

Syntax at the PF Interface: Prosodic Mapping, Linear Order, and Deletion

Duk-Ho An, Ph.D.

University of Connecticut, 2007

The goal of this dissertation is to investigate the nature of the interaction between syntax and phonology with the goal of achieving an explanation of a number of facts that have remained problematic for purely syntactic approaches. More specifically, two main issues will be examined in this dissertation: the distribution of null complementizer clauses and Right Node Raising constructions. These issues are similar in that they both have been subject to purely syntactic analyses, which I show face serious problems. I will argue instead that these phenomena can be best analyzed in terms of the PF component. The gist of the analysis of the first issue will be that the distribution of null complementizer clauses is governed by the requirements of the syntax-phonology mapping process – in particular, the requirement that boundaries of an intonational phrase be properly aligned with those of the syntactic category to which it is assigned. With respect to the second issue, a PF deletion analysis will be argued for, providing several arguments that what is involved in Right Node Raising constructions is an operation of the PF component, not of the syntax proper. To support these proposals, several novel generalizations regarding the position and the prosodic property of the shared material will be proposed based on cross-linguistic evidence. In addition, implications of the current analysis for related constructions such as across-the-board movement constructions as well as the general architecture of the grammar and the syntax-phonology interface will also be discussed.

Syntax at the PF Interface: Prosodic Mapping, Linear Order, and Deletion

Duk-Ho An

B.A., Korea University, 1999

M.A., Korea University, 2001

M.A., University of Connecticut, 2005

A Dissertation

Submitted in Partial Fulfillment of the

Requirements for the Degree of

Doctor of Philosophy

at the

University of Connecticut

2007

Copyright by

Duk-Ho An

2007

APPROVAL PAGE

Doctor of Philosophy Dissertation

Syntax at the PF Interface: Prosodic Mapping, Linear Order, and Deletion

Presented by

Duk-Ho An, B.A., M.A.

Major Advisor _____

Željko Bošković

Associate Advisor _____

Jonathan David Bobaljik

Associate Advisor _____

Mamoru Saito

Associate Advisor _____

Susanne Wurmbrand

University of Connecticut

2007

Acknowledgments

Trying to write these acknowledgments, I find it no easier than writing any of the sections that follow. I've actually been thinking for quite a while about how I should start the first paragraph of the acknowledgments and also what kinds of things and whose names should be mentioned in them. But, as is often the case, my words do not serve my feelings and ideas well enough, so I decided to fill the acknowledgments with plain words of “thanks” to those people who contributed to my long journey towards a Ph.D. degree. If you think you deserve some thanks from me, but don't find your name here, be assured that it is just “unpronounced” at PF, but is there at LF.

It is actually very difficult to say fully enough how grateful I am to Željko. His role as my major advisor has been so important to my work and life as a graduate student at UConn. Whenever I was stuck with problems in linguistics and otherwise, his advice served as a guiding light that kept me from getting lost. Especially, in the final stage of my Ph.D. course, he has made every effort to lead me to a better place, for which I cannot thank him enough. I also thank him very much for spending numerous hours (despite his insane schedule) reading and discussing with me the many papers and earlier versions of my dissertation. I have seen in him an example of what a good advisor and a good linguist is like, which I take to be the goal to achieve in my future career. I will also miss his syntax seminar very much “twice intentionally.”¹

Jonathan has been a very good teacher to me. To me, he was like an advisor to go to ask questions regardless of their nature – e.g., whether it was about the puzzles I encountered in the middle of writing something, about theories proposed by other linguists, about relevant references, about job application, etc. He has never failed to provide me with insightful answers with encouragement and support. His comments on my work have also helped me many times to clarify certain details that would have been overlooked, allowing me to keep the discussion balanced. I thank him for all the help and support he has given to me.

I have also benefited much from working with Susi. She was in the committee for my semantics general exam paper and also for my dissertation. When I defended them, she was the one who brought the longest list of questions – all hard ones. But, these questions all helped me greatly to improve my work. Her comments on my work were always very insightful and incisive, from which I learned much about different aspects of academic writing. I also thank her for her encouragement and support.

It was also extremely fortunate for me to have Saito sensei in my dissertation committee. He has always been very inspiring and very kind to me. He has shown me that sometimes, what seems to be a weak point in my work can actually be turned into a nice consequence of it and even allow me to make rather nice predictions. I think this is also a good place to thank Murasugi sensei who, along with Saito sensei, gave me a great amount of support and hospitality, for which I am very grateful.

Outside of my dissertation committee members, Yael Sharvit has been a source of constant support for me. In particular, she has helped me tremendously from the initial stage to the final publication of my semantics paper on NPIs. I always felt a bit sorry that I wasn't a better student in semantics. David Michaels has always been very kind to me. I first met him as a technical assistant for Ling 101 when I was a first year student. Since

¹ Don't worry even if you don't understand “twice intentionally” here.

then, he has given me a great deal of advices and many warm words that helped me much, for which I am very grateful. I worked with William Snyder for several semesters in Ling 101 and Ling 110, from which I learned a lot. He is also one of the native speakers of English who I bothered frequently with all sorts of complicated sentences. (William's judgment was usually in favor of my predictions.) I also thank other (former and current) teachers at UConn – Mona Anderson, Sigrid Beck, Andrea Calabrese, Barbara Citko, Jon Gajewski, Harry van der Hulst, Howard Lasnik, Diane Lillo-Martin, Kimiko Nakanishi, Jairo Nunes, Eva bar Shalom, and Chris Wilder for the many things I learned from them.

When it comes to my fellow grad students at UConn, I don't seem to have enough space to express my gratitude to all of them here. Some of the people below deserve more thanks than others, but making such a fine grained distinction here would not mean much. So, I will avoid talking about all the nice details (probably, those should be reserved for later days when we get older) and simply list those who I feel grateful for. First of all, many thanks go to my classmates Simona Herdan, Serkan Şener, Sandy Wood and former classmates Tomo Fujii and Lydia Grebenyova for their friendship and support, without which it would have been much harder to go through all this. I thank Serkan and Nilufer Şener for spending much time with me sharing their opinions, experiences, joys, frustrations, etc. I also have to thank some of the senior students: Inkie Chung and his family, Bosook Kang, Toshiko Oda, Sei-Rang Oh, and Bum-Sik Park. They provided me with a great amount of help, friendship, and hospitality, which made Storrs feel more like home to me. Among the older (not necessarily biologically older) generation students, I thank Klaus Abels, Sarah Felber, Elaine Grolla, Takako Iseda, Mariana Lambova, Luisa Marti, Nobu Miyoshi, Fumi Niinuma, Masashi Nomura, Natasha Rakhlin, Lara Reglero, Koji Sugisaki. Among the younger (not necessarily biologically younger) generation students, I thank Masahiko Aihara, Ana Bastos, Jeff Bernath, Carlos Buesa Garcia, Johnny Cheng, Jean Crawford, Miloje Despić, Natasha Fitzgibbons, Zhanna Glushan, Chris I-Ta Hsieh, Helen Koulidobrova, Pei-Jung Kuo, Jill Magee, Koichi Otaki, Karen O'Brien, Nina Radkevich, Miguel Rodriguez Mondoñedo, Tsuyoshi Sawada, Shigeki Taguchi, Masahiko Takahashi, Takuro Tanaka, Oksana Tarasenkova, and Cynthia Zocca. I thank Natasha (F), Nina, Pei-Jung, and Cynthia for organizing the nice reception on the day of my dissertation defense. Jeff, Jean, and Karen are the usual people I bothered a lot with English judgments and proof-reading. There are also a number of people who only spent a short time with me at UConn, e.g., Aritz Irurtzun, Kate Intajamornrak, Krzysztof Migdalski, Jong-Un Park, Kiki Vassilaki. (There seem to be more. But I don't remember their names at the moment.) I also thank Carol Boster, Judy Marcus and Catalina Ritton for their support and friendship.

As mentioned above, I don't have enough space to talk about all the memorable events, incidents, stories, and episodes, etc, that I had with all these people. I am sure that I will cherish the memory of the many days I spent with them here at UConn, certainly one of the most important periods of my life.

Outside of UConn, determining the scope of my thanks is also not so easy. I will start with the people in East Asia. First, I'd like to thank Prof. Myung-Yoon Kang, my former advisor at Korea University, for guiding me into the world of syntax and also for his support and encouragement. I would also like to thank other professors at Korea University: Jae-Woong Choe, Beom-Mo Kang, Sung-Do Kim, Ki-Yong Lee, Seok-Hoon You. I would also like to thank a number of visiting professors from Korea (to UConn)

from whom I received much help, support, and hospitality. These include Prof. Myung-Kwan Park, Sun-Woong Kim, Dong-Shin Choe, Jeong-Shik Lee, Keun-Won Sohn, Sang-Wan Shim (in order of their visit). I also thank the professors of the Korean Generative Grammar Circle – in particular, Prof. Sung-Ho Ahn, Jeong-Seok Kim, Chang-Kook Yim for their support. I thank Aoyagi sensei at Nanzan university and the grad students there for their support and friendship; I also thank the fellow grad students at Korea university, with whom I spent much time discussing linguistics and other things in my early days, including Jeong-Ha Hong, You-Mi Hwang, Jae-Eun Jeong, Hye-Young Kim, Miran Kim, Uy-Soo Kim, the late Kwang-Joo Ko, and Jong-Min Lee.

I also thank Brian Agbayani (in my paper that appeared in *Syntax*, Brian's name in the acknowledgments is misspelled. I'm sorry that I didn't notice it.), Cedric Boeckx, Steven Franks, Seung-Wan Ha, Atakan Ince, Youngmi Jeong, Jason Kandybowicz, Taka Kato, Marc Richards, Penka Stateva, Hideaki Yamashita for their friendship and interest in my work. I thank the many people who kindly sent me their papers/theses/comments, etc. in the process of writing my dissertation. These include Klaus Abels, Seung-Wan Ha, Shinichiro Ishihara, Kleanthes Grohmann, Marlies Kluck, Vivian Lin, Lisa Selkirk, Michael Wagner, Chris Wilder, among many others.

My non-linguist friends, Daham Chung, Gyu-Jin Han, Wang-Jun Lee, Aki Michimi, and Junior, all gave me friendship, support, and encouragement, which made my life here in Storrs and back in Korea much more enjoyable.

Finally, everything I have achieved in life up to this point (including, but not limited to completing a Ph.D.) would have been completely impossible without the endless love and support from my family – dad, mom, and sister, to whom this dissertation is dedicated.

Table of Contents

Chapter 1

<i>Introduction: On Interfaces</i>	1
--	---

Chapter 2

Prosodic Mapping at the Syntax-Prosody Interface

1. Introduction	9
2. The Distribution of Null C Clauses	11
3. Previous Approaches	14
3.1. Stowell 1981	14
3.2. Weibelhuth 1992	17
3.3. Pesetsky and Torrego 2001	18
3.4. Bošković and Lasnik 2003	22
4. Novel Generalizations and the Ban on Null Edge	24
4.1. The Ban on Null SpecCP and C	26
4.2. Obligatory Intonational Phrases	30
4.2.1. Clausal Subjects	33
4.2.2. Topicalization	36
4.2.3. Noun Complement Clauses	38
4.2.3.1. Restrictive Relative Clauses	41
4.2.3.2. Verb Complement Clauses	44
4.2.4. Extraposition, RNR, and Gapping	46
4.3. Summary	48
5. Proposal	50
5.1. Some Assumptions about Prosodic Mapping	51
5.2. Prosodic Mapping, Linearization, and the Ban on Null Edge	54
5.2.1. Left and Right Boundaries	55
5.2.2. Status of the Null C and Other Null Elements	60
5.3. Other contexts	69
5.3.1. Further Null C Contexts	70
5.3.2. Extension to Non-CP Contexts	75
6. Conclusion	80

Chapter 3

Properties of Right Node Raising

1. Introduction	82
2. Basic Properties of RNR	84
2.1. Previous Approaches	84

2.2. In-situ Property of RNR	87
2.2.1. Island Insensitivity	88
2.2.2. Preposition Stranding	90
2.2.3. Complementizer Stranding	92
2.2.4. Mobile Immobile Elements	93
2.2.5. VP-Ellipsis	94
2.2.6. Summary	96
3. Previous Analysis: Multi-Dominance	97
3.1. The Structure of MDW	97
3.2. Linearization of MDW	99
3.2.1. Linearization of MDW	99
3.2.2. Right Edge Generalization	102
3.3. Summary	105
4. Some Problems for the MD Analysis	105
4.1. Multiple Traces	107
4.2. Multiple Binders	112
4.3. Control	114
4.4. Honorification	116
4.4.1. Post-Syntactic Honorification?	123
4.5. Linearization	127
5. Summary	129
Appendix: One Additional Problem for MDW	131

Chapter 4

Non-syntactic Behavior of RNR

1. Introduction	135
2. A Case for PF Deletion	137
2.1. Insensitivity to Syntactic Constituency	138
2.2. Target-internal Adjacency	149
2.3. Peripherality	154
2.4. Illustration: Incremental Linear Deletion	158
3. Summary	165

Chapter 5

RNR as PF Deletion

1. Introduction	167
2. Deletion and Prosodic Constituency	169
2.1. Sensitivity to Prosodic Constituency	171
2.2. RNR Target as an I-phrase	177
3. Direction of Deletion and Linear Order	187

3.1. Background: Directionality Parameter	189
3.2. Order Preservation: Fox and Pesetsky 2005	191
3.2.1. Holmberg’s Generalization	192
3.3. Deriving the Adjacency and the Edge Sensitivity of RNR	194
3.3.1. Deriving Right Node Raising	196
3.3.2. Deriving Target-internal Adjacency	198
3.3.3. Deriving Peripherality	200
4. Some Remarks on Prosodic Phrasing	202
5. Summary	205

Chapter 6

Extension of PF Deletion and Some Loose Ends

1. Introduction	207
2. Linearization of ATB Structures	210
3. Multiple Wh-Fronting and ATB	214
3.1. Multiple Wh-Fronting and Lower Copy Pronunciation	215
3.2. ATB Multiple Wh-Fronting	220
3.3. PF Deletion and ATB Multiple Wh-Fronting	222
4. Some Loose Ends	227
4.1. Wide Scope of the Target of RNR	228
4.2. Some Remaining Issues	233
5. Summary	238

Chapter 7

<i>Conclusion</i>	239
-------------------------	-----

References	241
-------------------------	-----

Chapter 1.

Introduction: On Interfaces

In the recent generative grammar in the Principles and Parameters framework, the fundamental assumption about the architecture of the grammar is that there is a single generative component (or procedure), i.e., the syntactic component, that generates structural descriptions that are interpreted as instructions for external systems. These external systems generally fall into two categories: the articulatory-perceptual (or sensorimotor) and conceptual-intentional systems, which basically have to do with sound and meaning.¹ The communication between the generative component and the external systems is mediated by two separate levels of representation called Phonetic Form (PF) and Logical Form (LF), which interface with the articulatory-perceptual and the

¹ Chomsky (1981:176) assumes that these external systems also include the conceptual system, systems of belief, pragmatic competence, speech production and analysis, and so on.

conceptual-intentional systems, respectively.² PF and LF are thus called the interface levels (or simply, interfaces).

The nature of these interfaces and their relation with the syntactic component have been assumed to be quite different. Basically, the derivational processes that take place in the LF component are assumed to be a continuation of those in the overt syntax. For instance, it has often been argued that operations of the overt syntax and those of the LF component are subject to the same principles of the grammar (see, for instance, Lasnik and Saito 1984, 1992). (In other words, the overt syntax and the LF component employ the same kind of grammatical operations.) In this respect, the LF interface is considered the result of the syntactic derivation. (This is why the syntactic component and the LF component are often referred to as the “narrow syntax.”) On the other hand, Chomsky (1986:156) assumes that “the level of PF representation is derived ... by the rules of morphology and phonology; at this level, sentences are represented in phonetic form with constituency marked.” Chomsky and Lasnik (1993, reappeared as Chomsky 1995:35) also assume that “the PF representation π is a string of phonetic primes with syllabic and intonational structure indicated.”

Moreover, it is standardly assumed that languages do not significantly differ, if at all, at LF, although PF is assumed to be the locus of cross-linguistic variation. To this effect, Chomsky (1993:169-170) says that “variation must be determined by what is

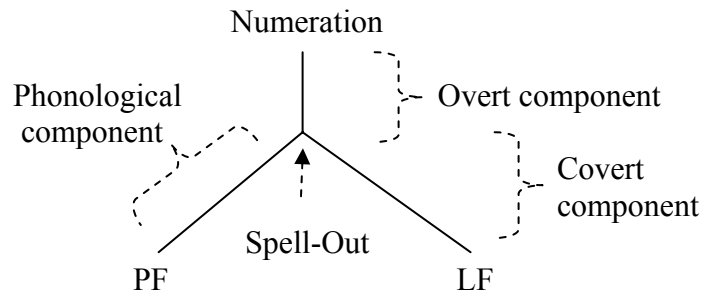
² The term PF first appeared in Chomsky’s (1981) *Lectures on Government and Binding*, where it is said that “the syntactic component of the grammar generates an infinite set of abstract structures ... that are assigned a representation in phonetic form (PF) and in LF.” (Of course, although the term PF itself was not used before *LGB*, equivalent notions had been adopted in Chomsky’s earlier work. For instance, in Chomsky and Lasnik 1977, it is assumed that the rules of the phonological and the semantic components interpret surface structures generated by the syntactic component and yield representations in universal phonetics and Logical Form.)

To my knowledge, the term LF first appeared in Chomsky 1976, where it is said “the grammar relates LF to phonetic representation through the medium of derivations (Chomsky 1976:306).”

visible to the child ... it is not surprising then to find a degree of variation in the PF component ... variations in the overt syntax or LF component would be more problematic, since evidence could only be quite indirect. A narrow conjecture is that there is no such variation.” Chomsky (2000:117-118) also assumes that at the PF interface, there are radical violations of the inclusiveness condition, unlike LF.

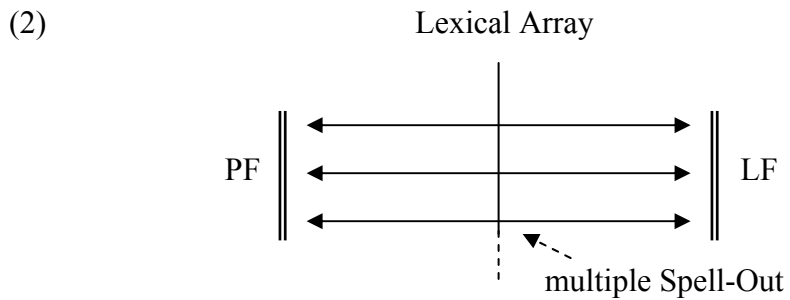
The different status of the PF and LF interfaces is also reflected in the assumptions regarding the architecture of the grammar. In the early Minimalism, i.e., until Chomsky 1995, it was assumed that in the course of the narrow syntactic derivation, there is a point where the operation Spell-Out applies to the structure Σ and strips away from Σ those elements relevant only to PF, leaving the residue Σ_L , which is mapped to LF by the same kind of operations used to form Σ (Chomsky 1995:229). This is illustrated in (1).

(1)



In the recent Minimalist framework, the way the structure is mapped to PF and LF has become more refined due to the introduction of multiple Spell-Out (Uriagereka 1999, Chomsky 2000, 2001, among others). According to this view, Spell-Out takes place

several times during a derivation, shipping the structure to PF piece by piece.³ One of the major consequences of this change is the elimination of the distinction between the overt and the covert components from the narrow syntax. Therefore, there is no designated point in the course of a derivation where the structure has to be sent to PF once and for all. Under this view, the architecture of the grammar can be illustrated as in (2).⁴



Although standard assumptions have been that there are two interface levels – in particular, from the late 70’s when the notion of interfaces began to be formulated, the major interest of the generative syntacticians has been the proper characterization of the nature of the narrow syntactic derivation and the LF interface, i.e., LF has attracted more attention among syntacticians than PF. This is of course not surprising, because LF is the result of syntax, i.e., syntax goes all the way down to LF, unlike PF. The preference for narrow syntactic explorations in the field of generative syntax is clearly reflected in the following remarks by Chomsky and Lasnik (1977:428 and 1993:125, respectively):

³ Chomsky (2000, 2001) argues that the relevant “pieces” here correspond to phases, which include vPs and CPs. There are also proposals in the recent literature that the inventory of phases is actually bigger than vPs and CPs (see, for instance, Abels 2003 for PPs, Bošković 2005c, to appear for DPs).

⁴ The difference between (1) and (2) will not play a significant role in subsequent chapters though.

“We will not be concerned here with phonology or UP [universal phonetics, see footnote 2 (D.An.)].”

“The discussion of the computational system is also crucially too narrow in that it excludes the PF component ... there are open questions as to whether certain operations and properties we have assigned to LF component do not in fact belong to the PF component.”

In this respect, the introduction of the Minimalist Program in the 90's marks a significant turning point in the perspectives of the generative exploration in many ways. In the 90's and afterwards, although still much focus was placed on the LF side of the computational system, considerations of the PF component also came to play a much more significant role than before in formulating certain properties of the grammar.⁵ The increased emphasis on the interface levels in part stems from the elimination of Deep Structure (DS) and Surface Structure (SS) as levels of representation. Chomsky (1993, 1995) provides several arguments that these levels are not motivated, hence should be eliminated. Therefore, many properties previously believed to hold of DS and SS had to be abandoned and reformulated as interface properties. Around this period, Chomsky also himself began to speculate more explicitly on the role of the PF component, attributing to this component several properties that used to be accounted for in purely syntactic terms. I list below some of Chomsky's remarks to this effect.

⁵ This is not to say that the role of the PF component has been completely ignored before. (Of course, there were many phonologists, for instance, who worked on the interaction between syntax and phonology.) I am simply saying that serious explorations of the properties of the syntax-phonology interface have only begun to take place in the “syntactic” theorizing around this period.

“Any remaining examples of optional rule application would then have to be assigned to ... a stylistic component of the mapping of S-Structure to PF.” (Chomsky 1991:131)

“The PF [copy] deletion operation is, very likely, a subcase of a broader principle that applies in ellipsis and other constructions.” (Chomsky 1993:202)

“... topic-focus and theme-rheme structures, figure-ground properties, effects of adjacency and linearity, and many others ... seem to involve some additional level or levels internal to the phonological component.” (Chomsky 1995:220)

“The operation Move F carries along “excess baggage” only when it is “heard” in the phonetic output ... only PF convergence forces anything beyond features to raise.” (Chomsky 1995:265)

“... a strong feature can enter the numeration if it has an effect on output – in this case, PF output.” (Chomsky 1995:366)

“... the need to construct derivative chains involving categories to satisfy PF convergence.” (Chomsky 1995:378)

“Stylistic operations might fall within the phonological component.” (Chomsky 2000:144)

“The rightward variant of Th/Ex is like extraposition in that it does not iterate, perhaps a more general property of ... phonological operation.” (Chomsky 2001b:25)

“There are some reasons to suspect that a substantial subcase of head raising processes ... may fall within the phonological component.” (Chomsky 2001b:37)

More importantly, in the Minimalist literature, many researchers have independently made numerous proposals that emphasize the role of the interaction between syntax and phonology and showed that such approaches indeed help us account for certain phenomena that have remained problematic for purely syntactic approaches

(Bobaljik 1994, 1995, Bošković 2001, Bošković and Lasnik 2003, Ćavar 1999, Embick and Noyer 1999, to appear, Fox and Pesetsky 2005, Franks 1998a, Franks and Bošković 2001, Halle and Marantz 1993, Harley and Noyer 1999, Hartmann 2000, Ishihara 2003, 2004, Kandybowicz 2006, Kayne 1994, Merchant 1999, 2001, Nunes 1995, 2004, Pesetsky 1997, Reglero 2004, Schütze 1994, Selkirk 1995, 1997, Stjepanović 1999, Swingle 1993, Truckenbrodt 1995, 1999, Wagner 2005, Zubizarreta 1998, among many others).

This dissertation aims to contribute to this line of research, i.e., it will be concerned with investigating the nature of the interaction between syntax and phonology with the goal of achieving an explanation of a number of facts that have remained problematic for purely syntactic approaches. More specifically, two main issues will be examined in this dissertation: the distribution of null complementizer clauses, as in (3), and Right Node Raising, as in (4).

- (3) a. That the teacher was lying was hardly obvious
b. * The teacher was lying was hardly obvious (Stowell 1981)

- (4) Mary suspected, and John believed, that Tom was a secret agent.

The data in (3) and (4) are similar in that they both have been subject to purely syntactic analyses, which however will be shown to face serious problems. It will be argued instead that these phenomena can and should be analyzed in terms of the PF component. The gist of the analysis of the first issue will be that the distribution of null

complementizer clauses is governed by the requirements of the syntax-phonology mapping process – in particular, the requirement that certain boundaries have to be aligned properly. With respect to the second issue, a PF deletion analysis will be explored, providing several arguments that what is involved in Right Node Raising constructions is an operation of the PF component, not of the syntax proper. To support these proposals, novel generalizations will be proposed based on cross-linguistic evidence. For instance, regarding the null C clauses, it will be shown that clauses are obligatorily parsed as separate intonational phrases in the relevant contexts where a null C is disallowed. As for Right Node Raising, it will be shown that unlike typical syntactic operations, this construction is not constrained by syntactic constituency, but is constrained by prosodic constituency – in particular, by the intonational phrase structure of the sentence. In addition, implications of the current analysis will be discussed for a number of related constructions, e.g., vP-fronting, across-the-board movement constructions, as well as the general architecture of the grammar and the process of syntax-phonology mapping, where I argue a number of processes take place sequentially, making reference to different aspects of the derivation.

The choice of these issues as the main topic of investigation was motivated by the fact that they illustrate in a quite straightforward way the interaction between syntax and phonology and its influence on the outcome of a derivation. Moreover, the appropriateness of locating the phenomena in question in the PF component is further confirmed by the fact that the current analysis is able to provide an account of a number of properties of the constructions in question that have been problematic for purely syntactic analyses.

Whether attributing more properties to the PF component is a good thing to do or not is an empirical question. At any rate, a huge territory seems to lie ahead of us in the realm of the syntax-phonology interface which I believe will lead us to a better understanding of how language works. I hope the current research is able to contribute a little piece to completing this bigger picture.

Chapter 2.

Prosodic Mapping at the Syntax-Prosody Interface

1. Introduction

It is a standard assumption that there is a process of prosodic mapping that mediates syntax and phonology (Selkirk 1978, 1984, 1986, 1995, Nespor and Vogel 1986, Chen 1990, Zec and Inkelas 1990, Truckenbrodt 1995, Ladd 1996, Wagner 2005). In this chapter, I will examine the distribution of null complementizer (C) clauses in English which I will argue sheds light on several important aspects of the syntax-phonology interaction as well as the process of prosodic mapping.

The distribution of null C clauses has received some attention in the literature, among which Stowell 1981 can be said to be an early representative (see also Webelhuth 1992, Bošković 1997, Pesetsky and Torrego 2001, Bošković and Lasnik 2003, among

many others).¹ Based on several sets of data, I will propose two novel generalizations regarding the contexts in which null C clauses can occur that focus on the aspects of the relevant CPs that have not received much attention before: first, I will show that not only the emptiness of C, but also that of SpecCP matters; second, I will show that the relevant CPs must constitute an independent prosodic constituent. The gist of the proposal based on these generalizations will be that a mismatch between the boundary of a syntactic category and that of a prosodic category obligatorily assigned to it leads to a deviant result in the contexts where null C clauses are disallowed. Therefore, under the current analysis, the problem that arises with the null C clauses lies not in the syntax proper, but in the interface between syntax and phonology.

This chapter is organized as follows: in section 2, I will discuss the distribution of null C clauses; in section 3, I will review previous analyses of the distribution of null C clauses; in section 4, I will propose the two novel generalizations briefly outlined above; in section 5, I will propose an account of the generalizations.

¹ This chapter is a considerably revised and expanded version of my paper in *Syntax* (An 2007a), portions of which were also presented at the 40th Annual Meeting of the Chicago Linguistic Society, 2004 Western Conference on Linguistics, and the 6th Seoul International Conference on Generative Grammar.

2. The Distribution of Null C Clauses

It is known that clauses in certain environments may not be headed by a null C. As (1)a and (1)b show, overt C is in principle optional in English embedded declarative clauses. However, the pair in (1)c and (1)d show that this optionality does not always hold. The only relevant difference between (1)a,b and (1)c,d seems to be that in the latter pair, the complement clause is separated from the verb.

- (1) a. I believe [**that** John liked linguistics]
b. I believe [John liked linguistics]
c. I believe very strongly [**that** John liked linguistics]
d. * I believe very strongly [John liked linguistics]

There are other environments where null C clauses are disallowed. For instance, they are ruled out in subject position.

- (2) a. [**That** the teacher was lying] was hardly obvious
b. * [The teacher was lying] was hardly obvious (Stowell 1981)

They may not undergo topicalization.

- (3) a. [**That** the teacher was lying], Ben already knew
b. * [The teacher was lying], Ben already knew (Stowell 1981)

They may not appear in the complement position of a noun.

- (4) a. I distrust the claim [**that** Bill had left the party]
b. * I distrust the claim [Bill had left the party] (Stowell 1981)

They may not be the target of Right Node Raising (RNR).²

- (5) a. They suspected, and we believed, [**that** Peter would visit the hospital]
b. * They suspected, and we believed, [Peter would visit the hospital]
(Bošković and Lasnik 2003)

They may not be the remnant of Gapping.

- (6) a. Mary believed that Peter finished school and Bill [**that** Peter got a job]
b. * Mary believed Peter finished school and Bill [Peter got a job]
(Bošković and Lasnik 2003)

² Some speakers find (5)a and (5)b equally acceptable. However, it is noteworthy that for these speakers, the length (i.e., duration) of the pause that occurs between the second conjunct and the shared material is considerably longer in (5)b than in (5)a. I take this to indicate that what is involved in (5)b for these speakers is not a genuine instance of RNR. Rather, following a suggestion by Željko Bošković (p.c.), I assume that for these speakers, the clause that follows the second conjunct in (5)b is actually a matrix clause, which does not require an overt C, and that the preceding coordinated structure is treated as an adsentential. It may also be the case that for some speakers, who accept (5)b, such constructions involve null complement anaphora (Grimshaw 1979), not RNR. In what follows, I will focus on the pattern of judgment reported in (5)b, which I assume instantiates a genuine case of RNR for the speakers in question.

Before continuing to the next section, it is worth pointing out that it is not immediately clear how the null-C-disallowing contexts could be characterized in syntactic terms. In fact, there does not seem to be any syntactic property that is shared by the environments noted above to which we could somehow attribute the impossibility of a null C clause – for instance, (1), (2), (3) involve movement of the relevant CP, which is not the case with (4) and (6) (see Chapters 3-5, where it is argued that RNR involves PF ellipsis, as in Wexler and Culicover 1980); in (2) (and presumably in (5) and (6) as well), the relevant CP appears in an A-position, which is not the case with (3). The relevant environments also do not seem to form a natural class semantically. In addition, considering the often-made proposal that the lexical item *that* is semantically empty (Chomsky 1981, 1991, Lasnik and Saito 1984, Franks 2005; see also Hegarty 1991), it seems hard to consider semantics to be the decisive factor in determining the alternation between an overt C and a null C. Keeping this in mind, I will briefly review in the next section how previous approaches tried to solve the problem in question.

3. Previous Approaches

As pointed out at the end of the previous section, it is not quite clear what the null-C-disallowing contexts have in common. There do not seem to be any obvious syntactic or semantic properties shared by these contexts to which we could attribute the deviance associated with the occurrence of a null C clause. As challenging as it is, the distribution of null C clauses has received several rather different analyses. In this section, I will briefly review the analyses advocated by Stowell (1981), Webelhuth (1992), Pesetsky and Torrego (2001), and Bošković and Lasnik (2003). (In so doing, I will not be concerned with providing a detailed critique of these analyses. See Bošković and Lasnik 2003, Epstein, Pires, and Seely 2005, and An 2007a, for relevant discussion).

3.1. Stowell 1981

Stowell (1981) presents an extensive discussion of the distribution of null C clauses under the GB framework, where he tries to capture the commonality among the null-C-disallowing contexts in syntactic terms. More specifically, Stowell argues that the ungrammaticality of the relevant null C clauses is due to a violation of the ECP, which

requires all empty categories, including the null C, to be properly governed.³ Under this analysis, sentences like (3)b, repeated below, are correctly predicted to be ungrammatical since the null C cannot be properly governed.

- (3) b. * [\emptyset_c the teacher was lying], Ben already knew

It is easy to see how this account extends to cases like (1) and (2), the null C being governed by the matrix predicate in (1)b, but not (1)d and (2)b.⁴

Note however that under the current minimalist framework, the ECP analysis cannot remain as is, since the notion of government has been abandoned, which makes it necessary to reformulate Stowell's insight in different terms. Moreover, even if we somehow preserve the ECP, the ECP account faces empirical problems. For instance, considering the ungrammaticality of (2)b, it is not clear how the null Cs in (7) can be properly governed.

- (7) a. [What \emptyset_c John likes] is apples (Bošković 1997:182)

- b. The child [\emptyset_c Alexis was waiting for] was lost

(Bošković and Lasnik 2003:535)

In this particular case, we might be able to get around the problem by stipulating that the null Cs in (7) are somehow licensed by spec-head agreement with the wh-phrase and the

³ Some of the environments that do not allow null C clauses, e.g., extraposition, Gapping, and RNR, are actually not included in Stowell's (1981) discussion.

⁴ As for noun complement clauses, as in (4), Stowell assumes that the head noun and the CP are in an apposition relation, where no thematic relation is established. This means that the complement clause is in effect an adjunct, into which government does not obtain.

relativization operator respectively à la Rizzi (1990) (see Bošković 1997). However, Bošković and Lasnik point out that RNR sentences like (5)b still raise a potential problem for the ECP analysis, if RNR involves PF deletion, as proposed by Wexler and Culicover (1980) (see Chapters 3-5 for evidence to this effect). The relevant structure of (5)b under the PF deletion analysis is given in (8).

- (8) They suspected [\emptyset_c ~~Peter would visit the hospital~~]
and we believed [\emptyset_c Peter would visit the hospital]

In (8), the null C in the second conjunct should be properly governed by the verb (cf. (1)b). Bošković and Lasnik (2003:530) observe that RNRed clauses are not barriers to government, based on the fact that they allow extraction. Note that even an adjunct can be extracted out of a RNRed clause.

- (9) a. Who_i did they believe, and Mary claim, [that Peter had murdered t_i]?
b. How_i did they believe, and Mary claim, [that Peter had murdered John t_i]?

Hence, the sentence is incorrectly predicted to be grammatical under the ECP analysis.

3.2. Webelhuth 1992

Webelhuth presents an analysis of the complementizer drop phenomenon in the context of Germanic languages, covering German, Dutch, Swedish, Danish, Norwegian, Icelandic, and English. Like that of Stowell's, Webelhuth's analysis can be considered a pure syntactic approach to the phenomenon in question. The gist of Webelhuth's analysis can be summarized as in (10).

- (10) a. *That*-clauses are [+N], while IPs are [+V].
b. *That*-less clauses are IPs.

Here, the assumption that *that*-clauses are specified as [+N] stems from the observation that the complementizer *that* is etymologically related to the demonstrative *that*, which is nominal (see also Bošković 1995, Stepanov 2001 for relevant discussion). The assumption that IPs are specified as [+V] is based on the fact that they are headed by elements having to do with verbs (or, say, [+V] elements).

Based on this, Webelhuth proposes the condition in (11) to explain why *that*-less clauses are excluded in subject and topic positions. One crucial ingredient here is the additional assumption that members of a chain must be identical with respect to their featural composition. Given this, if a *that*-less clause, which according to (10)b is an IP, undergoes movement, its trace will be [+V]. However, such a configuration goes against (11).

(11) *The Sentence Trace Universal*

Sentences can only bind DP-traces, i.e., traces with the categorial specification [+N, -V]. (Webelhuth 1992:94)

While the assumptions Webelhuth adopts are debatable, I will not be concerned with evaluating the validity of these assumptions. Note that the prerequisite for his analysis is that the relevant clauses undergo movement. Otherwise, there is no reason to consider the featural composition of their traces in the first place. However, as shown in Section 2, not all null-C-disallowing contexts involve movement of the relevant CPs (see (5) and (6)). Hence, Webelhuth's account cannot be extended to all null-C-disallowing contexts.

3.3. Pesetsky and Torrego 2001

In Pesetsky and Torrego's (2001) analysis, a feature checking relation between C and T plays a crucial role. Their analysis is based on a set of new ideas, discussing details of which would take us unnecessarily too far. Hence, I will simplify their system in a way that does not affect the key aspects of their analysis. First, it is assumed that nominative Case is an uninterpretable T feature (uT) on D. It is also assumed that not just D, but also T and C can have a T feature, the difference being that the T feature on D and C is

uninterpretable, while that on T is interpretable (iT). The uT on C can be checked either by moving the subject DP to SpecCP or by T-to-C movement. Crucially, it is assumed that *that* is an overt realization of the T that has moved to C for D feature checking, i.e., Pesetsky and Torrego adopt a different view on the identity of *that* from usual assumptions. The category C itself is assumed to be always phonologically empty. This is illustrated in (12).⁵ Here, it is assumed that the iT on the moved T does not delete after undergoing checking with the uT on C, since it is interpretable.

- (12) a. Mary expects that Sue will buy the book
 b. ... [CP [T that, iT]_j + [C, ~~uT~~] [IP Sue will]_j buy the book]]

It is important that when there is no *that* in the sentence, the uT on C is checked by movement of the subject to SpecCP. This is illustrated in (13).

- (13) a. Mary expects Sue will buy the book
 b. ... [CP [Sue, ~~uT~~]_j [C, ~~uT~~] [IP t_j will buy the book]]

Given these assumptions, let us see how the analysis extends to the distribution of null C clauses. Consider the data in (14).

- (14) a. [That Sue will buy the book] was expected by everyone
 b. * [Sue will buy the book] was expected by everyone

⁵ Pesetsky and Torrego assume that the relation between *that* and *will* is that of resumption.

(14) involves passivization of a clausal complement. Consider what happens within the relevant CPs here. For instance, in (14)a, T-to-C movement must have taken place, as illustrated in (15).

(15) [CP [that, iT]_j + [C, uT] [IP Sue will_j buy the book]]

On the other hand, in (14)b, since there is no *that* in the CP, the subject must be in SpecCP, as shown in (16).

(16) [CP [Sue, uT]_j [C, uT] [IP t_j will buy the book]]

The derivation goes on to build the matrix clause. Here, (17)a corresponds to (14)a and (17)b to (14)b respectively.

(17) a. [T, EPP] was expected [CP [that, iT]_j + [C, uT] [IP Sue will_j buy the book]]
 b. [T, EPP] was expected [CP [Sue, uT]_j [C, uT] [IP t_j will buy the book]]

It is assumed that the matrix T must attract an element with a T feature in order to check its EPP feature. In (17)a, as a result of T-to-C movement, the head of CP bears an iT. The CP is then moved to the matrix TP, resulting in the structure in (14)a. In (17)b, being uninterpretable, the uT on C and *Sue* are both erased when the CP cycle is completed. Therefore, there is no T feature left within the CP. Hence, the matrix T fails to check its EPP feature, accounting for the ungrammaticality of (14)b.

This is a fairly brief summary of the elaborate system put forth by Pesetsky and Torrego. However, I believe that the gist of their analysis has not been affected by this simplification. The analysis faces several potential problems. First, there is a problem concerning the assumption about T-to-C movement. Recall that the uT on C can be checked by movement of the subject. Hence, the subject must be in SpecCP in *that*-less embedded clauses. Given this, consider (18).

- (18) a. * They_i think that Mary likes each other_i
b. They_i think that each other_i, Mary likes t_i

(18)a is ruled out in the usual way: *each other* is not locally bound. However, if *each other* is topicalized, it becomes close enough to the antecedent in the matrix clause to be locally bound by it, as (18)b shows. Note that *each other* in (18)b is still below the complementizer. Now, consider (19).

- (19) * They_i think each other_i likes Mary

Since there is no *that* in the embedded clause, *each other* must be in SpecCP. If so, *each other* in (19) should be even closer to the antecedent than *each other* in (18)b. Hence, the ungrammaticality of (19) seems unexpected. Notice that it is in principle possible to bind an anaphor in SpecCP, as shown by (20).

- (20) John_i wonders which pictures of himself_i Mary likes

In addition, it seems that this analysis cannot be extended to cover all cases of null-C-disallowing contexts without additional assumptions. For instance, in the case of extraposed CPs, it is not clear how the EPP or nominative Case feature would be made relevant (see (1)c,d).⁶

3.4. Bošković and Lasnik 2003

Essentially following Pesetsky (1992), Bošković and Lasnik (BL) argue that the null C in English is an affix.^{7,8} While Pesetsky instantiated the affixal property by means of syntactic C-to-V movement, BL argue that the null C undergoes PF Merger with a [+V] element under adjacency. Therefore, if the null C is separated from its host, the sentence is ruled out due to a stranded affix. This is illustrated in (21).

- (21) a. I believe [\emptyset_c John liked linguistics]
b. * I believe very strongly [\emptyset_c John liked linguistics]

⁶ It should be pointed out that Pesetsky and Torrego were not primarily concerned with explaining the distribution of null C clauses itself. While it seems unclear how their analysis can be extended to cover other null-C-disallowing contexts, as mentioned in the text, their analysis accounts for a broad range of issues in other areas. Therefore, my criticism here is based on a narrow interpretation of their analysis, which does not necessarily mean that their analysis as a whole should be rejected.

⁷ It is assumed that an overt C, i.e., *that*, is not an affix.

⁸ See also Richards 1999 for an earlier application of Pesetsky's analysis to Tagalog. Portions of Richards's work will appear in a number of places below, providing some important insights for the conclusions drawn in the course of our discussion. See also Bošković 2005a for a revised version of BL's analysis, where a possible resolution of some problems that arise under BL's analysis is presented.

In (21)a, affixation can apply without any problems. The ungrammaticality of (21)b is also expected, since the null C is not adjacent to the verb.⁹ This analysis easily extends to other data discussed earlier. I repeat the relevant examples below.

- (22) a. * [\emptyset_c the teacher was lying] was hardly obvious
b. * [\emptyset_c the teacher was lying], Ben already knew
c. * I distrust [_{NP} the claim [\emptyset_c Bill had left the party]]
d. * They suspected, and we believed, [\emptyset_c Peter would visit the hospital]
e. * Mary believed that Peter finished school and Bill [\emptyset_c Peter got a job]

In (22)a-c, the null C is not adjacent to a verb. Hence, the ungrammaticality follows. (22)d requires an additional assumption – that is, following Bošković (2001), BL assume that RNRed clauses are parsed as separate intonational phrases and that an intonational phrase boundary blocks affixation. If that is correct, then affixation will fail in (22)d due to an intervening intonational phrase boundary between *believed* and the null C. In (22)e, after the application of Gapping, there is no verb that can host the null C in the second conjunct.

One important aspect of BL's analysis worth emphasizing is the fact that it locates the governing principle for the distribution of null C clauses not in the syntax proper, but in the interface between syntax and phonology, which will also be done in the analysis proposed below. However, as I show below, even this analysis does not capture

⁹ In (21)b, affixation of the null C fails either because of the intervening adjunct or an intervening pause. For arguments that adjuncts block affix hopping, see Bošković 2004c.

a broader generalization proposed in Section 4 and the distribution of categories other than CP, which are not likely to involve affixation, as discussed in Section 5.3.2. I will argue there that these properties are problematic for not just the null affix analysis, but also other (non-ECP) analyses reviewed above. See also An 2007a for other problems with Bošković and Lasnik's analysis.

