ms., UConn, Storrs, CT.

Bresnan, Joan. 1971. On sentence stress and syntactic transformations. *Language* 47:257–281.

Bresnan, Joan. 1973. *"Headless" relatives*. Mimeograph, University of Massachusetts, Amherst, MA.

Bresnan, Joan. 1974. The position of certain clause-particles in phrase structure. *Linguistic Inquiry* 5:614–619.

Bresnan, Joan. 1976. On the form and functioning of transformations. *Linguistic Inquiry* 7:3–40.

Bresnan, Joan, Anna Cueni, Tatiana Nikitna, & R. Harald Baayen. 2007. Predicting the dative alternation. In *Cognitive Foundations of Interpretation*, ed. Gerlof Bouma, Irene Kramer, & Joost Zwarts, 69–94. Royal Netherlands Academy of Science.

Brody, Michael. 1995. *Lexico-logical form: A radically minimalist theory*. Cambridge, MA: Massachusetts Institute of Technology.

Broekhuis, Hans. 2010. A typology of clause structure. In *Linguistic variation yearbook 10*, ed. Jeroen van Craenenbroeck, 1–31. John Benjamins Publishing Company.

Browning, Marguerite. 1987. Null operator constructions. Doctoral Dissertation, MIT, Cambridge, MA.

Büring, Daniel. 2005. *Binding theory*. Cambridge, UK: Cambridge University Press.

Büring, Daniel, & Katharina Hartmann. 1997. The Kayne mutiny. In *Rightward movement*, ed. Dorothee Beerman, David LeBlanc, & Henk van Riemsdijk, 59–79. Amsterdam: John Benjamins Publishing Company.

Carlson, Greg N. 1987. Same and Different: Some consequences for syntax and semantics. *Linguistics and Philosophy* 10:531–565.

Cecchetto, Carlo. 2004. Explaining the localit condition of QR: Consequences for the theory of phases. *Natural Language Semantics* 12:345–397.

Chierchia, Gennaro. 2004. Scalar implicatures, polarity phenomena, and the syntax/pragmatics interface. In *Structures and beyond: The cartography of syntactic structures*, ed. Adriana Belleti, 39–103. Oxford: Oxford University Press.

Chomsky, Noam. 1973. Conditions on transformations. In *A festshcrift for Morris Halle*, ed. Stephen Anderson & Paul Kiparsky. New York: Holt, Rinehard, and Winston.

Chomsky, Noam. 1977. On wh-movement. In *Formal Syntax*, ed. Peter Culicover, Thomas Wasow, & Adrian Akmajian. New York: Academic Press.

Chomsky, Noam. 1982. *Some concepts and consequences of the theory of government and binding*. Cambridge, Massachusetts: MIT Press.

Chomsky, Noam. 1986. *Barriers*. Cambridge, MA: The MIT Press.

Chomsky, Noam. 1993. A Minimalist Program for Linguistic Theory. In *The view from building 20: Essays in linguistics in honor of Sylvain Bromberger*, ed. Ken Hale & Samuel J. Keyser, 1–52. Cambridge, MA: MIT Press.

Chomsky, Noam. 1995. *The Minimalist Program*. Cambridge, MA: The MIT Press.

Chomsky, Noam. 2000. Minimalist inquiries: The framework. In *Step by step: Essays on minimalist syntax in honor of Howard Lasnik*, ed. Roger Martin, David Michaels, & Juan Uriagereka, 89–156. MIT Press.

Chomsky, Noam. 2001. Derivation by Phase. In *Ken Hale: A life in language*, ed. Michael Kenstowicz. Cambridge, MA: MIT Press.

Chomsky, Noam. 2004. Beyond explanatory adequacy. In *Structures and beyond the cartography of syntactic structures volume 3*, ed. Ariana Belletti, 104–131. Oxford University Press.

Chomsky, Noam, & Howard Lasnik. 1977. On filters and control. *Linguistic Inquiry* 8:425–504.

Cinque, Guglielmo. 1981–82. On the theory of relative clauses and markedness. *The Linguistic Review* 1:247–294.

Cinque, Guglielmo. 1990. *Types of A'-dependencies*. Cambridge, Massachusetts: MIT Press.

Collins, Chris. 1997. *Local economy*. Cambridge, MA: The MIT Press.

Contreras, Heles. 1984. A note on parasitic gaps. *Linguistic Inquiry* 15:698–701.

Cresti, Diana. 2000. Ellipsis and reconstruction in relative clauses. In *Proceedings of NELS 30*, ed. Masako Hirotani, Andries Coetzee, Nancy Hall, & Ji-Yung Kim, 153–163. Amherst, MA: University of Massachusetts, GLSA.

Crysmann, Berthold. 2013. Title. In *Rightward movement in a comparative perspective*, ed. Gert Webelhuth, Manfred Sailer, & Heike Walker, 369–396. Amsterdam: John Benjamins.

Culicover, Peter W. 2001. Parasitic gaps: A history. In *Parasitic Gaps*, ed. P. Culicover & P. Postal, 3–68. Cambridge, MA: The MIT Press.

Culicover, Peter W., & Michael S. Rochemont. 1990. Extraposition and the complement principle. *Linguistic Inquiry* 21:23–47.

Dayal, Veneeta. 2009. *Variation in English free choice items*. Modified version of paper in Proceedings of GLOW in Asia 7.

Diesing, Molly. 1992. *Indefinites*. Cambridge, MA: MIT Press.

den Dikken, Marcel. 2009. *On the nature and distribution of successive cyclicity: Adjunction, resumption, and scope marking as the roads to succes in long-distance relation building*. CUNY, New York.

Drummond, Alex, Norbert Horstein, & Howard Lasnik. 2010. A puzzle about P-stranding and a possible solution. *Linguistic Inquiry* 41:689–692.

Dryer, Matthew S. 2013a. Order of subject and verb. In *The world atlas of language structures online*, ed. Matthew S. Dryer & Martin Haspelmath. Leipzig: Max Planck Institute for Evolutionary Anthropology. URL `http://wals.info/feature/82`.

Dryer, Matthew S. 2013b. Position of interrogative phrases in content questions. In *The world atlas of language structures online*, ed. Matthew S. Dryer & Martin Haspelmath. Leipzig: Max Planck Institute for Evolutionary Anthropology. URL `http://wals.info/chapter/93`.

Dubinsky, Stanley. 2007. Parasitic gaps in restrictive and apposotive clauses. In *Proceedings of Israel Association for Theoretical Linguistics*, volume 22, 1–19. Jerusalem: The Hebrew University of Jerusalem.

É. Kiss, Katalin. 1985. Parasitic chains. *The Linguistic Review* 4:41–74.

É. Kiss, Katalin. 2002. *The syntax of Hungarian*. Cambridge, UK: Cambridge University Press.

É. Kiss, Katalin. 2009. Deriving the properties of structural focus. In *Focus at the syntax-semantics interface*, ed. A. Riester & E. Onea, 19–32. Stuttgart: University of Stuttgart.

Elbourne, Paul D. 2005. *Situations and individuals*. Cambridge, MA: MIT Press.

Emonds, Joseph E. 1985. *A unified theory of syntactic categories*. Dordrecht, Holland: Foris Publications.

Enç, Mürvet. 1991. The semantics of specificity. *Linguistic Inquiry* 22:1–25.

Engdahl, Elisabet. 1980. The syntax and semantics of questions in Swedish. Doctoral Dissertation, University of Massachusetts, Amerst, MA.

Engdahl, Elisabet. 1983. Parasitic gaps. *Linguistics and Philosophy* 6:5–34.

Engdahl, Elisabet. 1986. *Constituent questions*. Dordrecht, The Netherlands: D. Reidel Publishing Company.

Epstein, Samuel, & T. Daniel Seely. 2002. Rule application as cycles in a level-free syntax. In *Derivation and explanation in the minimalist program*, ed. Samuel Epstein & T. Daniel Seely, 65–84. Malden, MA: Blackwell.

Ernst, Thomas. 1999. Adjuncts, the universal base, and word order typology. In *Proceedings of NELS 29*, ed. Pius Tamanji, Masako Hirotani, & Nancy Hall, 209–223. Amherst, MA: University of Massachusetts GLSA.

Ernst, Thomas. 2002. *The syntax of adjuncts*. Cambridge, UK: Cambridge University Press.

Faraci, Robert A. 1974. Aspects of the grammar of infinitives and for-phrases. Doctoral Dissertation, MIT, Cambridge, MA.

Fauconnier, Gilles. 1975. Pragmatic scales and logical structure. *Linguistic Inquiry* 6:353–375.

von Fintel, Kai. 1999. NPI-licensing, Strawson-entailment, and context-dependency. *Journal of Semantics* 16:97–148.

von Fintel, Kai, & Sabine Iatridou. 2005. *What to do if you want to go to Harlem: Anankastic conditionals and related matters*. ms., MIT, Cambridge, MA.