4. Novel Generalizations and the Ban on Null Edge

In this and the next section, I will propose an alternative account of the distribution of null C clauses. The gist of the analysis, which we will see in detail in the next section, will be that the problem with the relevant null C clauses stems from a mismatch between the boundary of the CP and the boundary of a prosodic category assigned to the CP. In other words, the relevant CPs are ruled out due to a failure of boundary alignment, which I argue is part of the process of syntax-prosody mapping.

As an important empirical basis for the analysis, I will propose in this section two novel generalizations about the relevant null C clauses, suggesting that a shift of focus is necessary in order to achieve a better understanding of the relevant facts.

First, I will argue that not only the phonological content of C, but also that of SpecCP is relevant in determining the status of the relevant CPs. To be more concrete, I will show that a phonologically overt SpecCP has the same ameliorating effect as an overt C.

Second, I will argue that attention should be paid to the prosodic properties of the relevant null C clauses. It is standardly assumed that elements appearing in certain syntactic contexts are obligatorily parsed as independent intonational phrases (I-phrases), set off from the rest of the sentence prosodically. These contexts include, but are not limited to, root clauses, parentheticals, nonrestrictive relative clauses, tag questions, vocatives, and certain moved elements (Selkirk 1978, 1984, 1986, Nespor and Vogel 1986, Schütze 1994, Bošković 2001, among others). Crucially, I will show that the relevant null C clauses are all obligatorily parsed as separate I-phrases. (For convenience, I will refer to the contexts where an element is obligatorily parsed as a separate I-phrase as OBI (obligatory I-phrase) contexts.) Note, however, that what will be important for the analysis proposed below is that the relevant null C clauses are simply parsed as separate prosodic constituents. The exact categorial status of the constituent will not be crucial.

I will discuss in Section 5 how these novel generalizations interact to result in the observed distribution of null C clauses.

4.1. The Ban on Null SpecCP and C

Note that one property common to all of the previous analyses discussed in section 3 is that the well-formedness of null C clauses is attributed to some property of null C – for instance, satisfaction of the ECP or PF affixation. In this section, however, I will start with the suspicion that it is not sufficient to just look at the properties of null C alone (see also Bošković 2005). Rather I will argue that we have to look at the properties of SpecCP as well. In other words, not only the phonological content of C, but also that of SpecCP is relevant in determining the status of CPs in certain syntactic positions. For convenience, I repeat the relevant null-C-disallowing contexts below.¹⁰

- (23)
- a. * I believe very strongly [\emptyset_c John liked linguistics]
 - b. * [\emptyset_c the teacher was lying] was hardly obvious
 - c. * [\emptyset_c the teacher was lying], Ben already knew
 - d. * I distrust the claim [\emptyset_c Bill had left the party]
 - e. * They suspected, and we believed, [\emptyset_c Peter would visit the hospital]
 - f. * Mary believed that Peter finished school and Bill [\emptyset_c Peter got a job]

Based on this, let us adopt the tentative generalization in (24) for ease of exposition.

¹⁰ There is some speaker variation here, especially with respect to the exact degree of ungrammaticality, some examples in (23) being worse than others. I will abstract away from this variation here and focus on the clear contrast between CPs with an overt C and those with a null C.

(24) ***The Ban on Null C***

Clauses in extraposed position, subject position, topic position, complement position of a noun, target position of RNR and Gapping may not be headed by a null C.

Now, let us consider the CPs in (25).

- (25) a. the child [\emptyset_c Mary was waiting for]
b. the child [\emptyset_{spec} \emptyset_c Mary was waiting for]
c. the train [\emptyset_{spec} that [IP Mary was waiting for]
d. the train [\emptyset_{spec} \emptyset_c Mary was waiting for]

Here, the relevant CP is a restrictive relative clause. (25)a and (25)c show that in principle, a relative clause CP can have an overt SpecCP or an overt C. (25)b and (25)d show that these positions can actually be null at the same time.¹¹ Note that in (25), the CPs are adjacent to the head noun. Interestingly, a different pattern emerges in extraposition contexts. Note that as is well-known, relative clause CPs can be separated from their head noun by extraposition. In such contexts, one of the two positions, SpecCP or C, must be overt. This is illustrated in (26).

¹¹ One point of clarification: SpecCP in (25)b and (25)d may not be completely empty. It is possible that there is a null relativization operator (OP) in that position, as I actually assume to be the case below. What I am trying to illustrate here is that there is no phonologically overt material in that position.

- (26) a. I saw the child yesterday [who \emptyset_c Mary was waiting for]
 b. ?? I saw the child yesterday [\emptyset_{spec} \emptyset_c Mary was waiting for]
 c. I saw the train yesterday [\emptyset_{spec} that Mary was waiting for]
 d. ?? I saw the train yesterday [\emptyset_{spec} \emptyset_c Mary was waiting for]

Note that the contrast between (26)c and (26)d basically replicates the pattern of null C clauses in that an overt C saves the ungrammatical null C clause, just as it does for (23)a.

A crucial property is illustrated by (26)a,b. That is, given the ungrammaticality of the extraposed null C clause in (23)a, the question arises as to why there is a contrast between (26)a and (26)b, where the relative clause CPs are both headed by a null C. Here, the only difference between the two sentences is that in the grammatical sentence, SpecCP is occupied by an overt material. This clearly indicates that an overt SpecCP can induce the same amelioration effect as an overt C in null-C-disallowing contexts.

There is further evidence that this conclusion is on the right track. Consider (27).¹²

- (27) [What \emptyset_c he likes] is known to everyone

¹² Bošković (1997) also noted this property based on the data in (i). Bošković speculated that Spec-Head agreement in CP has a saving effect, but left open the exact nature of this property.

- (i) a.* The person stood up [Op John criticized]
 b.* The person stood up [Op t criticized John]
 c. The person stood up [who/that t criticized John]
 d. The person stood up [who/that John criticized]

To deal with examples like (27), BL stipulate that EPP Cs, i.e., Cs that undergo Spec-Head agreement, are not affixes. (Only Cs that do not undergo SHA are affixes.) Even if we put aside the stipulatory nature of this account, the account cannot be extended to cases like (26)b and (26)d, since the relevant C in these sentences must be an EPP C, which is not an affix. Therefore, I will not discuss this account further below.

Bošković (2005) argues that the null C is simply an enclitic, which allows him to account for (26)b,d. That is, given that the extraposed clause is parsed as a separate I-phrase, as discussed in Section 4.2, an I-phrase boundary will block encliticization of the null C. However, this account cannot be extended to similar cases regarding other categories that are clearly not affixes, as discussed in Section 5.3.2.

Here, a CP headed by a null C appears in subject position. Recall that null C clauses are normally not allowed in subject position, as shown in (28).

- (28) a. * [\emptyset_c he likes apples] is known to everyone
b. [That he likes apples] is known to everyone

Again, (27) shows clearly that an overt SpecCP can make a null C clause legitimate in null-C-disallowing contexts. Hence, *what* in (27) is basically doing the same work as *that* in (28)b.

The point can be replicated using RNR and Gapping constructions (see (23)e,f). If a null C clause appearing in RNR or Gapping constructions has an overt SpecCP, the CP becomes a legitimate target of RNR and Gapping. This is illustrated by (29) and (30) respectively.

(29) The policeman asked, but the detective didn't ask, [where \emptyset_c Tom lived]

(30) The policeman asked when Tom finished his work and the detective [where \emptyset_c he lived]

Note that in all of the ungrammatical examples in (23), there is no overt material in SpecCP (see footnote 12 to see how BL deal with this property). Given this, I propose to replace the tentative generalization in (24) with the revised version in (31). It is easy to

see that this broader generalization correctly captures the (un)grammaticality of all the examples discussed so far.

(31) ***The Ban on Null SpecCP and C***

Clauses in extraposed position, subject position, topic position, complement position of a noun, target position of RNR and Gapping may not have a null SpecCP and null C at the same time.

To recapitulate, I have argued in this section that the phonological content of SpecCP as well as that of C matters in determining the distribution of null C clauses. I have shown that even when a CP in a typical null-C-disallowing context is headed a null C, the sentence can still be saved by an overt SpecCP. The conclusion from this section is that there are actually two ways to save a CP in null-C-disallowing contexts: an overt SpecCP or an overt C. The next question that arises naturally is what is special about these null-C-disallowing contexts. I will address it in the next section.

4.2. Obligatory Intonational Phrases

As mentioned above, certain elements are obligatorily parsed as separate I-phrases. These include root clauses, parentheticals, appositives, tag questions, vocatives, preposed adverbials, and certain moved elements (Cooper and Paccia-Cooper 1980, Selkirk 1978,

1984, 1986, Nespor and Vogel 1986, Schütze 1994, Bošković 2001). (I will refer to these as OBI contexts.) I will argue in this section that the null-C-disallowing contexts also belong to OBI contexts. In other words, I argue that if a CP appears in extraposed position, subject position, topic position, complement position of a noun, and the target position of RNR and Gapping, it must be parsed as a separate I-phrase.¹³ I will provide cross-linguistics data from Brazilian Portuguese, English, Italian, Korean, Serbo-Croatian, and Tagalog below to support this idea.

In the course of the discussion below, I will frequently make reference to Serbo-Croatian (SC) second position clitics which have received a lot of attention in the literature (Browne 1975, Radanović-Kocić 1988, 1996, and Zec and Inkelas 1990, Halpern 1992, Ćavar and Wilder 1993, Schütze 1994, Wilder and Ćavar 1994, Progovac 1996, Franks 1998, Stjepanović 1999, Bošković 2001). This is because the behavior of SC second position clitics is particularly useful in that it shows the interaction between syntax and phonology in a straightforward way. In particular, I adopt the generalization in (32), extensively argued for by Radanović-Kocić (1988) and Bošković (1995, 2001).

(32) SC clitics occur in the second position of their I-phrase.

The crucial assumption underlying this generalization is that an I-phrase boundary blocks cliticization. Therefore, if an enclitic immediately follows an I-phrase boundary, it will not be able to cliticize onto the preceding element.

¹³ As mentioned at the outset of this section, what will matter for my analysis below is that the relevant clauses are separate prosodic constituents, i.e., their precise identity is not really important. Note, however, that given that we are concerned with full clauses here, the categorial status of the prosodic constituents is most likely to be an I-phrase. In fact, the data examined below suggest that we are indeed dealing here with I-phrases.

Before examining OBI contexts, let me briefly illustrate the validity of (32), based on the data in (33) and (34).

(33) a. Ja, tvoya mama, obećala sam ti sladoled (SC)

I your mother promised am you.dat ice cream

‘I, your mother, promised you an ice cream.’ (Bošković 2001:64)

b. * Ja, tvoya mama, sam ti obećala sladoled

I your mother am you.dat promised ice cream

c. * Ja obećala sam ti sladoled

I promised am you.dat ice cream

d. Ja sam ti obećala sladoled

I am you.dat promised ice cream

(34) a. U Rio de Žaneiru ostali su dve godine (SC)

in Rio de Janeiro stayed are two years

‘In Rio (de Janeiro) they stayed two years.’

b. * U Riju ostali su dve godine

in Rio stayed are two years (Zec and Inkelas 1990)

Sentences in (33) contain an appositive phrase. As mentioned above, appositives always constitute separate I-phrases. Therefore, the clitics in (33)a are correctly placed in the second position of their I-phrase, starting from *obećala*. The ungrammaticality of (33)b, (33)c is also correctly captured by (32), since the clitics are not in the second position of

their I-phrase. The same holds for the grammaticality of (33)d, where the clitics occupy the second position of their I-phrase. In (34)a, clitic placement is delayed, i.e., the position of the clitic does not correspond to the second position of the sentence, in apparent violation of (32). However, this is allowed since the fronted heavy PP is parsed as a separate I-phrase (Bošković 1995:264). (Bošković (1995:264, fn.27) notes that a pause has to follow the fronted PP in (34)a and that the sentence is actually bad without a pause in that position.) When the fronted phrase (probably via scrambling) is phonologically light, i.e., if it does not constitute a separate I-phrase, as in (34)b, delaying clitic placement will violate (32), as the ungrammaticality of the sentence confirms.

Given this, I will adopt the generalization in (32) without further discussion. See also Radanović-Kocić 1988, 1996, Schütze 1994, and Bošković 1995, 2001 for relevant discussion.

4.2.1. Clausal Subjects

Selkirk (1978) notes that clausal subjects carry particular intonational melody and have a characteristic pre-pausal lengthening at the end, which she assumes indicates that they are parsed as separate I-phrases. In this section, I will present additional data from a number of languages that indicate that clausal subjects are obligatorily parsed as separate I-phrases.

(35) illustrates the distribution of SC second position clitics with respect to a clausal subject.

- (35) a. ?* [Da Ivan voli Mariju] # **mi je** jasno
that Ivan loves Marija me is clear
- b. [Da Ivan voli Mariju] # jasno **mi je**
that Ivan loves Marija clear me is
- ‘That Ivan loves Marija is clear to me’ (Browne 1975:121)

Note that the clitics cannot immediately follow the clausal subject, as the ungrammaticality of (35)a shows, while the sentence is grammatical if the clitics follow one element after the clausal subject, i.e., if they occur in the second position following the clausal subject. Given the generalization in (32), the contrast between (35)a and (35)b suggests that there is an I-phrase boundary following the clausal subject (Bošković 2001, Schütze 1994).¹⁴ Note crucially that if there were an option of not parsing the subject clause in (35)a as a separate I-phrase, we would not be able to capture the ungrammaticality of the sentence. Therefore, I-phrasing for the clausal subject must be obligatory.

According to Nespor and Vogel (1986), Gorgia Toscana (GT) in Italian provides further evidence that clausal subjects (or heavy subjects, more generally) are parsed as separate I-phrases. GT is a rule of Tuscan Italian that aspirates voiceless stops intervocally, as illustrated in (36).

¹⁴ There is no inherent prohibition against placing the clitics after the subject, if the latter is an ordinary NP/DP that is not heavy. Therefore, the ungrammaticality of (35)a does not directly stem from the fact that the clitics are placed after the subject.

(i) Taj pesnik **mi je** napisao knjigu
that poet me is written book
 ‘That poet wrote me a book.’ (Schütze 1994)

- (36) Gorgia Toscana
[-cont, -voice, -del rel] → [+cont] / [-cons] __ [-cons]

(adapted from Nespor and Vogel 1986:207)

An example of GT is given in (37). (Bold-faced letters indicate a segment that is affected by GT.)

- (37) # Gli uccelli **costruiscono** I nidi #
'Birds construct nests'

What is relevant for our purposes is that GT is sensitive to I-phrase boundaries, i.e., it cannot apply across an I-phrase boundary. This is illustrated by (38).

- (38) # Certi tipi di uccelli trovati solo in Australia # costruiscono dei nidi
complicatissimi a due piani #
'Certain types of birds found only in Australia construct very complicated
two-story nests' (Nespor and Vogel 1986:208)

In (38), while the underlined segment c appears to be in an environment for GT (cf. (37)), it is actually not subject to GT. Nespor and Vogel (1986:208) argue that this is due to an intervening I-phrase boundary. Note that in (38), the segment in question immediately follows the subject, which is heavy enough to be parsed as a separate I-phrase. Although

(38) does not precisely involve a clausal subject, the observation seems sufficient to suggest that clausal subjects are parsed as separate prosodic constituents.

Based on these data, I conclude that clausal subjects are obligatorily parsed as separate I-phrases.

4.2.2. Topicalization

It is a usual assumption that topicalized elements are parsed as separate I-phrases. For instance, Cooper and Paccia-Cooper (1980) observe that typically, the last segment of a topicalized constituent manifests lengthening effect and is followed by a pause, which reflects the status of the topicalized element as an I-phrase. Moreover, recall that in the previous section, I have shown that clausal subjects are obligatorily parsed as separate I-phrases. Given this, it is very plausible that clausal topics are parsed as separate I-phrases as well. It is also noteworthy that Stowell (1981) and Koster (1978) argue that clausal subjects are in fact topics. Below, I will also present data from Korean that suggest that topics are generally parsed as separate I-phrases.

Cho (1990) discusses obstruent voicing (henceforth, OV) in Korean, where certain intervocalic [-continuant] obstruents become voiced, as shown in (39) (see also Han 1996).

(39) Obstruent Voicing

[-cont, -asp, -tense] → [+voice] / [+voice] __ [+voice]

(40) illustrates a number of contexts where OV is possible.

- (40) a. apeci → abeji (phonological word)
father
- b. ku cip → kujip (determiner-noun)
the house
- c. kulim-ul pota → kurimul boda (object-verb)
picture-acc see
- d. capa pota → caba boda (verb-verb)
hold try
'try holding'
- e. motun kulim → modun gurim (adjective-noun)
every picture

Significantly, Cho notes that OV is not possible between a topicalized element and the element that follows it. (% means that the expected OVED segment does not surface.)

- (41) sakwa-nun pelinta → sakwa-nun pelinta
apple-top throw-away (% b-)
'Apples, (we) throw away.'

I take this to indicate that topicalized constituents are parsed as a separate I-phrase, subsequently blocking the application of OV.¹⁵

4.2.3. Noun Complement Clauses

In this section, I will examine the behavior of noun complement clauses and suggest that they are also obligatorily parsed as separate prosodic constituents. As mentioned earlier, Stowell (1981) suggests that noun complement clauses should be analyzed as appositive modifiers. Here, we do not necessarily have to be committed to Stowell's view, but his proposal is consistent with our goal since it is a standard assumption that appositive modifiers are obligatorily parsed as separate I-phrases. With this in mind, let us consider the SC data in (42).

(42) a. *Želja # [dati joj ružu] ... (bila je velika)*¹⁶

wish give her rose been is great

‘The desire to give here a rose was great’

b. * *Želja # [joj dati ružu] ...* (Ćavar and Wilder 1993:11)

¹⁵ There may be a potential problem concerning the validity of OV as independent evidence for the I-phrase status of topicalized elements. That is, OV is blocked between subject and verb, even when the subject is a simple NP/DP.

(i) *kæ-ka canta → kæga canda*
dog-nom sleeps (%z-)

‘The dog is sleeping.’

(Han 1996:41)

Given this, there are two directions to explore: either all subjects are parsed as separate I-phrases in Korean or OV can be blocked by prosodic categories that are smaller than I-phrases. However, given that OV is possible across a relative clause and its head noun, as shown in (50) below, it seems to me that the latter may not be correct. However, I will put aside explorations of the nature of OV for future research. In any case, I believe that it is uncontroversial that topicalized clauses are parsed as separate I-phrases.

¹⁶ One potentially interfering factor is that (42) involves a nonfinite noun complement clause.

As the contrast between (42)a and (42)b shows, the clitic *joj* that appears within the noun complement clause cannot be the first element within the clause. Rather, it has to follow another element that occupies the first position within the clausal complement. This is correctly predicted by (32) if we assume that the noun complement clause is parsed as a separate I-phrase. Bošković (2001) also notes that a pause has to follow the nominal head in constructions like (42), which is usually assumed to correlate with a prosodic boundary.

According to Radanović-Kocić (1988, 1996), degemination is not possible across an I-phrase boundary in SC. This is illustrated by the contrast in (43), where (43)b involves a heavy fronted constituent, which is parsed as a separate I-phrase.

- (43) a. Moj jorgan je od perja
My comforter is of down
 /mojorgan/
- b. Za prošlogodišnji Prvi maj # Janko je otišao u Paris
for last year's first May Janko is gone to Paris
 'For last year's May Day, Janko went to Paris.'
 /majjanko/ */majanko/ (Bošković 2001:71)

An I-phrase boundary between *maj* and *Janko* blocks degemination. Based on this, Bošković (2001) also notes that degemination is blocked between a noun and its clausal complement. He argues that the impossibility of degemination in this case indicates that there is an I-phrase boundary following the noun head. He further argues that this is

correctly predicted if we assume that the clausal complement is parsed as a separate I-phrase.

- (44) Pokušaj # [juriti ga peronom] je uzaludan
attempt chase him platform-Inst is futile
/pokušajjuriti/ */pokušajuriti/
‘The attempt to chase him down the platform is futile’

(Bošković 2001:71)

According to Richards (1999), Tagalog has affixal and non-affixal complementizers – namely, *-ng* and *na*, respectively. Interestingly, only the non-affixal complementizer *na* is allowed to appear in noun complement clauses, i.e., affixation of *-ng* is not possible across a noun complement clause boundary. This is shown in (45).

- (45) a. ang balita [**na** kinain ni Juan ang tambakol]
news that ate Juan mackerel
‘the news that Juan ate the mackerel.’
b. * ang balita [**-ng** kinain ni Juan ang tambakol]
news that ate Juan mackerel

(Richards 1999)

Richards argues that the fact that the affixal C *-ng* cannot head the clause in (45)b is due to an I-phrase boundary between the head noun and its clausal complement.¹⁷

A similar phenomenon is found in Brazilian Portuguese. For instance, according to Guimarães (1999), a proclitic article cannot cliticize across a CP boundary if the CP is a complement of a noun.

- (46) * **o-** [de que minha namorada me abandonou]
the of that my girlfriend me abandoned

This is expected if we assume that noun complement clauses are parsed as separate I-phrases.

Before continuing further, I would like to digress a little bit in the next two subsections to compare noun complement clauses with restrictive relative clauses and clausal complements of verbs, which will help us better understand the nature of the licensing mechanism for null C clauses.

4.2.3.1. Restrictive Relative Clauses

In the previous section, I have argued that noun complement clauses are obligatorily parsed as separate I-phrases. The question arises naturally as to how restrictive relative clauses behave, given that relative clauses also involve a CP associated with a noun. The usual assumption that relative clauses are adjuncts also makes us expect that they should pattern with noun complement clauses, i.e., they should be parsed as separate I-phrases.

¹⁷ Recall also that Bošković and Lasnik (2003) and Bošković (2005a) also assume that affixation cannot apply across an I-phrase boundary.

As discussed in Section 4.2.2, GT, i.e., intervocalic aspiration of voiceless stop sounds in Tuscan Italian, cannot apply across an I-phrase boundary. It turns out that GT is possible across a relative clause, as shown in (49).¹⁹

- (49) Questo è il gatto [che ha mangiato il topo [che ha mangiato
this is the cat that ate the mouse that ate
 il formaggio]]
the cheese
 ‘This is the cat that ate the mouse that ate the cheese’
 (Nespor and Vogel 1986)

In addition, OV in Korean, discussed in Section 4.2.2, is also possible between a head noun and its relative clause, as Cho (1990) observes (see also footnote 15).

- (50) a. ku-ka mek-nun pap → ku-ga mengnun **bap**
he-nom eat-mod rice
 ‘The rice that he is eating’
 b. us-nun koyangi → us-nun **goyangi**
smile-mod cat
 ‘A cat that is smiling’

¹⁹ The discussion would have been more complete if it was possible to examine how GT works in noun complement clauses. Regrettably, I was not able to obtain any relevant data from the literature.

I have shown in this section that restrictive relative clauses behave differently from noun complement clauses despite their structural similarity. That is, while noun complement clauses have to be parsed as a separate I-phrases, relative clauses do not have to, allowing several phonological process to take place across their boundaries.²⁰

4.2.3.2. Verb Complement Clauses

In this subsection, I will discuss how verb complement clauses behave with respect to prosodic phrasing in comparison with noun complement clauses. The conclusion will be basically that they also behave differently from noun complement clauses – verb complement clauses are only optionally parsed as separate I-phrases.²¹

The Tagalog data in (51) shows that the affixal and non-affixal complementizers, i.e., *-ng* and *na*, respectively, can freely appear in verb complement clauses (cf. (45)b, (47)). This suggests that the clause in question does not have to form a separate I-phrase.

- (51) a. Hindi niya sinab**ing** kinain niya ang tambakol
not he said-that ate he mackerel
'He didn't say that he ate the mackerel'

²⁰ Note that the discussion in this section implies that with respect to prosodic phrasing, relative clauses have a closer relation to their head noun than clausal complements do. In this respect, it is noteworthy that relative clauses are also syntactically dependent on the head noun in that they contain a gap that is associated with the head noun unlike noun complement clauses. For instance, it is often argued that the head noun of a relative clause raises from inside the relative clause (Bianchi 2000, Kayne 1994). I speculate that the relevant prosodic property of relative clauses noted in the text may be related to this syntactic dependency.

²¹ Recall that Stowell (1981) argues that noun complement clauses are adjuncts. Given this, the fact that verb complement clauses behave differently from noun complement clauses appears less surprising, because verb complement clauses are clearly arguments – e.g. extraction is possible from verb complement clauses, but not from noun complement clauses.

- b. Hindi niya sinabi **na** kinain niya ang tambakol
not he said that ate he mackerel
 ‘He didn’t say that he ate the mackerel.’ (Richards 1999)

The discussion in Section 4.2.3.1 and the data in (51) suggest that relative clauses and verb complement clauses do not have to form separate I-phrases. But it is noteworthy that in some languages, these clauses may be forced to form separate I-phrases. This is the case in SC, as illustrated by (52) and (53).

- (52) a. * dete što otac **ga** voli
child that father him loves
 b. dete što **ga** otac voli
child that him father loves
 ‘The child that father loves’

- (53) a. * Mama odgovara da one **su** u ormaru
Mama answers that they are in wardrobe
 b. Mama odgovara da **su** one u ormaru
Mama answers that are they in wardrobe
 ‘Mama answers that they are in the wardrobe’ (Schütze 1994:467)

Given the generalization in (32), we are led to the conclusion here that an I-phrase starts with *što* in (52) and *da* in (53), i.e., the relative clause and the verb complement clause in

(52) and (53) form separate I-phrases. I conclude that formation of a separate prosodic constituent for restrictive relative clauses and verb complement clauses is in principle optional unlike noun complement clauses, which are obligatorily parsed as separate I-phrases.

4.2.4. Extraposition, RNR, and Gapping

Nespor and Vogel (1986:188) argue that extraposed elements obligatorily constitute separate I-phrases. Zec and Inkelas (1990) also note that extraposed elements are characterized by association with special intonational effects, which are correlates of I-phrases. In addition, it is well-known that extraposed elements are typically preceded by a pause and are often subject to a heaviness requirement, which are characteristic of I-phrases (Chen 1990, Hale and Selkirk 1987, Nespor and Vogel 1986, Selkirk 1978, Stowell 1981, Zec and Inkelas 1990).

As for RNR and Gapping, one can find numerous comments in the literature that CPs that are left by Gapping or those that undergo RNR are obligatorily parsed as separate I-phrases. More concrete evidence that suggests that RNRed elements have to form separate prosodic constituents comes from the contrast between (54) and (55).

- (54) a. * John wrote an interesting, and Elvira wrote a brilliant, thesis on
 nightingales (Swingle 1993)
- b. ? John wrote a mildly *INTERESTING*, but Elvira wrote a truly
 BRILLIANT, thesis on nightingales (McCawley 1988)

- (55) a. (?) John said *SIX*, but Mary said *FIVE*, cars from Europe were stolen
 b. (?) I think *MARY's*, but he thinks *SUSAN's*, father is sick

Note that what is RNRed in these sentences is an NP, excluding the head of the DP and an adjectival modifier.²² Under normal circumstances, these elements, i.e., articles and pronominal modifiers, are parsed into the same prosodic constituent with the NP they modify. Given this, Swingle (1993) attributes the ungrammaticality of (54)a to the fact that an I-phrase that comprises the whole DP, e.g., *a brilliant thesis on nightingales*, is broken up by RNR. As for the ameliorating effect in (54)b and (55), the contrastive stress on the italicized elements has the effect of prosodically severing up the DP, allowing the shared portion to stand on its own as a separate I-phrase.²³ What underlies this account is the assumption that the shared material in RNR must be parsed as a separate I-phrase (see

²² Notice that such structures provide evidence against an analysis of RNR on which the shared elements undergo movement, because quite generally movement of an NP may not strand a D. See Section 2 of Chapter 3 for further discussion and references.

²³ Note that, as in (54), the sentences in (55) also get degraded if the capitalized elements do not receive heavy stress. There is also independent evidence that heavy contrastive stress facilitates insertion of an I-phrase boundary. For instance, given the generalization in (32), the contrast between (i)a and (i)b indicates that contrastive focus on *Petru* in (i)b inserts an I-phrase boundary after it. *Petru* is also followed by a pause, which further confirms the point. (Italicized capitals indicate contrastively focused element.)

- (i) a.* *Petru*, Marija ga predstavlj^a.
Peter-dat Marija-nom him introduces
 b. *PETRU*, Marija ga predstavlj^a.

The same point is shown by the improvement of the ungrammatical sentence in (34)b, repeated below, with contrastive stress on *U Riju*. Here, the clitic does not occupy the second position within its I-phrase, which leads to the ungrammaticality.

- (ii) * *U Riju* ostali su dve godine
in Rio stayed are two years
 'In Rio, they stayed two years.'

But, with contrastive stress on *U Riju*, the same sentence becomes perfectly grammatical, which suggests that an I-phrase boundary is inserted following the stressed element, as indicated by #.

- (iii) *URIJU* # ostali su dve godine

Given this, we can conclude that in (54)b and (55), heavy contrastive stress on the relevant elements leads to insertion of an I-phrase boundary after them, forcing what follows to be an independent I-phrase as well.

Chapter 5 for further discussion). It is also noteworthy that the shared material in RNR is typically preceded by a pause and has a characteristic intonational contour, which are standardly assumed to correlate with I-phrases.

Finally, I assume that when the verb is removed by Gapping, the remaining complement clause is parsed as a separate I-phrase. For instance, Cooper and Paccia-Cooper (1980, ch.4.) showed based on an experimental study that there are systematic lengthening and pausing effects, which correlate with I-phrase boundaries, immediately preceding the deletion site in Gapping. They (ch.6.) also observe that palatalization is blocked between remnants of Gapping, as in (56)a, which they argue correlates with the presence of a prosodic break, i.e., I-phase boundary, between the two remnants in the second conjunct. ((56)b shows palatalization in a phonetically identical environment.)

- (56) a. The seamstress wove your hat and the maid your scarf. [d]
b. The seamstress wove your hat and then made your scarf. [ʒ]

Given this, I conclude that remnants of Gapping are parsed as separate I-phrases.

4.3. Summary

In this section, I have proposed two novel generalizations about the relevant null C clauses. First, while it is the phonological content of C in the null-C-disallowing contexts

that has initially attracted much attention in the literature, I have argued that the phonological content of SpecCP also deserves attention. To this effect, I have shown that there is no overt SpecCP in ungrammatical null C clauses and that in all null-C-disallowing contexts, not only an overt C, but also an overt SpecCP induces an amelioration effect. Second, I have shown based on a wide range of cross-linguistic data that clauses in the null-C-disallowing contexts are all obligatorily parsed as separate I-phrases. The combined effect of these generalizations is summarized in (57), which I argue is responsible for determining the distribution of null C clauses.

(57) ***The Ban on Null Edge (BONE)*** (preliminary version)

If a clause is obligatorily parsed as a separate I-phrase, its left boundary (i.e., specifier and head) cannot be phonologically null.

In Section 5, I will discuss why the BONE holds. I will actually argue that it can be deduced from considerations of general properties of prosodic mapping in the phonological component. In other words, it is a theorem. I will also examine several implications of the BONE.

5. Proposal

In this section, based on the generalizations proposed in the previous section, I will provide an analysis of the distribution of null C clauses, which is captured by the preliminary version of the BONE, given in (57) (to be revised below). The gist of the proposal will be that a mismatch between the boundary of the relevant CPs and the boundary of the obligatory prosodic constituent, i.e., I-phrase, built on these CPs leads to ill-formedness. In other words, the relevant null C clauses are ruled out due to a failure of boundary alignment, which I argue is part of the process of syntax-prosody mapping. In the course of the discussion, I will argue that the BONE is not a separate principle of the grammar, but is deduced from natural assumptions regarding the process of syntax-phonology mapping. (In this regard, it should be noted that the term *BONE* is used for ease of exposition and that there is in fact no such thing as the BONE in the grammar. In other words, the BONE is a theorem.)

The guiding intuition behind this proposal is the observation that demarcation of prosodic constituents is based on elements that are pronounced. Needless to say, no prosodic category can be built based on silence. Similarly, the beginning and the end of a prosodic category are inevitably marked by elements that are pronounced – that is, in any string, the first element that is pronounced will necessarily mark the beginning of the string and the last pronounced element will mark the end of the string. Under these rather natural assumptions, suppose that an element is required to serve as a boundary element,

while it for some reason fails to receive pronunciation. Then, there will arise a conflict, which I will argue is precisely the nature of the ill-formedness of the relevant null C clauses.

In this respect, the current analysis locates the problem that arises with respect to the relevant null C clauses at the syntax-phonology interface, i.e., the problem in question is not a matter of the syntax proper. The line of analysis pursued here can thus be characterized by the following quote from Zec and Inkelas 1990:378:

Certain phenomena which belong to the borderline of syntax cannot be characterized in purely syntactic terms ... At least part of the burden needs to be shifted to phonology, and this characterization crucially depends on prosodic units.

5.1. Some Assumptions about Prosodic Mapping

In this section, I will lay down the assumptions that I adopt about the relation between syntax and phonology. First, following the standard assumption, I assume that there is a process of prosodic mapping that mediates syntax and phonology (Lieberman 1975, Selkirk 1978, 1980, 1984, 1986, 1995, Nespor and Vogel 1986, Halle and Vergnaud 1987, Chen 1990, Zec and Inkelas 1990, Cinque 1993, Truckenbrodt 1995, Ladd 1996, Wagner 2005, among many others). Prosodic mapping is a process that takes syntactic structure as input and computes a corresponding prosodic structure, which involves hierarchically

organized levels of prosodic categories such as utterance, I-phrase, phonological phrase (ϕ -phrase), and phonological word.²⁴ Following Selkirk (1984), I assume that at any prosodic-categorial level in the prosodic hierarchy, a sentence is exhaustively parsed into a sequence of such categories. For instance, at the I-phrase level, a sentence is parsed into a sequence of I-phrases. The same is true of the level of other prosodic categories. As Nespor and Vogel (1986:196) and Schütze (1994:465) point out, what is important in this hierarchically arranged prosodic structure is that the boundary of a higher level prosodic category coincides with that of a lower level category (but not necessarily vice versa).²⁵ Therefore, the boundary of an I-phrase must occur at the juncture between two ϕ -phrases.

For our purposes, the most important aspect of the process of syntax-prosody mapping is that this process determines the boundary locations of the various prosodic categories in the hierarchy, i.e., this process breaks up a structure into a sequence of prosodic constituents. In other words, the process of prosodic mapping builds a prosodic constituent structure based on the syntactic structure of a sentence (see Selkirk 1984, Zec and Inkelas 1990, Truckenbrodt 1995 for relevant discussion and references).²⁶

A natural question arises here. That is, how are prosodic boundaries marked? The standard assumption in the literature is that boundaries of a higher level prosodic constituent, e.g., I-phrases, correlate with several phonetic cues such as domain-initial strengthening, domain-final lengthening, and an optional pause that follows final

²⁴ The precise inventory of prosodic categories in the prosodic hierarchy – in particular, the categories below the level of ϕ -phrases – is controversial. But the four levels mentioned in the text seem uncontroversial. In any case, lower level prosodic categories below ϕ -phrases will not matter for us, since we are dealing with clauses.

²⁵ There is a question of whether a prosodic category can be embedded within another of the same category. Selkirk (1984) assumes that this is not possible, but Ladd (1996) assumes that it is. This point does not seem crucial for us. As mentioned in the text, what matters for us is that the boundary of a prosodic category of level n matches that of an $n-1$ category.

²⁶ Implicit here is the assumption that in the process of syntax-prosody mapping, linearization takes place at PF. This aspect of prosodic mapping will be explored further in Chapter 5.

lengthening (Lehiste 1973, Cooper and Paccia-Cooper 1980, Selkirk 1984, Cinque 1993, Ladd 1996).^{27,28} Given this, it seems that we need to assume that prosodic boundaries are necessarily indicated by elements that are pronounced (see also footnote 27). For instance, the phenomenon of final-lengthening, which is standardly assumed to correlate with the right boundary of an I-phrase, must be based on a pronounced element, because if the relevant element is not pronounced, it would of course not be possible to lengthen its syllables (since there is no syllable!). The same considerations holds of the initial boundary – that is, there has to be something that is pronounced, in order to indicate that a prosodic category has been initiated. Otherwise, it would be simply meaningless to talk about prosodic boundaries. Given this, I will adopt the natural assumption that marking of a prosodic boundary requires elements with phonological content.²⁹

Recall that certain elements are obligatorily parsed as separate I-phrases – OBI contexts (see Section 4.2). For expository convenience, I will assume below that an element appearing in an OBI context carries a special diacritic, which I will call *pc* (prosodic constituent), which signals to PF that it should be parsed as a separate prosodic constituent. (*PC* should not be taken as a grammatical entity. I am just going to use this symbol as a shorthand for saying that an element is to be parsed as a separate I-phrase.)

²⁷ It is often pointed out that final lengthening rather than pauses provides a more reliable indication of an I-phrase boundary due to the optionality of the latter (see the work by the authors cited in the text). Nonetheless, one can still conclude that there is an I-phrase boundary if one finds a pause. In fact, pauses are usually considered a strong indicator of an I-phrase boundary. However, given their optionality, the implication is only one-way. That is, having a pause indicates that there is an I-phrase boundary, but not having a clear pause does not necessarily indicate that there is no I-phrase boundary.

²⁸ Recall that in Section 4.2 I have also discussed several phonological processes that provide tests for the presence of prosodic boundaries.

²⁹ Although it seems reasonable that this is true of any prosodic category, i.e., that a prosodic category has to be built on a pronounceable (or pronounced) element, we could limit this proposal to I-phrases if this turns out to be necessary. See below for discussion that could be relevant.

5.2. Prosodic Mapping, Linearization, and the Ban on Null Edge

In this section, based on the discussion in Section 5.1, I will discuss aspects of the process of prosodic mapping demonstrating how the BONE, repeated in (58), applies to capture the ill-formedness of the relevant null C clauses. In so doing, it should be noted that the BONE is not a separate principle of the grammar, but is deduced from natural assumptions regarding the process of syntax-phonology mapping. More specifically, the BONE is in effect a different way of describing the inherent requirement that boundaries of an I-phrase be pronounced. (Hence, as mentioned earlier, the term BONE should be understood as a mere expository device.)

(58) ***The Ban on Null Edge (BONE)*** (preliminary version)

If a clause is obligatorily parsed as a separate I-phrase, its left boundary (i.e., specifier and head) cannot be phonologically null.

Let us see how the BONE applies to capture the ill-formedness of the relevant null C clauses. The reasoning goes as follows: we have seen that when a clause appears in an OBI context, it forms a separate I-phrase. In so doing, the initial and the final element of the clause are designated as the left- and the right-boundary element, respectively, that may undergo additional phonological processing such as initial strengthening and final lengthening. However, in the case of null C clauses in OBI

contexts, a problem arises in determining the boundary elements – in particular, with respect to marking the left boundary. Recall that as discussed in Section 5.1, boundaries of a prosodic constituent are marked by phonologically overt elements in the initial and the final position. Under this assumption, it is predicted that the null C in the CP-initial position will not qualify as a legitimate boundary element due to its phonological emptiness. I suggest that this is the source of the deviance of the null C clauses in OBI contexts – such clauses are deviant because their left boundary cannot be marked properly. The fact that an overt SpecCP (even in the presence of a null C) can save the clause in OBI contexts is expected under this proposal, since an overt SpecCP, which occupies the left boundary of the CP, will be able to mark the left boundary of the I-phrase without any problems.

In sum, I argue that the problem that arises with respect to the relevant null C clauses reduces to a failure to align the boundaries of the relevant syntactic and prosodic categories in the process of prosodic mapping. The syntactic structure of the relevant CPs requires the null C to be the left-boundary marker, while the element fails to do so due to its phonological emptiness. Before closing, it should be pointed out that there are several implicit assumptions behind the above discussion that should be elaborated further. I turn to these assumptions below.

5.2.1. Left and Right Boundaries

I have suggested above that when the relevant CPs are parsed as separate I-phrases, the initial and the final elements are designated as the left- and the right-boundary element

respectively. In so doing, a question arises as to how we can identify initial/final elements (or left/right boundaries). Concerning this, I assume that part of the process of prosodic mapping at PF is linearization of the structure, during which reference is made to certain syntactic notions relevant for prosodic parsing – for instance, the diacritic *pc*, the distinction between heads and complements, the distinction between X and XP, etc. In the output of this process, the linearized sequence is broken up into a sequence of prosodic constituents, i.e., the prosodic constituent structure of the sentence is determined.³⁰

The idea that linearization takes place prior to the BONE has further implications. Note that the BONE in its preliminary formulation, stated in (58), makes special reference to the left boundary of the relevant syntactic and prosodic constituents. Given this, the question naturally arises as to whether the BONE can be generalized to the right boundary. In fact, since the BONE regulates the alignment of the boundaries of prosodic and syntactic constituents, it seems reasonable to assume that it applies to the right boundary as well, rather than to the left boundary only (see also the case of head-final languages discussed in Section 5.3.1).

There is in fact evidence that it is correct to do so – that is, we should extend the BONE to the right boundary of an I-phrase. Note that in head-final languages like Korean and Japanese, C appears on the right. Crucially, where the relevant test is applicable, the null C paradigm is also observed in these languages. For instance, as Saito (1987) observes, complementizers in the Kobe dialect of Japanese behave in a similar way to that of English, as shown in (59).

³⁰ The state of affairs becomes more complicated if we assume multiple spell-out involves linearization (Uriagereka 1999, Chomsky 2000, 2001, Fox and Pesetsky 2005). I will ignore this issue here for ease of exposition.

- (59) a. John-ga [_{CP} Koobe-ni iku (te)] yuuta
J-nom Kobe-to go comp said
 ‘John said that he was going to Kobe.’
- b. [_{CP} Koobe-ni iku *(te)], John-ga e yuuta
Kobe-to go comp J-nom said
 ‘John said that he was going to Kobe.’ (Saito 1987:312-313)

(59)a shows that an overt C is optional when the CP complement appears adjacent to the verb. However, an overt C is obligatory when the CP is separated from the verb, as in (59)b. The same pattern holds in Korean as well, as shown in (60).

- (60) a. Nina-ka [_{CP} Kiki-ka chayk-ul ilkessta-(ko)] malha-ess-ta.
N-nom K-nom book-acc read-comp say-past-dec
 ‘Nina said that Kiki read a book.’
- b. [_{CP} Kiki-ka chayk-ul ilkessta-*(ko)], Nina-ka e malha-ess-ta.
K-nom book-acc read-comp N-nom say-past-dec
 ‘That Kiki read a book, Nina said.’

Here, too, an overt C is optional if the CP appears adjacent to the verb, while an overt C is obligatory if the CP is separated from the verb. Note that the relevant Cs appear at the

right boundary of the CP, which provides evidence that the BONE applies to the right boundary as well.³¹ Given this, I suggest that we revise the BONE as in (61).

- (61) ***The Ban on Null Edge (BONE)*** (revised version 1)
 If a clause is parsed as a separate I-phrase, its left and right boundary
 positions cannot be occupied by phonologically empty elements

Under the revised version of the BONE, no special arrangements need to be made to handle head-final languages, because the condition governs both left and right boundaries of I-phrases. Given this, the (b) examples in (59) and (60) are unacceptable without an overt C because the right boundary of the I-phrase, built on the CP in an OBI context, will not be properly marked.

Now, notice that it is easy to find cases where the right edge of a syntactic constituent is occupied by phonologically null elements. For instance, in (62), there is an empty position in the right edge of the CP as a result of movement of the object.

- (62) [_{CP} What did John buy t]?

If we assume that verbs move out of VP, then there would be at least two consecutive positions that are occupied by phonologically null elements in the right edge of the CP, as shown in (63).

³¹ Notice that the data in (59) and (60) provide additional support for the current analysis. That is, the existing analyses of the null C paradigm, discussed in Section 3, (i.e., null affix, T-C feature checking) cannot explain (59) and (60) without additional assumptions. (The ECP analysis may be an exception. In fact, Saito (1986) adopts Stowell's (1981) ECP analysis to explain the Japanese data.)

(63) [CP What did John [VP buy [VP t_v t_{obj}]]]

Notice that we are dealing with a matrix clause here, which is an OBI context. In terms of linear order, the right edge of (63) seems to be a mirror image of the left edge of the ill-formed null C clauses examined above. Therefore, the question arises why the null elements in the right edge of (63) do not cause a problem with respect to the BONE. Would this be indicating that we need to treat left and right boundaries differently, more precisely, that the BONE should not be generalized to the right edge?

I believe that this does not necessarily mean that left and right boundaries should be treated differently. Rather, the apparent difference between these boundaries derives from the fact that the BONE applies after copy-deletion, which I assume is part of the process of linearization (see Nunes 1995, 2004, Bošković 2001, Franks and Bošković 2001 for relevant discussion). That is, I assume that once the structure is linearized, all the copies created by movement are eliminated (except for the one that surfaces). If the BONE applies after linearization, then the potentially offending positions occupied by movement copies will no longer exist in the right edge of (63). Under these assumptions, the relevant CP in (63) will basically look like the string in (64) at the point where the BONE applies. Crucially, the null positions in the right edge, previously occupied by movement copies, all have been removed by copy-deletion in the process of linearization, rendering *buy* as a legitimate right boundary element.³²

³² Given this, it is necessary to refine the status of the null C and also that of other phonologically null elements such as null object pro. I will discuss this in the next section.

(64) [What did John buy]

To summarize, I have argued in this section that the BONE applies to both left and right boundaries of an I-phrase, requiring both boundaries to be occupied by overt elements. I have argued that the reason why the BONE does not seem to constrain the right boundary of a clause is because null elements in that position are typically movement copies, which are eliminated by copy-deletion during the process of linearization. Given the assumption that the BONE applies after linearization, it is expected that no violation of the BONE arises in the right edge under normal circumstances.

5.2.2. Status of the Null C and Other Null Elements

In Section 5.2.1, I have argued that the BONE should be generalized to the right boundary of an I-phrase as well, which I believe is a reasonable consequence, given that this is a condition that governs the well-formedness of I-phrases with respect to their boundaries. To this effect, I have shown that C in head-final languages, which appears on the right, is also subject to the BONE. I have also argued that movement copies, which often occupy the right edge of a clause, do not cause a problem with respect to the BONE, given the assumption that the condition in question applies after linearization, by which time movement copies are eliminated. (Of course, the highest copy of a movement chain that survives copy-deletion, i.e., the copy that is pronounced, should be subject to the BONE. But this point is irrelevant here.)

This naturally leads us to the question about the status of other phonologically null elements such as null operators (OP), null pronouns (e.g., pro/PRO), and the null C itself. The question is whether we can also ignore these null elements for the purpose of satisfying the BONE. Among these, obviously, we would not want to ignore the null C with respect to the BONE. Otherwise there would not be any reason to have this chapter! Therefore, the bottom line of our task is to ensure that the null C is different from movement copies with respect to the BONE. We also have to determine whether other null elements like null pronouns and OP pattern with the null C or with movement copies and explain why.³³ Given this, I will be concerned with the schematic configurations in (65) in this section. Here, the CPs are assumed to be in OBI contexts, e.g., CP RNR.

- (65) a. * ... [CP \emptyset_c [IP Peter ...
 b. ... [CP that [IP Peter ...
 c. ... [CP t that [IP Peter ...
 d. ... [CP OP that [IP Peter ...

As expected, (65)a is ruled out by the BONE, since the CP in an OBI context is headed by a null C. The left boundary of the I-phrase assigned to the CP will not be properly marked, because its boundary element is not pronounced. The grammaticality of (65)b is also expected. The contrast between (65)a and (65)b replicates the familiar pattern discussed above.

³³ The status of pro/PRO will be discussed in Section 5.3.1.

(65)c requires some discussion. Basically, such structures are predicted to be well-formed. Note that strictly speaking, *that* is not the outermost element of the CP. Rather, the left edge of the CP is occupied by a movement copy. However, the copy does not cause any problem with the BONE, since by the time this condition applies, this copy will have been eliminated, effectively making *that* the boundary element. Therefore, (65)c is actually equivalent to (65)b with respect to the BONE. That this prediction is correct is confirmed by the grammaticality of the sentences in (66).

- (66) a. Who did they believe, and Mary claim, [_{CP} t that Peter had murdered t]?
- b. How did they believe, and Mary claim, [_{CP} t that Peter had murdered John t]?
- (Bošković and Lasnik 2003:530)

Here, the CP undergoes RNR and thus forms a separate I-phrase. The copy in SpecCP does not interfere with the BONE, since it is eliminated before the condition applies.

Therefore the overt complementizer will play the role of the left boundary marker.³⁴

³⁴ Consider the data in (i), which seem to pose a prima facie problem for the current analysis.

- (i) a. ? Who do you believe sincerely [_{CP} t \emptyset_c [_{IP} t likes Natasha]]?
- b. * What do you believe sincerely Natasha likes? (Bošković and Lasnik 2003:536)

The ungrammaticality of (ib) is predicted by the current analysis, since the extraposed CP has the structure in (ii), where the null C fails to mark the left boundary of the I-phrase assigned to the CP. However, the improvement in (ia) is surprising, because there should not be any structural difference between (ia) and (ib) at the level of CP, i.e., (ia) should also have null SpecCP and null C.

- (ii) ... [_{CP} t \emptyset_c [_{IP} Natasha likes t]]

BL's account of this contrast under the null affix analysis goes as follows: first, they assume that in the course of long-distance wh-movement, subject wh-phrases move through SpecCP, while other wh-phrases do not. They assume that non-subject wh-phrases make use of adjunction to IP (see BL for evidence to this effect). Second, as discussed in footnote 12, BL stipulate that the null C that is responsible for movement into SpecCP, i.e., an EPP C, is not an affix, while the null C that does not trigger movement into SpecCP, i.e., a non-EPP C, is an affix. Given this, the deviance of (ib) reduces to a failure of affixation of the non-EPP C. The grammaticality of (ia) is expected, since the null C responsible for the movement of the subject wh-phrase is an EPP C.

As Željko Bošković (p.c.) pointed out to me, the contrast can be captured under the current analysis by appealing to multiple spell-out. For the sake of argument, let us adopt BL's assumption about the correlation between movement into SpecCP and the type of wh-phrases – that is, subject wh-phrases move

(65)d is similar to (65)c, but it raises a different question. First of all, the grammaticality of (67) suggests that the BONE should be able to ignore OP. Otherwise, the left boundary of the CP would be occupied by a phonologically null element, which would be incorrectly predicted to violate the BONE.

(67) I saw the train yesterday [_{CP} OP that Peter was waiting for]

The question is why OP does not violate the BONE here, although it occupies the left edge of the CP. Crucially, given the ill-formedness of (68), this requires us to make a distinction between a null C and OP with respect to the BONE – that is, a null C causes a problem, while OP does not.

(68) ?? I saw the train yesterday [_{OP} ∅_c Peter was waiting for]

through SpecCP, while other wh-phrases employ adjunction to IP. Given this, suppose that in (i), the extraposed CPs are sent to PF by multiple spell-out and that the BONE applies at this point. Then, in (ia), no problem will arise, since SpecCP is occupied by the subject wh-phrase. On the other hand, (ib) will be ruled out, since there is only the null C in the left edge of the CP. (Recall that non-subject wh-phrases adjoin to IP.)

Recall that I have argued above that verb complement clauses are only optionally parsed as separate I-phrases. Given this, the grammaticality of (iii) is consistent with the discussion of (i) above, given the option where the embedded CP is not parsed as a separate I-phrase.

(iii) What do you think ∅_c Natasha likes?

BL's claim about wh-movement requires further justification, which I will not be concerned with here. The point is that by adopting the same assumption that BL adopt, the current analysis can also explain the data in question. Moreover, as I show below, the current analysis provides an account of examples like (68), which the null affix analysis cannot capture without additional assumptions. Note that the C in question should be an EPP C, which is not an affix. (Regarding this problem, BL stipulates that the null C heading a relative clause can only merge with the head noun of the relative clause. In addition, an updated version of the null affix analysis, proposed by Bošković (2005a), can handle (68) though. Under that analysis, the null C in (68) is an enclitic that has to be supported by an overt material. But an intervening I-phrase boundary will block encliticization in this case. However, this analysis cannot be extended to non-CP contexts discussed in Section 5.3.2.) Finally, it should also be noted that the status of (i) is controversial, i.e., there is considerable speaker variation regarding sentences like (i) (see An 2007a).

I suggest that the answer to this question has to do with the system of late vocabulary insertion advocated by Distributed Morphology (henceforth, DM) (see Halle and Marantz 1993, Embick and Noyer 1999, to appear, Harley and Noyer 1999, Bobaljik 2000, among others).³⁵ More specifically, I assume that in the narrow syntax, there are only features, e.g., formal and semantic features, in the structure and that the phonological content of each item is introduced later at PF. Under this view, there is essentially no distinction between \emptyset_c and *that* in the narrow syntax – that is, what is under the node C is just a set of features. I assume that the alternation between these Cs is in principle optional, i.e., insertion of the phonological content of the declarative C can take place optionally (see Franks 2005 for a similar proposal).³⁶ Under this view, the deviance of the relevant null C clauses reduces to the failure to insert the phonological content of C, which is required for the purpose of boundary marking.

Turning to null operators, I suggest that the reason why they can be ignored by the BONE is because there is no phonological content to insert here to begin with – that is, I assume that the lexical entry for OP is not associated with any phonological content.³⁷ Although OP in (65)d, repeated below as (69), occupies the leftmost node dominated by a *pc*-marked CP, the inherent emptiness of OP deprives its status as the left

³⁵ For ease of exposition, I also use “insertion of phonological content” to mean the same thing as vocabulary insertion. This is not intended to have any additional theoretical import. It should also be noted that I am adopting the ideas of DM for ease of exposition, because this system allows me to make a distinction between the relevant null elements in a way that seems to me to be rather plausible. It may be possible to state the intuition behind the discussion here in different terms without relying on DM. However I will not be committed to providing any arguments in favor of a particular system over others here.

³⁶ Note that it has often been suggested that *that* is void of any semantic content and that it thus can delete at LF, i.e., *that* does not stay in that component. For instance, Law (1991) suggests that complementizers are expletives that have to be deleted or replaced at LF (see also Chomsky 1981, 1991, Lasnik and Saito 1984). By adopting the late insertion view, I cast this intuition in a different way – that is, “*that*” is not there from the beginning. (But, strictly speaking, we do not have to assume here that *that* is semantically empty.) See also Hegarty 1991, Ormazabal 1995, and Bošković 1997 for relevant discussion.

³⁷ This means that null operators do not arise from non-insertion of phonological content of overt operators, i.e., they are different objects (Law 1991). For instance, null operators are subject to more severe locality restrictions than overt operators, as argued by Stowell (1986) (see also Authier 1989).

boundary element. In other words, OP is legitimately exempted from its duty of marking the left boundary, given its inherent phonological emptiness.³⁸

(69) ... [CP OP that [IP Peter ...

Note that this essentially induces “rebracketing” in the left boundary of the I-phrase, which passes the boundary status to the next element in the sequence – that is, the C node in the case at hand. Now, the question is whether this new boundary element can satisfy the BONE. Recall that null Cs arise as a result of non-insertion of phonological content to C. In the current context, insertion of phonological content to the node C is required, since this item is supposed to mark the boundary of the I-phrase. If vocabulary insertion takes place, nothing goes wrong. This situation is instantiated by (67), repeated below as (70).

(70) I saw the train yesterday [CP OP that Peter was waiting for]

On the other hand, if vocabulary insertion does not apply to C, the output is ill-formed, as shown by the ungrammaticality of (71). Recall that overt realization of the node C, i.e., vocabulary insertion into this node, is in principle optional. However, in the case at hand, vocabulary insertion must take place in order to mark the left boundary of the I-phrase built on the extraposed CP. Therefore, the ill-formedness stems from the fact that the derivation failed to do what it was supposed to – that is, to insert phonological

³⁸ This is equivalent to saying that OP is simply not considered for the purpose of satisfying the BONE.

content into the C node, which results in the failure of marking the left boundary of the I-phrase.

(71) ?? I saw the train yesterday [_{CP} OP \emptyset_c Peter was waiting for]

The deviance of (71) is important, since this is where the previous analyses of null C clauses all fail. For instance, under Bošković and Lasnik's (2003) null affix analysis, the null C in (71) should be an EPP C, which is not an affix (see footnotes 12 and 34). Therefore, the deviance of (71) is not expected under the null affix analysis.³⁹ In addition, compare (71) with (72). Concerning (72), Bošković (1997) argues that Spec-Head agreement licenses the null C, an assumption that the ECP analysis of Stowell (1981) seems to need as well in order to capture the grammaticality of the sentence. This however fails to predict the ungrammaticality of (71), since OP should be able to undergo Spec-Head agreement with the null C. In addition, there seems to be no obvious way of extending the EPP/nominative feature checking analysis of Pesetsky and Torrego (2001) to cases like (71) either.

(72) [_{CP} What \emptyset_c he likes] is apples

On the other hand, the current analysis provides a straightforward account of the contrast between (71) and (72). In the former, the left boundary of the I-phrase built on the extraposed CP fails to be marked, since the left edge of this CP is occupied by

³⁹ The updated version of the null affix analysis proposed by Bošković (2005a) can be extended to (71). However, this analysis cannot be extended to non-CP contexts discussed in Section 5.3.2. See also footnote 34 for relevant discussion.

phonologically empty elements, while an overt material occupies the left edge of CP in the latter. The crucial point to note is that under the current analysis, the only thing that matters is the phonological emptiness of the relevant elements and that this correctly captures the empirical facts.

Under the above discussion, the three configurations in (65)b-d, repeated below as (73)a-c, are equivalent with respect to the BONE at PF, i.e., they all reduce to (73)a in the relevant respect. This basically means that movement copies and inherently null elements like OP pattern alike with respect to the BONE.

- (73) a. ... [CP that [IP Peter ...
b. ... [CP t that [IP Peter ...
c. ... [CP OP that [IP Peter ...

I suggest that we implement this parallel behavior by appealing to the way lexical items are represented in the structure. More concretely, essentially following Halle (1990), I assume that lexical items are represented as a pair {F, Q} in the structure, where F is a matrix of semantic and syntactic features and Q a place holder for the phonological features to be inserted at PF. Given this, suppose that copy-deletion, which is part of the process of linearization, removes Q, precluding the insertion of phonological content.⁴⁰ In addition, suppose that the emptiness of the elements like OP reflects their lack of Q. Based on this, as a way to draw a line between the null C on the one hand and movement

⁴⁰ Chomsky (1995:228) also suggests that deletion marks the deleted element as “invisible at the [PF] interface.”

copies and OP on the other, I suggest that the BONE only deals with elements with Q.⁴¹ More specifically, the BONE requires elements with Q that appear at the left or right edge of an I-phrase to be subject to vocabulary insertion in order for the boundaries of the I-phrase to be properly marked. In the case of the ill-formed null C clauses in question, vocabulary insertion does not apply to the node C, which carries Q.

The current discussion has some implications for the architecture of the derivation in PF. Recall that based on (73)b, I have suggested that the process of linearization precedes the application of the BONE. In addition, given the discussion of (73)c, the BONE should apply after vocabulary insertion. That is, under the current assumptions, where the alternation between \emptyset_c and *that* is determined by the (non-)insertion of phonological content into the node C, there is no way to distinguish the two realizations of C before vocabulary insertion takes place. This seems reasonable, given that the function of the BONE is to ensure that the left and right boundaries of an I-phrase are occupied by elements with phonological content. Therefore, there is no point of applying it before phonological contents have been supplied. In addition, I will assume that the process of linearization precedes vocabulary insertion.⁴² Given this, I suggest that we update the BONE as follows:

⁴¹ Note that we do not necessarily have a problem for the BONE if an element with Q is not provided phonological content. Such an element causes a problem only if it occurs in a boundary position. However, in many cases, it is likely that non-insertion of phonological contents will lead to independent problems, e.g., recoverability.

⁴² This implies that the process of linearization should be solely based on syntactic structure, making no direct reference to the phonological content of the terminal elements.

(74) *The Ban on Null Edge (BONE)* (revised version 2)

If a clause is parsed as a separate I-phrase, its left and right boundary positions cannot be occupied by phonologically empty elements, where the phonological emptiness stems from non-insertion of phonological content.

Here, the non-insertion may take place due either to deletion of Q or to the lack of it.

Finally, it is important to note that the BONE is not a separate principle of the grammar, but is rather a theorem, i.e., it is deduced from independently needed assumptions about the mapping process between syntax and phonology. In effect, the BONE is a different way of describing the inherent restriction on I-phrasing that the boundaries of an I-phrase be pronounced. Therefore, the reader should bear in mind that there is actually no such thing as the BONE in the grammar – I am using this term simply for expository purposes.

5.3. Other Contexts

Before closing this section, I will examine some contexts that have not been covered so far and see how the current analysis captures them.

5.3.1. Further Null C Contexts

First, let us consider cases of grammatical *that*-less clauses. Consider (75).

- (75) a. John likes linguistics
b. I wanted at that time [PRO to leave]
c. the child [Mary was waiting for]
d. John thinks [Peter left]

(75)a is a simple matrix clause. (75)b involves an extraposed nonfinite complement clause. (75)c involves a restrictive relative clause that appears adjacent to the head noun. (75)d involves a finite clausal complement that appears adjacent to the verb. None of these clauses has an overt C (or overt SpecCP for that matter).

Concerning (75)a, recall that root clauses belong to OBI contexts. Assuming that (75)a is parsed as a separate I-phrase, we need to decide whether there is an empty edge that would interfere with the BONE. Given the grammaticality of the sentence, the answer has to be *no*. I assume that (75)a does not cause a problem since it does not have any empty edge. That is, there is no empty CP above the TP in (75)a in the overt syntax (and eventually in PF). Rather, *John* in SpecTP counts as a legitimate overt left edge. Under the assumption that there is no CP in (75)a, a question arises as to the clausal typing of this sentence, since CPs are often assumed to be the locus of the illocutionary force of the sentence (Rizzi 1990, 1996, Cheng 1991). There are basically two possibilities: there is no CP throughout the derivation and the declarative force of the

sentence is obtained by default (Bošković 1997); alternatively, C is inserted at LF, allowing the declarative interpretation without affecting the prosodic structure of the sentence (Chomsky 1995, Bošković and Lasnik 1999, Bošković 2000).⁴³ Under either option, no empty left edge occurs at PF.

The consequence of the current analysis is that in (75)b, the nonfinite complement clause is a TP. Bošković (1997) notes that under the Case-theoretic approach to the distribution of PRO, nonfinite clauses do not have to be CPs, but can be TPs (Chomsky and Lasnik 1993, Martin 1996, 2001, Lasnik 1995, Bošković 1997).^{44,45} If the nonfinite clause in (75)b is a TP, the clause will not have an offending empty edge, since there is an overt head *to*. Note that in the current formulation of the BONE, a distinction is made between inherently null elements, e.g., OP, and null elements that arise from non-insertion of a vocabulary item, e.g., null C. Given this, PRO/pro can be legitimately ignored for the purpose of the BONE, given their inherent phonological emptiness.⁴⁶ It is

⁴³ Given the considerations of the cycle, Bošković (2000) argues that LF-insertion of phonologically null categories can only take place at the root. In other words, covert C insertion option is not available for embedded clauses.

⁴⁴ Bošković (1997) argues that the relevant nonfinite clauses must be TPs.

⁴⁵ The GB assumption that nonfinite clauses with a PRO subject are CPs is due to the requirement that PRO be ungoverned (Chomsky 1981). But, with the elimination of the notion of government in the Minimalist Program, CP is not needed in order for PRO to be licensed.

⁴⁶ This implies that pro and PRO do not arise from non-insertion of the phonological features of an overt pronoun. The point remains the same even if PRO involves movement, as Hornstein (1999, 2001) argues, since the BONE applies after copies are eliminated.

Note in addition that this takes care of the potential issues having to do with pro-drop (and also PRO for that matter). For instance, in (ib), SpecTP is occupied by a null element. Here, we have a matrix clause, an OBI context. The head of TP (or CP) is occupied by an overt element, i.e., the declarative marker *-e*. But this element only marks the right boundary of the I-phrase. So, the question arises whether the pro subject can be considered a legitimate left boundary element. However, under the current formulation of the BONE, the issue does not arise, since pro is an ignorable element in evaluating the BONE, due to its inherent phonological emptiness, just like OP. Hence, the second element in the sequence, i.e., *chayk* ‘book’, will be allowed to mark the left boundary of the I-phrase. Therefore, no violation of the BONE arises.

- (i) a. John-un mwue ha-ni?
J-top what do-Q
 ‘What is John doing?’
 b. (pro) chayk ilk-ko iss-e
book read-prog be-dec

also worth pointing out that nonfinite clauses are generally easier to separate from the verb than finite clauses.^{47,48}

Before proceeding to the next question, compare (75)b with (76).

(76) * I believe very strongly [John liked linguistics]

While we have seen that (76) can be accounted for if the CP undergoes extraposition, a question arises why we cannot extrapose just the TP in (76), stranding the null C. If that were possible, the extraposed clause in (76) would not have an empty edge. However, there is evidence that TPs cannot move when they are dominated by a CP, as shown by (77):⁴⁹

‘(He) is reading a book.’

(As is well-known, NPs without a case-marker in Korean and Japanese usually do not yield a good result when they are scrambled (Saito 1985). In this regard, note that the object in (ib), *chayk* ‘book’, does not have a case marker. This excludes the possibility that the NP is scrambled above the null subject and occupies the left edge position of the sentence, in which case the point made above could not be made.)

⁴⁷ Note that, as pointed out by Bošković (1997), in all contexts where finite null C clauses are disallowed, control infinitives are allowed (where the relevant test is available).

⁴⁸ In this context, the behavior of French infinitival clauses, discussed by Bošković (1997b, 1998), is interesting. Consider the following contrast:

- | | | | | | | | |
|--------|----------------|------------------|----------------|------------------|---------------|----------------|-----------------|
| (i) a. | Pierre | croit | avoir | convaincu | ses | amis | |
| | <i>Pierre</i> | <i>believes</i> | <i>to-have</i> | <i>convinced</i> | <i>his</i> | <i>friends</i> | |
| b. (*) | Avoir | convaincu | ses | amis, | Pierre | le | croit |
| | <i>to-have</i> | <i>convinced</i> | <i>his</i> | <i>friends</i> | <i>Pierre</i> | <i>it</i> | <i>believes</i> |
- (Bošković 1998:48)

What is dislocated in (ib) is an infinitival clause. Crucially, as indicated by the parentheses, there is speaker variation, i.e., some speakers accept (ib) and others reject it. Bošković argues that there is a correlation between these differing judgments and the categorial status of the infinitival clause in question. More specifically, Bošković (1998) argues that for those speakers who disallow (ib), the infinitival clause is a CP, whereas it is a TP for those speakers who allow (ib). (Based on the possibility of licensing in-situ wh-phrases, Bošković provides independent evidence that the correlation is real. But I will simply refer the reader to Bošković’s work for detailed discussion of this.)

If Bošković is correct, then the behavior of (ib) falls out directly from the current analysis. That is, where the infinitival clause is a CP, dislocation of this CP will lead to a violation of the BONE, while the TP option will be ruled in on a par with (75)b.

⁴⁹ Saito and Murasugi (1999) argue that C is not an appropriate licenser of the trace left by the movement of TP. Therefore, a TP cannot be moved when there is a CP above it. See also Abels 2003 for a phase-based locality account.

(77) * [_{IP} John likes Mary]_i Peter believes [_{CP} that t_i]

Abels (2003) argues that under Chomsky's (2000, 2001) phase system, it is impossible to strand a phase head by moving its complement. Assuming that locality requires an element moving out of a phase to pass through the specifier of the phase head⁵⁰, Abels argues that considerations of economy prohibit the complement of a phase head from moving into the specifier of the same phase head, since the two are already in a local relation prior to such movement.⁵¹ If this is correct, then (76) will be ruled out regardless of whether we move only the TP (in which case, locality is violated) or the whole CP (in which case, the BONE is violated).

Concerning (75)c, recall that in Section 4.2.3.1, it was argued that restrictive relative clauses only optionally constitute separate I-phrases, provided that they are adjacent to their head noun. Given this, the relative clause in (75)c can satisfy the BONE because we have the option of choosing the derivation where the relative clause is not parsed as a separate prosodic constituent.

The *that*-less clausal complement of the verb in (75)d receives the same account as (75)c. As shown in Section 4.2.3.2, clausal complements of verbs are also optionally parsed as separate I-phrases when they appear adjacent to the verb. Therefore, there is a good derivation for (75)d where the embedded clause is not parsed as a separate I-phrase.

⁵⁰ This requirement is implemented as the Phase Impenetrability Condition by Chomsky (2000, 2001).

(i) Phase Impenetrability Condition

In phase α with head H, the domain of H is not accessible to operations outside α , but only H and its specifier. (Chomsky 2000:108)

⁵¹ See also Bošković 1994, 1997, Grohmann 2001, Saito and Murasugi 1999 for arguments that movement cannot be too short, e.g., movement is not allowed to take place from the complement to the specifier position of the same head.

If the relevant clauses in (75)c and (75)d are parsed as separate I-phrases, the BONE will be violated. In that case, we must choose the overt C option, which means insertion of phonological content of the node C under the current analysis. In this respect, *that*-insertion in PF can be considered as an operation to satisfy the BONE.⁵²

In addition, the current analysis provides an account of the fact that null operator appositive relative clauses are not possible.

- (78) a. John, who Mary likes, didn't come to the party
 b. * John, OP Mary likes, didn't come to the party

It is well-known that appositive relative clauses are obligatorily parsed as separate I-phrases (Nespor and Vogel 1986, Selkirk 1978, 1984, 1986). Therefore, given the current analysis, the left edge of an appositive relative clause must be overtly occupied, which correctly explains the ungrammaticality of (78)b. The problem does not arise in (78)a, whose specifier is occupied by an overt element. The same holds for (79).

- (79) a. I saw the child yesterday [_{CP} who \emptyset_c Mary was waiting for]
 b. [_{CP} What \emptyset_c he likes] is apples (= (72))

⁵² This raises a question of whether a stronger hypothesis – namely, that all clauses headed by *that* constitute separate I-phrases – can be maintained. If this is tenable, we may conclude that vocabulary insertion of *that* at PF is triggered as a last resort to satisfy the BONE (see Franks 2005 for relevant discussion). While this seems to be an interesting possibility to explore, I do not have evidence for or against this position at the moment. I leave this question for future research.

Here, the relevant CPs appear in OBI contexts: in (79)a, the CP is extraposed. In (79)b, it is in subject position. Although these CPs are headed by a null C, no problem arises with respect to the BONE, since SpecCP is occupied by an overt element.

5.3.2. Extension to Non-CP Contexts

Note that the BONE is a general condition on prosodic mapping and hence there is no necessary reason for us to expect its application to be restricted to CPs. In this section, I will examine contexts outside of CPs where the BONE effect can also be observed.

First, recall that second position clitics in Serbo-Croatian have to appear in the second position in their I-phrase. Given this, the data in (80) indicate that when vPs are fronted, they are parsed as separate I-phrases.⁵³

- (80) a. [vP Dali ga Mariji] Ivan i Stipe su
 given it to Marija Ivan and Stipe did
 ‘Give it to Marija, Ivan and Stipe did’
- b. ?? [vP Dali ga Mariji] su Ivan i Stipe
 given it to Marija did Ivan and Stipe (Bošković 2001:88)

⁵³ There is a question about the categorial status of the fronted category, i.e., it may be vP or VP. Following Abels (2003) (see Section 5.3.1), I will assume that what is fronted is a vP. In passive and unaccusative sentences, which are usually assumed to lack vP (Chomsky 1995), what is fronted may be a VP (see also Legate 2003 for relevant discussion).

As Bošković (2001:88) observes, the sentence is degraded when an auxiliary clitic immediately follows a fronted vP, as in (80)b, which is expected if we assume that fronted vPs form separate I-phrases.⁵⁴ Bošković also notes that a pause must follow the fronted vP.

It is interesting that the current analysis makes a prediction that if a vP is fronted and if its edge (i.e., SpecvP and v) is empty, the sentence will be ruled out by the BONE. Testing this prediction requires a somewhat complex context, because vPs are less mobile than CPs. But, to the extent that the test can be run, the prediction is borne out. Consider (81).

- (81) a. John killed the dog and Mary killed the pig
b. (?) [_{vP} Kill the dog] John did and [_{vP} kill the pig] Mary did

(81)b illustrates that multiple vP-fronting is in principle possible.⁵⁵ Given this, consider (82).

- (82) a. John killed the dog and Mary ___ the pig
b. ?* [_{vP} Kill the dog] John did and [_{vP} ___ the pig] Mary did

⁵⁴ The coordinated NP *Ivan i Stipe* ‘Ivan and Stipe’ in (80a) counts as one element with respect to clitic placement (Bošković 2001, Schütze 1994).

⁵⁵ There is variation regarding the possibility of multiple vP-fronting. (In fact, some speakers of English do not even allow vP-fronting in simple sentences.) William Snyder (p.c.) pointed out to me that (81)b can be felicitously uttered in a context like the following:

- (i) To survive the winter, John would have to kill the dog and Mary would have to kill the pig.
Well, kill the dog John did and kill the pig Mary did.

(82)a is an instance of Gapping, where the verb of the second conjunct is deleted under identity with that of the first conjunct.⁵⁶ However, if Gapping applies to the fronted vP, as in (82)b, the result is ungrammatical. The current analysis provides a straightforward account of the ungrammaticality of (82)b. Note that under the standard vP-internal subject hypothesis, the specifier of vP will always be empty under normal circumstances. Given this, the current analysis correctly predicts that the head of vP cannot be empty if the vP is parsed as a separate I-phrase. That is, the fronted vP, which is obligatorily parsed as a separate I-phrase, will not have an overt element in its left boundary, in violation of the BONE.⁵⁷

The relevant configuration of (82)b can be represented as in (83).

(83) ?* ... # [_{vP} t_{sub} (GAP)] [_{vP} the pig]] # Mary did

Ana Bastos (p.c.) informed me that the same pattern can be found in Brazilian Portuguese, as shown in (84).

(84) a. [_{vP} com-er a torta], o Joao comeu e [_{vP} com-er a maca],
eat-Inf the pie the John eat-Past and eat-Inf the apple
 a Maria comeu
the Mary eat-Past
 ‘Eat the pie, John did and eat the apple, Mary did

⁵⁶ The real nature of Gapping is very controversial. I assume here that Gapping involves deletion for ease of exposition. See Jackendoff 1971, Koutsoudas 1971, Hudson 1976, Kuno 1976, Hankamer 1979, Neijt 1980, van Oirsouw 1987, Johnson 1994, 1996, Lin 2001, Hartmann 2000 among others.

⁵⁷ I assume that the “invisible” verb in Gapping arises in the same way as null Cs do, i.e., it is a result of non-insertion of phonological content.

- b. * [_{VP} com-er a torta], o Joao comeu e [_{VP} ___ a maca],
eat-Inf the pie the John eat-Past and the apple
 a Maria comeu
the Mary eat-Past

(84)a illustrates that multiple vP-fronting is possible in Brazilian Portuguese. As expected, the head of the fronted vP may not be occupied by a null element, as shown by (84)b.

Željko Bošković (p.c.) pointed out to me that a similar pattern can be found in AP-preposing contexts as well. Note that the position of the second position clitic in (85) suggests that the preposed AP is parsed as a separate I-phrases.

- (85) [_{AP} Željkan pobjede], bio je
desirous win been is
 ‘Desirous to win, he was.’

Assuming this, note that when the head of a preposed AP is null, the sentence is ungrammatical. The ungrammaticality of the sentences in (86) receives the same account as (82)b/(84)b.⁵⁸

- (86) a. * [_{AP} Eager to win the Pulitzer prize], John is and [_{AP} ___ to win the Nobel prize], Mary is

⁵⁸ In (86)b, what is deleted is bigger than that in (86)a. For some unknown reason, this improves the sentence slightly.

b. ?? [_{AP} Eager to win the Pulitzer prize], John is and [_{AP} ___ the Nobel prize],
Mary is

The data examined here thus provide evidence that the boundary alignment property, i.e., the BONE, holds for other categories as well, which is in fact a natural prediction made by the current analysis. Given this, it is very important to notice that the discussion in this section provides empirical argument in favor of the current analysis over other approaches discussed so far – namely, the analyses of null C clauses discussed in Section 3, including Bošković's (2005) updated version of the null C analysis (see footnote 34). The crucial limitation of these analyses is that they cannot be extended to contexts that do not involve CPs, like the ones discussed here.⁵⁹ In addition, note incidentally that Chomsky (2001a, 2001b) assumes that V-to-v raising is obligatory. The current analysis provides evidence for this claim as well. Consider, for instance, (81)b. Here, if overt V-to-v raising were not obligatory, we could not account for the grammaticality of this sentence.

⁵⁹ The ECP analysis might be an exception.

6. Conclusion

In this chapter, I have examined the distribution of clauses headed by a null *C* and argued that the problem that arises with respect to the contexts where null *C* clauses are disallowed should be located in the syntax-phonology interface, not in the syntax proper. Unlike most of the previous approaches to the phenomenon in question, the current analysis started with the suspicion that the phonological content of the null *C* may not be the only relevant factor. Based on this, a novel generalization was proposed to the effect that not only the emptiness of *C*, but also that of SpecCP plays a role in determining the distribution of null *C* clauses. More specifically, the observation was that an overt SpecCP can play the same role as an overt *C* in saving a CP in certain contexts. I have also proposed a second generalization that all the relevant null-*C*-disallowing contexts belong to OBI contexts, i.e., contexts in which an element must be parsed as a separate intonational phrase.

Based on these novel generalizations, I have argued that the problem associated with the relevant null *C* clauses reduces to a failure to properly demarcate an I-phrase assigned to the CPs in question. More concretely, I have proposed that a condition on prosodic mapping – that is, the BONE – requires that the left and right boundary elements of an I-phrase be overtly realized, i.e., insertion of phonological features of these elements is obligatory. I have also argued that we are dealing here with a general requirement that goes beyond CPs. For instance, I have shown that the BONE applies to

vPs and APs when these categories are parsed as I-phrases, which provides additional support for the current analysis over others. Finally, notice that the BONE can be deduced from independently required assumptions about the mapping between syntax and phonology. In other words, the BONE is not a separate principle of the grammar, but follows as a theorem.

In the course of the discussion, I have also considered implications of the current analysis for the architecture of the process of syntax-phonology mapping that takes place at PF, where a number of processes take place sequentially, making reference to different aspects of the derivation. For instance, in the first stage of prosodic mapping, reference is initially made to syntactic notions like c-command, dominance, head-complement, argument-adjunct, etc, the result of which is a linearized string with demarcation of left and right boundaries of prosodic constituents – in particular, I-phrases. This results in the prosodic constituent structure of the sentence. The next step is vocabulary insertion, followed by the application of the BONE. I have also argued that certain phonologically null elements can be legitimately exempted from the requirements of the BONE, either because of the independently motivated process of copy-deletion or because of their lexical entry, i.e., their inherent phonological emptiness. Under this view, the problem that arises with the relevant null C clauses is equivalent to non-insertion of a vocabulary item in a context where insertion is required.

Chapter 3.

Properties of Right Node Raising

1. Introduction

In Chapter 2, I have examined some aspects of the syntax-phonology mapping that have to do with the prosodic constituent structure of a sentence. I have shown that investigating the complex interaction among a number of processes such as left-/right-boundary marking, linearization, copy deletion, vocabulary insertion, etc, which I assume comprise the process of the syntax-phonology mapping, enables us to account for the distribution of null C clauses.

In this and subsequent chapters, we will look into more details of the interaction among the above mentioned processes that take place in the phonological component. To this goal, we will explore the properties of Right Node Raising (RNR), which I argue

should be implemented as ellipsis, in particular, PF deletion. We will see that investigating the properties of RNR allows us to better understand the nature of the interaction between linearization, copy deletion, and vocabulary insertion. It is worth pointing out here that the issue of whether ellipsis involves LF copying or PF deletion is very controversial in the literature (see Hankamer and Sag 1976, Sag 1976, May 1985, Lobeck 1986, 1995, Fiengo and May 1994, Chung, Ladusaw, and McCloskey 1995, Fox 1995, Hornstein 1995, Hoji 1998, Merchant 2001, Kennedy 2002, Fox and Lasnik 2003, B. Park 2005, among many others). Although the current analysis does not directly bear on this debate, it does provide evidence that at the very least one instance of ellipsis – namely, RNR – should be handled in terms of PF deletion.

The goal of this chapter is to illustrate the basic properties of RNR that will serve as the point of departure for the subsequent discussion. In Section 2, I will briefly summarize existing approaches to RNR and also illustrate a number of properties of this construction. In the course of the discussion, I will also point out that the data discussed there raise empirical problems for the across-the-board movement analysis of RNR. In Section 3, I will discuss in some detail the multi-dominance analysis of RNR, which has been influential in the recent literature on the construction in question. In Section 4, however, I will present a new set of data that raise problems for the multi-dominance analysis. In so doing, I will also point out that these problematic data receive a natural account under the PF deletion analysis.

2. Basic Properties of RNR

In this section, I will briefly introduce previous approaches to RNR and also illustrate a number of properties of this construction. In the course of the discussion, I will point out that the data discussed here pose problems for the movement analysis of RNR.

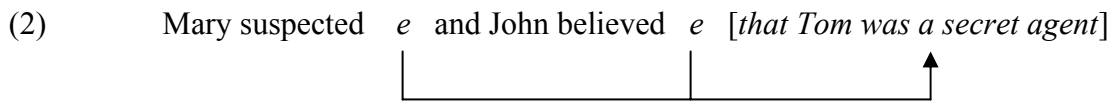
2.1. Previous Approaches

RNR refers to constructions like (1).

- (1) Mary suspected, and John believed, *that Tom was a secret agent*.

Here, the object of *suspected* is missing on the surface. The intuition is that the missing element is not simply gone, but is “shared” by the two conjuncts. That is, the italicized clause *that Tom was a secret agent* is interpreted as the complement of both *suspected* and *believed*.

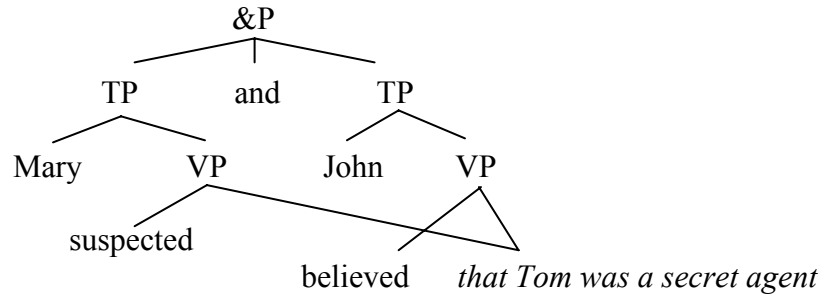
Three different approaches have been proposed in the literature to capture this property of RNR. One of these approaches is the Across-the-board Movement analysis (ATB) (Ross 1967, Maling 1972, Bresnan 1974, Postal 1974, Hudson 1976, Williams 1978, Burton and Grimshaw 1992, Goodall 1983, Sabbagh 2003). Under this analysis, RNR involves a special kind of movement, where multiple identical tokens undergo parallel movement and are somehow collapsed into one (or, say, stacked on one another like transparent films), resulting in a forking chain. For instance, the derivation of (1) can be represented as in (2).



The crucial property of the ATB analysis is that the shared element undergoes actual movement.

An alternative analysis, which is called the Multi-Dominance analysis (MD), employs a special structural configuration called “multi-dominance” (McCawley 1982, Goodall 1983, 1987, Erteschik-Shir 1987, Wilder 1999, 2001, Abels 2003b, Citko 2003, 2005, Chung 2004, M. Park 2005, de Vos and Vincente 2005). Under this analysis, the shared element in RNR is literally shared by the conjuncts by being dominated by multiple mother nodes. This is illustrated in (3).

(3)



Notice that in contrast to the ATB analysis, the shared element does not need to undergo movement under the MD analysis. Another important aspect of the MD analysis is that there is only one occurrence of the shared element in the structure.

Under the third analysis, which I will call the Ellipsis analysis, RNR sentences involve a full sentential coordination that is subsequently reduced by deletion under identity (Tai 1969, Hankamer 1979, Wexler and Culicover 1980, Booij 1985, van Oirsouw 1987, Swingle 1993, Kayne 1994, , Wilder 1994, 1997 Schein 1997, Hartmann 2000, Mukai 2003, Bošković 2004b, te Velde 2005, An 2006, 2007, in press a, in press b, Ha 2006). Under this analysis, (1) is derived as in (4).

(4) Mary suspected [~~that Tom was a secret agent~~] and John believed [*that Tom was a secret agent*]

Note that there are multiple tokens in the underlying structure, although only one of them survives on the surface. In this respect, the Ellipsis analysis differs from the MD analysis, in which there is only one occurrence of the target. The Ellipsis analysis also differs from the ATB analysis in that the shared element does not need to undergo movement for the purpose of RNR. (Of course, the shared element may undergo movement, should there be

independent reasons for it. The same holds for the MD analysis.) In this dissertation, I will argue that the relevant Ellipsis phenomenon involved in deriving RNR sentences is PF deletion. Therefore, I will argue that RNR is not an operation of the syntax proper, but is an operation of PF. I will discuss the properties of the PF deletion operation in more detail in Chapters 4 and 5.

In sum, I have briefly reviewed above the properties that characterize three different approaches to RNR. The discussion here can be summarized as in (5).

(5)

	Movement of the target	Number of the target
ATB	Yes	multiple/single
Multi-dominance	No	single
Ellipsis	No	multiple

2.2. In-situ Property of RNR

The goal of this section is to illustrate the basic properties of RNR that will lay down a background for the subsequent discussion. In particular, it will be shown that the shared element in RNR sentences behaves as if it did not undergo movement, i.e., there is evidence that the shared element in RNR sentences stays in-situ, which poses a problem

for the ATB analysis.¹ (For convenience, I will call the shared element in RNR sentences *target* from now on.)

2.2.1. Island Insensitivity

It has been noted that RNR is not sensitive to a number of well-established islands (Abels 2003b, Bošković 2004b, Hartmann 2000, van Oirsouw 1987, Ross 1967, Wexler and Culicover 1980, Wilder 1997, among others). Consider (6)-(8) from Abels 2003b.

- (6) a. John wonders when Bob Dylan wrote, and Mary wants to know when he recorded, *his great song about the death of Emmett Till*
- b. * What does John wonder when Bob Dylan wrote?
- (7) a. Josh got angry after he read, and Willow quit after finding out about, *the company's pro-discrimination policy*
- b. * What did Josh get angry after he read?
- (8) a. I know a man who buys, and you know a woman who sells, *gold rings and raw diamonds from South Africa*
- b. * What do you know a man who sells?

¹ As noted above, this only means that movement is not necessary for purposes of RNR per se. However, the shared element can undergo movement for independent purposes, e.g., extraposition, heavy NP shift, etc.