Fox, Danny. 1995. Economy and scope. *Natural Language Semantics* 3:283–341.

Fox, Danny. 1999. Reconstruction, binding theory, and the interpretation of chains. *Linguistic Inquiry* 30:157–196.

Fox, Danny. 2000. *Economy and semantic interpretation*. The MIT Press.

Fox, Danny. 2002. Antecedent-contained deletion and the copy theory of movement. *Linguistic Inquiry* 33:63–96.

Fox, Danny, & Kyle Johnson. 2015. *Three dimensional QR*. Paper presented at the 33rd West Coast Conference on Formal Linguistics, Simon Fraser University.

Fox, Danny, & Jon Nissenbaum. 1999. Extraposition and Scope: A case for overt QR. In *The Proceedings of WCCFL 18*, ed. Sonya Bird, Andrew Carnie, Jason D. Haugen, & Peter Norquest, 132–144. Sommerville, MA: Cascadilla Press.

Fox, Danny, & David Pesetsky. 2005. Cyclic linearization of syntactic structures. *Theoretical Linguistics* 31:1–45.

Frampton, John. 1990. Parasitic gaps and the theory of wh-chains. *Linguistic Inquiry* 21:49–78.

Freidin, Robert. 1986. Fundamental issues in the theory of binding. In *Studies in the acquisition of anaphora*, ed. Barbara Lust, 151–188. Dordrecht: Reidel.

Gazdar, Gerald. 1981. Unbounded dependencies and coordinate structure. *Lingusitic Inquiry* 12:155–184.

Giannakidou, Anastasia. 1998. *Polarity sensitivity as (non)veridical dependency*. Amsterdam/Philadelphia: John Benjamins.

Gibson, Edward, & Evelina Fedorenko. 2013. The need for quantitative methods in syntax and semantics research. *Language and Cognitive Processes* 28:88–124.

Gibson, Edward, Steven T. Piantadosi, & Evelina Fedorenko. 2013. Quantitative methods in syntax/semantics research: A response to Sprouse and Almeida (2013). *Language and Cognitive Processes* 28:229–240.

Göbbel, Edward. 2013. Extraposition of defocused and light pps in english. In *Rightward movement in a comparative perspective*, ed. Gert Webelhuth, Manfred Sailer, & Heike Walker, 399–438. Amsterdam: John Benjamins.

Greenberg, Joseph H. 1963. Some universals of grammar with particular reference to the order of meaningful elements. In *Universals of language*, ed. Joseph H. Greenberg, 73–113. Cambridge, MA: MIT Press.

Grewendorf, Günther. 2015. Problems of remnant movement. In *Remnant movement*, ed. Günther Grewendorf, 3–31. Berlin: de Gruyter.

Grimshaw, Jane. 1991. *Extended projections*. Ms., Brandeis University.

Grimshaw, Jane. 1993. *Minimal projection, heads, and optimality*. Ms., Rutgers University.

Groat, Erich, & John O'Neil. 1996. Spell-Out at the LF interface. In *Minimal ideas*, ed. Werner Abraham, Samuel David Epstein, Hóskuldur Thráinsson, & C. Jan-Wouter Zwart, 113–139. Amsterdam: John Benjamins Publishing Company.

Grosu, Alexander. 1973. On the status of the so-called Right Roof Constraint. *Language* 49:294–311.

Grosz, Patrick Georg. 2015. Movement and agreement in right node raising constructions. *Syntax* 18:1–38.

Guéron, Jaqueline. 1980. On the syntax and semnatics of PP extraposition. *Linguistic Inquiry* 11:637–678.

Guéron, Jaqueline, & Robert May. 1984. Extraposition and Logical Form. *Linguistic Inquiry* 15:1–32.

Guerzoni, Elena. 2006. Intervention effects on NPIs and feature movement: Towards a unified account of intervention. *Natural Language Semantics* 14:359–398.

Ha, Seungwan. 2008. Ellipsis, right node raising, and across-the-board constructions. Doctoral Dissertation, Boston University, Boston, MA.

Haegeman, Liliane, Ángel L. Jiménez-Fernández, & Andrew Radford. 2014. Deconstructing the subject condition in terms of cumulative constraint violation. *The Linguistic Review* 31:73–150.

Haïk, Isabelle. 1985. The syntax of operators. Doctoral Dissertation, MIT, Cambridge, MA.

Hartmann, Katharina. 2000. *Right node raising and gapping: Interface conditions on prosodic deletion*. Amsterdam: John Benjamins.