(6)a illustrates RNR from wh-islands. Similarly, (7)a involves RNR from adjunct clauses. (8)a illustrates RNR from complex NPs. As the ungrammaticality of the (b) examples shows, these environments do not allow overt extraction out of them. Hence, given the grammaticality of the (a) examples, one can reasonably assume, as many researchers do (see the references for the MD and the Ellipsis analysis cited in Section 2.1), that the shared elements in these sentences are not extracted from the domains in question. This poses a serious problem for the ATB movement analysis, in which the target necessarily undergoes overt movement.

RNR also does not observe the locality conditions that are independently known to constrain rightward movement – such as Right Roof Constraint (RRC), which states that rightward moving elements are clause-bound (Ross 1967). This is illustrated by (9).

- (9) I believe that John, but I can't imagine that Mary, *will graduate on time*
(Bošković 1996:5)

Here, the shared element originates from the embedded clause. If RNR were subject to the RRC, the sentence should have been ungrammatical.²

To summarize, the data examined here illustrate that the shared element in RNR is not sensitive to a number of well-established island constraints, indicating that it does not undergo movement.³ This poses a problem for the ATB analysis, under which the shared element of RNR must undergo movement.

² Note that what is shared in (9), which is presumably T', is typically immobile. See Section 2.2.4 for further discussion.

³ Whether RNR is sensitive to the Coordinate Structure Constraint (CSC) is controversial.
(i) * Alfonso cooked the beans and __, and Harry cooked the potatoes and, *the rice*

2.2.2. Preposition Stranding

As is well-known, Irish quite generally disallows preposition stranding under movement, i.e., the ban on preposition stranding in Irish is absolute. However, preposition stranding is allowed in RNR constructions in Irish, as shown by (10) and (11).^{4,5} (According to McCloskey (1986), RNR is in fact the only environment in Irish that allows preposition stranding.) (Examples (10)-(12) are from McCloskey 1986:184-185.)

- (10) Níl sé in aghaidh an dlí a thuilleadh a bheith ag éisteacht le
is-not it against the law anymore be(-fin) listen(prog) with

(adapted, Neijt 1980: 43)

Regarding (i), I speculate that the ungrammaticality of the construction may have to do with a morphological property of the stranded conjunction. That is, I assume that the conjunction is a dependent element in a way similar to clitics, so that it has to be parsed into the same prosodic constituent with the second conjunct. More specifically, suppose that the conjunction in question has to be parsed into the same I-phrase with the second conjunct. (The direction may be subject to cross-linguistic and lexical variation. Note also that in many languages, e.g., Korean and Japanese, some conjunctions are overtly realized as affixes (or clitics).) If this is correct, then we can attribute the ungrammaticality of (i) to the fact that the conjunction is stranded as a result of RNR.

However, as issue regarding CSC still seems to arise in sentences like (ii).

- (ii) *Alfonse cooked the beans that Susan liked and the rice __, and Harry baked the potatoes that Nancy liked and the rice, *that Mary liked*

While there may be an interfering factor with respect to processing difficulty, it is unclear how the sentence can be ruled out, in particular, under the MD and the Ellipsis analyses, since the shared material does not have to undergo movement under these approaches. But, I speculate that this may have to do with a kind of (PF) parallelism requirement on coordinated structures (see Ximenes and Nunes 2004 for relevant discussion). Note that in (ii), RNR affects only a subpart of an NP that is itself coordinated, arguably disrupting the parallelism between the coordinated NPs. Furthermore, it is actually not clear if (ii) can be considered a case of a CSC violation in the first place.

It is worth pointing out that (i) and (ii) illustrate two subparts of the CSC – namely, the ban on extraction of a conjunct and the ban on subextraction from a conjunct, respectively, which are likely to be different phenomena (see Grosu 1973). It is also noteworthy that a number of researchers have questioned the status of the CSC as a syntactic island constraint, i.e., they have argued that the CSC does not involve syntactic islandhood (see Anderson 1983, Munn 1993, Fox 2000, Merchant 2001 for relevant discussion; see also Kato 2006a, b).

⁴ McCloskey (1986) also reports that the same behavior is found in French, Polish, and Spanish.

⁵ It is also well-known that Heavy NP Shift, an instance of rightward movement, is in general incompatible with preposition stranding (Ross 1967). ((i) is from McCloskey 1986: 185.)

- (i) * We can depend **on** here those linguists who have some familiarity with the AI literature

nó ag breathnú ar ráidió agus teilifís an Iarthair
or look(prog) on radio and television the West(gen)

‘It is no longer against the law to listen to, or to watch, Western radio and television.’

- (11) Brian Mag Uidhir ... ag glacadh le agus ag cabhrú le
Brian Maguire take(prog) with and help(prog) with
plandáil a dtailte féin
planting their lands reflex

‘Brian Maguire ... accepting, and helping with, the planting of their own lands.’

Note, as expected, that rightward movement may not strand prepositions in Irish.

- (12) * Bhí mé ag éisteacht le inné clár mór fada ar an
was I listen(prog) with yesterday program great long on the
ráidió faoin toghachán
radio about-the election

‘I was listening yesterday to a great long program on the radio about the election.’

These facts provide strong evidence that RNR does not involve movement of the shared element. Again, this poses a serious problem for the ATB analysis, under which

the shared element must undergo movement. The MD and the Ellipsis analyses do not face any problems here, since they do not require movement of the target of RNR.

2.2.3. Complementizer Stranding

As extensively discussed by Abels (2003c), complementizers cannot be separated from their complement clauses by movement of the latter. For instance, movement of IP may not strand C, as shown by (13).⁶

(13) * [John likes Mary]_i, Peter believes that t_i

In contrast, complementizers can be separated from their complement clauses by RNR, as shown by (14) (Bošković 1996, 2004b, Postal 1998, Abels 2003b, 2003c).

(14) I've been wondering whether, but I wouldn't like positively to state that,
your theory is correct (Bresnan 1974)

Bošković (2004b: 14) discusses a similar case.

(15) John asked when, but he didn't ask why, *Mary left*

⁶ See Section 5.3.1 of Chapter 2 for Abels's (2003c) analysis for the ungrammaticality of (13).

Here, what is stranded is a bit ambiguous – it can be SpecCP or SpecCP and C. If we assume that intermediate categories do not move, what is shared in (15) must be IP, which then entails that a null C must be stranded.

Therefore, the data examined here are problematic for the ATB analysis, where the target of RNR has to undergo movement.

2.2.4. Mobile Immobile Elements

Bošković (2004b:14) discusses cases where elements that are otherwise completely immobile undergo RNR. For instance, adjectival modifiers in English may not be separated from the NP they modify.

- (16) a. Expensive dresses, I like
b. * Dresses, I like expensive

However, separation of these elements is possible in RNR sentences, as shown by (17).

- (17) I like expensive, and you like cheap, *dresses*

Such separation is also impossible with other types of rightward movement.

- (18) a. Mary likes expensive dresses designed by French designers more than anything else

- b. Mary likes more than anything else expensive dresses designed by French designers
 - c. * Mary likes expensive more than anything else dresses designed by French designers
- (19)
- a. Linguists don't buy expensive books from foreign countries so often
 - b. ? Linguists don't buy so often expensive books from foreign countries
 - c. * Linguists don't buy expensive so often books from foreign countries

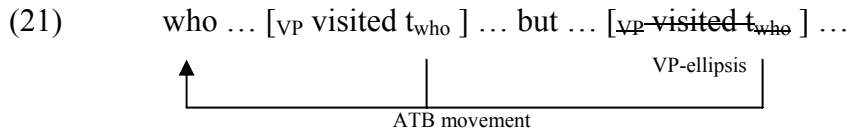
Given this, it is reasonable to assume that *expensive* and *dresses* in (17) are not separated by movement. Again, this conclusion is problematic for the ATB analysis.

2.2.5. VP-Ellipsis

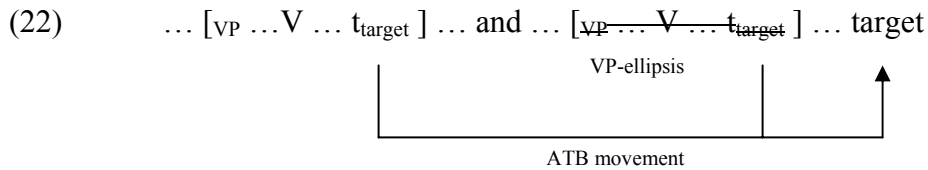
Abels (2003c:49) points out that leftward ATB movement is compatible with VP-ellipsis. That is, it is possible for VP-ellipsis to apply to a VP from which an element is ATB moved. This is illustrated in (20).

- (20) ? Who did you say that John had visited long ago but that Mary hadn't until
yesterday? (Abels 2003c:49)

The relevant portion of the structure of (20) is illustrated in (21).



Given this, if RNR involved rightward ATB movement of the target, it would be expected that VP-ellipsis should be possible, since the structure of the sentence after the application of RNR will be virtually identical to that in (21).



However, this prediction is not borne out.

- (23) a. Jane talked about, but Frank didn't talk about, *the achievements of the syntax students*
- b. Jane talked about the achievements of the syntax students but Frank didn't
- c. * Jane talked about, but Frank didn't, *the achievements of the syntax students*
- (Abels 2003c:50)

(23)a and (23)b illustrate RNR and VP-ellipsis, respectively. (23)c is a combination of the two. As indicated, RNR and VP-ellipsis are not compatible. As Abels points out, it is not clear why this should be the case under the ATB analysis.⁷

2.2.6. Summary

In this section, I have reviewed a number of well-known properties of RNR. The important conclusion that follows from the discussion is that the target of RNR stays in-situ, i.e., it does not undergo movement for the purposes of RNR. This conclusion is problematic for the ATB analysis, in which the target necessarily undergoes movement. Of course, the question still remains how the in-situ property is to be captured. This will be made clear in subsequent sections. Before closing, however, it should be noted that the in-situ property does not itself allow us to tease apart the MD and the Ellipsis analyses. Therefore, in what follows, I will presuppose that the in-situ property holds in RNR without further discussion, and examine different aspects of the construction in question that will allow us to determine which of the remaining two analyses is the correct one.

⁷ Jonathan Bobaljik (p.c.) informed me that (23c) is acceptable to him. But he also noted that the second conjunct *but Frank didn't* feels more like a parenthetical, which is best when destressed. Given this, I assume that for those speakers who find the sentence acceptable, the sentence involves a different structure and hence the grammaticality of the sentence for these speakers is irrelevant to the discussion.

In addition, preposition stranding is not a relevant factor in (23), since the grammaticality of the sentences does not change even if there is no preposition.

- (i) a. Jane discussed, but Frank didn't discuss, the achievements of the students
- b. Jane discussed the achievements of the students but Frank didn't
- c. ?* Jane discussed, but Frank didn't, the achievements of the students

3. Previous Analysis: Multi-Dominance

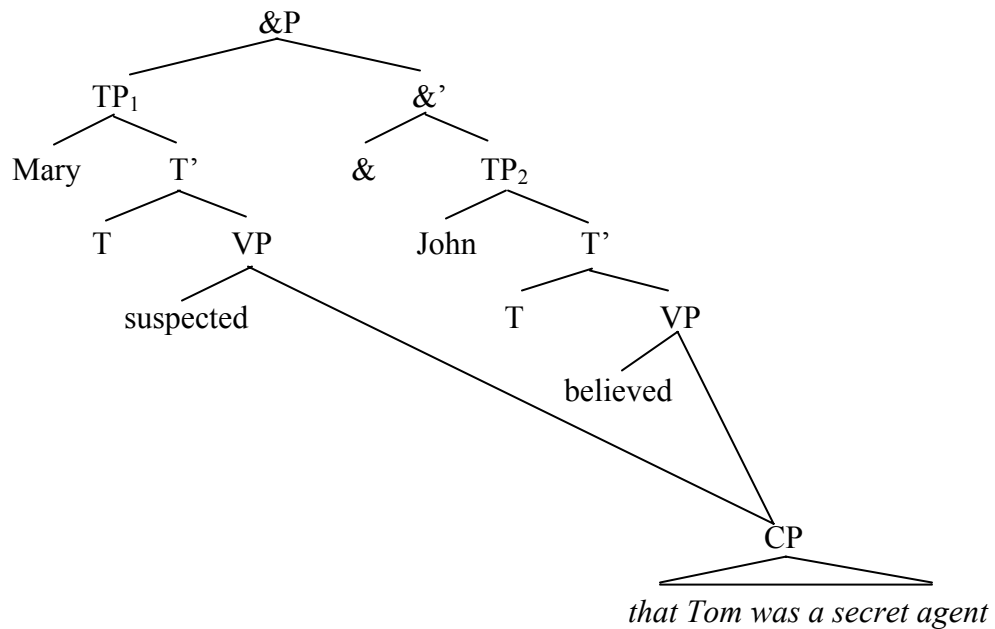
In this section, I will discuss the MD analysis of RNR. In particular, I will discuss the version of the MD analysis proposed by Wilder (1999, 2001) (henceforth, MDW) since it is widely adopted in the recent literature on RNR (see also McCawley 1982, Goodall 1983, 1987, Erteschik-Shir 1987, Abels 2003b, Chung 2004, M. Park 2005, de Vos and Vincente 2005 for various versions of the MD analysis). The reason why I devote a whole section to discussing MDW, which I will eventually reject, is that this system captures some aspects of RNR in a very elegant way (in addition to being an influential analysis in the literature). Therefore I think it is instructive to look into this analysis in some detail and see what its advantages and disadvantages are. However, I will show in Section 4 that MDW both under- and overgenerates.

3.1. The Structure of MDW

The starting point of the MD analysis is the abandonment of the Single Mother Condition, which states that if a node α is dominated, there can be only one node β that immediately dominates (i.e., is a mother of) α . In particular, proponents of the MD analysis claim that

the target of RNR is literally shared in the structure, which is achieved by allowing the target to be dominated by all the conjuncts at the same time. For instance, under MDW, the structure of a RNR sentence can be represented as in (24).⁸

(24) Mary suspected, and John believed, *that Tom was a secret agent*



Note that the target in (24) occupies the complement position of the VP projected by *suspected* and *believed*, i.e., the CP in question is a sister of both verbs at the same time. The target of RNR is thus literally shared under MDW. Note also that the shared CP does not undergo movement under this analysis. Given this, all of the in-situ properties of RNR discussed in Section 2.2 follow naturally. For instance, it is not surprising under the

⁸ Although the exact internal structure of coordination is not crucial to us, I adopt here the common assumption that the conjunction particle projects its own category yielding an asymmetric hierarchical relation between the conjoined elements. See Johannessen 1998, Moltmann 1992, Munn 1993, Wilder 1997 for relevant discussion.

MD analysis that the target of RNR is not subject to islands, since it does not have to undergo movement.

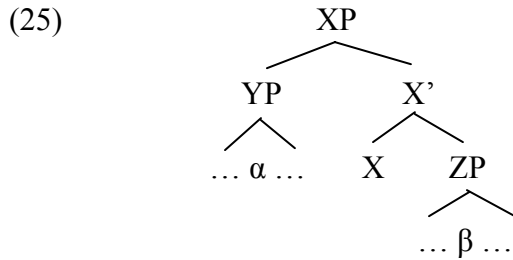
3.2. Linearization of MDW

One of the immediate questions that arises under the MD analysis is that of linearization. For instance, note that in (24), the target CP appears in the complement position of *suspected*. Therefore, the CP belongs to the first conjunct, which entails that it will precede elements in the second conjunct. However, the same CP also occupies the complement position of *believed* in the second conjunct. This requires the CP to appear within the second conjunct, following everything in the first conjunct. Therefore, a contradiction arises. In order to avoid this contradiction, Wilder (2001) proposes to modify Kayne's (1994) linearization algorithm, the Linear Correspondence Axiom (LCA). In what follows, I will illustrate how the LCA allows multi-dominance structures to be linearized. In Section 3.2.2, I will also discuss an elegant consequence of the modified linearization system of MDW.

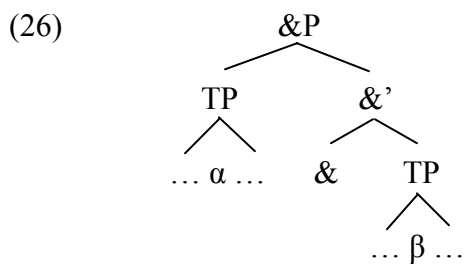
3.2.1. Linearization of MDW

Note that in Kayne's (1994) original formulation of the LCA, the precedence relation between two terminals for which no direct c-command relation holds is determined by

means of the notion of image, where the image of X is the set of terminals dominated by X. For instance, in (25), neither α nor β c-commands the other. However, α ends up preceding β , because it is contained in the image of YP that asymmetrically c-commands β .⁹



Under the assumption that conjunction projects its own maximal category with full-fledged X-bar structure (see footnote 8 for references), the interconjunct relation between the terminals contained in each conjunct is essentially the same as that between α and β in (25), because no direct c-command relation holds between the terminals, while the terminals in the first conjunct end up preceding those in the second conjunct.



⁹ I am ignoring here certain details of the LCA that are not important for us, e.g., the precedence relation between α and X, etc. See Kayne's original work for further details.

However, unlike the normal coordinated sentences in (26), coordinated sentences in RNR constructions involve multi-dominance of the target, which leads to a contradiction with respect to linear order, as noted above. Given this, Wilder (1999, 2001) proposes to modify the LCA. I list in (27) the set of assumptions regarding linearization adopted by Wilder (1999, 2001).

- (27)
- a. X *c-commands* Y if Y either is or is contained in X 's sister.
 - b. A *dominance path* of α is a sequence of categories $\langle C_1, \dots, C_n \rangle$ such that $C_1 =$ the root, $C_n = \alpha$, and for all j ($1 \leq j \leq n$) C_j immediately dominates C_{j+1} .
 - c. α *fully dominates* β iff α is a member of every dominance path of β .
 - d. α is a *shared* constituent of X iff X dominates, but not fully dominates α .
 - e. The *image* of a category X , $d(X)$, is the (unordered) set of terminals fully dominated by X .

In the modified system in (27), the notion of image makes reference to the new notion of full dominance. The key consequence of this modification is that the shared element is ignored in evaluating the precedence relations holding “across” the conjuncts. Therefore, the linear position of the shared element can only be determined based on the direct asymmetric *c-command* relations holding “within” each conjunct. Therefore, given (27), the precedence relations in (28) will be established based on the multi-dominance structure in (24). (For ease of exposition, I ignore the conjunction here.)

- (28) a. Within TP₁: Mary > suspected > CP
b. Within TP₂: John > believed > CP
c. TP₁ asymmetrically c-commands elements in TP₂.

Hence, the image of TP₁, i.e., {Mary, suspected}, will precede the image of TP₂, i.e., {John, believed}.

The next task is to determine the linear order of all the elements in the sentence by putting together the ordering relations in (28)a-c. In so doing, let us assume that the resulting order should be compatible with the individual ordering relations in (28)a-c. For instance, the shared CP in (28)a is the final element of the first conjunct. Similarly, the CP in (28)b is also the final element of the second conjunct. Given this, the only way that the CP can satisfy both these ordering relations is to appear at the very final position of the whole sentence, where it can follow the first and the second conjuncts simultaneously. Therefore, we get the correct order in (24): *Mary > suspected > John > believed > CP*.

In sum, the modified system of the LCA, proposed by Wilder (1999, 2001), resolves the linear order problem that arises with respect to multi-dominance structures. In the following section, I will discuss one additional advantage of this system.

3.2.2. Right Edge Generalization

As shown in the preceding section, in determining the linear position of the target of RNR, reference is only made to the asymmetric c-command relations that the target establishes within each conjunct. It is also assumed that the surface position of the target

should be consistent with all the conjunct-internal orders established that way. Given this, it is not difficult to see that the target should occupy the final position conjunct-internally. For instance, if an element X follows the target in the first conjunct, the target would not be allowed to appear after the second conjunct, a position designated for RNR targets, since X would then be unable to follow the target. This is actually a well-known property of RNR, and Wilder (1999, 2001) points out that MDW correctly predicts it. This is summarized in (29).

(29) ***Right Edge Generalization***

The shared element must be the rightmost element in all non-final conjuncts.

The effect of this generalization is illustrated by the ungrammaticality of (30).

- (30) * John gave __ a present, and Mary congratulated, *the boy who lives nextdoor*
(Wilder 1997:84)

Here, given that the shared DP c-commands *a present* in the first conjunct, the former must precede the latter. However, the surface position of the shared DP in (30) is not consistent with the linear order established in the first conjunct.

This, in my opinion, is the most elegant aspect of MDW. Although the generalization in (29) is often stipulated in other analyses, MDW derives it, which provides a reason to favor this analysis. However, a problem still remains. That is, the

generalization in (29) also holds for final conjuncts, i.e., it should be generalized as follows:

(31) ***Right Edge Generalization***

The shared element must be the rightmost element in all conjuncts.

However, MDW does not prevent a situation where the target is followed by something in the final conjunct, as in (32).

(32) * Mary congratulated __, and Bill gave, *the boy* the prize

Here, the target occupies a non-final position in the final conjunct. Given the linearization algorithm discussed in Section 3.2.1 and also the generalization in (29), it is not clear why the sentence is ungrammatical under MDW.¹⁰ Therefore, although MDW can nicely capture the in-situ property of the RNR target and the right edge requirement for non-final conjuncts, it still fails to capture the right edge effect for final conjuncts.

¹⁰ Wilder (2001:34) notes that if the subject of the second conjunct is missing, (32) improves for some unknown reason. This is shown in (i).

- (i) a. Mary congratulated __ and gave *the boy* the prize
- b. She neither fed __ nor gave *the child* a drink

Here, the subject of the second conjunct is shared with the first conjunct. (Wilder assumes that (i) involves conjoined VPs.) In any case, it seems clear that cases like (32) remain problematic for MDW and that (i) is affected by additional factors, which require further investigation. I will speculate more on these additional factors in Chapters 5 and 6.

3.3. Summary

In this section, I have discussed in detail Wilder's (1999, 2001) Multi-Dominance analysis of RNR. Given that the shared element need not be moved for the purposes of RNR under MDW, the analysis correctly captures several properties of RNR examined in Section 2.2. Moreover, it was shown that with some modifications to the LCA, MDW nicely derives (one aspect of) the Right Edge Generalization. In the following section, I will discuss a number of problems for MDW.

4. Some Problems for the MD Analysis

Recall that in Section 2.2, I have shown that the in-situ property of RNR poses a problem for the ATB movement analysis, in which the target of RNR necessarily undergoes movement. The in-situ property does not distinguish the MD and the Ellipsis analyses, since under these approaches, the target does not have to undergo movement for the purposes of RNR. However, I have also pointed out above that the two approaches are

still different with respect to the number of occurrences of the target in the structure. That is, under the MD analysis, there is one occurrence of the target, while under the Ellipsis analysis, the number of occurrences of the target equals the number of the conjuncts, although only one of the targets appears on the surface. Another structural difference between the two approaches in question concerns the relation between the target and the conjuncts. Under the MD analysis, all the conjuncts lie in the same structural relation to the target, since they literally share the target by means of multi-dominance. On the other hand, what appears to be shared on the surface is actually part of the final conjunct only under the Ellipsis analysis. Hence, the target-conjunct relation is symmetric under the MD analysis, while it is asymmetric under the Ellipsis analysis. The state of affairs is summarized in (33).

(33)

	Number of Targets	Target-Conjunct Relation
Multi-dominance	Single	Symmetric
Ellipsis	Multiple	Asymmetric

Based on these differences, I will compare the MD and the Ellipsis analyses in this section with respect to a set of novel data. I will show that the MD analysis both overgenerates and undergenerates, while the Ellipsis analysis provides a straightforward analysis of the data examined below.

4.1. Multiple Traces

The sentences in (34) and (35) illustrate RNR in Korean and Japanese. The point to note is that prior to the application of RNR, the embedded object, indicated by bold letters, is scrambled out of the embedded clause in each conjunct in a parallel way. After that, the embedded clause, which contains the trace of the scrambled object, is RNRed along with the matrix verb.

- (34) **ppang_i-ul** Tomo-nun, kuliko **bap_j-ul** Nina-nun, (K)
bread-acc *T-top* *and* *rice-acc* *N-top*
- Ana-ka** t **mekess-tako malha-ess-ta**
A-nom *ate-comp* *say-past-dec*
- ‘Bread, Tomo (said that Ana ate) t and rice, Nina said that Ana ate t.’

- (35) **pan_i-o** Tomo-wa, (sosite) **gohan_j-o** Nina-wa, (J)
bread-acc *T-top* *and* *rice-acc* *N-top*
- Ana-ga** t **tabeta-to it-ta**
A-nom *ate-comp* *say-past.dec*
- ‘Bread, Tomo (said that Ana ate) t and rice, Nina said that Ana ate t.’

Apparently, there are two distinct elements that are associated with a single position inside the RNRed embedded clause. If we assume that there is only one occurrence of the

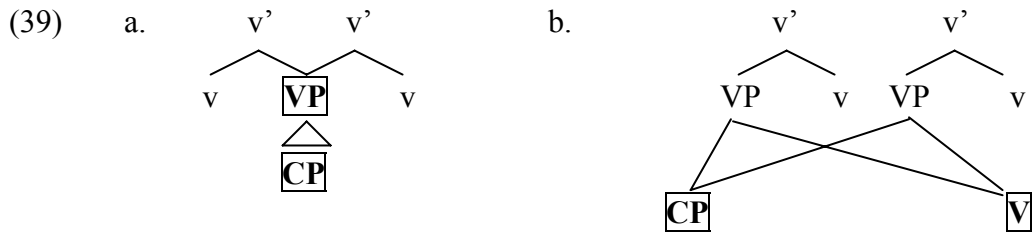
constituents on the basis of examples like (37)-(38).¹³ Given this, we seem to be required to allow multiple applications of multi-dominance, where the elements contained in the target are separately multi-dominated.

- (37) Aki-nun Ana-ka ppang-ul, kuliko Nina-nun Ana-ka bap-ul, (K)
A-top A-nom bread-acc and N-top A-nom rice-acc
mekess-tako kun sori-lo malha-ess-ta
ate-comp big.voice-with say-past-dec
 ‘Aki (said with loud voice that) Ana (ate) bread and Nina said with loud voice that Ana ate rice.’

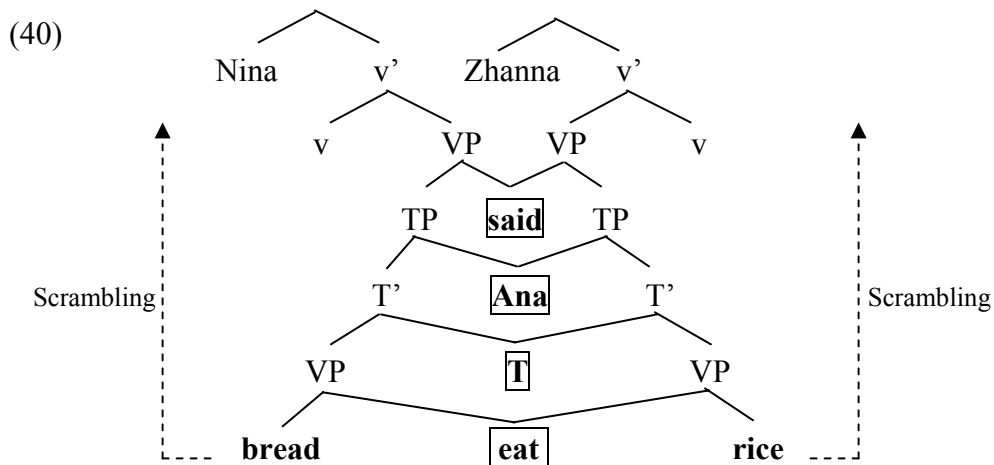
- (38) Aki-wa Ana-ga pan-o, (sosite) Nina-wa Ana-ga gohan-o (J)
A-top A-nom bread-acc and N-top A-nom rice-acc
tabeta-to oo goe-de it-ta
ate-comp big.voice-with say-past-dec
 ‘Aki (said with loud voice that) Ana (ate) bread and Nina said with loud voice that Ana ate rice.’

Once we allow such multiple multi-dominance, the number of possible multi-dominance configurations for an RNR target increases rapidly. For instance, in (34) and (35), we may multi-dominate the embedded CP separately from the matrix verb, which is itself multi-dominated, as shown in (39)b. ((39)a is the structure of (34) and (35) under the assumption that multi-dominance targets constituents.)

¹³ See Chapter 4 for further discussion on insensitivity of RNR to syntactic constituency.



Of course, the structure in (39)b does not resolve the problem raised above, since there is still only one occurrence of the embedded clause. As a result, it fails to provide the required number of base-positions for the scrambled objects in (34) and (35). In this respect, it does not differ from (39)a. However, it appears that nothing prevents all the elements contained in the target from being multi-dominated individually, as shown in (40).

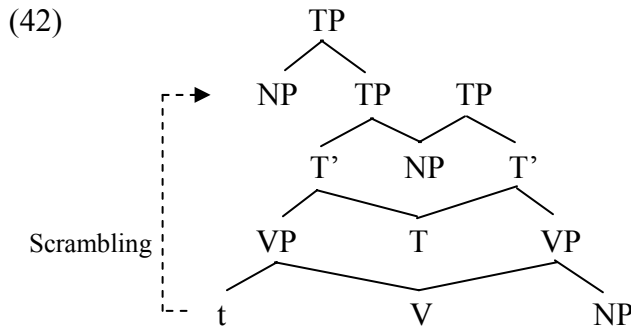


The structure in (40) does provide a technical solution to the problem raised above. By allowing all the terminal elements in the target to be individually multi-dominated, we can supply two separate positions for the scrambled objects in (34) and (35).

However the potential solution to the problem at hand noted above faces serious problems. In particular, structures like (40) lead to a problem of overgeneration. For instance, it does not seem possible to rule out examples like (41) under this system.

- (41) * sakwa-rul Ana-nun ppang-ul mek-ess-ta (K)
apple-acc A-top bread-acc eat-past-dec
 ‘Apple, Ana ate bread.’

The structure of (41) is given in (42). Here, the configuration of multiple multi-dominance is exactly the same as that in (40).



To summarize, while a technical solution may be available to avoid a problem raised above for the MD analysis, the solution leads to another problem, which may even be more serious than the original one. Either way, the phenomenon examined here raises a serious problem for the MD analysis. I have also shown that the data in question (i.e., (34) and (35)) receive a straightforward account under the Ellipsis analysis.

4.2. Multiple Binders

Section 4.1 illustrated a problem for the MD analysis that arises due to a discrepancy between the number of elements extracted out of a target and that of their base-positions available in the target. I have shown that while a technical solution may be available, the solution comes at the cost of overgeneration. In this section, I will examine a different type of discrepancy between target-external and target-internal elements. More specifically, I will show that a pronominal contained in a target can be bound by distinct elements outside of the target, allowing a sloppy identity-like interpretation. This poses a difficult problem for the MD analysis since the pronoun stays in situ. Therefore, allowing multiple multi-dominance will not help.¹⁴ Consider (43) and (44).

- (43) Jeff_i-nun Nina-ekey, kuliko Tomo_j-nun Zhanna-ekey, (K)
J-top *N-dat* *and* *T-top* *Z-dat*
- ku_{i/j}-uy/caki_{i/j}-uy** **cha-rul** **pillye cwu-ess-ta**
he-gen/self-gen *car-acc* *lend-past-dec*
- ‘Jeff (lent his car) to Nina and Tomo lent his car to Zhanna.’

¹⁴ In (43) and (44), speakers have different preferences between a pronominal form and a reflexive form. This does not affect the argument.

It is interesting to observe that there is variation between speakers of English with respect to the availability of sloppy identity reading in comparable sentences.

(i) %John will call, and Bill will email, *his wife*

I speculate that this may correlate with the speaker variation noted above regarding the choice between a pronominal form and a reflexive form, where the English speakers who disallow (i) follow a comparable principle that disallows the pronominal form in the Korean and Japanese sentences in (43) and (44). However, for the English speakers in question, the reflexive option would not be available.

- (44) Jeff_i-wa Nina-ni, (sosite) Tomo_j-wa Zhanna-ni, (J)
J-top N-dat and T-top Z-dat
kare_{i/j}-no/zibun_{i/j}-no kuruma-o kasi-ta
he-gen/self-gen car-acc lend-past.dec
 ‘Jeff (lent his car) to Nina and Tomo lent his car to Zhanna.’

(43) and (44) involve a similar situation to that discussed in Section 4.1 in that there are multiple non-identical elements on the surface that are associated with a single element in the target. In this case, the possessive pronoun contained in the target can refer to *Jeff* and *Tomo* as its antecedent, allowing a sloppy identity-like interpretation. If there is a single occurrence of the target in the structure, as is the case under the MD analysis, it does not seem possible for a single pronoun to be bound by two different antecedents.

On the other hand, the Ellipsis analysis provides a rather simple solution, as shown in (45). Here, the crossed-out portion in the first conjunct is deleted under identity with the corresponding elements in the second conjunct. Under the assumption that the relevant deletion operation takes place at PF, it is expected that the interpretative properties of the pronouns do not interfere with the deletion operation.¹⁵

¹⁵ It is noteworthy that sloppy identity interpretation is often discussed in relation to VP-ellipsis in the literature, another phenomenon that is often argued to involve deletion under identity (Ross 1967, Sag 1976, Williams 1977b, Lobeck 1986, 1995, Fiengo and May 1994, Hoji 1998, Tomioka 1999).

(i) Peter walked his dog and Dan did \emptyset too (Ross 1967)
 ‘... Dan walked Peter’s dog (strict).’
 ‘... Dan walked Dan’s dog (sloppy).’

Note also that Bošković (2004b) discusses several similarities between VP-ellipsis and RNR based on morphological properties.

- (45) Jeff-nun Nina-ekey ~~ku-uy~~ ~~cha-rul~~ ~~pillie cwu-ess-ta~~ kuliko
J-top N-dat he-gen car-acc lend-past-dec and
Tomo-nun Zhanna-ekey **ku-uy cha-rul pillie cwu-ess-ta**
T-top Z-dat he-gen car-acc lend-past-dec

Given this, I conclude that the interpretation of pronouns in (43) and (44) provides evidence in favor of the Ellipsis analysis and raises a problem for the MD analysis.

4.3. Control

In this section, I will examine cases where a PRO subject contained in the target is controlled by the matrix subject of each conjunct at the same time, yielding a sloppy identity-like interpretation. As discussed in Section 4.2, the availability of this type of interpretation poses a problem for the MD analysis. With this in mind, consider (46) and (47).

- (46) Nina_i-nun Ana-ekey, kuliko Zhanna_j-nun Oksana-ekey, (K)
N-top A-dat and Z-top O-dat
PRO_{ij} ilchik tolaokayss-tako yaksokha-ess-ta
early return-comp promise-past-dec

‘Nina (promised) Ana (to come back early) and Zhanna promised Oksana to come back early.’

- (47) Nina_i-wa Ana-ni, (sosite) Zhanna_j-wa Oksana-ni, (J)
N-top A-dat and Z-top O-dat
PRO_{i/j} hayaku kaeru-to yakusokusi-ta
early return-comp promise-past.dec

‘Nina (promised) Ana (to come back early) and Zhanna promised Oksana to come back early.’

Here, the target contains a PRO subject, which is controlled by the matrix subject of each conjunct simultaneously, yielding a sloppy identity-like interpretation. As in Section 4.2, this is problematic for the MD analysis, since there should be only one occurrence of the PRO in the structure, although there are two distinct controllers for it. Therefore, the MD analysis faces a problem regarding the data in (46) and (47).¹⁶

¹⁶ Given the word order, one might assume that the PRO in (46) and (47) may be outside of the target. That is, what is shared in the embedded clause may be smaller than the embedded TP – presumably, something like vP. If this is correct, then the structure of (46) and (47) would be as in (i).

- (i) [_{TP} Subj_i [_{vP} Dat [_{TP} PRO_i [_{vP} Adv Verb]] Verb]] and
 [_{TP} Subj_j [_{vP} Dat [_{TP} PRO_j [_{vP} Adv Verb]] Verb]]

In this case, the fact that PRO is controlled by distinct matrix subjects may not be a problem, because there are two distinct PROs.

However, such a complication can be avoided by burying the nonfinite embedded clause deeper within the target, as in (ii) and (iii). In this case, there is no possibility of putting the PRO subject outside of the target. Hence the argument still holds.

- (ii) Nina_i-nun cenhwa-ro, kuliko Tomo_j-nun imeyil-ro, (K)
N-top telephone-by and T-top email-by
 [(PRO_{i/j}) **rwummeyit-ekey** [(PRO_{i/j}) **ilchik tolaokeyss-tako**] **yaksokhayssta**]
roommate-dat early return-comp promised

‘Nina (promised her roommate to come back early) by phone and Tomo promised his roommate to come back early by email.’

- (iii) Nina_i-wa denwa-de, (sosite) Tomo_j-wa email-de, (J)
N-top telephone-by and T-top email-by
 [(PRO_{i/j}) **roommate-ni** [(PRO_{i/j}) **hayaku kaeru-to**] **yakusokusi-ta**]

Again, the Ellipsis analysis provides a straightforward account. (48) illustrates the relevant step of the derivation of (46). (The same account applies to (47).)

- (48) Nina_i-nun Ana-ekey ~~PRO_i ilchik tolaokayss tako yaksokha-ess-ta~~
N-top *A-dat* *early* *return-comp* *promise-past-dec*
- Zhanna_j-nun Oksana-ekey **PRO_j ilchik tolaokayss-tako yaksokha-ess-ta**
Z-top *O-dat* *early* *return-comp* *promise-past-dec*

Note incidentally that if we assume that control involves overt movement, as Hornstein (1999, 2001) argues, the data examined here can be considered to pose the same type of problem as the data in Section 4.1. Either way, the data examined in this section pose a problem for the MD analysis.

4.4. Honorification

I will show now that subject honorification in Korean poses a problem for the MD analysis, while it is correctly captured by the Ellipsis analysis. Subject honorification is an optional phenomenon where a verb takes a special honorification morpheme when the

roommate-dat *early* *return-comp* *promised*
 ‘Nina (promised her roommate to come back early) by phone and Tomo promised his roommate to come back early by email.’

subject of the sentence is socially superior to the speaker.¹⁷ Given its optionality, one is not required to use honorification even when the referent of the subject is respectable. (But, of course, one could be considered disrespectful in that situation.) While the exact nature of the phenomenon is somewhat controversial in the literature (see Harada 1976, Ura 1996, Namai 2000, Niinuma 2003, Boeckx and Niinuma. 2004, Choe 2004, Bobaljik and Yatsushiro 2006), for our purposes, it suffices that when the honorification morphology is present, a certain structural requirement must be met – namely, that there be a local subject that is socially superior to the speaker. This is illustrated below. (Subject honorification in Japanese behaves in the same way as Korean in the relevant respects.)

(49) kyoswunim-un chayk-ul sa-(**si**)-ess-ta (K)
professor-top book-acc buy-hon-past-dec
 ‘Professor bought a book.’

(50) Lydia-nun kyoswunim-ul manna-(***si**)-ess-ta (K)
L-top professor-acc meet-hon-past-dec
 ‘Lydia met the professor.’

(51) kyoswunim-uy kay-ka cicu-(***si**)-ess-ta (K)
professor-gen dog-nom bark-hon-past-dec
 ‘Professor’s dog barked.’

¹⁷ Object honorification is also possible in Korean in some environments. However, it employs a different mechanism than subject honorification and hence is irrelevant for our purposes. See Niinuma 2003 for extensive discussion of object honorification.

- (52) kyoswunim-un Ana-ka chayk-ul sa-(*si)-ess-tako malha-ess-ta (K)
professor-top A-nom book-acc buy-hon-past-comp say-past-dec
 ‘Professor said that Ana bought a book.’

In (49), the subject is socially superior to the speaker. Hence, the honorification morpheme *-si-* may appear on the verb. (50) shows that objects cannot license this type of honorification. (51) illustrates that it must be the subject itself, not an element embedded within it, that licenses honorification.¹⁸ (52) shows that a matrix subject cannot license honorification on the embedded verb across a non-coreferential embedded subject, i.e., the honorification-triggering subject must be local.

Given this, consider (53), which involves RNR of an indirect object and a verb. Note that the subject of each conjunct is in different social status with respect to the speaker (i.e., Professor > speaker ≥ Tomo). As indicated, honorification is possible on the RNRed verb in (53), where *kyoswunim* ‘Professor’ appears as the subject of the second conjunct. However, as the sharp contrast between (54) and (55) (and also between (56) and (57)) shows, when the subject of the second conjunct is not superior to the speaker, honorification is impossible, even though the subject of the first conjunct is superior to the speaker.

- (53) Tomo-nun bap-ul, kuliko kyoswunim-un ppang-ul, (K)
T-top rice-acc and professor-top bread-acc

¹⁸ It might be possible to say that the trigger has to c-command the honorification morpheme. But this is not important for us.

Nina-ekey cwu-si-ess-ta

N-dat give-hon-past-dec

‘Tomo (gave) rice (to Nina) and Professor gave bread to Nina.’

- (54) * kyoswunim-un ppang-ul, kuliko Tomo-nun bap-ul, (K)
professor-top bread-acc and T-top rice-acc

Nina-ekey cwu-si-ess-ta

N-dat give-hon-past-dec

- (55) kyoswunim-un ppang-ul, kuliko Tomo-nun bap-ul, (K)
professor-top bread-acc and T-top bread-acc

Nina-ekey cwu-ess-ta

N-dat give-past-dec

- (56) Nina-wa Ana-ni, (sosite) sensei-wa Zhanna-ni, (J)
N-top A-to and teacher-top Z-dat

hon-o o-okurini nat-ta

book-acc hon-send-past-dec

‘Nina (sent a book) to Ana and the teacher sent a book to Zhanna.’

- (57) * sensei-wa Zhanna-ni, (sosite) Nina-wa Ana-ni, (J)
teacher-top Z-dat and N-top A-dat

hon-o o-okurini nat-ta

book-acc hon-send-past-dec

Therefore, the generalization is that in RNR constructions, honorification marking in the target is only allowed when the subject of the final conjunct satisfies the syntactic and pragmatic requirements for honorification.¹⁹

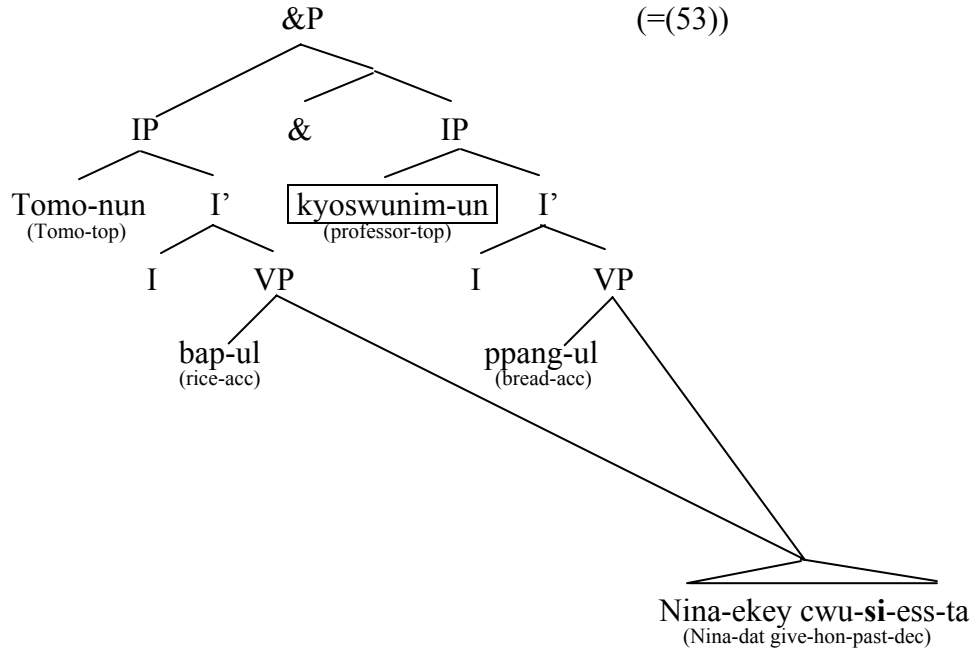
- (58) In RNR constructions, honorification marking in the target can only be licensed by the subject of the final conjunct.