Heck, Fabian, & Gereon Müller. 2000. Repair-driven movement and the local optimization of derivations. In *WCCFL 19 Proceedings*, ed. Roger Billerey & Brook Danielle Lillehaugen, 220–231.

Heim, Irene. 1984. A note on negaive polarity and downward entailingness. In *Proceedings of NELS 14*, ed. Charles Jones & Peter Sells, 98–107. Amherst: UMass GLSA.

Heim, Irene, & Angelika Kratzer. 1998. *Semantics in Generative Grammar*. Malden, MA: Blackwell.

Hoeksema, Jack. 2012. Monotonicity phenomena in natural language. *Linguistic Analysis* 38:3–32.

Hornstein, Norbert, & Jairo Nunes. 2002. On asymmetries between parasitic gap and across-the-board constructions. *Syntax* 5:26–54.

Horvath, Julia. 2007. Separating "focus movement" from focus. In *Phrasal and clausal architecture: Syntactic derivation and interpretation*, ed. Simin Karimi, Vida Samilan, & Wendy K. Wilkins, 108–145. Amsterdam: John Benjamins.

Hsieh, I-Ta Chris. 2009. On NPI-licensing and the sematnics of causal sentences. In *Proceedings of LoLa 10*, 63–71.

Huang, James C.-T. 1982. Logical relations in chinese and the theory of grammar. Doctoral Dissertation, MIT, Cambridge, MA.

Huck, Geoffrey J., & Younghee Na. 1990. Extraposition and focus. *Language* 66:51–77.

Huettner, Alison. 1989. Adjunct infinitives in english. Doctoral Dissertation, UMass, Amherst, MA.

Hulsey, Sarah, & Uli Sauerland. 2006. Sorting out relative clauses. *Natural Language Semantics* 14:111–137.

Hunter, Tim, & Robert Frank. 2014. Eliminating rightward movement: Extraposition as flexible linearisation of adjuncts. *Linguistic Inquiry* 45:227–267.

Huybregts, Riny, & Henk van Riemsdijk. 1985. Parasitic gaps and atb. In *Proceedings of NELS 15*, 168–187. Amherst, MA: GLSA, University of Massachusetts.

Jackendoff, Ray. 1977. *X′ Syntax*. Cambridge, Massachusetts: MIT Press.

Jacobson, Pauline. 2008. Direct compositionality and variale-free semantics: The case of antecedent-cnontained deletion. In *Topics in ellipsis*, ed. Kyle Johnson, 30–68. Cambridge, UK: Cambridge University Press.

Johnson, Kyle. 1985. A case for movement. Doctoral Dissertation, MIT, Cambridge, MA.

Johnson, Kyle. 2007. *LCA+Alignment=RNR*. Talk presented at the Workshop on Coordination, Subordination, and Ellipsis, Universität Tübingen.

Johnson, Kyle. 2012. Towards deriving differences in how *Wh* Movement and QR are pronounced. *Lingua* 122:529–553.

Johnston, Michael. 1993. *Because* clauses and negative polarity licensing. In *Proceedings of ESCOL 93*, 163–174.

Johnston, Michael. 1994. The syntax and semantics of adverbial adjuncts. Doctoral Dissertation, University of California Santa Cruz.

Jones, Charles. 1991. *Purpose clauses: Syntax, thematics, and semantics of english purpose constructions*. Dordrecht: Kluwer.

Kasai, Hironobu. 2010. *Parasitic gaps under multidominance*. Ms., University of Kitakyushu, Japan.

Kayne, Richard. 1976. French relative *que*. In *Current studies in romance linguistics*, ed. Marta Luján & Fritz Hensey, 255–299. Washington D.C.: Georgetown University Press.

Kayne, Richard. 1983. Connectedness. *Linguistic Inquiry* 14:223–249.

Kayne, Richard. 1994. *The antisymmetry of syntax*. Cambridge, MA: The MIT Press.

Kearny, Kevin. 1983. *Governing categories*. ms., University of Connecticut, Storrs, CT.

Kennedy, Chris. 2000. *Comparative deletion and optimality in sytnax*. Ms., Northwestern University, Evanston, IL.

Kennedy, Christopher. 1997. Antecedent-contained deletion and the syntax of quantification. *Linguistic Inquiry* 28:662–688.

Kiss, Tibor. 2005. Semantic constraints on relative clause extraposition. *Natural Language and Linguistic Theory* 23:281–334.