The question is how to capture this generalization. It is very important to note that under the MD analysis, each conjunct lies in a symmetric relation to the target, because the target is literally shared. Keeping this in mind, let us consider the structure of (53) and (54), given in (59) and (60). (The tree diagrams in (59) and (60) are simplified due to the complexity of the MD structure. But this does not affect the point.)

¹⁹ Van Oirsouw (1987:234-235) notes a similar case of asymmetric agreement in RNR constructions. According to him, in Hopi, it is not the higher node, but the NP that is linearly nearest to the verb that controls agreement. In addition, in Palestinian Arabic, it is again the NP that is linearly nearest to the verb that controls agreement. Van Oirsouw assumes that this should be explained by reference to linear order of conjuncts.

(59)

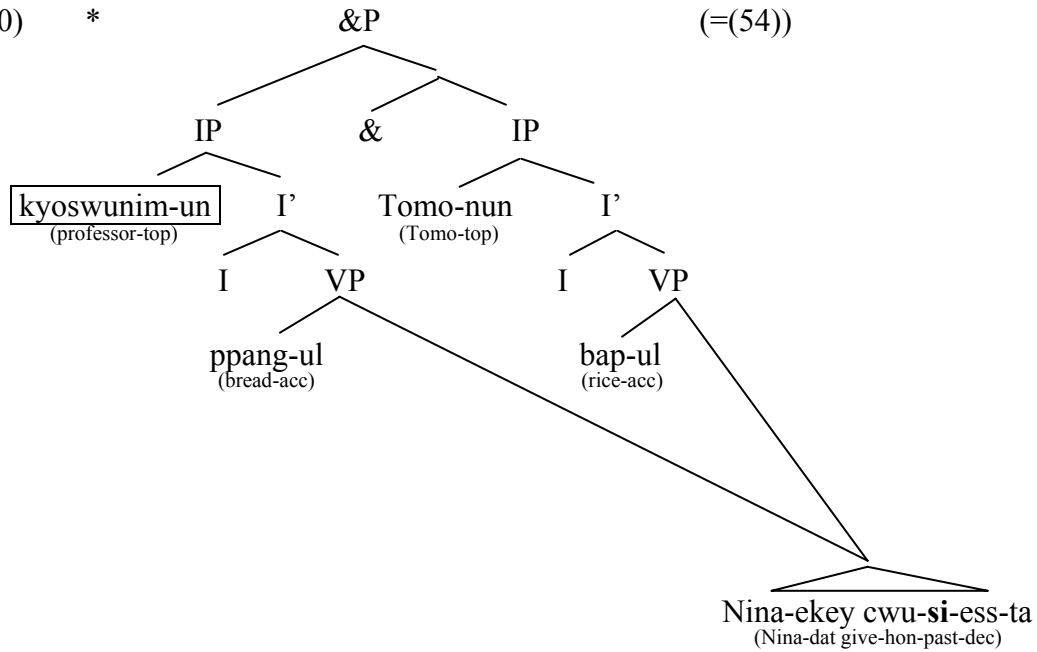
(=(53))



(60)

*

(=(54))



As is clear in the tree diagram, the subjects lie in an equal structural relation to the honorification morpheme in the target. Given this, there seems to be no reason why the

second conjunct should be privileged with respect to honorification. Hence, the generalization drawn above remains unaccounted for under the MD analysis.

In contrast, the asymmetry receives an account under the Ellipsis analysis, since the verb contained in the target belongs to the second conjunct only (see also Mukai 2003 for a similar conclusion). Therefore, it can only agree with the subject of its own conjunct. Under this analysis, the structure of the grammatical sentence in (53) can be represented as in (61).²⁰

²⁰ Note that the verbs in the deleted and the surviving target do not have exactly the same morphological form in (61), i.e., only the verb in the surviving target carries an honorification morpheme, which indicates that RNR can ignore certain morphological mismatches. Bošković (1996:7) also notes that RNR in English can ignore certain inflectional mismatches, as illustrated in (i).

- (i) a. John will ~~sleep in her house~~, and Peter was, sleeping in her office
 b. John will ~~sleep in her house~~, and Peter has, slept in her house

It is noteworthy that Stjepanović (1998) also discusses similar cases in Serbo-Croatian, where she shows that VP ellipsis can ignore a wide range of inflectional differences. Oku (1998) argues that such a mismatch in VP ellipsis is allowed when the morphological content of the deleted verb can be recovered from that of the surviving verb (see also Lasnik 1995c). From this, it follows that the morphological content of the surviving element should be bigger than (or at least equal to) that of the deleted element, so that the content of the latter can be recovered from that of the former. (Oku calls this the *Subset Principle*.) This seems to hold for the sentences in (i) as well. For instance, the deleted verb in the first conjunct in (ia) is *sleep*, while the surviving verb in the second conjunct is *sleeping*, which obviously has more morphological structure than the former. In (ib), the deleted verb is *sleep* and the surviving verb is *slept*, which is morphologically more complex than the former (i.e., *sleep* vs. *sleep* + past).

Given this, an interesting question arises regarding cases like (ii) (Cf. (61)).

- (ii) kyoswunim-un ppang-ul, kuliko Tomo-nun bap-ul, **Nina-ekey cwu-ess-ta**
professor-top bread-acc and T-top rice-acc N-dat give-past-dec
 ‘Professor (gave) bread (to Nina) and Tomo gave rice to Nina.’

The question is if the honorification morpheme appears on the deleted verb in the first conjunct. Given the Subset Principle, which implements the notion of recoverability of deletion in the current context, it is expected that in the deleted target in (ii), the honorification morpheme should not appear, since it will not be recoverable from the surviving target which does not have an honorification morpheme. This is illustrated in (iii). (Square brackets mean that the element inside them should not occur in that position.)

- (iii) kyoswunim-un ppang-ul ~~Nina-ekey~~ ~~ewu-**[si]**-ess-ta~~ kuliko
*professor-top bread-acc N-dat give-**[hon]**-past-dec and*
 Tomo-nun bap-ul **Nina-ekey cwu-ess-ta**
T-top rice-acc N-dat give-past-dec

The prediction then is that (ii) will sound impolite, since the speaker is not employing honorification morphology although the subject of the first conjunct is socially superior. Unfortunately, the judgment is too subtle to draw a firm conclusion. Recall that honorification is an optional phenomenon to begin with. It is not easy to determine the degree of politeness especially when the honorification marker does not appear overtly. Therefore, until we find a better way to test this prediction, I will put aside this question for future research.

- (61) Tomo-nun bap-ul ~~Nina-ekey cwu-ess-ta~~ kuliko
T-top *rice-acc* *N-dat* *give-past-dec* *and*
kyoswunim-un ppang-ul **Nina-ekey cwu-si-ess-ta**
professor-top *bread-acc* *N-dat* *give-hon-past-dec*

In sum, the asymmetry in subject honorification in RNR constructions poses an additional problem for the MD analysis, while the Ellipsis analysis provides a straightforward account of it.

4.4.1. Post-Syntactic Honorification?

As Jonathan Bobaljik (p.c.) pointed out to me, one may wonder whether subject honorification can be based on linear order, given that only the subject of the second conjunct, which is linearly closer to the target than the subject of the first conjunct, licenses honorification. This is an interesting question in light of the fact that there have been proposals in the recent literature that some morphological manifestations of agreement may be determined in the post-syntactic component (see Bobaljik 2006 for relevant discussion and references). Given this, I would like to briefly consider this question before proceeding to the next section. However, it should also be noted that we cannot dispense with structural notions in characterizing subject honorification in Korean. That is, as shown by (49)-(52), we have to make reference to the notion of a c-commanding local subject. Moreover, I have shown above that this notion is sufficient to capture all the relevant patterns of subject honorification in RNR. Given this, the reader

should bear in mind that any analysis that introduces additional assumptions, just like the hypothetical post-syntactic analysis to be considered below, should be dispreferred on grounds of simplicity. Furthermore, I will show that this hypothetical system also faces empirical problems. Therefore, the point of the discussion in this subsection is that even with this undesirable move, i.e., adoption of the assumption that linear order is relevant for honorification, the MD analysis still cannot account for the honorification data.

Suppose that in the syntax, local subjects can mark the verb with an honorification feature and that this feature is realized as the honorification marker if the subject is the linearly closest subject to the verb after linearization. If this is a correct characterization of subject honorification in Korean, then the data in Section 4.4 does not necessarily provide an argument against the MD analysis, because after linearization, the subject of the first conjunct will not be the linearly closest subject even if it can locally c-command the verb within its conjunct. Therefore, the fact that the subject of the first conjunct fails to license honorification can be made consistent with the MD analysis. (The Ellipsis analysis is also compatible with this formulation.)

However, a problem arises when we look at a bigger context. To see this, consider the sentence in (62), where subject honorification is licensed by a scrambled embedded subject.²¹

²¹ Ko (2007) extensively argues that subject scrambling is possible in Korean, barring processing difficulties. See also Oku 1998.

- (62) kyoswunim_i-i [_{CP} na-nun [_{CP} t_i Mary-lul manna-**si**-ess-tako] (K)
professor-nom I-top M-acc meet-hon-past-comp
 sayngkakha-n-ta]
think-pres-dec
 ‘John_i, I think that t_i met Mary.’

Note that the hypothetical post-syntactic honorification system sketched above cannot apply to this sentence without modification, since the embedded subject that is responsible for honorification is no longer the closest subject as a result of scrambling. An immediate solution seems to be to assume that honorification is licensed derivationally. For instance, suppose that the embedded subject licenses honorification when the embedded CP is sent to PF by multiple spell-out. At that point, the embedded subject will be the local subject both syntactically and linearly.

Assuming that honorification can be licensed derivationally, consider (63), which replicates the pattern examined in Section 4.4. The only difference here is that the licensing subject is the subject of the embedded clause. But the fact is the same – the relevant subject that licenses honorification should be in the second conjunct.

- (63) a. na-nun Jeff-ka, kuliko Tomo-nun [_{CP} kyoswunim-i, (K)
I-top J-nom and T-top professor-nom
chayk-ul peri-si-ess-tako] **sayngkakha-n-ta**
book-acc throw.away-hon-past-comp think-pres-dec

‘I (think that) Jeff (threw away the book) and Tomo thinks that the professor threw away the book.’

- b. * na-nun kyoswunim-i, kuliko Tomo-nun [_{CP} Jeff-ka, (K)
I-top professor-nom and T-top J-nom
chayk-ul peri-si-ess-tako] **sayngkakha-n-ta**
book-acc throw.away-hon-past-comp think-pres-dec

‘I (think that) the professor (threw away the book) and Tomo thinks that Jeff threw away the book.’

Now, when the embedded CPs in (63)b are sent to PF via multiple spell-out, the two ordering relations in (64) will be generated.

- (64) a. First conjunct: professor > book > throw away
 b. Second conjunct: Jeff > book > throw away

Recall that we are assuming (tentatively) that honorification is licensed derivationally via multiple spell-out. Assuming this, note that we are at the level of embedded clauses here and that these clauses have not been conjoined yet, i.e., they are separate clauses at this point. Given this, there does not seem to be any reason why *professor* in (64)a should not be able to license honorification, since it is the local subject at this point both syntactically and linearly.²² This shows that the MD analysis still fails to account for the

²² Note that given (62), one cannot assume that the licensing subject has to remain the most local subject throughout the derivation – especially, in the final representation. Therefore, one cannot appeal to the fact that *professor* in (64) is not the closest subject in the final representation as the reason why it fails to license honorification.

data in (63) as well as the data in Section 4.4, whereas the Ellipsis analysis can be extended to all these cases without any additional assumptions.

To conclude, the MD analysis cannot account for the honorification data even with the additional assumptions laid out above, which provides a strong argument in favor of the Ellipsis analysis.

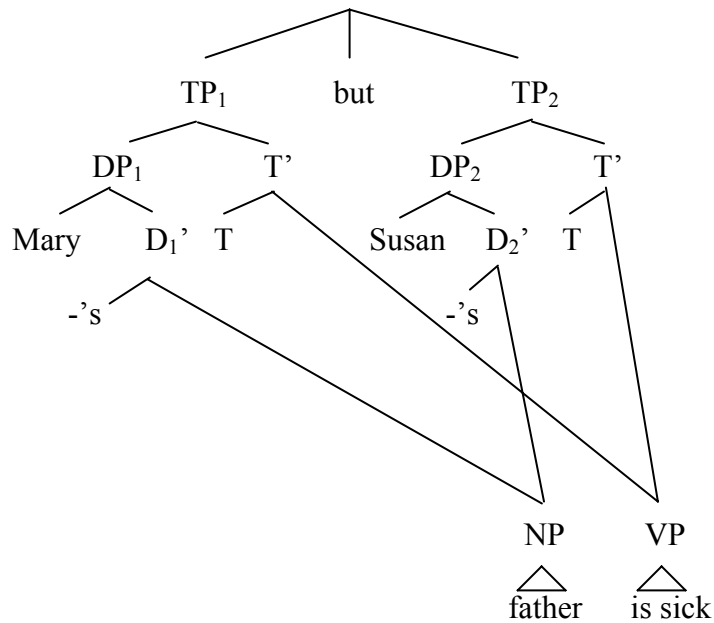
4.5. Linearization

Recall that it was noted in Section 3.2.1 that MDW adopts a modified version of the LCA in order to make multi-dominance structures linearizable. The problem that went unnoticed under MDW is a situation where a proper subpart of a left-branch element is multi-dominated along with a right-branch element, as in (65).²³ The relevant portion of the structure of (65) is given in (66). (I adopt (66) for ease of exposition. Of course, it is not the only possible multi-dominance structure, given the discussion in Section 4.1. But, regardless of the mode of multi-dominance employed here, the point made here stays the same.)

(65) (?)I think Mary's, but he thinks Susan's, *father is sick*

²³ For (65) to be more natural, contrastive stress has to be placed on *Mary's* and *Susan's*. See the discussion in Section 2.2 of Chapter 5.

(66)



In (66), the shared NP does not c-command out of the DPs dominating it – crucially, it does not c-command T'. Being multi-dominated, the NP is not contained in the image of DP₁ or DP₂ either. Hence, we do not have any way to determine the linear order of (the element contained in) NP, i.e., *father*, with respect to the elements contained in T', i.e., the structure is unlinearizable.²⁴

On the other hand, the Ellipsis analysis provides an account of (65) without any additional assumptions, as shown in (67).

(67) I think Mary's ~~father is sick~~ but he thinks Susan's *father is sick*

²⁴ In (66), it is even allowed under the linearization system of MDW that the elements in T' precede NP, which is ungrammatical. Hence, the structure both over- and undergenerates.

In sum, the data discussed here show that the MD analysis both over- and undergenerates, while the Ellipsis analysis provides a straightforward account of the data in question.

5. Summary

In this chapter, I have discussed some basic properties of RNR that will serve as background for the subsequent discussion. I have also reviewed previous approaches to this construction and argued that the Ellipsis analysis is superior to both the ATB and the MD analyses. Although I have not separately discussed this in the course of the discussion, it should be obvious that the Ellipsis analysis can also easily capture the in-situ property of the RNR target discussed in Section 2.2, which the ATB movement analysis fails to account for. In addition, I have shown that the MD analysis, a very influential analysis of RNR in the literature, faces the problem of both overgeneration and undergeneration. The arguments crucially relied on the inherent difference between the MD and the Ellipsis analyses regarding the number of the tokens of the target of RNR in the structure. I have argued that the behavior of scrambled elements (i.e., the fact that multiple non-identical elements can be extracted out of a single position in the target),

interpretation of overt and null pronouns (i.e., the fact that a single pronoun in the target can be bound/controlled by multiple non-identical antecedents), and licensing of honorification (i.e., the fact that there is an asymmetry between the first and the second conjuncts with respect to licensing of honorification) all indicate that we need multiple tokens of the shared element of RNR sentences.

In the course of the discussion, I have remained largely unspecific about the nature of the relevant Ellipsis phenomenon involved in RNR sentences. This will be the topic of discussion of the subsequent chapters. There, I will argue that the Ellipsis phenomenon in question should be implemented as PF deletion, the direct consequence of which is that RNR is not an operation of the syntax proper. In the course of the discussion in subsequent chapters, I will also point out additional problems for the pure syntactic approaches, i.e., the ATB and the MD analyses. The reader should bear in mind that the goal of the discussion in subsequent chapters will be to show that studying the properties of the Ellipsis in RNR allows us to better understand the nature of the interaction between syntax and phonology.

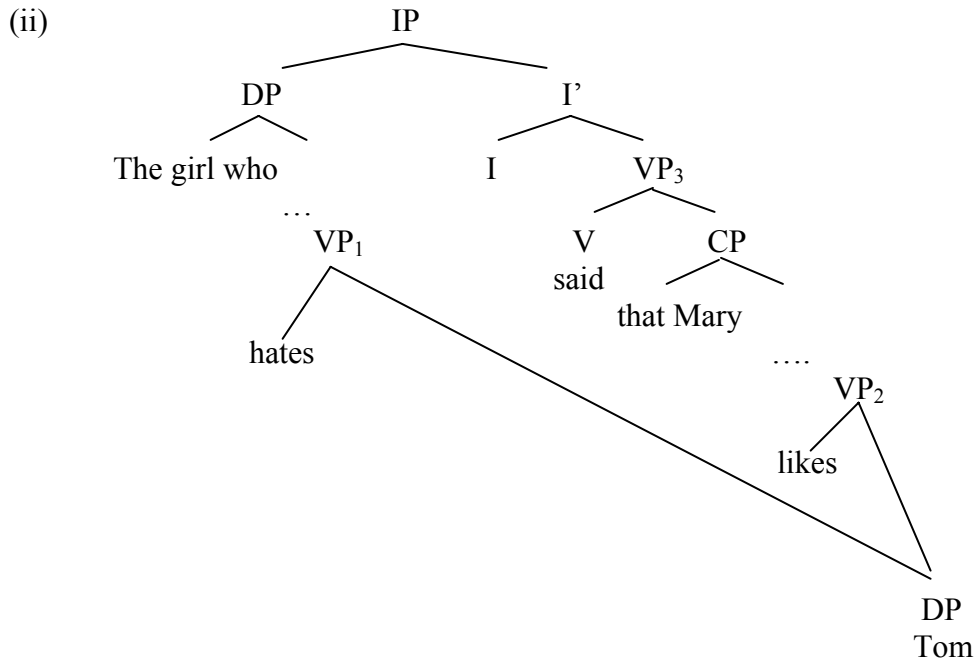
Appendix: One Additional Problem for MDW

Before proceeding to the next chapter, I would like to briefly discuss one more problem for MDW. We have seen above that the MD system is too powerful – it considerably overgenerates. Below, I will point out one additional problem for MDW to this effect.

Note that what is required (among others) in licensing a multi-dominance structure is that no problem arises with respect to linearization and presumably that no clash of selectional requirements, e.g., Θ -role, Case, etc, for the shared material occurs. These requirements hold in all the grammatical MD structures examined so far. Given this, consider the following example:

- (i) * The girl who hates said that Mary likes Tom

Here, the intended reading is where the embedded object *Tom* is also understood as the object of *hates* in the relative clause. The structure of (i) under MDW can be represented as in (ii).



In both VP_1 and VP_2 , *Tom* receives a Theme role and accusative Case. Hence, there is no clash of features. (Note that Citko (2005) argues that feature checking in multi-dominance structure is done in-situ by Agree without movement to Case positions. Therefore, the shared DP does not face a problem of having to move to two separate Case-checking positions.) Moreover, no problem arises with respect to linearization of the structure in (ii). For instance, within the subject DP, the order in (iii) obtains based on the following asymmetric c-command relations between the terminals:

(iii) the > girl > who > hates > Tom

As for the elements dominated by VP_3 , the order in (iv) holds. (I am ignoring I^0 here. But it does not affect our discussion.)

(iv) said > that > Mary > likes > Tom

Now, given that there is no direct c-command relation between the elements embedded under the subject DP and those under VP₃, we need something more than simple asymmetric c-command relations between terminals. Concerning this, as discussed earlier, MDW adopts a modified system of the LCA, repeated below.

- (v)
- a. X *c-commands* Y if Y either is or is contained in X's sister.
 - b. A *dominance path* of α is a sequence of categories $\langle C_1, \dots, C_n \rangle$ such that $C_1 =$ the root, $C_n = \alpha$, and for all j ($1 \leq j \leq n$) C_j immediately dominates C_{j+1} .
 - c. α *fully dominates* β iff α is a member of every dominance path of β .
 - d. α is a *shared* constituent of X iff X dominates, but not fully dominates α .
 - e. The *image* of a category X, $d(X)$, is the (unordered) set of terminals fully dominated by X.

Given this, the relevant images and the ordering relations that derive from them are given in (vi).

- (vi)
- $d(DP) > d(VP_3)$, where
- $d(DP) = \{\text{the, girl, who, hates}\}$
- $d(VP_3) = \{\text{said, that, Mary, likes}\}$

Crucially, the multi-dominated element *Tom* is not included in any of the images above. Therefore, its linear position can only be determined based on the asymmetric c-command relations that it establishes with other elements in the structure – namely, those in (iii) and (iv). When we combine (iii), (iv), and (vi), we get the order in (vii), which gives exactly the sentence in (i).

(vii) the > girl > who > hates > said > that > Mary > likes > Tom

Therefore, we need additional assumptions to rule out sentences like (i), i.e., MDW overgenerates here. One possibility would be to restrict multi-dominance to coordinated structures. However, note that multi-dominance is actually designed to be part of a more general structure building process. For instance, Wilder (2001) even proposes to extend multi-dominance to Move, not just Merge. Given this, it is not clear to me what kind of additional assumptions would help the situation.

Chapter 4.

Non-syntactic Behavior of RNR

1. Introduction

In Chapter 3, we have seen that both the ATB movement analysis and the MD analysis face serious problems. In the course of the discussion, I have argued for an Ellipsis analysis, implicitly assuming PF deletion. Note however that there are other treatments of the ellipsis phenomenon, e.g., LF copying, syntactic deletion, etc. In this chapter, I will argue that the relevant Ellipsis phenomenon involved in RNR constructions should indeed be implemented as PF deletion, which in turn means that RNR is a PF phenomenon. Given this, the goal of this chapter is to provide empirical evidence for the proposal that RNR is to be handled by PF deletion. To this end, I will show that RNR is not constrained by syntactic constituency. That is, what is shared (and also what is left)

between conjuncts in RNR sentences does not have to form a syntactic constituent. I will show that RNR can in fact completely ignore syntactic constituency, which provides a good reason to conclude that what is involved in this construction is not a syntactic operation. In Chapter 5, I will argue that RNR is constrained by prosodic constituency. That is, elements affected by RNR have to form separate prosodic constituents – in particular, I-phrases.¹ I will show that assuming that elements affected by RNR has to form separate I-phrases allows us to capture certain facts that are very difficult to explain under pure syntactic approaches.

This chapter is organized as follows: in Section 2.1, as a first step to showing that RNR is not an operation of the syntax proper, I will show that RNR can affect elements that are typically not affected by syntactic operations (see also Section 2.2 of Chapter 3). In particular, I will show that it is not sensitive to syntactic constituency, i.e., the target of RNR does not have to form a syntactic constituent. In Section 2.2 and Section 2.3, I will show that RNR is constrained by conditions that are readily defined in terms relevant to PF. More specifically, I will show that elements contained in the target of RNR must satisfy an adjacency requirement and that the target of RNR must be located at the right periphery of its conjunct. Note that notions like adjacency and periphery are based on linear order. Given this, under the current assumption that linear order is determined at PF, it follows that the Deletion operation involved in RNR must be an operation of PF, not of the syntax proper.

¹ Although nothing really hinges on the assumption that the prosodic categorial status of the elements affected by RNR has to be I-phrases, there is sufficient evidence, e.g., final lengthening, pauses, stress, that indicate that I-phrases are the relevant ones. I will discuss this in more detail in Chapter 5.

2. A Case for PF Deletion

One of the first lessons of a course in syntax is that syntactic operations target constituents, an assumption that I will take for granted here. Given this, suppose that an operation *O* does not have to target a syntactic constituent. Suppose further that *O* is governed by notions like periphery or adjacency, which are based on linear order. In such a situation, it seems reasonable to suspect that *O* is not an operation of the syntax proper. In this section, I will argue, based on a novel set of data, that RNR has exactly these properties. I will show that elements affected by RNR do not have to be syntactic constituents and that they are also sensitive to notions like periphery and adjacency. These properties provide evidence that what is involved in RNR is an operation of PF, since this is the component where the role of syntactic constituency does not play a role, while notions like adjacency and periphery become relevant. In the course of the discussion below, I will also point out additional problems for the pure syntactic approaches, i.e., the ATB and the MD analyses.

2.1. Insensitivity to Syntactic Constituency

In this section, I will show that elements affected by RNR do not have to form a syntactic constituent, which provides supporting evidence for the claim that the operation involved in deriving RNR sentences is not an operation of the syntax proper.

Examples in (1) and (2) illustrate RNR in Korean and Japanese, which involve conjoined complex sentences.

- (1) Tomo-nun Ana-ka ppang-ul, kuliko Nina-nun Ana-ka bap-ul, (K)
T-top A-nom bread-acc and N-top A-nom rice-acc
mekess-tako malhayssta.
ate-comp said

‘Tomo (said that) Ana (ate) bread and Nina said that Ana ate rice.’

- (2) Tomo-wa Ana-ga pan-o, (sosite) Nina-wa Ana-ga gohan-o, (J)
T-top A-nom bread-acc and N-top A-nom rice-acc
tabeta-to itta.
ate-comp said

‘Tomo (said that) Ana (ate) bread and Nina said that Ana ate rice.’

Note that the target includes the matrix and the embedded verbs, which clearly do not form a syntactic constituent. Hence, these sentences raise a question about their

derivation, because it is unlikely that a one-time application of RNR could have “raised” these verbs, given their non-constituency. Under a purely syntactic analysis (i.e., the ATB and the MD analysis), it seems necessary to assume that (1) and (2) involve two separate instances of RNR.²

Given this, let us consider more closely how (1) and (2) might be derived under the ATB analysis. Presumably, the embedded verbs (and the embedded complementizers as well) would first have to undergo long-distance ATB head movement, crossing the matrix verbs. The matrix verbs would then undergo ATB head movement to some position above the landing site of the embedded verbs. However, it does not seem possible for the embedded verbs to undergo such ATB head movement to begin with, considering that head movement is generally very local. That is, the embedded verbs here have to move across two clause-boundaries. Moreover, they also have to move over other

² One might wonder if the sentences in (1) and (2) could be derived by multiple applications of Gapping. However, as should be clear in the course of the discussion below (and also from the discussion in Chapter 3), the RNR data examined here manifest several properties that do not pass the standard tests for Gapping. For instance, it is well-known that Gapping is not acceptable with conjunction markers outside of *and*, *or*, and *nor*. For instance, with *but*, Gapping is at best marginal (Hudson 1976:543). However, all the RNR data examined here are perfect with *but*. (This applies to all other Korean/Japanese data examined below.) In addition, Gapping typically requires the remnants to be two constituents, while there is no such requirement on RNR. Moreover, Gapping is known to be island-sensitive, whereas RNR is not, as I showed in Chapter 3 and will also show at various points below. Given these differences, I will not consider further the putative alternative derivation of the RNR data that involve Gapping. See Jackendoff 1971, Hudson 1976, Kuno 1976, Hankamer 1979, Neijt 1980, Johnson 1994, 1996, Kim 1997, Hartmann 2000, among others, for further discussion of Gapping.

In addition, as Mamoru Saito (p.c.) pointed out to me, one might wonder if (1) and (2) could be derived by scrambling all the argument NPs and then applying RNR to the remnant. (Note that Korean and Japanese are scrambling languages.) There is reason to believe that such an analysis is untenable. That is, note that the embedded subject and the embedded object are following the matrix subject in (1) and (2). Given this, we seem to need to assume that they have landed in some matrix-clause-internal positions. However, it is well-known that a long distance scrambled elements may not land in the middle of a higher clause, i.e., it must move all the way to the sentence-initial position, as the ungrammaticality of (i) indicates (see Saito 1992, Tada 1993 for relevant discussion). This makes the putative scrambling + remnant RNR analysis unlikely.

- (i) ?* Nina-nun bap_j-ul imayil-eyce Ana-ka t_j mekess-tako malhayssta. (K)
N-top rice-acc email-in A-nom ate-comp said
 ‘Nina said in the email that Ana ate rice.’

Moreover, such an analysis cannot be adopted as *the* general analysis of RNR, because even immobile elements can be affected by RNR. See for instance (8) and (9) below, where syntactically immobile elements are affected by RNR. See also the discussion in Section 2.2.4 of Chapter 3.

heads that are to be affected by the same type of rule application, i.e., they have to move over the matrix verbs. Therefore, it seems impossible to avoid a violation of Relativized Minimality (see Travis 1984, Baker 1988, Li 1990, Rizzi 1990 for relevant discussion).

One might wonder if the relevant verbs could move together as a complex head via some kind of incorporation, instantiated by head-adjunction. If that is possible, then we might be able to avoid a Relativized Minimality type violation. However, (3) shows that such an idea cannot be maintained. Here, a full phrase intervenes between the RNRed verbs, rendering the possibility of V-to-V incorporation unlikely.

(3) a. Tomo-nun Ana-ka ppang-ul, kuliko Nina-nun Ana-ka bap-ul, (K)

T-top A-nom bread-acc and N-top A-nom rice-acc

mekess-tako kun sori-lo malhayssta.

ate-comp big.voice-with said

‘Tomo (said with loud voice that) Ana (ate) bread and Nina said with loud voice that Ana ate rice.’

b. Tomo-wa Ana-ga pan-o, (sosite) Nina-wa Ana-ga gohan-o, (J)

T-top A-nom bread-acc and N-top A-nom rice-acc

tabeta-to oo goe-de itta.

ate-comp big.voice-with said

‘Tomo (said with loud voice that) Ana (ate) bread and Nina said with loud voice that Ana ate rice.’

Note in addition that the targets in (3) include a matrix verb, an embedded verb, and an adjunct PP, which clearly illustrates that the target of RNR does not have to form a syntactic constituent.

Under the MD analysis, given that there is no single node that dominates only the targets, we would have to allow multiple multi-dominance, where the relevant verbs would be separately multi-dominated. (As far as I can tell, no one who has pursued the MD analysis has explicitly explored this kind of system.) I will abstain from providing a tree diagram for the putative multiple multi-dominance structure here, given the complexity of it. Recall however that allowing multiple multi-dominance leads to the problem of overgeneration, as discussed in Section 4 and Appendix of Chapter 3.

In contrast, (1) and (2) receive a rather straightforward account under the Deletion analysis. (4) illustrates how (1) can be derived under the PF deletion analysis.³ ((2) receives the same account.)

- (4) Tomo-nun Ana-ka ppang-ul ~~mekess-tako~~ malhayssta kuliko
T-top A-nom bread-acc ate-comp said and
- Nina-nun Ana-ka bap-ul **mekess-tako malhayssta**
N-top A-nom rice-acc ate-comp said

³ The current analysis is not affected by the issue of how verbal inflection is realized in Korean and Japanese, e.g., by syntactic head-adjunction or by morphological merger under adjacency (see Park 1994, Sells 1995, Koizumi 2000, Koopman 2005, Chung 2007 for relevant discussion). In particular, if Park (1994) is right that inflectional heads in these languages stay in-situ in syntax and are merged in PF, it will be very difficult to derive RNR sentences under the ATB analysis (at least, technically), because we would obviously need a considerable number of applications of ATB head movement. The situation does not seem any better for the MD analysis, because as discussed earlier, allowing such a radical multiple multi-dominance leads to the problem of overgeneration.

Here, the embedded and the matrix verbs in the first conjunct are deleted under identity with the corresponding elements in the second conjunct. No special movement or any additional structural modification is necessary. In particular, the fact that elements in the target do not form a syntactic constituent does not pose any difficulties to the PF deletion analysis, since, as the strike-out shows, what is affected by the deletion operation in question is rather a string of elements, not a syntactic constituent.

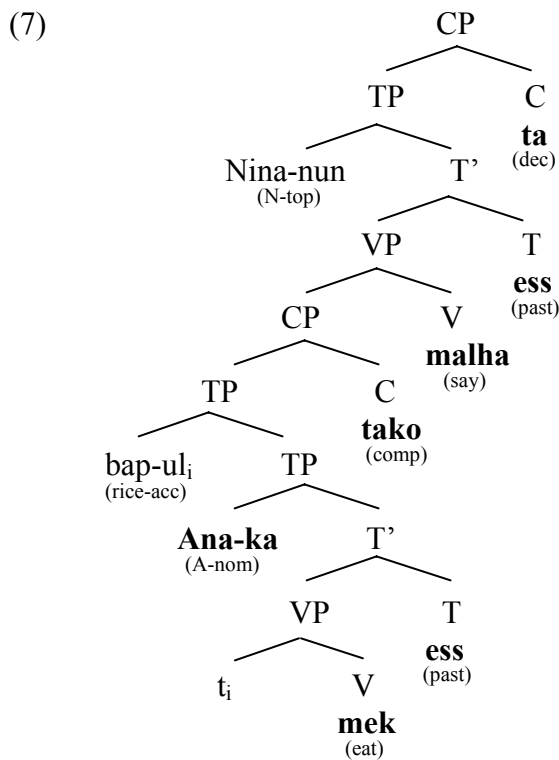
Examples (5) and (6) demonstrate more clearly the point that RNR does not have to target a syntactic constituent.

- (5) Tomo-nun ppang_i-ul, kuliko Nina-nun bap_j-ul, (K)
T-top bread-acc and N-top rice-acc
Ana-ka t_j mekess-tako malhayssta.
A-nom ate-comp said
 ‘Tomo (said that Ana ate) bread and Nina said that Ana ate rice.’

- (6) Tomo-wa pan_i-o, (sosite) Nina-wa gohan_j-o, (J)
T-top bread-acc and N-top rice-acc
Ana-ga t_j tabeta-to itta.
A-nom ate-comp said
 ‘Tomo (said that Ana ate) bread and Nina said that Ana ate rice.’

Note that the object of the embedded clause is scrambled in each conjunct. Regarding the position of the scrambled object, I assume, following the standard assumption (Saito

1985, 1989, 1992, 2003a), that it is adjoined to the embedded TP.⁴ Given this, the structure of the second conjunct in (5) can be represented as in (7). (The same holds for (6), which I will not repeat. Irrelevant details are omitted below.⁵)



It seems completely impossible for the target in (7) to form a constituent.

Consider also (8) and (9), where RNR affects the verb and the object NP. Crucially, RNR affects only a portion of the object – that is, the genitive phrase is separated from its NP. Regardless of one’s analysis of the internal structure of NPs with genitives (see Fukui and Speas 1986, Abney 1987, Kang 1987, Yoon 1990, Giorgi and

⁴ Given the discussion of (i) in footnote 2 above, I assume that the scrambled objects in (5) and (6) are within the embedded clause.

⁵ As mentioned earlier, the exact mechanism of verbal inflection in Korean and Japanese does not affect the current discussion. See footnote 3.

Longobardi 1991, Jo 2000, Alexiadou 2001, Hiraiwa 2001 for relevant discussion and references), there is no way to form a constituent with the targets in these sentences.⁶

(8) Nina-nun Ana-uy, kuliko Lydia-nun Tomo-uy, (K)

N-top A-gen and L-top T-gen

catongcha-rul molassta.

car-acc drove

‘Nina (drove) Ana’s (car) and Lydia drove Tomo’s car.’

(9) Nina-wa Ana-no, (sosite) Lydia-wa Tomo-no, (J)

N-top A-gen and L-top T-gen

kuruma-o untensita.

car-acc drove

‘Nina (drove) Ana’s (car) and Lydia drove Tomo’s car.’

⁶ One might suspect that the sentences in (8) and (9) are derived by Gapping plus pro-drop of the object, as schematically illustrated in (i).

(i) Nina-nun Ana-uy pro Gap kuliko (K)
N-top A-gen and
 Lydia-nun Tomo-uy **catongcha-rul molassta.**
L-top T-gen car-acc drove

However, note that the NP complement of a genitive phrase may not be substituted by a pro, as the ungrammaticality of (ii) shows.

(ii) * Lydia-nun Tomo-uy pro molassta. (K)
L-top T-gen drove
 ‘Lydia drove Tomo’s.’

Regardless of the utterance context, it is simply impossible to replace the possessed NP with a pro in the presence of a possessor. In addition, I have also shown in footnote 2 why Gapping is not a possible option in the data examined here. Therefore, I conclude that the sentences in (8) and (9) are not derived by Gapping plus pro-drop.

It is also important to note that in general, genitive phrases may not be separated from their NPs in Korean and Japanese. Consider (10) and (11). (All examples below are intended to mean ‘Lydia drove Tomo’s car’.)

- (10) a. * Tomo_i-uy Lydia-nun t_i catongcha-rul molassta. (K)
T-gen L-top car-acc drove
- b. * catongcha_i-rul Lydia-nun Tomo-uy t_i molassta.
car-acc L-top T-gen drove
- (11) a. * Tomo_i-no Lydia-wa t_i kuruma-o untensita. (J)
T-gen L-top car-acc drove
- b. * kuruma_i-o Lydia-wa Tomo-no t_i untensita.
car-acc L-top T-gen drove

Given that genitive possessors and their NPs cannot be separated by movement, the data in (8) and (9) also confirm the conclusion that RNR does not involve movement of the target, which is problematic for the ATB analysis (see also the discussion in Section 2.2.4 of Chapter 3).

Next, consider (12) and (13), where a postposition is affected by RNR along with other elements, stranding its NP complement.⁷ Again, there does not seem to be any way to form a syntactic constituent with the RNRed elements in these sentences.

⁷ One of my Japanese informants found (13) marginal. However, others found it fully acceptable. In addition, to my ears, (12) sounds perfect. I suspect that this variation may have to do with the fact that these postpositions are affixes. But I will put aside exploration of the nature of this variation for future study.

(12) Nina-nun opis, kuliko Zhanna-nun tosekwan (K)

N-top office and Z-top library

-eyse chayk-ul ilk-nun-ta.

-at book-acc read-pres-dec

‘Nina (reads a book in) the office and Zhanna reads a book in the library.’

(13) Nina-wa ofisu, (sosite) Zhanna-wa toshokan (J)

N-top office and Z-top library

-de hon-o yon-deiru.

-at book-acc read-pres

‘Nina (reads a book in) the office and Zhanna reads a book in the library.’

Incidentally, notice that postposition drop is not free in Korean and Japanese.⁸ Thus, no matter what context is given, postposition drop in normal declarative sentences, as in (14), is completely impossible.⁹

⁸ One environment where postposition drop is allowed is Sluicing, as shown in (i) (see Merchant 2001, B. Park 2005 for Sluicing).

(i) (Na-nun) Tomo-ka nwukwunka-eykeyse ku chayk-ul sass-tako tul-ess-ta. (K)
I-top T-nom someone-from the book-acc bought-comp hear-past-dec

Kurena (Na-nun) nwukwu-(eykeyse)-in-ci-nun morunta.
but I-top who-(from)-is-Q-top not.know

‘I heard that Tomo bought the book from someone. But I don’t know who from.’

In the second clause, in which Sluicing takes place, the *wh*-phrase can optionally carry the postposition *eykeyse* ‘from’. In this case, it may be the case that the availability of postposition drop in Sluicing is on a par with that in RNR in that the operations in question involve PF deletion.

Another environment where postposition drop seems to be allowed is clefting. ((ii) is from Kang 2002:11. See also Saito 2003b for relevant discussion and references.)

(ii) a. Mary-ka tosekwan-*(eyse) John-ul manna-ass-ta.
M-nom library-in J-acc meet-past-dec

‘Mary met John in the library.’

b. Mary-ka John-ul manna-n kes-un tosekwan-(ese)-i-ta.
M-nom J-acc meet-pre kes-top library-in-cop-dec

‘It was in the library that Mary met John.’

(14) * Nina-nun opis-Ø chayk-ul ilk-nun-ta. (K)

N-top office book-acc read-pres-dec

‘Nina reads a book (in) the office.’

It should be easy to see how the sentences in (5)-(13) would be derived by deletion. (I do not repeat the Japanese sentences here, since they receive the same account as their Korean counterparts.)

(15) Tomo-nun ppangi-ul ~~Ana-ka t_i mekess-tako malhayssta~~ kuliko (=5))

T-top bread-acc A-nom ate-comp said and

Nina-nun bap_j-ul **Ana-ka t_j mekess-tako malhayssta.**

N-top rice-acc A-nom ate-comp said

(16) Nina-nun Ana-uy ~~catongcha-rul molassta~~ kuliko (=8))

N-top A-gen car-acc drove and

Lydia-nun Tomo-uy **catongcha-rul molassta.**

L-top T-gen car-acc drove

⁹ The state of affairs is reminiscent of preposition stranding in RNR, discussed in Section 2.2.2 of Chapter 3, where it was shown that otherwise impossible preposition stranding is allowed with RNR. In addition, it is also noteworthy that postpositions cannot be separated from their NP complement by movement, as shown in (i). This poses an additional difficulty for the ATB analysis of RNR.

(i) a. * opis Nina-nun t -eyse chayk-ul ilk-nun-ta. (K)
office N-top -at book-acc read-pres-dec

b. * ofisu Nina-wa t -de hon-o yon-deiru. (J)
office N-top -at book-acc read-pres-dec
 ‘Office, Nina reads a book in.’

- (17) Nina-nun opis-eyse ~~chayk-ul ilk-nun-ta~~ kuliko (=12))
N-top office-at book-acc reads and
 Zhanna-nun tosekwan-eyse **chayk-ul ilk-nun-ta.**
Z-top library-at book-acc reads

‘Nina (reads a book in) the office and Zhanna reads a book in the library.’

Before concluding this section, note that in (15), the traces contained in the surface target and the deleted target have different indices. (I use *traces* here for ease of exposition. The situation is unchanged under the copy theory of movement, since the moved elements are not identical anyway.) Why is this not a problem for the identity requirement for deletion? I think this is understandable if we assume that the deletion operation in question takes place in PF, since in that component, traces are eliminated. (I will argue below that the relevant deletion operation applies after linearization, which I assume involves deletion of traces, as discussed in Chapter 2.)

To summarize, I have shown that the target of RNR does not have to form a syntactic constituent, unlike what is found in typical syntactic operations. In addition, I have shown that there are many cases where elements that cannot be affected by movement can be affected by RNR. In this respect, recall that allowing multiple multi-dominance to accommodate syntactic non-constituents opens a way for the problem of massive overgeneration under the MD analysis. In addition, the fact that RNR can affect elements that cannot be affected by movement also poses a serious problem for the ATB analysis. I take all of this to provide strong evidence that we are dealing with a non-syntactic operation. The state of affairs makes sense if we assume that RNR applies at PF,

where syntactic constituency does not play a role. In the following section, I will examine another aspect of RNR that provides further reasons to believe that it is derived via a PF operation.

2.2. Target-internal Adjacency

In this section, I will show that the target of RNR is subject to an adjacency requirement. Combined with the fact that RNR can affect syntactic non-constituents, as shown in the preceding section, the fact that adjacency matters in determining the target of RNR makes the operation in question very unlikely to be an operation of the syntax proper. Rather, it makes more sense if this operation applies in PF, given that notions like adjacency are more naturally definable in terms relevant to PF – in particular, linear order. Therefore, in the course of the following discussion, it is crucial to notice that making reference only to hierarchical structural notions misses a generalization that can be straightforwardly captured by making reference to the non-hierarchical notion of linear order.