Klima, Edward. 1964. Negation in English. In *The structure of langauge: Readings in the philosophy of language*, ed. Jerry Fodor & Jerrold Katz, 246–323. Englewood Cliffs, NJ: Prentice-Hall.

Kluck, Marlies, & Mark de Vries. 2013. Cumulative rightward processes. In *Rightward movement in a comparative perspective*, ed. Gert Webelhuth, Manfred Sailer, & Heike Walker, 281–318. Amsterdam: John Benjamins.

Ko, Heejong. 2007. Asymmetries in scrambling and cyclic linearization. *Linguistic Inquiry* 38:49–83.

Koster, Jan. 1987. *Domains and dynasties*. Dordrecht: Foris Publications.

Koster, Jan. 2000. *Extraposition as parallel construal*. Ms., University of Groningen.

Kratzer, Angelika. 1996. Severing the external argument from its verb. In *Phrase structure and the lexicon*, ed. Johan Rooryck & Laurie Zaring, 109–137. Dordrecht, The Netherlands: Kluwer Academic Publishers.

Ladusaw, William. 1979. Polarity sensitivity as inherent scope relations. Doctoral Dissertation, University of Texas, Austin, TX.

Lakoff, George. 1970. *Irregularity in syntax*. New York: Holt, Reinhart, and Winston.

Larson, Bradley. 2012. A dilemma with accounts of right node raising. *Linguistic Inquiry* 43:143–150.

Larson, Richard, & Robert May. 1990. Antecedent containment or vacuous movement: Reply to Baltin. *Linguistic Inqruiry* 21:103–122.

Larson, Richard K. 1988. On the double object construction. *Linguistic Inquiry* 19:335–391.

Larson, Richard K. 1989. Light predicate raising. In *Lexicon Project Working Papers*, volume 27. Cambridge, MA: Center for Cognitive Science, MIT.

Lasnik, Howard, & Mamoru Saito. 1984. On the nature of proper government. *Linguistic Inqruiry* 15:235–289.

Lebeaux, David. 1988. Language acquisition and the form of the grammar. Doctoral Dissertation, University of Massachusetts, Amherst, MA.

Lewis, David. 1973. Causation. *Linguistics and Philosophy* 70:556–567.

Linebarger, Marcia. 1980. The grammar of negative polarity. Doctoral Dissertation, MIT, Cambridge, MA.

Linebarger, Marcia. 1987. Negative polarity and grammatical representation. *Linguistics and Philosophy* 10:325–387.

Link, Godehard. 1984. Hydras: On the logic of relative clause constructions with multiple heads. In *Varieties of formal semantics*, ed. Fred Landmann & Frank Veltmann, 245–257. Dordrecht: Foris.

Maling, Joan M. 1972. On “gapping and the order of constituents”. *Linguistic Inquiry* 3:101–108.

Marantz, Alec. 1993. Implications of asymmetries in double object constructions. In *Theoretical Aspects of Bantu Grammar*, ed. Sam Mchombo, 113–150. Stanford, CA: CSLI.

May, Robert. 1977. The grammar of quantification. Doctoral Dissertation, MIT, Cambridge, MA.

May, Robert. 1985. *Logical form*. Cambridge, MA: The MIT Press.

Mayr, Clemens, & Benjamin Spector. 2010. Not too strong! Generalizing the scope economy condition. In *Proceedings of Sinn und Bedeutung 14*, ed. Martin Prinzhorn, Viola Schmitt, & Sarah Zobel, 305–321.

McCawley, James D. 1982. Parentheticals and discontinuous constituent structure. *Linguistic Inquiry* 13:91–106.

McCloskey, James. 1999. On the right edge in Irish. *Syntax* 2:189–209.

McCloskey, James. 2002. Resumption, successive-cyclicity, and the locality of operations. In *Derivation and explanation in the minimalist program*, ed. Samuel Epstein & T. Daniel Seely, 184–226. Malden, MA: Blackwell.

McKinney-Bock, Katherine. 2013. Deriving split-antecedent relative clauses. In *University of pennsylvania working papers in linguistics*, ed. Kobey Shwayder, volume 19.

Merchant, Jason. 2013. Voice and ellipsis. *Linguistic Inquiry* 77–108.

Mimura, Takayuki. 2009. ”HNPS” as a combination of focalization and topicalization to the left periphery. *Interdisciplinary Information Sciences* 15:273–289.

Müller, Gereon. 1999. Imperfect checking. *The Linguistic Review* 16:359–404.

Müller, Gereon. 2001. Order preservation, parallel movement, and the emergence of the unmarked. In *Optimality-theoretic syntax*, ed. Géraldine Legendre, Jane Grimshaw, & Sten Vikner, 279–213. Cambridge, MA: MIT Press.

Müller, Gereon. 2004. *Remarks on cyclic linearization and order preservation*. Ms., Universität Leipzig.

Müller, Gereon. 2011. *Constraints on displacement: A phase-based approach*. Amsterdam: John Benjamins.

Munn, Alan. 1992. A null operator analysis of ATB gaps. *The Linguistic Review* 9:1–26.

Nakamura, Yoshio. 1993. Jyuumeisiku idou no A-idou bunseki to kiseitekikuusyo Gensyo ni tuite [On A-movement analysis of HNPS and parasitic gap constructions]. *Eibungaku Kenkyu* 69:275–289.

Narita, Hiroki. 2011. Phasing in Full Interpretation. Doctoral Dissertation, Harvard University, Cambridge, MA.

Nissenbaum, Jon. 2000. Investigations of covert phrase movement. Doctoral Dissertation, MIT, Cambridge, MA.

Nissenbaum, Jon. 2005. Kissing Pedro Martinez: (Existential) anankastic conditionals and rationale clauses. In *Proceedings of Semantics and Linguistic Theory XV*, ed. Effi Georgala & Jonathan Howell, 134–151. Ithaca, NY: Cornell University.

Nunes, Jairo. 1995. The copy theory of movement and linearization of chains in the Minimalist Program. Doctoral Dissertation, University of Maryland.

Nunes, Jairo. 2001. Sideward movement. *Linguistic Inquiry* 32:303–344.

Nunes, Jairo. 2004. *Linearization of chains and sideward movement*. Cambridge, MA: MIT Press.

Obata, Miki. 2006. Phase and convergence. In *Proceedings of the 29th annual Penn Linguistics Colloquium*, ed. Aviad Eilam, Tatjana Scheffler, & Joshua Tauberer, volume 12, 279–292.

Partee, Barbara H. 1993. *On the "scope of negation" and polarity sensitivity*. Ms., University of Massachusetts, Amherst, MA.

Perlmutter, David M., & John R. Ross. 1970. Relative clauses wih split antecedents. *Linguistic Inquiry* 1:350.

Pesetsky, David. 1982. Paths and categories. Doctoral Dissertation, Massachusetts Institute of Technology.

Phillips, Colin. 1996. Order and structure. Doctoral Dissertation, Massachusetts Institute of Technology, Cambridge, Massachusetts.

Postal, Paul M. 1974. *On raising*. Cambridge, Massachusetts: MIT Press.

Postal, Paul M. 1990. Some unexpected english restrictions. In *Grammatical relations: A cross-theoretical prespective*, ed. Katarzyna Dziwirek, Patrick Farrell, & Mejiás-Bikandi, 365–385. Stanford, CA: CSLI, Stanford University.

Postal, Paul M. 1993. Parasitic gaps and the across-the-board phenomenon. *Linguistic Inquiry* 24:735–754.

Postal, Paul M. 1994. Parasitic and pseudoparasitic gaps. *Linguistic Inquiry* 25:63–117.

Postal, Paul M. 1998. *Three investigations of extraction*. Cambridge: The MIT Press.

Potts, Christopher. 2002. The syntax and semantics of *As*-parentheticals. *Natural Language & Linguistic Theory* 20:623–689.

R Core Team. 2015. *R: A language and environment for statistical computing*. R Foundation for Statistical Computing, Vienna, Austria. URL `http://www.R-project.org/`.

Reinhart, Tanya. 1983. *Anaphora and semantic interpretation*. London: Croom Helm.

Reinhart, Tanya. 1995. Interface strategies. In *Ots working papers in linguistics*. Utrecht: Utrecht University.

Reinhart, Tanya. 2006. *Interface strategies*. Cambridge, MA: The MIT Press.

Richter, Frank, & Jan-Phillip Soehn. 2006. Braucht niemanden zu scheren: A survey of npi licensing in german. In *Proceedings of the 13th International Conference on Head-Driven Phrase Structure Grammar*, ed. Stefan M'uller, 421–440. Stanford, CA.

Rizzi, Luigi. 1997. The fine structure of the left periphery. In *Elements of grammar*, ed. Liliane Haegeman, 281–337. Dordrecht: Kluwer Academic Publishers.

Rochemont, Michael S. 1978. A theory of stylistic rules in English. Doctoral Dissertation, University of Massachusetts, Amherst, MA.