Let us consider the data in (1) and (2) again, repeated here as (18) and (19).

- (18) Lydia-nun Ana-ka ppang-ul ~~mekess-tako~~ malhayssta kuliko (K)
L-top A-nom bread-acc ate-comp said and
 Nina-nun Ana-ka bap-ul **mekess-tako malhayssta.**
N-top A-nom rice-acc ate-comp said

‘Lydia (said that) Ana (ate) bread and Nina said that Ana ate rice.’

- (19) Lydia-wa Ana-ga pan-o ~~tabeta to itta~~ (sosite) (J)
L-top A-nom bread-acc ate-comp said and
 Nina-wa Ana-ga gohan-o **tabeta-to itta.**
N-top A-nom rice-acc ate-comp said
 ‘Lydia (said that) Ana (ate) bread and Nina said that Ana ate rice.’

One of the points raised by these sentences in Section 2.1 was that the target of RNR does not have to form a syntactic constituent. Another aspect of these sentences that is of interest here is that the elements included in the target, i.e., the embedded and the matrix verbs, are linearly adjacent to each other. In the same environment, if the conjuncts contain identical embedded objects, they can also be affected by deletion, as in (20) and (21).¹⁰ Again, the deleted elements are all linearly adjacent.

- (20) Lydia-nun Ana-ka ~~bap-ul mekess tako malhayssta~~ kuliko (K)
L-top A-nom rice-acc ate-comp said and
 Nina-nun Tomo-ka **bap-ul mekess-tako malhayssta.**
N-top T-nom rice-acc ate-comp said
 ‘Lydia (said that) Ana (ate rice) and Nina said that Tomo ate rice.’

¹⁰ It is not just that the identical objects can, but in fact that they must be affected by deletion in this environment.

- (i) *Lydia-nun Ana-ka bap-ul ~~mekess tako malhayssta~~ kuliko (K)
L-top A-nom rice-acc ate-comp said and
 Nina-nun Tomo-ka bap-ul mekess-tako malhayssta.
N-top T-nom rice-acc ate-comp said
 ‘Lydia (said that) Ana (ate) rice and Nina said that Tomo ate rice.’

Under the PF deletion analysis, what this seems to indicate is that once a conjunct is affected by deletion, all elements in that conjunct that satisfy the conditions on deletion, such as identity, adjacency, etc, must be deleted. In other words, there seems to be a kind of maximality requirement on deletion. See den Dikken, Meinunger, and Wilder 2000, Kennedy 2002, and Takahashi and Fox 2005 for similar observations. See also the discussion in Sections 2 of Chapter 5.

- (21) Lydia-wa Ana-ga ~~gohan-o tabeta-to~~ itta (sosite) (J)
L-top A-nom rice-acc ate-comp said and
 Nina-wa Tomo-ga **gohan-o tabeta-to itta.**
N-top T-nom rice-acc ate-comp said
 ‘Lydia (said that) Ana (ate rice) and Nina said that Tomo ate rice.’

The question is whether this linearity is an accidental property of these particular sentences or a general property of RNR. Empirical facts suggest that the latter is the case.¹¹ Consider (22) and (23).

- (22) * Lydia-nun ~~Ana-ka~~ ppang-ul ~~mekess-tako~~ malhayssta kuliko (K)
L-top A-nom bread-acc ate-comp said and
 Nina-nun **Ana-ka** bap-ul **mekess-tako malhayssta.**
N-top A-nom rice-acc ate-comp said
 ‘Lydia (said that Ana ate) bread and Nina said that Ana ate rice.’

- (23) * Lydia-wa ~~Ana-ga~~ pan-o ~~tabeta-to~~ itta (sosite) (J)
L-top A-nom bread-acc ate-comp said and
 Nina-wa **Ana-ga** gohan-o **tabeta-to itta.**
N-top A-nom rice-acc ate-comp said
 ‘Lydia (said that Ana ate) bread and Nina said that Ana ate rice.’

¹¹ Note that the data in (22) and (23) also provide an argument against the view that we might be dealing here with Gapping plus pro-drop. If the embedded subjects in (22) and (23) had been replaced with a pro, it would be unclear why these sentences are ungrammatical. (Recall that it is allowed for the embedded and the matrix verbs to be shared in RNR.) See also footnote 6.

The only difference between (18)-(21) and (22)-(23) is that in the latter, the targets are not contiguous.¹² Note that what breaks down the adjacency of the targets in (22) and (23) is the embedded object, which is not identical across the conjuncts. Significantly, if the embedded object is scrambled above the embedded subject, leaving no overt material between the embedded subject and the rest of the deleted elements, RNR of the embedded subject suddenly becomes possible.¹³ This is illustrated by (24) and (25).

- (24) Carlos-nun ppangi-ul ~~Ana-ka t_j mekess-tako malhayssta~~ kuliko (K)
C-top bread-acc A-nom ate-comp said and
 Nina-nun bap_j-ul **Ana-ka t_j mekess-tako malhayssta.**
N-top rice-acc A-nom ate-comp said
 ‘Carlos (said that Ana ate) bread and Nina said that Ana ate rice.’

¹² (18)/(22) and (19)/(23) are, respectively, minimal pairs.

¹³ Note that scrambling has to take place in all conjuncts in a parallel fashion. If scrambling takes place only in one conjunct, the result is ungrammatical, as shown by (i). Compare this to (24).

- (i) * Carlos-nun ppangi-ul ~~Ana-ka t_j mekess-tako malhayssta~~ kuliko (K)
C-top bread-acc A-nom ate-comp said and
 Nina-nun **Ana-ka** bap-ul **mekess-tako malhayssta.**
N-top A-nom rice-acc ate-comp said
 ‘Carlos (said that Ana ate) bread and Nina said that Ana ate rice.’

It seems that the ungrammaticality of this example is due to a failure of the parallelism requirement. For instance, Ćavar and Wilder (1994) argue that the elided element in coordinated structures must be in the same position as the non-elided counterpart. If this is correct, then the sentence in (i) is predicted to be deviant, since the elided embedded subject does not occupy the same position as its non-elided counterpart. Similarly, Hankamer (1979) argues that coordinated sentences affected by deletion are subject to a structural identity condition, which is not met in (i). (See also Williams 1977b, 1978, Hankamer 1979, Goodall 1987, Munn 1993, Wilder 1997, Fox 2000 for general discussion of parallelism in coordinated structures.)

Under the current analysis, the relevant parallelism requirement may also be stated in terms of identity of the string that comprises the target of RNR. For instance, in (i), the strings that contain the deleted and the surviving target are not identical. That is, in the first conjunct, the string that contains the delete target is [*Ana-ka t mekess-tako malhayssta*], while the corresponding string in the second conjunct is [*Ana-ka bap-ul mekess-tako malhayssta*]. Therefore, string-identity is not met in (i).

- (25) Carlos-wa pan_i-o ~~Ana-ga t_j tabeta-to itta~~ (sosite) (J)
C-top bread-acc A-nom ate-comp said and
 Nina-wa gohan_j-o **Ana-ga t_j tabeta-to itta.**
N-top rice-acc A-nom ate-comp said

‘Carlos (said that Ana ate) bread and Nina said that Ana ate rice.’

Notice that the embedded subject satisfies the adjacency requirement after scrambling of the embedded object with the proviso that traces/copies created by movement do not disrupt adjacency of the targets of RNR, as mentioned above.¹⁴

Let us see how we could capture the fact that traces/copies are ignored for the purposes of establishing adjacency of RNR targets. As pointed out earlier, notice that the relevant notion of adjacency here requires linearization of the structure, i.e., it is based on linear order. In fact, there seems to be no way to characterize the adjacency requirement among the shared elements in hierarchical terms (e.g., compare (22)/(23) with (24)/(25)).¹⁵ Given the conclusion that determining the target of RNR requires a linearized structure, it follows that RNR applies after linearization in PF. Now, recall that, as discussed in Chapter 2, the process of linearization involves deletion of movement copies, which involves elimination of the place holder for insertion of phonological features. I assume that PF operations ignore elements without the place holder for

¹⁴ Željko Bošković (p.c.) points out that under Bošković and Takahashi’s (1998) base-generation analysis of scrambling, where scrambled elements are base-generated in their surface position and are lowered to their Θ -position in LF, traces in (24) and (25) would not matter for establishing adjacency, i.e., there will be no traces in the first place.

¹⁵ Concerning the adjacency requirement between T and v in English for purposes of inflection, Embick and Noyer (2005) assume two different ways of defining adjacency. One is to rely on a linearized string – say, PF adjacency (Bobaljik 1994, 1995). The other is to make reference to the hierarchical structure, where adjacency holds between a head X and the head of the complement of X, which is true of T and v (Abels 2003a, 2003c). The point to note here is that such a syntactic definition of adjacency is not applicable to the RNR data examined here.

phonological feature insertion, i.e., elements without phonological content such as movement copies.¹⁶ This explains why overt material does, but traces/copies do not, block the application of RNR. (Recall further that in Section 4.3 of Chapter 3, I have shown that PRO, another phonologically null element, does not block RNR even when controlled by non-identical controllers.)

To summarize, I have examined in this section another aspect of RNR that suggests that what is involved in this construction is a PF operation. In particular, I have shown that elements contained in the target of RNR must be linearly adjacent to each other. Given that adjacency is based on linear order, this property suggests that the operation in question takes place in PF. I summarize the finding of this section in (26).

(26) *Target-internal Adjacency*

Elements affected by RNR must be linearly adjacent to each other, i.e., no overt material can intervene between the elements in the target of RNR.

2.3. Peripherality

In this section, I will examine another aspect of RNR that stems from its sensitivity to linear order. More specifically, as first noted by Langendoen (1975), we will see that the

¹⁶ See also Chomsky 1995:228, who suggests that deletion marks the deleted element as “invisible at the [PF] interface”, although it is still accessible within C_{HL} .

target of RNR must be located at the periphery of its conjunct (see also Hudson 1976, Booij 1985, van Oirsouw 1987, Wilder 1997 for relevant discussion). Given that notions like periphery make reference to linear order (van Oirsouw 1987:78), the observation provides further evidence for the current proposal that RNR is a PF phenomenon, to be handled in terms of PF deletion.

Consider (27) and (28) and also compare them with the grammatical sentences in (29) and (30).

- (27) * Tomo-nun ~~Ana-ka ppang-ul sass-tako~~ ssessta kuliko (K)
T-top A-nom bread-acc bought-comp wrote and
 Nina-nun **Ana-ka ppang-ul sass-tako** malhayssta.
N-top A-nom bread-acc bought-comp said
 ‘Tomo wrote (that Ana bought bread) and Nina said that Ana bought bread.’

- (28) * Tomo-wa ~~Ana-ga pan-o katta-to~~ kaita (sosite) (J)
T-top A-nom bread-acc bought-comp wrote and
 Nina-wa **Ana-ga pan-o katta-to** itta.
N-top A-nom bread-acc bought-comp said
 ‘Tomo wrote (that Ana bought bread) and Nina said that Ana bought bread.’

- (29) Tomo-nun Lydia-ka ~~ppang-ul sass-tako~~ ~~malhayssta~~ kuliko (K)
T-top L-nom bread-acc bought-comp said and
 Nina-nun Ana-ka **ppang-ul sass-tako malhayssta.**
N-top A-nom bread-acc bought-comp said

‘Tomo (said that) Lydia (bought bread) and Nina said that Ana bought bread.’

- (30) Tomo-wa Lydia-ga ~~pan-o~~ ~~katta-to~~ ~~itta~~ (sosite) (J)
T-top L-nom bread-acc bought-comp said and
 Nina-wa Ana-ga **pan-o katta-to itta.**
N-top A-nom bread-acc bought-comp said

‘Tomo (said that) Lydia (bought bread) and Nina said that Ana bought bread.’

In all these sentences, there is no problem with respect to the adjacency requirement, i.e., the string of the deleted elements in each sentence is not broken up by any overt material. The difference between these sentences has to do with the linear position of the target within each conjunct. It is crucial to note that in the grammatical sentences in (29) and (30), the rightmost element in the target is the rightmost element of its conjunct as well, while this is not the case in the ungrammatical sentences in (27) and (28).¹⁷ In other words, the target of RNR must contain the rightmost element within its conjunct (in addition to satisfying the target-internal adjacency requirement). In this respect, it seems that the way RNR applies is as if it starts from the most external element of the conjunct and proceeds inward based on linear order.

The state of affairs is reminiscent of the Right Edge Generalization discussed in Section 3.2.2 of Chapter 3.

¹⁷ The reader should note that this is a general requirement, i.e., it is not restricted to Korean and Japanese RNR sentences. I repeat a relevant example from Section 3.2.2 of Chapter 3.

(i) * John gave ___ a present and Mary congratulated *the boy who lives next door*.

(31) ***Right Edge Generalization***

The shared element must be the rightmost element in all non-final conjuncts.

However, the generalization in (31) must be further refined, because it is only true when the target is a single syntactic constituent. When the target does not form a constituent, which I have shown is a quite robust fact of RNR, it is inevitable that non-rightmost elements within the target violate the generalization in (31). Therefore, (31) is not sufficiently precise to cover all cases of RNR. At this juncture, the adjacency condition on RNR targets discussed in Section 2.2 provides help.

(32) ***Target-internal Adjacency***

Elements affected by RNR must be linearly adjacent to each other, i.e., no overt material can intervene between the elements in the target of RNR.

Note that in (29), the embedded verb *sasstako* ‘bought’ is adjacent to the rightmost element of the conjunct, in keeping with (32), although it does not itself occupy the rightmost position of its conjunct. Given this, I suggest that an element is deemed peripheral, and hence can be affected by RNR, if it is adjacent to a peripheral element that is also affected by RNR. In other words, peripherality can be iteratively determined by transitivity.

(33) ***Peripherality of the targets of RNR***

- (i) RNR can only affect peripheral elements of a conjunct.
- (ii) Peripherality can be determined transitively.

(33) correctly captures that the embedded object *ppangul* ‘bread’ and the embedded verb *sasstako* ‘bought’ in (29) can undergo RNR, while, strictly speaking, they do not occupy the right periphery of their conjunct. Note that under the PF deletion analysis of RNR, the second clause of (33) is equivalent to saying that Deletion applies iteratively, deleting one element at a time from the periphery. The state of affairs is easy to understand if we imagine peeling of an onion – first remove the outer skin and continue to remove additional layers one by one to the inner core.

2.4. Illustration: Incremental Linear Deletion

Before concluding this chapter, I would like to illustrate more clearly the effect of the generalizations proposed in (32) and (33). More specifically, I will show that these generalizations correctly capture the fact that RNR applies as if it starts from the right edge of the conjunct and continues to proceed inward (provided that other conditions such as identity are also met) – just like peeling an onion, as mentioned above. This incremental linear deletion is precisely what is expected by the generalization proposed above. In considering the data in (34)-(37), the reader should notice that the sentences

form successive minimal pairs. That is, each time the example number increases, exactly one element changes in the subsequent sentence, which is otherwise identical to the previous sentence. (In other words, the number of elements included in the target increases one by one.) The crucial point to keep in mind is that there is no way to capture the difference between these sentences in purely structural terms.

(34) a. Tomo-nun Ana-ka pang-eyse ppang-ul, kuliko (K)

T-top A-nom room-at bread-acc and

Nina-nun Zhanna-ka pwuek-eyse bap-ul,

N-top Z-nom kitchen-at rice-acc

mekess-tako malhayssta.

ate-comp said

‘Tomo (said that) Ana (had) bread in the room and Nina said that Zhanna had rice in the kitchen.’

b. Tomo-wa Ana-ga heya-de pan-o, (sosite) (J)

T-top A-nom room-at bread-acc and

Nina-wa Zhanna-ga daidokoro-de gohan-o,

N-top Z-nom kitchen-at rice-acc

tabeta-to itta.

ate-comp said

‘Tomo (said that) Ana (had) bread in the room and Nina said that Zhanna had rice in the kitchen.’

(35) a. Tomo-nun Ana-ka pang-eyse, kuliko (K)

T-top A-nom room-at and

Nina-nun Zhanna-ka pwuek-eyse,

N-top Z-nom kitchen-at

bap-ul mekess-tako malhayss-ta.

rice-acc ate-comp said

‘Tomo (said that) Ana (had rice) in the room and Nina said that Zhanna had rice in the kitchen.’

b. Tomo-wa Ana-ga heya-de, (sosite) (J)

T-top A-nom room-at and

Nina-wa Zhanna-ga daidokoro-de,

N-top Z-nom kitchen-at

gohan-o tabeta-to itta.

rice-acc ate-comp said

‘Tomo (said that) Ana (had rice) in the room and Nina said that Zhanna had rice in the kitchen.’

(36) a. Tomo-nun Ana-ka pang, kuliko (K)

T-top A-nom room and

Nina-nun Zhanna-ka pwuek,

N-top Z-nom kitchen

-eyse bap-ul mekess-tako malhayssta.¹⁸

-at rice-acc ate-comp said

¹⁸ See footnote 7 concerning the grammaticality of the sentences in (36)b.

‘Tomo (said that) Ana (had rice in) the room and Nina said that Zhanna had rice in the kitchen.’

b. Tomo-wa Ana-ga heya, (sosite) (J)

T-top A-nom room and

Nina-wa Zhanna-ga daidokoro,

N-top Z-nom kitchen

-de gohan-o tabeta-to itta.

-at rice-acc ate-comp said

‘Tomo (said that) Ana (had rice in) the room and Nina said that Zhanna had rice in the kitchen.’

(37) a. Tomo-nun Ana-ka, kuliko Nina-nun Zhanna-ka, (K)

T-top A-nom and N-top Z-nom

pwuek-eyse bap-ul mekess-tako malhayssta.

kitchen-at rice-acc ate-comp said

‘Tomo (said that) Ana (had rice in the kitchen) and Nina said that Zhanna had rice in the kitchen.’

b. Tomo-wa Ana-ga, (sosite) Nina-wa Zhanna-ga, (J)

T-top A-nom and N-top Z-nom

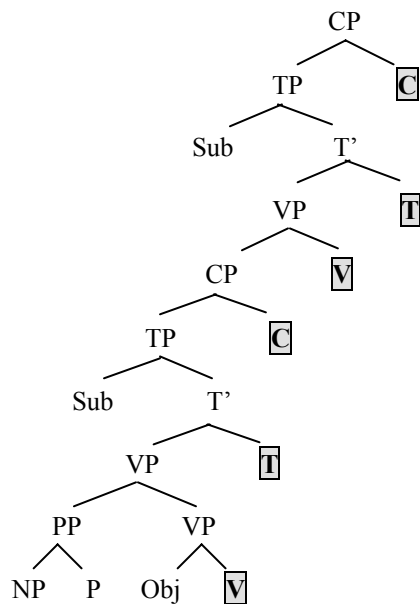
daidokoro-de gohan-o tabeta-to itta.

kitchen-at rice-acc ate-comp said

‘Tomo (said that) Ana (had rice in the kitchen) and Nina said that Zhanna had rice in the kitchen.’

For ease of exposition, I provide below the structure of the conjuncts in (34)-(37). It should be easy to see that from (38) to (41), RNR proceeds as if it applies from right to left, eliminating the relevant elements one by one. (Elements in the grey boxes are the ones that are affected by RNR, i.e., RNR targets. Each structure is also presented in a labeled bracket format, which makes it easier to see how the structure is to be generated under the Deletion analysis.)

(38)

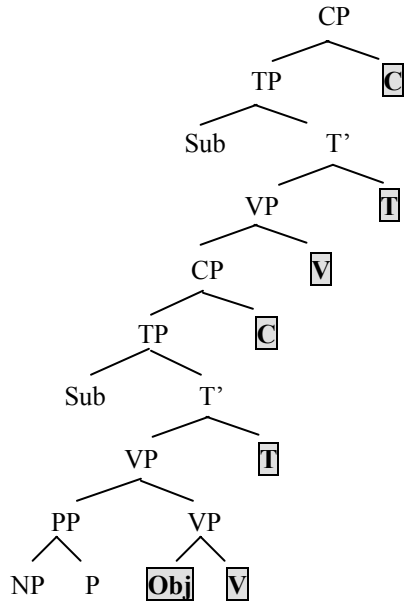


(= (34))

[CP[TP Subj [VP[CP[TP Subj [VP[PP NP P] [VP Obj V]T]C]V]T]C]

(39)

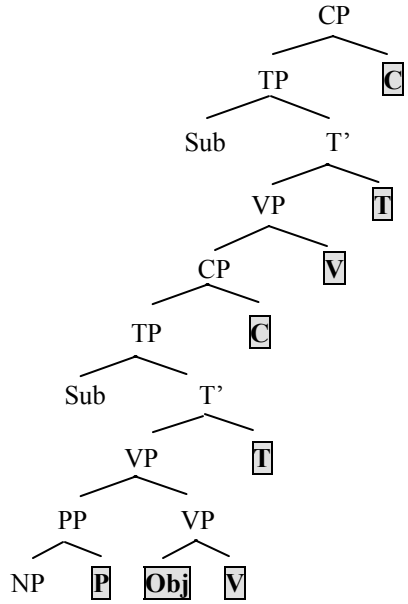
(= (35))



[CP[TP Subj [VP[CP[TP Subj [VP[PP NP P] [VP Obj V] T] C] V] T] C]

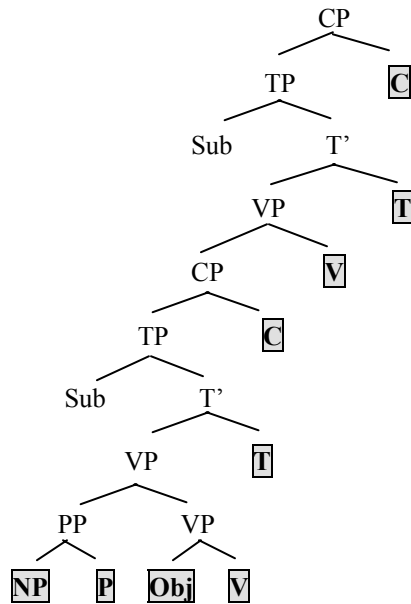
(40)

(= (36))



[CP[TP Subj [VP[CP[TP Subj [VP[PP NP P] [VP Obj V] T] C] V] T] C]

(41)



(= (37))

[CP[TP Subj [VP[CP[TP Subj [VP[PP NP P][VP Obj V]T]C]V]T]C]

Here is the key point: it seems very difficult to capture the linear incrementality manifested by (38) to (41) in purely syntactic structural terms. In fact, it seems completely impossible to describe this property by means of any familiar syntactic notions such as c-command, dominance, sisterhood, constituent, etc. What matters here is linear order. Therefore, under the assumption that linear order is determined at PF, the property of RNR examined here provides strong evidence that RNR is not an operation of the syntax proper, but of PF.

3. Summary

In this chapter, I have examined some of the essential properties of RNR that provide strong evidence that it is an operation of PF. More specifically, I have examined three aspects of RNR: First, targets of RNR do not have to form a syntactic constituent; Second, targets of RNR are subject to an adjacency constraint; Third, targets of RNR must be located at the right periphery of their conjunct, where the notion of periphery is defined iteratively and transitively. These properties strongly suggest that RNR is an operation of PF, because targeting a constituent is a fundamental property of syntactic operations and also because in describing them, we need to make reference to linear order. Given this, I argue that RNR should be implemented as PF deletion. The relevant deletion operation takes place after linearization at PF, which captures the fact that RNR is not sensitive to syntactic constituency, the fact that movement copies (and other phonologically null elements such as *pro*/PRO) are ignored, and also the fact that it is based on linear order. In the course of the discussion, I have also pointed out in several places that the RNR data from Korean and Japanese pose serious problems for the pure syntactic approaches to RNR – namely, the ATB and the MD analyses.

The question arises if we have to stipulate the generalizations proposed above under the Deletion analysis. Recall that MDW derives the Edge Generalization by adopting a rather elaborate system of linearization. In Chapter 5, I will argue that we can actually do better than the MD analysis by deriving all of the generalizations proposed in

this chapter from an independently proposed principle of the grammar. I will also present further evidence in support of the view that RNR is a PF operation – in particular, I will show that RNR is based on prosodic constituents. (Recall that I have already shown that it is not based on syntactic constituents.)

Chapter 5.

RNR as PF Deletion

1. Introduction

In Chapters 3 and 4, I have argued that adopting PF deletion as the operation responsible for deriving RNR sentences leads to a straightforward account of a number of properties of RNR that are problematic for alternative approaches, indicating that the PF deletion analysis is empirically superior to its alternatives. In Chapter 4, I have also argued that the relevant deletion operation may not be an operation of the syntax proper, based on the fact that its target does not have to be a syntactic constituent and that it is subject to adjacency and peripherality requirements, which are based on linear order.

In this chapter, I will present additional arguments to the effect that RNR is derived by a PF operation, providing further justification of its implementation as PF

deletion. More specifically, I will explore the interaction between RNR and the prosodic structure of sentences and show that RNR is sensitive to prosodic constituency. (Recall that I have shown in the preceding chapter that RNR is not sensitive to syntactic constituency.) Crucially, based on a set of novel data, I will argue that the target of RNR must be able to stand as an independent I-phrase. I will show that in the cases where the target cannot stand as an independent I-phrase, RNR is disallowed. In the second half of this chapter, I will re-examine the generalizations about the target of RNR proposed in Chapter 4 – namely, that it has to occupy the right periphery of its conjunct and that elements contained in the target have to be adjacent to each other – and show that they can be derived, i.e., we do not have to stipulate these properties.

This chapter is organized as follows: In Section 2, I will discuss the interaction between RNR and the prosodic constituent structure of sentences, which I argue provides further evidence that what is involved in RNR is a PF operation. I will show that RNR is sensitive to prosodic constituency. Crucially, I will argue that the shared material in RNR sentences must be able to stand as an independent I-phrase (cf. Chapter 2). In Section 3, I will argue that adopting Fox and Pesetsky's (2005) system of cyclic linearization allows us to account for a number of properties of RNR such as the fact that it is always the last conjunct that is associated with the target that surfaces, the fact that elements contained in the target have to be adjacent to each other (intra-target adjacency), and the fact that the target has to occupy the right periphery of its conjunct (peripherality). It should be noted that these properties have often been stipulated in the previous approaches to RNR.

2. Deletion and Prosodic Constituency

In this section, I will be concerned with the interaction between RNR and the prosodic structure of the sentence, which I argue provides additional evidence that RNR is derived by a PF operation. I will argue that RNR is directly constrained by prosodic factors. That is, RNR is sensitive to prosodic constituency – in particular, I-phrases, although it is not sensitive to syntactic constituency, as shown in Chapter 4.

Let me briefly recapitulate the assumptions about the syntax-prosody mapping laid down in Chapter 2. First, the process of the syntax-prosody mapping consists of several steps, part of which is the process of linearization followed by demarcation of various levels of prosodic categories in the prosodic hierarchy. The prosodic hierarchy consists of several levels of prosodic categories such as utterance, intonational phrase (I-phrase), phonological phrase, phonological word, etc (Selkirk 1980, Truckenbrodt 1995; see also Selkirk 1984, 1986, 1995, Nespor and Vogel 1986).^{1,2} These prosodic categories are organized in a strictly hierarchical fashion, so that the output of prosodic mapping is a layer of these prosodic categories. Crucially, at any level in the prosodic hierarchy – for

¹ As mentioned in Chapter 2, there is controversy regarding the inventory of prosodic categories. But there seems to be little, if any, disagreement concerning the status of the four categories listed in the text.

² Given that we are dealing with cases of clausal coordination, I will ignore the level of phonological words in the course of the discussion. But, note that it has been argued by a number of researchers that the level of phonological words forms a legitimate domain of coordinate reduction (Booij 1985, Wiese 1993, Wilder 1997).

instance, at the level of I-phrases, the linear string is exhaustively broken up into a sequence of I-phrases. Therefore, if a portion of a sentence is parsed as a separate I-phrase, the rest of the sentence will also be an I-phrase.

With this background, I will be concerned with showing that the PF deletion operation in RNR is constrained by prosodic factors – in particular, the target of RNR must constitute an independent I-phrase (cf. also Chapter 2). Under this view, RNR sentences will generally have the prosodic structure schematically represented as in (1). That is, RNR sentences have a tripartite constituent structure at the level of I-phrases, where the first conjunct, second conjunct, and the target form separate I-phrases (Swingle 1993).³ (Note that by (1), I do not mean to exclude the possibility where the first and the second conjuncts are further divided into additional I-phrases. What is important is that the target is an independent I-phrase, as argued in Chapter 2.)

(1) [iP first conjunct] [iP and second conjunct] [iP target] (iP = I-phrase)

In what follows, I will first examine the interaction between RNR and the prosodic constituent structure – in particular, the I-phrase structure – of a sentence based on a set of novel data. I will show that the proposal that the target of RNR must be an independent I-phrase allows us to correctly capture the behavior of a set of previously unnoticed data. In Section 2.2, I will present further and stronger evidence that the shared material in RNR must constitute a separate I-phrase.

³ Nothing really hinges on whether the exact categorial status of the prosodic constituents here is that of an I-phrase or not. However, the available evidence, e.g., pauses, final lengthening, etc, indicates that I-phrases are the relevant prosodic units. As discussed in the main text, this also allows us to explain certain facts more easily.

2.1. Sensitivity to Prosodic Constituency

In this section, I will argue based on a set of novel data from Korean and Japanese that RNR is sensitive to the prosodic constituent structure – in particular, the I-phrase structure – of a sentence. Let us first examine the Korean sentence in (2).

- (2) Mary-nun wusumyense cilmwunha-nun haksayng-ul ttayri-ess-ta.
 M-top *with.a.smile* *ask.a.question-rel* *student-acc* *hit-past-dec*

(adapted, Kang and Speer 2005)

The sentence is ambiguous depending on which argument the adjunct phrase *wusumyense* ‘with a smile’ is associated with. If the adjunct phrase modifies the subject, the sentence receives the interpretation given in (3)a, which I will call *high reading* for convenience. The adjunct phrase can also modify the object *haksayng* ‘student’, which is already modified by a relative clause *cilmwunhanun* ‘asking a question’. In this case, the sentence receives the interpretation given in (3)b, which I will call *low reading*.

- (3) a. High reading
 ‘With a smile on her face, Mary hit the student who was asking a question.’
 b. Low reading
 ‘Mary hit the student who was asking a question with a smile on his face.’

What is interesting is that disambiguation of this sentence is done by prosody, so that the two readings in (3) correlate with the position of a pause surrounding the adjunct phrase. In other words, the sentence in (2) is disambiguated based on its prosodic constituent structure at the I-phrase level. More concretely, if the adjunct phrase is parsed into the same I-phrase with the subject, the sentence only receives the high reading, as shown in (4)a. In contrast, if the adjunct phrase is parsed into the same I-phrase with the object, the sentence only receives the low reading, as shown in (4)b. (# indicates the position of a pause.)

- (4) a. High reading
 Mary with.a.smile # ask.a.question student hit
- b. Low reading
 Mary # with.a.smile ask.a.question student hit

It is also possible to place pauses on both sides of the adjunct phrase, although the sentence sounds somewhat awkward. But, what is important is that the sentence only receives the high reading in this environment.

- (5) ? Mary # with.a.smile # ask.a.question student hit

The same pattern is attested in Japanese.

- (6) Mary-wa warainagara shitsumon-shiteiru gakusei-o nagut-ta.
M-top with.a.smile ask.a.question student-acc hit-past.dec
‘With a smile on her face, Mary hit the student who asked a question.’
‘Mary hit the student who asked a question with a smile on his face.’

Here, too, the sentence is ambiguous and its disambiguation is done by the location of a pause, exactly as in (4) and (5).

Given this, the descriptive generalization is that in order to get the low reading, the adjunct phrase must be parsed into the same I-phrase with the object, i.e., it may not be separated from the object by an I-phrase boundary under the low reading.

- (7) The adjunct phrase must be parsed into the same I-phrase with the object to receive the low reading.

Let me clarify one thing before proceeding further in order to preclude any potential confusion of the reader. That is, it is reasonable to assume that the sentence in (2) has two different structures that correlate with the two readings in (3). The intonational difference noted in (4) could then merely reflect this structural difference. In other words, although what helps us disambiguate the sentence in (2) is its intonation, it is not intonation per se that is responsible for the two readings for the sentence in question. It is their structure that results in the different interpretations. The intonation of the sentence in question simply serves to signal which structure is being used. At this juncture, it is

very important to recall that RNR is not sensitive to syntactic constituency. The reason for this will be made clear immediately.

Given this, let us see how these sentences behave with respect to RNR. In (8), there are two adjunct phrases that contrast with each other – *wusumyense* ‘with a smile’ and *insangssmyense* ‘with a frown’. What is interesting about these sentences is that they are not ambiguous any more – in particular, they only receive the high reading.

(8) a. Mary-nun wusumyense, kuliko Jane-un insangssmyense, (K)

M-top with.a.smile and J-top with.a.frown

cilmwunha-nun haksayng-ul ttari-ess-ta.

ask.a.question-rel student-acc hit-past-dec

‘With a smile, Mary (hit the student who was asking a question) and with a frown, Jane hit the student who was asking a question.’

b. Mary-wa warainagara, (sosite) Jane-wa okorinagara, (J)

M-top with.a.smile and J-top angrily

shitsumon-shiteiru gakusei-o nagut-ta.

ask.a.question student-acc hit-past.dec

‘With a smile, Mary (hit the student who was asking a question) and with a frown, Jane hit the student who was asking a question.’

The question is what is responsible for the disappearance of the low reading here. First, note that since RNR is not sensitive to syntactic constituent structure, it is unlikely that there is something inherent in the structure under the low reading that makes the sentence

incompatible with RNR. I argue that in order to account for the lack of the low reading here, we have to take into consideration the prosodic constituent structure of the sentences in (8). Assume, as suggested above, that the target of RNR has to form a separate I-phrase on its own. This is actually indicated by the fact that in (8), a pause is inserted after each conjunct as a result of the application of RNR – especially, after the relevant adjunct phrases, i.e., *wusummyense/warainagara* ‘with a smile’ and *insangssmyense/okorinagara* ‘with a frown’. Given this, the lack of the low reading in (8) is predicted by the generalization in (7), since the adjunct phrases are prosodically separated from the object included in the RNR target by an I-phrase boundary as a result of RNR. The resulting prosodic constituent structure of the conjuncts in (8) is exactly the same as that in (4)a, which correctly predicts the availability of the high reading.

Given that a pause has to occur between the subject and the adjunct phrase under the low reading, as shown in (4)b, one might try to place a pause after the topic-marked subjects in (8) to yield the low reading. However, the result is still not acceptable under the intended reading. (The asterisks given below indicate the deviance under the low reading.) If the target must form a separate I-phrase in order for RNR to apply, it is actually predicted that the low reading will never be compatible with RNR in environments like (8) and (9), where the target contains the object, but not the adjunct phrase, because an I-phrase boundary will appear between the object and the adjunct, which is not the correct prosodic structure under the low reading.⁴ (The sentences in (9)

⁴ Although the proposal that the target of RNR must form a separate I-phrase is sufficient to explain all the data examined here, it seems worth pointing out that a slightly different account may also be available. (This account is also consistent with the current proposal that deletion in RNR is sensitive to the prosodic constituent structure of the sentence.) Notice that the combined effect of the proposal that an RNR target must be an I-phrase and that RNR involves deletion is basically equivalent to saying that deletion in RNR can only delete a full I-phrase constituent. Given this, we may assume that the deviance of (7) and (8) under

pattern with (5) in that they allow the high reading. They sound somewhat more awkward than (5) though. I speculate that this has to do with the fact that many pauses appear consecutively, making it difficult to maintain the normal intonational contour of the sentence.)

- (9) a. * Mary-nun # wusumyense, # kuliko Jane-un # insangssmyense, #
M-top with.a.smile and J-top with.a.frown
cilmwunha-nun haksayng-ul ttari-ess-ta.
ask.a.question-rel student-acc hit-past-dec
- b. * Mary-wa # warainagara, # (sosite) Jane-wa # okorinagara, #
M-top with.a.smile and J-top angrily
shitsumon-shiteiru gakusei-o nagut-ta.
ask.a.question student-acc hit-past.dec
- c. *Intended reading:*
 ‘With a smile on her face, Mary (hit the student who was asking question)
 and with a frown on her face, Jane hit the student who was asking a
 question.’

To summarize, building on the proposal that the target of RNR has to form a separate I-phrase (see Chapter 2), I have argued in this section that this proposal also

the low reading stems from PF deletion being unable to delete a full I-phrase constituent, i.e., only a subpart of an I-phrase is deleted under the intended reading of the sentences, as illustrated in (i).

- (i) * ... [_{IP} smile ~~ask a question student hit~~] (low reading)

Although this account can also explain the data examined in the text and is compatible with the proposal that RNR is sensitive to the prosodic constituent structure of the sentence, it appears that the account given in the main text is simpler. Given this, I will put aside the alternative account until a better case is found that will allow us to tease apart the two accounts in question.

allows us to correctly capture the behavior of certain adjunct phrases in RNR sentences in Korean and Japanese. I have argued based on this that the relevant deletion operation in RNR is sensitive to the prosodic constituent structure of the sentence. Combined with the fact that RNR is not sensitive to syntactic constituency, as argued in Chapter 5, the discussion in this section provides further evidence that RNR is a PF phenomenon.

2.2. RNR Target as an I-phrase

In the previous section, I have argued that RNR, implemented as PF deletion, is sensitive to prosodic constituency, just like syntactic operations are based on syntactic constituency. In this section, I will examine a set of novel data and argue that the shared material in RNR must form an independent I-phrase, as suggested in Chapter 2. The crucial point is that the shared material must be able to stand as an independent I-phrase either (A) as a result of regular prosodic parsing or (B) as a result of a modification of the regular prosodic structure via contrastive stress assignment.⁵ I will show below that in other cases, i.e., in the cases where the shared material cannot stand as an independent I-phrase at all, the sentence is disallowed. It should also become obvious during the discussion below that there is no non-*ad hoc* way to capture the properties discussed below under the purely syntactic approaches to RNR.

⁵ As briefly alluded to in Section 4.2.4 in Chapter 2, RNR interacts with contrastive stress assignment, which facilitates insertion of an I-phrase boundary. I will further elaborate on this point shortly.

First, a straightforward illustration of point (A) above – namely, that the target of RNR must be able to stand as an independent I-phrase – comes from the deviance of sentences like (10).

(10) * Alice composed, and John performed, it. (Abbott 1976)

It is well-known that *it* behaves like a clitic, which means that it cannot stand as a separate I-phrase. Therefore, the ill-formedness of (10) is correctly predicted under the current assumption that the target of RNR must be a separate I-phrase. A good instance of point (A) is sentences like *John believes, and Mary suspects, that Einstein is from Mars*, where the shared clause can naturally form an independent I-phrase via regular prosodic phrasing.

Point (B) can be illustrated by the contrast between (11) and (14) below, which shows the interaction between RNR and contrastive stress assignment. Consider first the ungrammaticality of (11).⁶

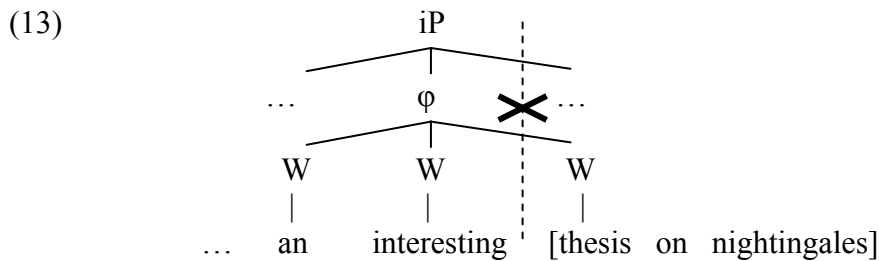
- (11) a. * John wrote an interesting, and Elvira wrote a brilliant, thesis on
 nightingales. (McCawley 1988)
- b. * I think Mary's, but he thinks Susan's, father is sick.

⁶ The sentences in (11) should be pronounced without heavy stress on the last element of each conjunct, i.e., on the intended pronunciation, *interesting* and *brilliant* in (11)a and *Mary's* and *Susan's* in (11)b should not receive contrastive stress. (As discussed below, putting stress on these elements is actually the most natural pronunciation of the sentences in (11), i.e., stress on these elements improves these sentences, which is not the point I am trying to make here.)

In (11), a proper subpart of a DP is included in the target of RNR, stranding several prenominal elements, as shown below.

- (12) a. [... [an interesting ~~thesis on nightingales~~]]
 b. [... [[Mary's ~~father~~] is sick]]

With normal intonation, the sentences in (11) are bad, as indicated. The ill-formedness of these sentences is expected, since articles, prenominal adjectival modifiers, and prenominal genitives are normally parsed into the same prosodic constituent with their head noun. Hence, in (11), the target of RNR fails to form an independent I-phrase, disallowing RNR.⁷



⁷ Given the Strict Layer Hypothesis, it is not possible for a lower level prosodic category to be broken up by a higher level prosodic category. In other words, the boundary of a higher level category (e.g., an I-phrase boundary) must coincide with that of a lower level category (e.g., a ϕ -phrase boundary), as discussed in Chapter 2. Therefore, configurations like (i), where the left boundary of the second I-phrase does not coincide with any of the boundaries of the ϕ -phrases, are disallowed. The configuration in (i) is exactly what is found in (11)/(13). (Below, iP stands for I-phrase, ϕ phonological phrase, and W prosodic word. Although there may be other prosodic levels, they are ignored for ease of exposition. See Section 5 of Chapter 2 and references therein.)

(i) * $\left[\begin{array}{ccc} [iP & &] [iP & &] \\ [\phi P & &] [\phi P & &] \end{array} \right]$

What is important for us here is the fact that the sentences in (11) improve considerably when the last element of each remnant receives contrastive stress. (Below, italicized capital letters indicate contrastive stress.)

- (14) a. John wrote an *INTERESTING*, and Elvira wrote a *BRILLIANT*, thesis on
 nightingales. (McCawley 1988)
- b. I think *MARY'S*, but he thinks *SUSAN'S*, father is sick.

Regarding this improvement, note that contrastive stress is standardly assumed to insert an I-phrase boundary after the element that receives it, which is typically signaled by a pause following the contrastively stressed element (Selkirk 1984, Radanović-Kocić 1988, 1996, Kanerva 1989, Swingle 1993, Truckenbrodt 1995, Ladd 1996, Bošković 2001, among many others). The effect of contrastive stress on prosodic phrasing can be clearly illustrated by Serbo-Croatian second position clitics. Recall that, as discussed in Section 4.2 of Chapter 2, SC second position clitics have to occupy the second position within their I-phrase. Given this, the ungrammaticality of the sentences in (15) is correctly predicted, since the clitics *će* and *je* are not in the second position of the I-phrase that corresponds to the whole clause.

- (15) a. * Petru on će prodati knjige.
 Petar.dat he will sell book.acc
 ‘To Petar, he will sell books.’ (Bošković 2001:65)

b. * Džokera Batman je uhvatio.

Joker.acc Batman.nom is caught

‘Joker, Batman caught.’

(Miloje Despić (p.c.))

However, if the clause-initial elements in (15), i.e., *Petru* and *Džokera*, receive contrastive stress, the sentences become perfect. Following Browne (1975), Bošković (2001) argues that this is so because contrastive stress on these elements results in insertion of an I-phrase boundary after these phrases, which is indicated by a pause that follows them. The clitics *će* and *je* are then correctly located in the second position of their I-phrase, as illustrated in (16).⁸ (# indicates a pause.)