Rochemont, Michael S. 1986. *Focus in Generative Grammar*. Amsterdam, The Netherlands: John Benjamins Publishing Company.

Rochemont, Michael S., & Peter W. Culicover. 1990. *English focus constructions and the theory of grammar*. Cambridge, UK: Cambridge University Press.

Rochemont, Michael S., & Peter W. Culicover. 1997. Deriving dependent right adjuncts in English. In *Rightward movement*, ed. Dorothee. Beerman, David LeBlanc, & Henk van Riemsdijk, 279–300. Amsterdam/Philadelphia: John Benjamins.

Rooth, Mats. 1985. Association with focus. Doctoral Dissertation, University of Massachusetts, Amherst, MA.

Ross, John R. 1967. Constraints on variables in syntax. Doctoral Dissertation, MIT, Cambridge, MA.

Ross, John R. 1970. Gapping and the order of constituents. In *Progress in linguistics*, ed. Manfred Bierwisch & Karl E. Heidolph, 249–259. The Hague: Mouton.

Runner, Jeffrey. 1995. Noun phrase licensing and interpretation. Doctoral Dissertation, University of Massachusetts at Amherst, Amherst.

Saab, Andrés. 2015. On long-distance theta-role assignment. *Lingua* 160:91–126.

Sabbagh, Joey. 2007. Ordering and linearizeing rightward movement. *Natural Language & Linguistic Theory* 25:349–401.

Sag, Ivan. 1976. Deletion and logical form. Doctoral Dissertation, Massachusetts Institute of Technology.

Sailer, Manfred. 2007. NPI licensing, intervention, and discourse representation structures in HPSG. In *Proceedings of the 14th International Conference on Head-Driven Phrase Structure Grammar*, ed. Stefan Müller, 214–234. Stanford, CA.

Sauerland, Uli. 1998. Plurals, derived predicates and reciprocals. In *The interpretive tract(25)*, ed. Orin Percus & Uli Sauerland, 177–204. Cambridge, Massachusetts: MIT, Department of Linguistics.

Sheehan, Michelle. 2010. Extraposition and Antisymmetry. In *Linguistic variation yearbook 10*, ed. Jeroen van Craenenbroeck, 203–254. Amsterdam: John Benjamins.

Sprouse, Jon, & Diogo Almeida. 2013. The empirical status of data in syntax: A reply to Gibson and Fedorenko. *Language and Cognitive Processes* 28:222–228.

Staub, Adrian, Charles Clifton, & Lyn Frazier. 2006. Heavy NP Shift is the parser's last resort. *Journal of Memory and Language* 54:389–406.

Stowell, Tim. 1981. Origins of phrase structure. Doctoral Dissertation, MIT, Cambridge, MA.

Stroik, Thomas S. 1999. The Survive principle. *Linguistic Analysis* 29:278–303.

Stroik, Thomas S. 2009. *Locality in minimalist syntax*. Cambridge, MA: The MIT Press.

Strunk, Jan, & Neal Snider. 2013. Subclausal locality consttraints on relative clause extraposition. In *Rightward movement in a comparative perspective*, ed. Gert Webelhuth, Manfred Sailer, & Heike Walker. Amsterdam: John Benjamins.

de Swart, Henriëtte. 1998. Licensing of negative polarity items under inverse scope. *Lingua* 105:175–200.

Syrett, Kristen. 2015. Experimental support for inverse scope readings of finite-clause-embedded antecedent-contained-deletion sentences. *Linguistic Inquiry* 46:579–592.

Szendröi, Kriszta. 2003. A stress-based approach to the syntax of Hungarian focus. *The Linguistic Review* 20:37–78.

Takahashi, Shoichi. 2006. Decompositionality and identity. Doctoral Dissertation, MIT, Cambridge, MA.

Taraldsen, Tarald. 1981. The theoretical interpretation of a class of marked extractions. In *Theory of Markedness in Generative Grammar*, ed. Adriana Belleti, Lucieta Brandi, & Luigi Rizzi. Pisa: Scuola Normale Superiore.

Tiedeman, Robyne. 1995. Some remarks on antecedent contained deletion. In *Minimalism and linguistic theory*, ed. Shosuke Haraguchi & Michio Funaki, number 4 in Hituzi Linguistics Workshop Series, 67–103. Japan: Hituzi Syobo.

Tonhauser, Judith. 2001. An approach to polarity sensitivity and negative concord by lexical underspecification. In *Proceedings of the 7th International Conference on Head-Driven Phrase Structure Grammar*, ed. Dan Flickeinger & Andreas Kathol, 285–304. Stanford, CA.

Uriagereka, Juan. 1999. Multiple spell-out. In *Working minimalism*, ed. Samuel Epstein & Norbert Hornstein, 251–282. Cambridge, Massachusetts: MIT Press.

Uribe-Etxevarria, Maria. 1994. Interface licensing conditions on negative polarity items: A theory of polarity and tense interactions. Doctoral Dissertation, University of Connecticut, Storrs, CT.

Vergnaud, Jean Roger. 1974. French relative clauses. Doctoral Dissertation, MIT, Cambridge, MA.

Vicente, Luis. 2003. *Extraposition as stranding*. Ms., Universiteit Leiden.

de Vries, Mark. 2002. The syntax of relativization. Doctoral Dissertation, Universiteit van Amsterdam, Amsterdam.

Wallenberg, Joel. 2009. Antisymmetry and the conservation of c-command: Scrambling and phrase structure in synchronic and diachronic perspective. Doctoral Dissertation, University of Pennsylvania, Philadelphia, PA.

Wallenberg, Joel. 2015. Antisymmetry and Heavy NP Shift across Germanic. In *Syntax over time: Lexical, morphological and information-structural interactions*, ed. Theresa Biberauer & George Walkden, 336–349. Oxford University Press.

Ward, Gregory, & Betty Birner. 1996. On the discourse function of rightward movement in English. In *Conceptual structure, discourse and language*, ed. Adele Goldberg, 463–479. Stanford, CA: CSLI.

Wasow, Thomas, & Jennifer E. Arnold. 2003. Post-verbal constituent ordering in English. In *Determinants of grammatical variation in English*, ed. Günter Rohdengurg & Britta Mondorf, 119–154. The Hague: Mouton.

Webelhuth, Gert, Manfred Sailer, & Heike Walker. 2013. Introduction by the editors. In *Rightward movement in a comparative perspective*, ed. Gert Webelhuth, Manfred Sailer, & Heike Walker, 1–62. Amsterdam: John Benjamins.

Wexler, Kenneth, & Peter Culicover. 1980. *Formal principles of language acquisition*. Cambridge, MA: The MIT Press.

Wilder, Chris. 1995. Rightward movement as leftward deletion. In *On extraction and extraposition in german*, ed. Uli Lutz & Jürgen Pafel, 273–309. Amsterdam/Philadelphia: John Benjamins Publishing Company.

Wilder, Chris. 1997a. Phrasal movement in LF: *De re* readings, vp-ellipsis and binding. In *Proceedings of North East Linguistics Society 27*, ed. Kiyomi Kusumoto, 425–439. Amherst, MA: Graduate Student Linguistic Association, University of Massachusetts.

Wilder, Chris. 1997b. Some properties of ellipsis in coordination. In *Studies on universal grammar and typological variation*, ed. Artemis Alexiadou & T. Hall, 59–107. Amsterdam: Benjamins.

Wilder, Chris. 1999. Right node raising and the LCA. In *Proceedings of WCCFL 18*, ed. SS Bird, A. Carnie, J. D. Haugen, & P. Norquest. Tucson, Arizona: University of Arizona.

Wilder, Chris. 2003. Antecedent containment and ellipsis. In *The interfaces: Deriving and interpreting omitted structures*, 79–119. Amsterdam: John Benjamins Publishing Company.

Williams, Edwin. 1974. Rule ordering in syntax. Doctoral Dissertation, MIT, Cambridge, MA.

Williams, Edwin. 1977. Discourse and logical form. *Linguistic Inquiry* 8:101–139.

Williams, Edwin. 1990. The ATB-theory of parasitic gaps. *The Linguistic Review* 6:265–279.

Williams, Edwin. 1995. *Thematic structure in syntax*. Cambridge, MA: MIT Press.

Williams, Edwin. 2003. *Representation theory*. Cambridge, MA: MIT Press.

Yatabe, Shûichi. 2003. A linearization-based theory of summative agreement in peripheral-node raising constructions. In *Proceedings of the 9th International Conference on HPSG*, ed. Jong-Bok Kim & Stephen Wechsler, 391–413. Stanford University.

Zhang, Niina Ning. 2007. The syntactic derivations of split antecedent relative clause constructions. *Taiwan Journal of Linguistics* 5:19–47.

Zwarts, Frans. 1998. Three types of polarity. In *Plurality and quantification*, ed. Fritz Hamm & Erhard Hinrichs, 177–238. Dordrecht: Kluwer.