(16) a. *PETRU* on će prodati knjige. (Bošković (p.c.))

→ [_{iP} *PETRU*] # [_{iP} on **će** prodati knjige]

b. *DŽOKERA* Batman je uhvatio. (Miloje Despić (p.c.))

→ [_{iP} *DŽOKERA*] # [_{iP} Batman **je** uhvatio]

Given this, the improvement in (14) receives the same analysis as (16). That is, contrastive stress on the italicized elements in (14) induces insertion of an I-phrase boundary after them, cutting off the stressed elements from the rest of their NPs. Now, recall that a sentence at the prosodic level P must be exhaustively parsed into a sequence of Ps, as discussed in Chapter 2. Given this, that an I-phrase boundary is inserted

⁸ Note that due to contrastive stress, even phonologically light elements, i.e., *Petru* and *Džokera*, form an I-phrase on their own and delay clitic placement in (16). See also footnote 23 in Section 4.2.4 of Chapter 2.

following *INTERESTING/BRILLIANT* and *MARY'S/SUSAN'S* in (14) entails that what follows these elements is an I-phrase as well. This is illustrated in (17).

- (17) a. [i_P John wrote an *INTERESTING*] # [i_P ~~thesis on nightingales~~
[i_P and Elvira wrote a *BRILLIANT*] # [i_P thesis on nightingales]
- b. [i_P I think *MARY'S*] # [i_P ~~father is sick~~
[i_P and he thinks *SUSAN'S*] # [i_P father is sick]

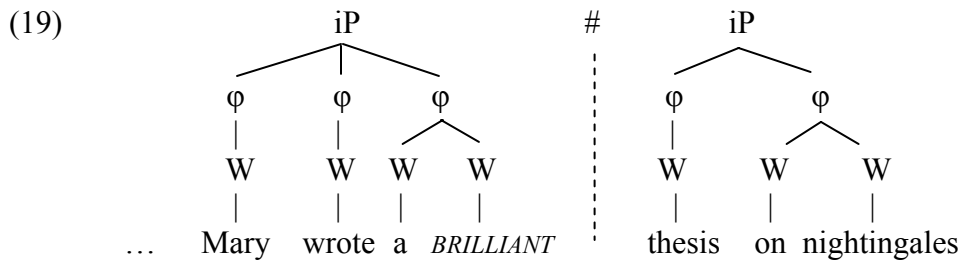
Therefore, the sentences in (14) are perfectly consistent with the requirement that an RNR target be an independent I-phrase.

Recall that at the outset of this section, I proposed that the shared material should be able to stand as an independent I-phrase either (A) as a result of regular prosodic parsing or (B) as a result of contrastive stress assignment. I have argued above that the deviance of (10) confirms (A), a good instance of (A) being sentences like *John believes, and Mary suspects, that Einstein is from Mars*, where the shared clause can naturally form an independent I-phrase via regular prosodic phrasing. As for (B), based on the contrast between (11) and (14), I have shown that elements that usually do not form a separate I-phrase can be a legitimate target of RNR when an element preceding them receives contrastive stress, which facilitates insertion of an I-phrase boundary. The data discussed above provide strong evidence for the claim that RNR is directly constrained by the prosodic constituent structure of the sentence, hence argue for the PF deletion analysis. Since this point is of some importance, let me discuss the data in

question in a bit more detail, slightly extending the relevant paradigm. Consider (18). (As before, italicized capital letters indicate contrastive stress.)

- (18) a. John wrote an *INTERESTING*, and Mary wrote a *BRILLIANT*, thesis on nightingales. (= (14)a)
- b. ?* John *WROTE* an interesting, but Mary *DIDN'T* write an interesting, thesis on nightingales.
- c. John *WROTE*, but Mary *DIDN'T* write, an interesting thesis on nightingales.

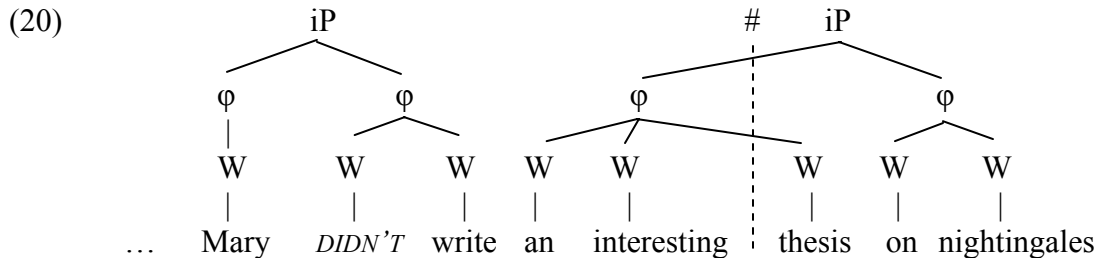
We have already seen above how the grammaticality of (18)a can be captured. The relevant portion of the prosodic constituent structure of (18)a is given in (19).



As argued above, contrastive stress assignment on *BRILLIANT* separates the elements of the DP that would otherwise have been parsed into the same ϕ -phrase (and the same I-phrase for that matter).⁹ As a result, the target forms an I-phrase on its own. The output of RNR is thus well-formed.

⁹ Regarding the details of ϕ -phrase formation, see Nespor and Vogel 1986, Hayes 1989. See also Swingle 1993 for relevant discussion.

Given this, the contrast between (18)a and (18)b is important. The relevant portion of the prosodic constituent structure of (18)b is given in (20).



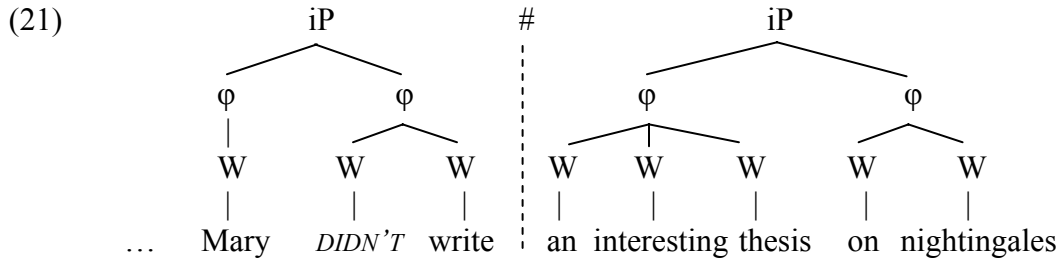
In this case, contrastive stress falls on *DIDN'T*, as indicated. Given that a ϕ -phrase boundary appears between *write* and *an*, contrastive stress on *DIDN'T* licenses insertion of an I-phrase boundary in that position, so that the I-phrase boundary will be properly aligned with a ϕ -phrase boundary. (This looks like a mismatch, but it is actually predicted by the SLH. Recall that as discussed in Chapter 2, one of the consequences of the SLH is that the boundary of an I-phrase must align with that of a ϕ -phrase. Therefore, it is not possible to insert an I-phrase boundary right after *DIDN'T* in (20), because it would then be unable to align with a ϕ -phrase boundary.¹⁰) Recall that a sentence at the prosodic level P must be exhaustively parsed into a sequence of Ps. Hence, insertion of an I-phrase boundary after *write* entails that what follows it will be an I-phrase as well. In the prosodic structure in (20), the string *an interesting thesis on nightingales* forms a prosodic constituent that can be properly parsed as an I-phrase. However, the problem is

¹⁰ The underlying assumption here is that it is not at all possible to insert a ϕ -phrase boundary between *didn't* and *write*, which thus precludes insertion of an I-phrase boundary between these elements (see also footnote 11). In this respect, notice the deviance of (i), where the target of RNR cannot be an I-phrase, given the above discussion. (Another problem with the sentence may be that what is deleted is not identical to the target of RNR.)

(i) * Mary wrote, and Peter didn't, write an interesting thesis on nightingales.

that what is actually deleted is only a subpart of this I-phrase. Therefore, RNR fails to affect an I-phrase in (18)b, which leads to ungrammaticality.¹¹

That this account is correct is confirmed by the grammaticality of (18)c. The relevant portion of the prosodic constituent structure of (18)c is given in (21).



Since it should be easy to see why (21) is allowed, in contrast to (20), I will not repeat the account.

There is a further set of data that provide strong evidence in support of the current analysis. Consider (22).

- (22)
- a. John CLAIMED yesterday, and Peter DIDN'T claim yesterday, that Mary left.
 - b. John NEVER believed, and Peter ALWAYS believed, that Mary left.
 - c. * John NEVER believed Mary's, but Peter ALWAYS believed Mary's, father is sick.

¹¹ It is possible that an I-phrase boundary following *write* is not obligatory. Recall that I am only assuming that contrastive stress “facilitates” insertion of an I-phrase boundary. The important point is that contrastive stress cannot put an I-phrase boundary after the adjective in (20). Nor can regular prosodic phrasing do so. Therefore, there is no way to insert an I-phrase boundary after *interesting*, i.e., the target of RNR cannot be an I-phrase in this environment.

The crucial point to note here is that in none of these sentences does the contrastively stressed element immediately precede the target of RNR. In fact, it is not even possible to assign contrastive stress on the final element of the remnants here, since in each example, they are identical. Therefore, contrastive stress assignment does not play a role in determining the target of RNR in these sentences. As argued above, in such contexts, what is required is that the target of RNR be able to stand as an independent I-phrase via regular prosodic phrasing. The contrast here bears out this prediction. That is, only the sentence in (22)c, in which the target cannot form an independent I-phrase via regular prosodic parsing, results in ungrammaticality. (In (22)a,b, the target is a CP, which can be parsed as a separate I-phrase on its own.) Compare also (22)c with (14)b, repeated below.

(23) I think *MARY'S*, but he thinks *SUSAN'S*, father is sick.

To emphasize, the point here is that neither contrastive stress assignment, nor regular prosodic parsing allows the target in (22)c to be an independent I-phrase, which leads to the ill-formedness of the sentence.

To summarize, I have argued in this section that RNR is sensitive to the prosodic constituent structure of the sentence – in particular, the target of RNR must be an independent I-phrase. The crucial illustration of this point came from the cases where illegitimate RNR sentences become grammatical when their prosody is changed by contrastive stress assignment. I have shown that by allowing insertion of an I-phrase boundary, contrastive stress enables RNR to separate elements that are normally parsed into the same ϕ -phrase. This provides strong evidence that application of RNR is directly

constrained by the prosodic constituent structure of the sentence. This state of affairs is expected if RNR is derived by an operation of PF that targets prosodic constituents – in particular, I-phrases, as I am arguing in this dissertation. However, I do not see a non-stipulatory way to capture this aspect of RNR under the purely syntactic approaches discussed earlier. Note in addition that the discussion above crucially requires that RNR, implemented as PF deletion, follow the process of prosodic phrasing.

3. Direction of Deletion and Linear Order

In this section, I will explore some additional questions about RNR that have to do with the linear position of the target and show that the current analysis provides a natural solution to these questions. Recall that in Chapter 4, I proposed two generalizations – namely, target-internal adjacency and peripherality, which respectively require that the elements contained in an RNR target be adjacent to each other and that the target occupy the right periphery of its conjunct. There, I did not explain why these generalizations hold. Obviously, it will be more desirable if we can explain them.

There are further questions to be addressed in relation to the surface position of the target of RNR. For instance, as a careful reader might have noticed in the course of

the discussion, it is always the second conjunct that surfaces adjacent to the target. In other words, even if the peripherality and the adjacency conditions are met, it is completely impossible for an RNR target to surface next to the first conjunct, as schematically shown in (24).

- (24) a. [first conjunct] ~~{target}~~ [second conjunct] [target]
b. * [first conjunct] [target] [second conjunct] ~~{target}~~

In fact, the target must always surface after the final conjunct, as shown by (25). There is simply no other position available for the target.¹²

- (25) a. [first conjunct] ~~{target}~~ [second conjunct] ~~{target}~~ [third conjunct] [target]
b. * [first conjunct] ~~{target}~~ [second conjunct] [target] [third conjunct] ~~{target}~~
c. * [first conjunct] [target] [second conjunct] ~~{target}~~ [third conjunct] ~~{target}~~

As far as I can tell, these properties have not been explained satisfactorily, regardless of one's analysis of RNR. Along with the two generalizations mentioned above, the properties illustrated by (24) and (25) have often been stipulated.

In what follows, I will argue that we can explain these properties. I will show that by adopting Fox and Pesetsky's (2005) system of cyclic linearization, we can actually *derive* these properties, i.e., we do not have to stipulate them.¹³

¹² Under the deletion analysis, when there are multiple instances of the target in the underlying structure, the question is why the target in the final conjunct is privileged so that it never undergoes deletion.

¹³ As discussed in Chapter 3, Wilder's (1999, 2001) multi-dominance system captures the peripherality requirement on RNR targets. I have shown however that the modified system Wilder adopts actually leads

3.1. Background: Directionality Parameter

In discussing Gapping from a cross-linguistic perspective, Ross (1970) observes that there is a correlation between the direction in which Gapping applies in a given language and the canonical phrase structural configuration of that language.¹⁴ Ross states his observation as in (26).

- (26) The order in which Gapping operates depends on the order of elements at the time that the rule applies; if the identical elements are on left branches, Gapping operates forward [rightward (D.A.)]; if they are on right branches, it operates backward [leftward (D.A.)]. (Ross 1970:251)

(26) states that if verbs are located on the left branch in a language (e.g., SVO), then the verb of the initial conjunct survives and the corresponding verbs in all subsequent conjuncts undergo Gapping. Similarly, if verbs are located on the right branch in a language (e.g., SOV), the verb of the final conjunct survives and the corresponding verbs in all preceding conjuncts are Gapped. This is schematically represented in (27)-(29).

to problems. In what follows, I will show that the current analysis can also derive the peripherality requirement of RNR (as well as other properties of RNR noted above) and that it also accounts for a broader range of data that even go beyond RNR.

¹⁴ For properties of Gapping, see Jackendoff 1971, Hudson 1976, Kuno 1976, Hankamer 1979, Neijt 1980, Johnson 1994, 1996, Kim 1997, Hartmann 2000, among many others.

(27) SVO + SVO + SVO + ... + SVO

⇒ SVO + SO + SO + ... + SO

(28) SOV + SOV + SOV + ... + SOV

⇒ SO + SO + ... + SO + SOV

(29) * SO + SO + ... + SO + SVO (Ross 1970:251-252)

Let me put Ross's observation in a slightly different way.

(30) In a given language, if verbs canonically precede their object, then the surviving verb in the output of Gapping must precede all the objects in the structure; if verbs canonically follow their object, then the surviving verb in the output of Gapping must follow all the objects in the structure.

It is easy to see that the alternative formulation in (30) is consistent with the paradigm in (27)-(29). I will not be concerned with evaluating whether this reinterpretation actually holds of all cases of Gapping itself.¹⁵ The purpose of this section is to point out that there has been an attempt to relate the direction of certain deletion operations to the linear order of the elements affected by the operation. In other words, I take Ross's observation, reinterpreted as in (30), as the guiding intuition for my answer to the question raised above concerning the surface position of the target of RNR. More concretely, I will argue

¹⁵ In fact, Hankamer (1979) and van Oirsouw (1987) point out that there are exceptions to Ross's generalization. See also Wilder 1994.

below that the linear order of the affected elements at the time of application of Deletion in RNR is responsible for the properties noted above.

3.2. Order Preservation: Fox and Pesetsky 2005

In this section, I will outline Fox and Pesetsky's (2005) (F & P) system of cyclic linearization, which I argue allows us to derive the generalizations about RNR mentioned above in a principled way. First, recall that Chomsky (2000, 2001) argues that syntactic derivation proceeds through a series of cyclic nodes called *phases*, which correspond to CPs and vPs, among others. It is also assumed that phases determine the points of Spell-Out where syntactic structure is shipped to PF (see Uriagereka 1999 for multiple Spell-Out). Building on this, F & P argue that one of the functions of Spell-Out is that it determines the linear order of elements contained in the phase that is sent to PF. Crucially, Fox and Pesetsky argue that the linear order determined by Spell-Out of a phase may not be contradicted by the linear order determined by Spell-Out of a later phase. This is schematically illustrated in (31).

(31)

	Syntax	Spell-Out	Linear Order
(a)	$[_{VP} A B C]$	\Rightarrow	$A > B > C$
(b)	$[_{CP} A B [_{VP} C]]$	\Rightarrow	$A > B > C$
(c)	$[_{CP} B A [_{VP} C]]$	\Rightarrow	* $B > A > C$

In (31)a, the vP is sent to PF, resulting in the order given in the right column. (31)b involves movement of A and B out of the vP. When the CP is sent to PF, the resulting order is consistent with the order established in (31)a. Therefore no problem arises. In (31)c, A and B are also moved out of the vP. But, when the CP is spelled out, the resulting order is not consistent with the order established in (31)a. F & P argue that such a contradiction of linear order is not allowed.

Before proceeding to the discussion of RNR, let me briefly illustrate below how F & P's analysis applies to account for actual data.

3.2.1. Holmberg's Generalization

It is well-known that in Scandinavian languages, object shift out of VP is restricted to environments where the verb also moves out of VP. This is known as Holmberg's generalization.¹⁶ Swedish is one of those language that show this effect, as illustrated in (32).

¹⁶ See Holmberg 1986, 1998, Bobaljik 2002 for further discussion and references concerning Holmberg's Generalization.

- (32) a. Jag kysste henne inte [_{VP} t_v t_o]
I kissed her not
- b. * ... att jag henne inte [_{VP} kysste t_o]
... that I her not kissed
- c. * Jag har henne inte [_{VP} kysst t_o]
I have her not kissed

(Fox and Pesetsky 2005:17)

In (32)a, the object *henne* ‘her’ moves out of the VP. This is legitimate since the verb *kysste* ‘kissed’ also moves out of VP to satisfy the V2 requirement. It is well-known that in embedded clauses, main verbs do not move for the purpose of V2 under normal circumstances. In such contexts, object shift is disallowed, as the ungrammaticality of (32)b shows. Even in matrix clauses, when there is an auxiliary main verbs do not move for V2. Again, object shift is disallowed, since the verb stays within the VP, as shown by (32)c.

The way F & P account for Holmberg’s Generalization is as follows: First, in the good case, Spell-Out of the VP yields the order V>O, as shown in (33)a.¹⁷ When the CP is sent to PF, the relative order between the verb and the object does not change. Although both the verb and the object have moved out of the VP, the verb lands higher than the landing site of the object, since it is moving for the purpose of V2. Therefore, no contradiction of previous ordering relations arises.

¹⁷ F & P assume that in Scandinavian, VP is a Spell-Out domain. This does not affect our discussion of RNR.

- (33) a. $[_{VP} V O] \Rightarrow \text{order: } V > O \quad (= (32)a)$
 b. $[_{CP} S V O Adv [_{VP} t_v t_o]] \Rightarrow \text{order: } S > V > O > Adv$

In the bad cases, as expected, a contradiction of ordering relations arises. This is shown in (34). In this case, since the object alone moves out of the VP, which contains the in situ verb, the movement necessarily leads to a contradiction with respect to the relative order between the object and the verb when the CP undergoes Spell-Out.

- (34) a. $[_{VP} V O] \Rightarrow \text{order: } V > O \quad (= (32)b,c)$
 b. $[_{CP} S (aux) O Adv [_{VP} V t_o]] \Rightarrow \text{order: } * S > (aux) > O > Adv > V$

I have briefly illustrated how F & P's system of cyclic linearization captures Holmberg's generalization. In the following section, I will argue that adopting this system also allows us to account for the properties of RNR noted at the outset of this section, including the generalizations proposed in Chapter 4.

3.3. Deriving the Adjacency and the Edge Sensitivity of RNR

In this section, I will show that adopting F & P's system of cyclic linearization allows us to account for the properties of RNR mentioned at the outset of this section in a principled manner. Let me first lay down the assumptions I adopt here.

- (35) a. Conjuncts undergo derivation in separate workspace until they are conjoined by conjunction.
- b. Elements affected by RNR are treated in PF as (copies of) a single element, i.e., deletion under identity.
- c. Fox and Pesetsky's (2005) system of cyclic linearization holds.

(35)a seems to be a natural assumption under the deletion analysis given that we are dealing here with a full clausal coordination by hypothesis. I assume that conjuncts are built in separate workspaces, each undergoing all the necessary steps of the derivation – including, crucially, multiple Spell-Out that determines linear order. Recall that under the deletion analysis, coordinated structures in RNR involve a full clausal coordination. Therefore, it is natural that these clauses undergo Spell-Out in the course of their derivation.¹⁸ This means that the conjunct-internal linear order for each conjunct is determined independently of elements in other conjuncts before the conjuncts are assembled together by the conjunction. The conjuncts are eventually conjoined by the introduction of the conjunction into the structure. I assume it is after this point that the relative order between the conjuncts – that is, the inter-conjunct linear order – is determined, which results in the total ordering of all the lexical items of the whole sentence. Concerning (35)b, note that what the deletion operation employed in RNR does

¹⁸ Željko Bošković (p.c.) raised a question to me whether this implies that only phases can be coordinated. As mentioned in the text, given that we are dealing with full clausal coordination, and clauses have to be spelled out anyway, this does not really matter to us. I would like to just note that this is a possibility, i.e., it may be the case that only phases can be coordinated, seeing that there are proposals in the recent literature that the inventory of phases is actually bigger than vPs and CPs (see, for instance, Abels (2003) for PPs, Bošković (2005c, to appear) for DPs). But I will remain undecided about this issue, since it does not affect us.

is eliminate elements under identity, which is a characteristic shared by copy-deletion at PF.¹⁹ I also assume that part of the conjoining process is an evaluation procedure, which I will call *Scan* for convenience, that applies to all conjuncts, checking them against various constraints holding for coordinated structures, including the conditions for deletion such as identity.²⁰ I assume that *Scan* is the process that identifies the relevant targets of RNR.

With this much background, I will show in subsequent subsections how the current analysis accounts for the properties of RNR mentioned above.

3.3.1. Deriving Right Node Raising

Let us first examine the structure in (36), a normal instance of RNR. The relevant steps of the derivation of (36) are given in (37).

(36) [A B ~~1~~~~2~~~~3~~] & [C D **1 2 3**]

- (37) a. Order within the first conjunct: A> B> 1> 2> 3
 b. Order within the second conjunct: C> D> 1> 2> 3
 c. Conjunction, Scan, Target Selection: {1, 2, 3}
 d. Deletion: A> B> ~~1~~~~2~~~~3~~> C> D> **1> 2> 3**

¹⁹ This suggests a possibility that we do not have to postulate a separate deletion operation designated for RNR only. It may be that in the course of the derivation of an RNR sentence, copy-deletion applies multiple times. That is, it first applies conjunct-internally as part of the process of their linearization. When the conjuncts are conjoined, deletion applies again to the whole sentence to eliminate the target of RNR, which I argue below is driven by considerations of linearization. See Bošković 2001 for relevant discussion.

²⁰ I believe that in any theory of coordinated structures, there has to be some form of operation equivalent to *Scan* that checks the well-formedness of the structure, given the various forms of parallelism requirements (see, e.g., Munn 1993, Fox 2000). It may be that *Scan* is an interface process that applies at both LF and PF.

(37)a, b illustrate the conjunct-internal linear order established for each conjunct. When the conjuncts are conjoined, Scan applies, searching for candidates for deletion. In the case at hand, the set of elements in (37)c qualify for deletion under identity. Note that given (37)a, b, there are two occurrences of the target, i.e., {1, 2, 3} – one in the first conjunct and the other in the second conjunct. Note that the only way we can get an output that is consistent with the previously established ordering relations in (37)a and (37)b is to delete the target in the first conjunct, as shown in (37)d. Here, {1, 2, 3} follows A and B in conformity with (37)a. It also follows C and D in conformity with (37)b. On the other hand, if deletion affects the second conjunct, as in (38), the derivation is ruled out, because the output will contradict the previous ordering relation established in (37)b, which requires {1, 2, 3} to follow C and D.

(38) * A > B > **1** > **2** > **3** > C > D > ~~1 > 2 > 3~~

We can now derive the bigger generalization in (24) and (25) that deletion in RNR always applies to the targets in non-final conjuncts, i.e., only the target in the final conjunct is allowed to surface. This is because whenever the target is realized in a non-final conjunct, it will inevitably contradict the conjunct-internal linear order established for the final conjunct prior to the conjunction of the conjuncts. That this prediction is correct is confirmed by the ungrammaticality of (39).

- (39) * I believe that John, **will graduate on time**, but I can't imagine that Mary.
 (Cf. I believe that John, but I can't imagine that Mary, **will graduate on time**.)

Therefore, there is no other option for the target than to appear in the “right” position in RNR. Under the current analysis, the generalization in question is therefore derived, not stipulated.

3.3.2. Deriving Target-internal Adjacency

Next, let us see how the current analysis accounts for the target-internal adjacency of RNR, schematically represented in (40). The relevant steps of the derivation of (40) are given in (41).

- (40) * [A B † C 2] & [D E 1 F 2]

- (41) a. Order within the first conjunct: A > B > 1 > C > 2
 b. Order within the second conjunct: D > E > 1 > F > 2
 c. Conjunction, Scan, Target Selection: {1, 2}
 d. Deletion: * A > B > † > C > 2 > D > E > 1 > F > 2

As before, the two conjuncts undergo separate derivations, resulting in the conjunct-internal linear order in (41)a,b. When the two conjuncts are conjoined, Scan applies to

identify the set of elements to be affected by deletion, as shown in (41)c. Suppose that we choose to delete the target in the first conjunct. Then, we will get the surface order in (41)d. The output is however not allowed, since according to (41)a, 1 has to precede C, which is not the case in (41)d. That this prediction is correct is shown by the ungrammaticality of (42).

- (42) * John-un Mary-ka ___ sass-tako ___ kuliko (K)
J-top M-nom bought-comp and
 Tom-un Susan-i **chayk-ul** hwumchiess-tako **malhayssta**.
T-top S-nom book-acc stole-comp said
 ‘John (said that) Mary bought (the book) and Tom said that Susan stole the book.’

In addition, we already know from the discussion in Section 3.3.1 that sentence-internal realization of the target (or deletion in the final conjunct) is always disallowed. Therefore, deleting the target in the second conjunct will not improve the sentence. The crucial point to note is that if the elements contained in the target are not adjacent to each other, the derivation always ends up with a contradiction with respect to linear order. Therefore, the current analysis successfully derives the target-internal adjacency requirement of RNR.²¹

²¹ As pointed out to me by Jonathan Bobaljik (p.c.) and Željko Bošković (p.c.), the target-internal adjacency property may actually follow from an independent property of RNR – namely, the fact that an RNR target must form an I-phrase. That is, note that in (40), there is no way in which 1 and 2 can form an I-phrase together. Given this, we may actually not need F & P’s system to capture the target-internal adjacency property.

3.3.3. Deriving Peripherality

Finally, let us see how the current analysis explains the requirement that the target of RNR be located at the right edge of its conjunct, schematically represented in (43). The relevant portion of the derivation is given in (44).

(43) * [A B 1 2 C] & [D E 1 2 F]

- (44)
- a. Order within the first conjunct: A > B > 1 > 2 > C
 - b. Order within the second conjunct: D > E > 1 > 2 > F
 - c. Conjunction, Scan, Target Selection: {1, 2}
 - d. Deletion: * A > B > ~~1 > 2~~ > C > D > E > 1 > 2 > F

The conjunct-internal orders are given in (44)a,b. The target of deletion is determined in (44)c. It should be easy to see that applying deletion to the first conjunct, as in (44)d, leads to a contradiction with respect to linear order. This is so because the resulting surface order in (44)d is not consistent with (44)a, since C precedes 1 and 2 in (44)d, contra (44)a. That this prediction is correct is shown by the ungrammaticality of (45), repeated from Chapter 4.

(45) * Tomo-nun ~~Ana-ka ppang-ul sass-tako~~ ssessta kuliko (K)
T-top A-nom bread-acc bought-comp wrote and

Nina-nun **Ana-ka ppang-ul sass-tako** malhayssta.

N-top A-nom bread-acc bought-comp said

‘Tomo wrote (that Ana bought bread) and Nina said that Ana bought bread.’

As before, applying deletion to the target in the second conjunct, realizing the target as part of the first conjunct does not save the derivation, since this always leads to a contradiction with respect to linear order. Therefore, the current analysis correctly derives the peripherality requirement on RNR targets.²²

To summarize, I have argued in this section that adopting F & P’s system of cyclic linearization allows us to derive several generalizations regarding the position of the target of RNR that have often been stipulated in the literature.

²² A question remains regarding the ungrammaticality of (i) (see the end of Section 3 of Chapter 3).

(i) *Mary congratulated __, and Bill gave, *the boy* the prize
Here, the surface position of the target is consistent with all the conjunct-internal ordering relations. Therefore, the ungrammaticality of (i) should be attributed to a factor other than linear order. I speculate that the problem may have to do with some notion of non-parallelism in (i), e.g., it may be relevant that the prosodic contexts for *the boy* are not identical across the conjuncts. I will put aside further investigation of this question for future research. See Bachrach and Katzir 2006 and Kluck 2006, to appear, for relevant discussion.

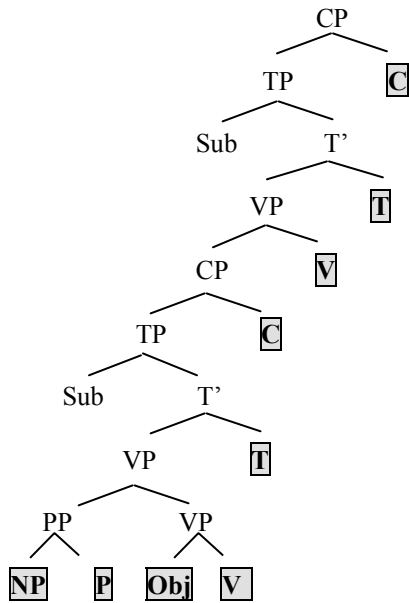
4. Some Remarks on Prosodic Phrasing

Before closing this chapter, some comments will be useful. Recall that, following the standard assumption, I assume that the process of prosodic mapping is based on the syntactic constituent structure of a sentence. For instance, it is assumed that, under normal circumstances, an XP maps onto a phonological phrase (ϕ -phrase), which may further map onto an I-phrase depending on the context (Selkirk 1984, Nespor and Vogel 1986, Hayes 1989, Truckenbrodt 1995, among others). However, the reader should not be confused to think that all prosodic constituents are determined based on syntactic constituents, i.e., there is no absolute one-to-one correspondence between the syntactic constituent structure of a sentence and its prosodic constituent structure. In fact, many factors are known to affect the process of prosodic mapping to result in a prosodic structure that does not completely reflect its syntactic constituent structure. For instance, the length and structural complexity of phrases, the rapidity of speech, and the information structural content of an utterance all contribute to non-isomorphism between the syntactic constituent structure and the prosodic constituent structure of sentences.

In this light, recall that I have shown in Chapter 4 that RNR, which involves PF deletion, can target elements that do not form a syntactic constituent. I have also argued above that RNR must target a prosodic constituent – in particular, an I-phrase. Given this, one may wonder whether we are dealing with conflicting requirements here. But, this would be so only if prosodic phrasing was done entirely on the basis of syntactic

constituent structure, which is not true. For instance, recall that I have shown in Section 2.4 of Chapter 4 that the boxed elements in (46) together form a target of RNR in sentences like (47).

(46)



[CP[TP Subj [VP[CP[TP Subj [VP[PP NP P][VP Obj V] T] C] V] T] C]

(47) Tomo-nun Ana-ka, kuliko Nina-nun Zhanna-ka, (K)

T-top A-nom and N-top Z-nom

pwuek-eyse bap-ul mekess-tako malhayssta.

kitchen-at rice-acc ate-comp said

‘Tomo (said that) Ana (had rice in the kitchen) and Nina said that Zhanna had rice in the kitchen.’

If we were to assume that prosodic phrasing is determined solely based on syntactic constituent structure, then there would not be any way to form a prosodic constituent based on the boxed elements in (46). This in turn would cause a problem for the proposal that PF deletion is based on prosodic constituents. However, this is really no problem here. As discussed above, many factors, e.g., contrastive stress assignment, allow a sentence to map onto a prosodic structure that does not parallel its syntactic constituent structure. The correspondence of XPs to ϕ -phrases, for instance, is at best a tendency or preference, not an absolute requirement. Therefore, the fact that syntactic non-constituents can form a legitimate target of PF deletion, which I argue is based on prosodic constituency, does not cause a problem for our analysis. It is in fact expected to be the case, as I argued earlier.

The reader should of course not be led to think that RNR necessarily involves special prosodic phrasing that completely deviates from the normal pattern of prosodic phrasing that reflects the syntactic constituent structure. It is easy to find cases where prosodic phrasing in an RNR sentence conforms to the normal pattern of prosodic phrasing, e.g., RNR of a CP in English, where the shared CP is parsed as a separate I-phrase. What is important to note is that in the cases where the target-remnant structure of an RNR sentence does not conform to the regular pattern of prosodic phrasing, contrastive stress assignment often plays a role. For instance, in (48), the target of RNR separates elements that are normally parsed together into the same prosodic constituent. In all these cases, speakers agree that more stress is required on the elements preceding the target to make the sentence natural (see the discussion in Section 2.2).

- (48) a. I think *MARY'S*, but he thinks *SUSAN'S*, father is sick.
- b. I like *EXPENSIVE*, and you like *CHEAP*, dresses.
- c. John wrote *an INTERESTING*, and Elvira wrote *a BRILLIANT*, thesis on
nightingales. (McCawley 1988)
- d. John wants just *ANY*, but I want the very *BEST*, *portrait of Elvis*.
(McCawley 1988)

In sum, the target of RNR must form an independent I-phrase. There are basically two ways for a string of elements to be a legitimate target of RNR: (i) via regular prosodic phrasing, which basically (if not necessarily) reflects the syntactic constituent structure; (ii) via I-phrase boundary insertion licensed by contrastive stress assignment.

5. Summary

In this chapter, I have argued for two points: (i) RNR is based on prosodic constituency – in particular, the target of RNR must form an independent I-phrase; (ii) the generalizations regarding the position of RNR targets, discussed in Chapter 4, can be derived, i.e., they need not be stipulated. I have shown that taking into consideration the

prosodic constituent structure of a sentence allows us to correctly predict what strings will make legitimate or illegitimate targets of RNR, which strengthens the proposal made in Chapter 4 that RNR is not based on syntactic constituency and that it is not an operation of the syntax proper. In addition, guided by Ross's (1970) intuition about the directionality of deletion, I have argued that the generalizations regarding the position of the target of RNR – namely, the fact that the target always appears in the final conjunct and also the target-internal adjacency and the peripherality properties, proposed in Chapter 4 – can be explained by adopting Fox and Pesetsky's (2005) system of cyclic linearization. I have shown that all cases of RNR that fail to conform to these generalizations lead to a contradiction with respect to linear order. This is a desirable result since we do not have to stipulate separate conditions to capture these properties.

Chapter 6.

Extension of PF Deletion and Some Loose Ends

1. Introduction

In the previous chapters, I have argued that PF deletion is responsible for deriving RNR sentences. In particular, following Ross's (1970) intuition, I have argued in Chapter 5 that the system of cyclic linearization, proposed by Fox and Pesetsky (2005), plays a significant role in determining the direction of deletion in RNR sentences. The crucial idea was that the ordering relations established in the course of the derivation of respective conjuncts should be maintained in the output of deletion. Based on this, I will discuss an extension of the PF deletion analysis in this chapter. I will also discuss some questions that have remained untouched in the previous chapters.

First, it is interesting to note that there is another construction that shares several properties with RNR – that is, the across-the-board (ATB) movement construction, illustrated in (1).¹

(1) What did John buy and Mary sell?

Note that ATB is similar to RNR in that it involves a coordinated structure in which certain material is shared by the conjuncts, e.g., *what* and *did* in (1). In addition, the shared element does not have to form a syntactic constituent. That is, e.g., the case with *what* and *did* in (1). Moreover, even the superficial differences between these constructions seem to pattern in a rather principled way. For instance, the shared material in RNR occupies the right periphery and that in ATB occupies the left periphery.

Given this, it is tempting to extend the deletion analysis to ATB constructions. In fact, several researchers have already suggested that ATB is derived by applying deletion to a full clausal coordination under identity, as shown in (2) (Ross 1967, Tai 1969, van Oirsouw 1987, Wilder 1994, 1997, among others).

(2) [What did John buy] and [~~what did~~ Mary sell]

¹ Various mechanisms have been proposed to explain the nature of ATB, e.g., deletion (van Oirsouw 1987, Wilder 1994, 1997), factorization (Williams 1977, 1978), null operator movement (Munn 1993), parallel movement (Burton and Grimshaw 1992, Ross 1967), sideward movement (Agbayani and Zoerner 2003, Hornstein and Nunes 2002), three dimensional structure (Goodall 1983, 1987, Moltmann 1992), and multi-dominance (Citko 2003, 2005). Among these, it is noteworthy that ATB movement and multi-dominance have also been independently pursued for ATB and RNR constructions, which indicates that other researchers also had the view that these constructions should be treated alike.

It is also interesting to note that several researchers, e.g., Koutsoudas 1971, Hankamer 1979, van Oirsouw 1987, Wilder 1994, 1997, among others, argue that ATB and Gapping are the same phenomena, while others, e.g., Goodall 1987, Hartmann 2000, argue that Gapping and RNR are the same. If these researchers are correct, then it should be expected that RNR and ATB are amenable to the same analysis. See however footnote 2 of Chapter 4 for some differences between RNR and Gapping.

I will adopt this hypothesis in this chapter and show that this approach allows us to account for a set of novel data that otherwise remain unaccounted for. However, I will not attempt to deal with all the details of ATB constructions, given the wealth of the literature on various aspects of the construction in question. Rather, I will focus on providing a brief discussion of two aspects of the construction where the deletion analysis provides a rather simple and elegant explanation of the facts, which I think provides a good motivation for pursuing a uniform analysis of RNR and ATB.

In the second part of this chapter, I will also discuss a number of questions that remained unaddressed in the previous chapters. In particular, I will be concerned with certain interpretative properties of RNR targets that have been considered to be a problem for the deletion analysis.

With these goals in mind, this chapter is organized as follows; In Section 2, I will discuss a superficial difference between RNR and ATB with respect to the direction of Deletion. I will argue that the difference in question follows from Fox and Pesetsky's (2005) system of cyclic linearization, discussed in the previous chapter; In Section 3, I will examine a new set of data from a number of Slavic languages that involve ATB multiple wh-fronting. I will show that the current analysis makes correct predictions regarding the behavior of these constructions; In Section 4, I will discuss a set of data regarding RNR that have been argued to be problematic for the PF deletion analysis. Although I will not provide an explanation of the property in question in this dissertation, I will show that there is reason to believe that it may not be a genuine problem for the Deletion analysis.

2. Linearization of ATB Structures

If RNR and ATB are derived by the same rule of PF deletion, why is it that deletion affects different conjuncts in different directions in the two constructions? That is, in a two conjunct structure, deletion takes place in the first conjunct in RNR, while it affects the second conjunct in ATB. In RNR, the surface target appears in the second conjunct, while it appears in the first conjunct in ATB. Note that under the current analysis, where there are multiple tokens of the target in the underlying structure, the question basically reduces to the choice of which token of the target is to be realized and which one is to be deleted.² I will demonstrate that this difference in the directionality of deletion can also be captured by Fox and Pesetsky's (2005) system of cyclic linearization, discussed in Section 3 of Chapter 5.

Recall that in Chapter 5, I have shown that adopting F & P's system of cyclic linearization correctly derives the peripherality property of RNR targets – that is, wherever the peripherality condition is not met, a contradiction with respect to linear order arises, which is disallowed. Assuming this, note that the peripherality condition also holds of the target of ATB, i.e., the target of ATB has to be peripheral in its conjunct. Consider (3). Here, the topicalized phrase and the subject are shared by the conjuncts.

² The situation is very similar to the process of determining which copy of a movement chain is to be pronounced (under the copy theory of movement). As mentioned in Section 3.3 of Chapter 5, several researchers have pursued the idea that shared elements in coordinated structures are to be treated as copies of a chain (Wilder 1994, 1997, Nunes 1995, 2004, Hornstein and Nunes 2002, and Agbayani and Zoerner 2003).

- (3) The rabbit, the hunter followed in vain and caught in his backyard by accident.

Under the current analysis, the derivation of (3) can be represented as in (4). In the second conjunct, the topicalized phrase and the subject are deleted under identity, adjacency, and peripherality.³

- (4) [**The rabbit, the hunter** followed *t* in vain] and [~~the rabbit, the hunter~~ caught *t* in his backyard by accident].

The question is why deletion has to affect the target in the second conjunct, as in (4). It should not be too difficult to see why, given the discussion in Chapter 5. First, at some point in the derivation, the conjunct-internal orders will be established as in (5)a,b. When the two conjuncts are conjoined, the target is selected, as in (5)c.

- (5) a. First conjunct: the rabbit > the hunter > followed > in vain
b. Second conjunct: the rabbit > the hunter > caught > in his backyard
> by accident
c. Conjunction, Scan, Target Selection: {the rabbit, the hunter}

Given that there are two instances of the target, suppose that we delete the target in the first conjunct. The output will be as in (6).

³ In addition, note that the target does not form a syntactic constituent here. See also den Dikken, Meinunger, and Wilder 2000 for a similar analysis of pseudocleft constructions.

- (6) * [~~The rabbit, the hunter~~ followed *t* in vain] and [**the rabbit, the hunter** caught *t* in his backyard by accident].

Here, the position of the surface target is not consistent with the order established in (5)a, where the target precedes the rest of the clause. Therefore, this derivation is ruled out due to a contradiction with respect to linear order. On the other hand, if we apply deletion to the target in the second conjunct, as in (4), no contradiction with respect to linear order arises. Therefore, the derivation is ruled in. This way we account for the fact that deletion in ATB must affect the left periphery of the second conjunct.

In the same environment, if the topicalized element is not identical, rendering the subject non-peripheral to its conjunct, it is predicted that deletion will not be able to affect the subject (see van Oirsouw 1987, Wilder 1994 for relevant discussion). This is confirmed by the ungrammaticality of (7), whose derivation is given in (8).⁴

- (7) * The rabbit, the hunter followed in vain and the bear, caught in his backyard by accident.

- (8) * [The rabbit, **the hunter** followed *t* in vain] and [the bear, ~~the hunter~~ caught in his backyard by accident].

⁴ As illustrated by (i), parallel topicalization in coordinated structures is in principle possible.

(i) The rabbit, the hunter followed *t* in vain, and the bear, he caught in his backyard by accident

Let us see why (8) is disallowed. At some point in the derivation, the two conjuncts will establish the ordering relations in (9)a,b. When the two conjuncts are conjoined, Scan searches for identical elements for deletion. Here, the subject *the hunter* qualifies.

- (9)
- a. First Conjunct: the rabbit > the hunter > followed > in vain
 - b. Second Conjunct: the bear > the hunter > caught > in his backyard
> by accident
 - c. Conjunction, Scan, Target Selection: {the hunter}

From here, regardless of where the target is deleted, the derivation will lead to a contradiction with respect to linear order. For instance, if we delete the target in the second conjunct, this will give us the surface order of (8). But this order contradicts (9)b, in which *the hunter* follows the topicalized element *the bear*. It is easy to see that deleting the target in the first conjunct cannot save the derivation either.

To conclude, I have shown in this section that the surface form of ATB sentences can be correctly derived by the PF deletion analysis. I have also shown that the target of ATB is subject to the peripherality requirement just like the target of RNR.⁵ The difference in the direction of deletion between RNR and ATB simply stems from the fact that in ATB, the target undergoes independently motivated leftward overt movement in syntax, e.g., wh-movement, topicalization, etc. Therefore, by the time deletion applies,

⁵ Due to many interfering factors, it is not easy to test the target-internal adjacency requirement in ATB contexts. But, the current analysis predicts that it holds in ATB contexts as well, since such a configuration necessarily leads to a contradiction with respect to linear order. Given that other properties such as the peripherality requirement and the direction of deletion work exactly in the way predicted by the current analysis, I will assume that the target-internal adjacency holds as well.

the position of the target is already fixed in the left periphery. PF simply takes that as input and computes the direction of deletion in accordance with the ordering relations established earlier in the course of the derivation.

In the following section, I will examine a set of novel data from a number of Slavic languages that provide additional arguments in favor of the PF deletion analysis.

3. Multiple Wh-Fronting and ATB

In this section, I will examine a set of novel data involving ATB multiple wh-fronting in Bulgarian, Romanian, Russian, and Serbo-Croatian.^{6,7} In Section 3.1, I will illustrate the basic properties of multiple wh-fronting and also the environments where multiple wh-fronting is disallowed. In Section 3.2, I will discuss a set of novel data from these languages involving ATB multiple wh-fronting. In Section 3.3, I will provide a deletion analysis of ATB multiple wh-fronting.

⁶ The data examined in this section are collected from personal communication with Željko Bošković, Miloje Despic (Serbo-Croatian), Simona Herdan (Romanian), Mariana Lambova (Bulgarian), Natasha Fitzgibbons, Zhanna Glushan, Nina Radkevich, Oksana Tarasenkova (Russian). I thank these people for their help in this respect.

⁷ Here, only Romanian is not Slavic. But the language shows the same pattern as Slavic languages in the relevant respects.

3.1. Multiple Wh-Fronting and Lower Copy Pronunciation

As is well-known, wh-phrases must all undergo fronting in languages like Bulgarian, Romanian, Russian, and Serbo-Croatian (see Rudin 1988, Richards 1997, Stjepanović 1999, Pesetsky 2000, Bošković 2002b for relevant discussion and references).^{8,9} This is illustrated in (10)-(12), drawn from Bošković 2002b:355.

(10) a. **Ko šta** kupuje? (SC)

who what buys

‘Who buys what?’

b. * **Ko** kupuje **šta**?

(11) a. **Koj kakvo** e kupil? (B)

who what is bought

‘Who bought what?’

b. * **Koj** e kupil **kakvo**?

⁸ There is some controversy regarding the precise landing site of multiple wh-fronting. This however does not affect our discussion. For ease of exposition, I will simply assume that wh-phrases in these languages move to CP. I also put aside echo wh-questions that pattern somewhat differently from true wh-questions. See Bošković 2002b for further details and references.

⁹ I am not including Romanian data here, because for some speakers, failure to apply multiple wh-fronting does not necessarily lead to ungrammaticality, while it does for other speakers. However, this variation will not affect the point made below.

(12) a. **Kto što** kupil? (Ru)
who what bought

b. * **Kto** kupil **što**?

What is of interest to us is that there are cases where multiple wh-fronting is disallowed in these languages. Consider the sentences in (13)-(16), drawn from Bošković 2002b:364-365.

(13) a. **Šta** uslovljava **šta**? (SC)
what conditions what

‘What conditions what?’

b. * **Šta šta** uslovljava?

(14) a. **Kakvo** obuslavlja **kakvo**? (B)
what conditions what

b. * **Kakvo kakvo** obuslavlja?

(15) a. **Čto** obuslovalo **što**? (Ru)
what conditioned what

b. * **Čto što** obuslovalo?

(16) a. **Ce** precede **ce**? (Ro)
what precedes what

b. * **Ce ce** precede?

Multiple wh-fronting is disallowed and an in-situ wh-phrase must be used in (13)-(16), deviating from the general pattern of multiple wh-fronting.

However, note that there is a property shared by the sentences in (13)-(16) that contrasts with those in (10)-(12); that is, the phonological form of the in-situ wh-phrases in (13)-(16) is identical to that of the fronted wh-phrase. Therefore, the generalization is that multiple wh-fronting is obligatory except when the phonological form of the wh-phrases are identical. In the latter case, one of the wh-phrases has to stay in-situ.¹⁰

Given this, Bošković (2001, 2002b) argues that the languages in question have a PF constraint that disallows a sequence of homophonous wh-phrases.¹¹ (For expository convenience, I will call this constraint the *what-what filter*.) It is standardly assumed that there is a general preference for pronouncing the highest copy of a movement chain (see Chomsky 1993 for the copy theory of movement; see also Nunes 1995, 2004 for its application). Bošković argues that this preference can be overridden, i.e., a lower copy can be pronounced iff this is necessary to avoid a PF violation, e.g., to avoid a sequence of homophonous wh-phrases in the case at hand (see also Bobaljik 1995, 2002, Franks 1998b).

¹⁰ Oksana Tarasenkova (p.c.) pointed out to me that in some dialects of Russian, it is possible to use a different Case form of the second wh-phrase to avoid a sequence of homophonous wh-phrases. This is illustrated in (i). (There is a number of additional factors here. First, the verb in (i) normally does not license genitive Case. In addition, for some reason, multiple wh-fronting is not required of the genitive wh-phrase, i.e., the genitive wh-phrase can stay in situ, while the same speakers find sentences like (12)b unacceptable.)

(i) Čto čego obuslovalo? (Ru)
what what-gen conditioned
'What conditioned what?' (cf. (15)b)

This option, which seems to be subject to dialectal variation (and is also restricted to colloquial registers), is still consistent with the generalization that the languages in question disfavor a sequence of homophonous wh-phrases in multiple wh-fronting environments.

¹¹ Many languages have similar constraints that disallow sequences of homophonous elements. See Billings and Rudin 1996 and Bošković 2001:102-103, fn.6 for relevant discussion and references.

Given this background, let me illustrate step by step how Bošković's account captures the contrast in (13)-(16). First, (13)a, for instance, has the structure in (17) after movement of the wh-phrases. (Irrelevant details, e.g., the lower copy of the first *šta*, are omitted here. (17)-(19) are from Bošković 2002b:368-369.)

(17) [CP *šta* *šta*_i [TP uslovljava *šta*_i]]

When (17) is sent to PF, we need to determine which copy of the moved wh-phrases is to be pronounced. Note that if we pronounce the higher copy of *šta*_i, we run into a problem, because Serbo-Croatian is subject to the *what-what* filter, as shown in (18).

(18) * [CP *šta* *šta*_i [TP uslovljava ~~*šta*~~_i]]

Given this, the necessity of satisfying the independently motivated PF constraint, i.e., the *what-what* filter, overrides the preference for pronunciation of the topmost copy of *šta*_i, and allows pronunciation of the lower copy, resulting in the surface string in (19).

(19) [CP *šta* *šta*_i [TP uslovljava *šta*_i]]

Under this analysis, it is not the case that the in-situ wh-phrase stays in-situ throughout. Rather, multiple wh-fronting takes place as usual in the overt syntax, while its effect is masked by pronunciation of a lower member of the movement chain of one wh-phrase. Note that if the in-situ wh-phrase truly undergoes overt movement to CP, we

would expect it to be able to license certain elements that are dependent on overt wh-movement. One typical example of such an element is parasitic gap, and the prediction is borne out by (20), as pointed out by Bošković for Romanian.¹²

- (20) **Ce** precede **ce** fără să influențeze? (Ro)
what precedes what without SUBJ.PART influences
‘What precedes what without influencing?’

Note that, as is well-known, parasitic gaps are only licensed by overt wh-movement (Chomsky 1982), as shown by the contrast in (21).

- (21) a. * What precedes **what** without influencing?
 b. **What** does it precede without influencing?

Given this, if we assume that the in-situ *ce* in (20) covertly moves at LF or is unselectively bound (Pesetsky 1987), just like the in-situ *what* in (21)a, we would not be able to explain how the parasitic gap in (20) is licensed. In other words, the apparently in-situ wh-phrase *ce* in (20) patterns with the overtly moved wh-phrase in (21)b. Therefore, the grammaticality of (20) provides strong evidence that the apparent in-situ wh-phrase undergoes overt movement, although the effect of that overt movement is obliterated by lower copy pronunciation.

¹² Due to interfering factors, the parasitic gap test cannot be applied to the Slavic languages examined here. Note that Romanian is also subject to the *what-what* filter. See Bošković 2002b, page 374, fn. 38.

3.2. ATB Multiple Wh-Fronting

Given the background on Slavic multiple wh-fronting and lower copy pronunciation, let us examine the pattern of multiple wh-fronting in ATB environments. Consider the data in (22)-(25).

(22) **Ko šta** razbija i uništava? (SC)

who what is-breaking and is-destroying

‘Who is breaking and destroying what?’

(23) **Koj kakvo** vze ot bibliotekata i pročete? (B)

who what took from library and read

(24) **Kto čto** slomal i budet razrušat'? (Ru)

who what broke and will destroy

(25) **Cine ce** a spart și a distrus? (Ro)

who what has broken and has destroyed

These sentences show that ATB multiple wh-fronting is in principle possible, as long as the fronted wh-phrases are not homophonous, just like multiple wh-fronting in non-coordinated sentences.

Given this, consider the data in (26)-(29), which involve multiple fronting of phonologically identical wh-phrases.

(26) a. * **Šta šta** ruši i uništava? (SC)

what what is-breaking and is-destroying

b. **Šta** ruši i uništava **šta**?

(27) a. ?* **Kakvo kakvo** udari i izgori? (B)

what what broke and destroyed

b. **Kakvo** udari i izgori **kakvo**

(28) a. ?* **Čto čto** slomal i budet razrušat'? (Ru)

what what broke and will destroy

b. **Čto** slomalo i budet razrušat' **čto**?

(29) a. * **Ce ce** a spart și a distrus? (Ro)

what what has broken and has destroyed

b. **Ce** a spart și a distrus **ce**?

As the ungrammaticality of (a) examples shows, ATB multiple wh-fronting of phonologically identical wh-phrases is not allowed, just as in their non-coordinated counterparts in (13)-(16). Given this, I assume that the ungrammaticality of (a) examples in (26)-(29) is an instance of a violation of the *what-what* filter. As expected, in order to make these sentences grammatical, the second wh-phrase must be pronounced in a lower position to break the wh-wh sequence. Note that there are at least two possible lower copy positions for the in situ wh-phrases in (26)-(29) – namely, lower copy position in the first conjunct and its counterpart in the second conjunct. It turns out that only the position in the second conjunct, illustrated in (26)-(29), is legitimate.¹³ I will turn to this question in the next section.

3.3. PF Deletion and ATB Multiple Wh-Fronting

Let us see how the current analysis accounts for lower copy pronunciation in ATB multiple wh-fronting contexts. Consider first an ordinary ATB multiple wh-fronting sentence, in which lower copy pronunciation is not required. I repeat the relevant example below.

- (30) **Koj kakvo** vze ot bibliotekata i pročete? (B)
 who what took from library and read

¹³ This is true for the majority of speakers, but some speakers of the languages in question do accept sentences of the form in (i). I will return to this type of sentences below.

(i) What broke what and destroyed?

As suggested earlier, each conjunct undergoes in separate workspaces all the usual steps of the derivation, including multiple wh-fronting and linearization.

- (31) a. First conjunct: *koj > kakvo > vze ot bibliotekata*
 b. Second conjunct: *koj > kakvo > pročete*
 c. Conjunction, Scan, Target Selection: *{koj kakvo}*

Given that there are identical elements that qualify for Deletion, i.e., *{koj kakvo}*, we have to determine which occurrence of the target is to be deleted. Given the principle of order preservation, the only way in which the target can preserve the conjunct-internal ordering relations is for it to be realized at the left-periphery of the first conjunct, i.e., the target in the second conjunct has to be deleted, as illustrated in (32).

- (32) [*Koj kakvo vze ot bibliotekata*] i [~~*koj kakvo*~~ *pročete*]

This correctly derives the ATB multiple wh-fronting sentence in (30).

Next, let us consider how lower copy pronunciation in ATB multiple wh-fronting environments is to be handled under the current analysis. I repeat the relevant example below.

- (33) *Kakvo udari i izgori kakvo?* (B)
what broke and destroyed what
 ‘What broke and destroyed what?’

Again, each conjunct undergoes all the usual steps of the derivation in separate workspaces. (For expository convenience, I mark the subject *kakvo* as *kakvo_s* and the object *kakvo* as *kakvo_o* below.)

- (34) a. First conjunct: $kakvo_s > kakvo_o > udari$
 b. Second conjunct: $kakvo_s > kakvo_o > izgori$

Then, the *what-what* filter triggers lower copy pronunciation in each conjunct since the fronted wh-phrases are homophonous, resulting in the updated structures in (35).

- (35) a. First conjunct: $kakvo_s > udari > kakvo_o$
 b. Second conjunct: $kakvo_s > izgori > kakvo_o$

Now, Scan determines that there are elements that qualify for deletion – namely, the two occurrences of *kakvo_s* and also the two occurrences of *kakvo_o*. As for *kakvo_s*, the only way to preserve the linear order established in (35) is for this element to be realized at the left-periphery of the first conjunct. On the other hand, the only way for *kakvo_o* to be realized in keeping with the conjunct-internal ordering relations established in (35) is for it to be realized at the right-periphery of the second conjunct. This leads to the correct surface form of the sentence, as illustrated in (36).

- (36) [Kakvo_s udari ~~kakvo_o~~] i [~~kakvo_s~~ izgori kakvo_o]

It is interesting to note that the derivation in (36) is a mixture of RNR (for *kakvo_o*) and ATB (for *kakvo_s*). This is precisely what is expected under the current analysis, in which RNR and ATB are derived by a single rule of the grammar – namely, PF Deletion.¹⁴

As expected, realizing the second wh-phrase in the first conjunct does not yield a good result.

- (37) a. * Kakvo udari kakvo i izgori? (B)
what broke what and destroyed
- b. ?? Ce a spart ce și a distrus? (Ro)
what has broken what and has destroyed

These sentences are ruled out because the surface position of the second wh-phrases leads to a contradiction with respect to their underlying position within the second conjunct (e.g., *izgori* > *kakvo_o* in (37)a).

Interestingly, it turns out that for some speakers, sentences like (38) are possible.

¹⁴ Clarification is necessary here. That is, recall that I have suggested in Chapter 5 that deletion in effect precedes vocabulary insertion, because I am assuming that deletion is non-insertion of phonological features, i.e., deletion preempts vocabulary insertion. However, the context for lower copy pronunciation in multiple wh-fronting sentences seems to require vocabulary insertion, since we are dealing with homophony here. If this is correct, then a contradiction of rule ordering would arise between deletion and lower copy pronunciation, unless we assume that deletion can also apply after vocabulary insertion. However, I will adopt an alternative approach here. That is, I do not assume that the phenomenon in question takes place after vocabulary insertion. As a result, I do not assume that reference is made directly to the phonological content of the relevant wh-phrases either. Rather, I assume that what triggers lower copy pronunciation here is not the phonological features of the wh-phrases itself, but the identity of their formal features that trigger vocabulary insertion. More specifically, following Franks (1993, 1995), I assume that these homophonous wh-phrases are underspecified with respect to the formal features that determine their phonological form, which results in the insertion of identical set of phonological features (see also Citko 2005 for relevant discussion and references). Then, in the course of the process of linearization, the *what-what* filter determines whether two consecutive wh-phrases have the same set of formal features or not. If they do, then a lower copy is realized.

- (38) a. (?) Čto slomalo što i razrušilo? (Ru)
what broke what and destroyed
- b. Šta ruši šta i uništava? (SC)
what is-breaking what and is-destroying

These sentences seem problematic at first sight, since the surface position of the second wh-phrase is not compatible with the ordering relation for the second conjunct, i.e., *razrušilo* > *što* in (38)a and *uništava* > *šta* in (38)b. Regarding this, Željko Bošković (p.c.) and Natasha Fitzgibbons (p.c.) note that a pause must clearly be placed after the first conjunct in (38), unlike in (26)b and (26)d, repeated below.

- (39) a. Šta ruši i uništava šta?
 b. Čto slomalo i razrušilo što?

Given this, I assume that sentences like (38) are derived in a different way from (39). In particular, given that a long pause must appear after the first conjunct in (38), I assume that the apparent second conjunct in (38) is actually an afterthought clause, which is not coordinated with the preceding clause. In other words, the sentences in (38) are thus not an instance of ATB sentences.¹⁵

¹⁵ Under the assumption that the putative second conjunct is an afterthought clause, it is expected that the afterthought clauses in (38) involve object drop (pro), which can be licensed in the languages in question given the right context. Željko Bošković (p.c.) pointed out to me that these sentences are highly context-sensitive, which seems to correlate with the availability of object drop.

To summarize, I have examined patterns of lower copy pronunciation in ATB multiple wh-fronting contexts based on a set of novel data from Bulgarian, Romanian, Russian, and Serbo-Croatian. I have shown that the system of cyclic linearization provides a principled account of the phenomenon in question.

4. Some Loose Ends

In this section, I will discuss some remaining questions and issues that are worth pointing out before we close our discussion.

4.1. Wide Scope of the Target of RNR

It is noted in the literature that there are cases where the target of RNR seems to have wide scope over all the conjuncts, which is not what the deletion analysis would normally

expect to be possible. Therefore, these cases have been considered problematic for the deletion analysis of RNR (see Perlmutter and Ross 1970, Abbott 1976, Jackendoff 1977, Postal 1998, Hartmann 2000, Wilder 2001, Abels 2003b, 2003c, Park 2005, 2006 for relevant discussion). Consider the data in (40), drawn from Abels 2003c:126.¹⁶

- (40)
- a. John sang and Mary beat the drums – at equal volumes.
 - b. John sang and Mary recorded – {the same song / very different songs}.
 - c. John sold and Mary bought – gold rings and diamonds from South Africa respectively.

The interpretation of these sentences suggests that the target of RNR takes scope outside of the whole conjunction. Moreover, the structures in (41), which would correspond to the underlying structure of the sentences in (40) under the deletion analysis, do not seem to receive the same interpretation as the sentences in (40). Some are even ungrammatical.

- (41)
- a. * John sang at equal volumes and Mary beat the drums at equal volumes.
 - b. John sang the same song and Mary recorded the same song.
 - c. * John sold gold rings and diamonds from South Africa respectively and Mary bought gold rings and diamonds from South Africa respectively.

¹⁶ The data in (i), drawn from Abbott 1976:642, show the same point.

- (i)
- a. Mary baked, and George frosted, 20 cakes in less than an hour.
 - b. I borrowed, and my sisters stole, a total of \$3000 from the bank.
 - c. John gave Mary, and Joan presented to Fred, books which looked remarkably similar.

This seems to suggest that the data in (40) are not derived by deletion and involve a different type of operation that somehow allows the target to take scope over the whole conjunction.

A similar, but somewhat more complicated pattern is manifested by the sentences in (42). ((42)a,b are from Jonathan Bobaljik (p.c.))

- (42) a. John married, and Bill is engaged to, **two sisters** from Iowa.
b. John wants, but Mary refuses, to get **themselves** on “Jerry Springer”.
c. Mary met a man, and John met a woman, who **were** wanted by the police.

(Perlmutter and Ross 1970)

These sentences are similar to (40) in that their unreduced counterparts do not have the same interpretation and/or grammaticality, as shown by (43).¹⁷

- (43) a. John married two sisters from Iowa and Bill is engaged to two sisters from Iowa.
b. * John wants to get themselves on “Jerry Springer”, but Mary refuses to get themselves on “Jerry Springer”.
c. * Mary met a man who were wanted by the police and John met a woman who were wanted by the police.

¹⁷ The relevant interpretation of (42)a is where John is married to Jane, Bill is engaged to Susan, and Jane and Susan are sisters from Iowa. An alternative interpretation, where John is married to two Iowan sisters and Bill is engaged to two Iowan sisters, is also available. This is what the Deletion analysis would predict to be available, though it is pragmatically unnatural. We are not concerned with this second reading here.

(42)b illustrates a case of split antecedent, where singular subjects contained in different conjuncts together act as an antecedent of a plural anaphor.

Here, an additional question arises regarding number morphology of the target – that is, how is plural agreement licensed? It seems that somehow, the target has to make reference to all the remnant conjuncts across-the-board, not just to the final conjunct, as was the case in Section 4.4 of Chapter 3.^{18,19}

Given this, Postal (1998) suggests that an ATB-type analysis is necessary to account for these data. Concerning this, recall that in Chapter 3, I have provided ample evidence that the target of RNR does not undergo movement, based, among others, on the fact that it is not sensitive to syntactic islands. I repeat below the relevant examples that illustrate the island-insensitivity of RNR.

- (44) a. John wonders when Bob Dylan wrote, and Mary wants to know when he recorded, *his great song about the death of Emmett Till*.
- b. * What does John wonder when Bob Dylan wrote?
- (45) a. Josh got angry after he read, and Willow quit after finding out about, *the company's pro-discrimination policy*.
- b. * What did Josh get angry after he read?

¹⁸ It may be that some kind of “adding up” operation is required to correctly yield the plural number agreement of the target. Aoun, Benmamoun, and Sportiche (1994:210) have also noted that we need some kind of resolution rule to properly compute number agreement in coordinated structures that would perform, for instance, computations like sg + sg = pl. However, it is not clear to me how this should be implemented. I leave this question for future research.

¹⁹ In this respect, the MD analysis may be in a slightly better position than the Deletion analysis, because under this analysis, the two conjuncts will c-command the target simultaneously, although it is not completely clear if this automatically explains how plural agreement morphology is licensed (see Wilder 2001, Park 2005, 2006 for relevant discussion).

- (46) a. I know a man who buys, and you know a woman who sells, *gold rings and raw diamonds from South Africa*.
- b. * What do you know a man who sells?

Therefore, if Postal is correct, we would expect that the shared materials in (40) and (42) will be sensitive to islands. Interestingly, this prediction is borne out. That is, as Abels (2003c:127) notes, exactly in those cases where we seem to need ATB movement independently, the sentences are island-sensitive. (Postal (1998) and Abels (2003c) did not discuss (48).)

- (47) a. * John sang __ after Mary beat the drums __ – at equal volumes.
- b. * John sang __ after Mary had recorded __ {the same song / very different songs}.
- c. * John sold __ before Mary bought __ – gold rings and diamonds from South Africa respectively.
- d. * John knows a man who sells and Mary knows a woman who buys – gold rings and diamonds from South Africa respectively.
- (48) a. * Mary knows a man who is married to, and Susan knows a man who is engaged to, two sisters from Iowa.
- b. * John met a man who wants, but Mary met a woman who refuses, to get themselves on Jerry Springer.

- c. ?? I know a girl who met a man, and Susan knows a boy who met a woman,
who were wanted by the police.

Given this, Abels suggests that the type of sentences in (40) and (42) may be derived by ATB movement essentially driven by interpretive needs. (Incidentally, as Abels also points out, it is not quite clear how these sentences are interpreted. One promising way to explore seems to be to postulate some kind of operator above the conjunction à la Beck 2000. However, I put aside exploration of this idea for future research.)

To conclude, following Abels (2003c), I assume that the type of RNR discussed in this section is fundamentally different, as shown by the difference between the sentences examined here and the RNR sentences investigated in previous chapters with respect to islands. The locality difference quite convincingly shows that we should not analyze both of them in the same way, either in terms of deletion or in terms of movement.²⁰ What is important is that locality insensitive RNR should be treated in terms of PF deletion, as argued extensively throughout this dissertation.

²⁰ See also Hartmann 2000:78-88 for a different kind of objection to the validity of sentences like (40) as counterarguments to the Deletion analysis of RNR.

4.2. Some Remaining Issues

In this section, I will briefly discuss a number of remaining issues that have not been discussed above.

First, consider (49). What is interesting about this sentence is that coreference between *he* and *John* is possible without inducing a violation of the Principle C, although, under the current analysis, the underlying structure of (49) would be as in (50), where the pronoun c-commands a coindexed R-expression.

(49) He said, but Mary denied, that John is an idiot.

(50) [~~He_i said that John_i is an idiot~~] but [Mary denied that John_i is an idiot]

Note that what is happening here is reminiscent of what Fiengo and May (1994) call *vehicle change* in VP ellipsis, shown below.

(51) Mary admires John, but he doesn't.

Here, the coreference between *he* and *John* is possible. Fiengo and May's proposal is that when the elided VP is reconstructed, an R-expression can be replaced with a pronoun, avoiding a violation of the Principle C. Given this, I assume that basically, something like vehicle change is happening in (49). More specifically, I suggest that we implement this

idea with respect to (50) by assuming that in the underlying structure, what is in the first conjunct is actually a pronoun, not an R-expression, as illustrated in (52).²¹

(52) [He_i said ~~that he_i is an idiot~~] but [Mary denied that John_i is an idiot]

Given this, I assume further that *he* can be deleted under identity with *John*. As a number of researchers have pointed out (Lasnik 1995c, Oku 1998, Stjepanović 1998, among others), ellipsis can often ignore certain mismatches as long as the content of the elided element can be restored from the surface element. Crucially, Oku (1998) argues that the content of an elided element has to be a subset of its antecedent, which seems to be the case with *John* and *he* in (52). In other words, I assume that the content of *he* can be restored from that of *John*. Therefore, ellipsis is allowed in (49) without a violation of the Principle C.

Next, given that we are dealing with full clausal coordination under the deletion analysis, it seems worthwhile to consider how the Coordinate Structure Constraint (CSC), which prohibits non-parallel extraction *out of* a coordinated structure, can be handled.²² For instance, sentences in (53) are assumed to be ruled out by the CSC, since extraction takes place out of one conjunct. However, under the assumptions we are adopting here, the *wh*-phrases in (53) are still within their own conjuncts even after movement. Therefore, the traditional formulation of the CSC is inapplicable as is.

²¹ I will leave further investigation of the nature of vehicle change for future research.

²² The original formulation of the CSC is as in (i).

(i) In a coordinated structure, no conjunct may be moved, nor may any element contained in a conjunct be moved out of that conjunct. (Ross 1967)

See Ross 1967, Grosu 1973, Goldsmith 1985, Lakoff 1986, Franks 1993, Munn 1993, Takahashi 1994, Culicover and Jackendoff 1997, Johannessen 1998, Postal 1998, Bošković and Franks 2000, Fox 2000, Kato 2006a, 2006b, among many others, for relevant discussion and references.

- (53) a. * What will John read a book and buy t ?
b. * What will John buy t and read a book?

However, an alternative solution seems to be available. Note that under the current analysis, the underlying structure (or LF structure) of the sentences in (53) will be as in (54).

- (54) a. [What will John read a book] and [what will John buy]
b. [What will John buy] and [what will John read a book]

Crucially, these sentences involve an operator that does not bind a variable: the *wh*-phrase in the first conjunct in (54)a and that in the second conjunct in (54)b. Given this, I suggest that the sentences in (53) are ruled out by the ban on vacuous quantification.²³

A more difficult question is raised by the sentences in (55).²⁴

- (55) a. * Who said that John bought a house and that Peter sold what?
b. * Who said that John bought what and that Peter sold what?

As for (55)a, Bošković and Franks (2000) argue that it is ruled out by the CSC at LF, assuming that the *wh*-phrase in-situ has to move out of the second conjunct.²⁵ Bošković

²³ I am handling these issues in basically the same way as in three-dimensional approaches (see Section 4.1.2. Cf. Bošković and Franks 2000).

²⁴ Sentences like (55)b are extensively discussed by Bošković and Franks (2000), where it is argued that there is no LF ATB movement based on examples like (55)b.

and Franks also argue that there is no LF ATB movement based on examples like (55)b. Therefore, the in-situ wh-phrases remain unlicensed. However, under the current analysis, it is not clear how the ungrammaticality of these sentences could be accounted for. Note that the unreduced versions of these sentences do not cause any problems, as shown in (56). Therefore, unlike in (53), we cannot appeal to the deviance of the underlying structure (or LF structure) of the source sentences to rule out the sentences in (55).

- (56) a. Who said that John bought a house and who said that Peter sold what?
 b. Who said that John bought what and who said that Peter sold what?

It seems that the only difference to which we could attribute the deviance of (55) is the application of deletion in the second conjunct. Given this, I speculate that elimination of the wh-phrase in SpecCP somehow leads to a failure of the licensing the in-situ wh-phrase, although the mechanism behind this is ill-understood. It also seems worth pointing out that this is reminiscent of Chomsky's (1973) condition that only a +wh C with a wh-phrase in its Spec can unselectively bind a wh-phrase in English.²⁶

- (57) a. [Who said that John bought a house] and [~~who said~~ that Peter sold what]
 b. [Who said that John bought what] and [~~who said~~ that Peter sold what]

²⁵ Note that Munn (1993), Takahashi (1994), and Fox (2000), among others, argue that the CSC can be reduced to a kind of LF parallelism requirement.

²⁶ Of course, there is a wh-phrase in SpecCP in the second conjunct in the underlying structure, as shown in (57). In the current context, we should probably re-formulate Chomsky's condition either as a kind of surface condition that requires an overt SpecCP when there is an in-situ wh-phrase licensed by the same C or as a condition on deletion that would somehow disallow deletion when there is an in-situ wh-phrase licensed by the C to be deleted. However, I do not know at the moment how exactly these ideas could be implemented. We may be dealing here with one of those ill-understood phonology-semantics interactions.

I leave further explorations of this question for future research.

Finally, Munn (1994) discusses some asymmetries in ATB constructions, as shown below.

- (58) a. * Which picture of herself_i did John paint and Mary_i buy?
b. Which picture of himself_i did John_i paint and Mary buy?
c. * Whose_i picture did Mary paint and he_i buy?

These data show that with respect to the binding of an ATB moved element, the first conjunct is privileged. Hence, an anaphor contained in an ATB moved wh-phrase, as in (58)a,b, can only be bound in (or reconstructed into) the first conjunct. However, (58)c shows that Principle C effects can be found in the second conjunct.

The deviance of (58)c is predicted by the current analysis, as shown below.

- (59) [Whose picture did Mary paint] and [*whose_i picture did he_i buy]

As for (58)a,b, I speculate that reflexives are represented as ‘X-self’ (or something like this) in the narrow syntax and that X is determined later in the PF branch by the local binder. Of course, a question arises as to how the notion of local binder can be implemented in PF. I put this question aside for future research.

5. Summary

In this chapter, I have suggested that we should extend the PF deletion analysis of RNR to ATB constructions. I have argued that the superficial difference between the two constructions concerning the direction of deletion falls out straightforwardly from the system of cyclic linearization proposed by Fox and Pesetsky (2005), discussed in Chapter 5, where the system was shown to provide an account of several generalizations about RNR. In addition, I have argued that patterns of ATB multiple wh-fronting and lower copy pronunciation in Slavic languages receive a straightforward account under the current analysis. I have also discussed some remaining issues and questions that arise under the deletion analysis and discussed how they can be accommodated under the current analysis.

Chapter 7.

Conclusion

In this dissertation, I have explored the nature of the interaction between syntax and phonology based on the distribution of null C clauses and the properties of RNR. As for the former, based on two novel generalizations, I have argued that the crucial factor that disallows null C clauses in certain positions is the failure to align the syntactic boundary of these clauses with that of an I-phrase assigned to them. As for RNR, I have argued that it is not an operation of the syntax proper, but an operation of PF, based on a number of arguments such as its insensitivity to syntactic constituency and its sensitivity to prosodic constituency. I have argued that RNR should be implemented as PF deletion that is based on linear order and on the prosodic constituent structure of a sentence – in particular, the I-phrase structure. I have shown that the current analysis can derive several generalizations about RNR that remained as stipulations in the literature – namely, the fact that the shared material must always appear in the final conjunct and the fact that the shared material has to satisfy the peripherality and the adjacency requirements.

Throughout the discussion, I have been concerned with uncovering the nature of the complex interactions between the many suboperations that take place in the course of the mapping between syntax and phonology with the goal of arriving at a clearer picture of the architecture of the syntax-phonology interface. As mentioned at the outset of this dissertation, it has been suggested in the recent literature that studying the interaction between syntax and phonology can lead us to a fuller understanding of the nature of the grammar. Still much portion of the realm of the syntax-phonology interface remain to be explored, which I believe will lead us to a better understanding of how language works. I hope the current research has contributed a little piece to completing the bigger picture.

Bibliography

- Abbott, Barbara. 1976. Right Node Raising as a test for constituenthood. *Linguistic Inquiry* 7, 639-642.
- Abels, Klaus. 2003a. Auxiliary adverb word order revisited. In *Proceedings of the 26th Annual Penn linguistics Colloquium*, ed. Elsi Kaiser and Sudha Arunachalam.
- Abels, Klaus. 2003b. Right Node Raising: Ellipsis or Across the Board Movement? In *Proceedings of NELS 34*, ed. by Keir Moulton and Matthew Wolf, 45-59. GLSA, Amherst.
- Abels, Klaus. 2003c. *Successive cyclicity, anti-locality, and adposition stranding*. Ph.D. dissertation, University of Connecticut, Storrs.
- Abney, Steven Paul. 1987. *The English noun phrase in its sentential aspect*. Ph.D. dissertation. MIT, Cambridge, Mass.
- Agbayani, Brian. 2000. Wh-subjects in English and the vacuous movement hypothesis. *Linguistic Inquiry* 31:703-713.
- Agbayani, Brian and Ed Zoerner. 2003. A sideward movement approach to non-constituent deletion. Paper presented at WECOL 2003, University of Arizona, September.
- Alexiadou, Artemis. 2001. *Functional structure in nominals*. Amsterdam: John Benjamins.
- An, Duk-Ho. 2003. A PF Approach to *wanna*-contraction. Paper presented in the 1st North American Syntax Conference, Concordia University, Montreal.

- An, Duk-Ho. 2005a. Asymmetric T-to-C movement. Paper presented at the 35th Annual Meeting of the Michigan Linguistic Society, Michigan State University, Michigan, October.
- An, Duk-Ho. 2005b. PF T-to-C Movement. In *Ellipsis in Minimalism: Proceedings of the 7th Seoul International Conference on Generative Grammar*, ed. by Kiyong Choi and Changguk Yim, 33-44. Seoul: Hankook.
- An, Duk-Ho. 2006. Asymmetric T-to-C Movement in ATB Constructions: A PF Deletion Analysis. In *Proceedings of the 14th annual conference of the Student Organization of Linguistics in Europe*. University of the Basque Country, Vitoria- Gasteiz.
- An, Duk-Ho. 2007a. Clauses in non-canonical positions at the syntax-phonology interface. *Syntax* 10:38-79.
- An, Duk-Ho. 2007b. Right Node Raising: What is right? Colloquium talk. University of Victoria, February 8.
- An, Duk-Ho. in press-a. New arguments for Right Node Raising as PF deletion. *Proceedings of Western Conference on Linguistics 2006*.
- An, Duk-Ho. in press-b. Right Node Raising as PF Coordination Reduction. *Proceedings of the 16th Japanese/Korean Linguistics Conference*.
- Anderson, Carol. 1983. Generating coordinate structures with asymmetric gaps. In *Proceedings of the Chicago Linguistic Society* 19, 3-14. Chicago: Chicago Linguistic Society.
- Aoun, Joseph, Elabbas, Benmamoun, and Dominique Sportiche. 1994. Agreement, word order and conjunction in some varieties of Arabic. *Linguistic Inquiry* 25:195-220.

- Aoun, Joseph and Elabbas Benmamoun. 1998. Minimality, reconstruction, and PF movement. *Linguistic Inquiry* 29:569-597.
- Authier, J.-Marc P. 1989. Two types of empty operator. *Linguistic Inquiry* 20:117-125.
- Authier, J.-Marc P. 1992. Iterated CPs and embedded topicalization. *Linguistic Inquiry* 23:326-336.
- Bachrach, Asaf and Roni Katzir. 2006. Right-Node Raising and delayed spellout. Ms., MIT.
- Baker, C. L. 1971. Stress level and auxiliary behavior in English. *Linguistic Inquiry* 11:167-181.
- Baker, Mark. 1988. *Incorporation: A theory of grammatical function changing*. Chicago: University of Chicago Press.
- Baltin, Mark. 1982. A landing site theory of movement rules. *Linguistic Inquiry* 13:1-38.
- Beck, Sigrid. 2000. The semantics of different: Comparison operator and relational adjective. *Linguistics and Philosophy* 23:101-139.
- Bianchi, Valentina. 2000. The raising analysis of relative clauses: a reply to Borsley. *Linguistic Inquiry* 31:123-140.
- Bickmore, Lee. 1990. Branching nodes and prosodic categories: Evidence from Kinyambo. In *The Phonology-Syntax Connection*, Sharon Inkelas and Draga Zec (eds), 1-17. Chicago: The University of Chicago Press.
- Billings, L. and C. Rudin. 1996. Optimality and superiority: A new approach to multiple-wh ordering. In *Formal approaches to Slavic linguistics: The College Park meeting, 1994*, J. Toman (ed.), 35-60. Ann Arbor: Michigan Slavic Publications.

- Bobaljik, Jonathan. 1994. What does adjacency do? In *MIT Working Papers in Linguistics 22: The Morphology-Syntax Connection*, 1-32.
- Bobaljik, Jonathan David. 1995. *Morphosyntax: The syntax of verbal inflection*. Ph.D. dissertation. MIT.
- Bobaljik, Jonathan David. 2000. The ins and outs of contextual allomorphy. In *University of Maryland Working Papers in Linguistics 10*, ed. by K.K. Grohmann and C. Struijke, 35-71.
- Bobaljik, Jonathan David. 2002. A-chains at the PF-interface: Copies and 'covert' movement. *Natural Language and Linguistic Theory* 20:197-267.
- Bobaljik, Jonathan. 2006. Where's Phi? Agreement as a post-syntactic operation. In *Leiden Papers in Linguistics 3.2*, ed. by P. Hendriks M. van Koppen, F. Lansbergen, M. Poss, and J. van der Wal, 1-23.
- Bobaljik, Jonathan David and Samuel Brown. 1997. Interarboreal operations: Head movement and the extension requirement. *Linguistic Inquiry* 28:345-356.
- Bobaljik, Jonathan and Kazuko Yatsushiro. 2006. Problems with honorification-as-agreement in Japanese: A reply to Boeckx and Niinuma. *Natural Language and Linguistic Theory* 24:355-384.
- Boeckx, Cedric. 2000. A note on contraction. *Linguistic Inquiry* 31:357-366.
- Boeckx, Cedric. 2003. *Islands and chains: Resumption as stranding*. Amsterdam: John Benjamins Publishing Company.
- Boeckx, Cedric and Fumikazu Niinuma. 2004. Conditions on agreement in Japanese. *Natural Language and Linguistic Theory* 22:453-480.

- Boeckx, Cedric and Sandra Stjepanović. 2001. Head-*ing* toward PF. *Linguistic Inquiry* 32:345-355.
- Booij, Geert E. 1985. Coordination reduction in complex words: a Case for prosodic phonology. In *Advances in nonlinear phonology*, ed. by Harry van der Hulst and Norval Smith, 143-160. Dordrecht: Foris.
- Bošković, Željko. 1995. Participle movement and second position cliticization in Serbo-Croatian. *Lingua* 96:245-266.
- Bošković, Željko. 1996. On right node base-generation. Ms., University of Connecticut, Storrs.
- Bošković, Željko. 1997a. Coordination, object shift, and V-movement. *Linguistic Inquiry* 28:357-365.
- Bošković, Željko. 1997b. *The syntax of nonfinite complementation: An economy approach*. Cambridge, Mass.: MIT Press.
- Bošković, Željko. 1998. LF movement and the minimalist program. In *the Proceedings of the North East Linguistic Society 28*, ed. by Pius N. Tamanji and Kiyomi Kusumoto, 43-57. GLSA.
- Bošković, Željko. 1999. On multiple feature checking: Multiple wh-fronting and multiple head movement. In *Working minimalism*, ed. by Samuel David Epstein and Norbert Hornstein, 159-188. Cambridge, Mass.: MIT Press.
- Bošković, Željko. 2000. Sometimes in [Spec,CP], sometimes *in situ*. In *Step by Step: Essays in honor of Howard Lasnik*, ed. R. Martin, D. Michaels, and J. Uriagereka, 53-87. Cambridge, Mass.: MIT Press.

- Bošković, Željko. 2001. *On the Nature of the Syntax-Phonology Interface: Cliticization and Related Phenomena*. Amsterdam: Elsevier.
- Bošković, Željko. 2002a. A-movement and the EPP. *Syntax* 5:167-218.
- Bošković, Željko. 2002b. On multiple wh-fronting. *Linguistic Inquiry* 33:351-383.
- Bošković, Željko. 2004a. Be careful where you float your quantifiers. *Natural Language and Linguistic Theory* 22:681-742.
- Bošković, Željko. 2004b. Two notes on right node raising. In *University of Connecticut Working Papers in Linguistics* 12, ed. Miguel Rodriguez Mondonedo and M. Emma Ticio, 13-24. Department of Linguistics, University of Connecticut, Storrs.
- Bošković, Željko. 2004c. PF merger in stylistic fronting and object shift. In *Minimality effects in syntax*, ed. by G. Fanselow A. Stepanov, and R. Vogel, 37-71. Berlin: Mouton de Gruyter.
- Bošković, Željko. 2005a. Null C in English as an enclitic. *Lingvisticki Vidici* 34, 39-57.
- Bošković, Željko. 2005b. On the locality of Move and Agree: Eliminating the Activation Condition, Generalized EPP, Inverse Case Filter, and Phase Impenetrability Condition. *UCONN Occasional Papers in Linguistics* 3, ed. by Simona Herdan and Miguel Rodríguez-Mondoñedo. Department of Linguistics, University of Connecticut, Storrs.
- Bošković, Željko. 2005c. On the locality of left branch extraction and the structure of NP. *Studia Linguistica* 59:1-45.
- Bošković, Željko. 2007. Agree, phases, and intervention effects. *Linguistic Analysis* 33:54-96.

- Bošković, Željko. to appear. On the clausal and NP structure of Serbo-Croatian. *Proceedings of FASL 15*.
- Bošković, Željko and Daiko Takahashi. 1998. Scrambling and Last Resort. *Linguistic Inquiry* 29:347-366
- Bošković, Željko and Steven Franks. 2000. Across-the-board movement and LF. *Syntax* 3:107-128.
- Bošković, Željko and Howard Lasnik. 1999. How strict is the cycle? *Linguistic Inquiry* 30:691-703.
- Bošković, Željko and Howard Lasnik. 2003. On the distribution of null complementizers. *Linguistic Inquiry* 34:527-546.
- Breckenridge, J. 1977. Declination as a phonological process. Ms., Bell Laboratories.
- Bresnan, Joan W. 1972. *Theory of complementation*. Ph.D. dissertation. MIT, Cambridge, Mass.
- Bresnan, Joan W. 1974. The position of certain clause-particles in phrase structure. *Linguistic Inquiry* 5:614-619.
- Brody, Michael. 2000. Mirror theory: Syntactic representation in perfect syntax. *Linguistic Inquiry* 31:29-56.
- Browne, Wayles. 1974. On the problem of enclitic placement in Serbo-Croatian. In *Slavic Transformational Syntax, Michigan Slavic Materials 10*, R. D. Brecht and C. V. Chvany (eds), 36-52. Ann Arbor: Dept. of Slavic Languages and Literatures, University of Michigan.
- Browne, Wayles. 1975. Notes on clauses as subjects. In Filipović 1975, 143-145.

- Burton, Strang and Jane Grimshaw. 1992. Coordination and VP-internal subject. *Linguistic Inquiry* 23:305-313.
- Ćavar, Damir. 1999. *Aspects of the syntax-phonology interface: Cliticization and related phenomena in Croatian*. Ph.D. dissertation. University of Potsdam.
- Ćavar, Damir and Chris Wilder. 1993. Verbal and pronominal clitics in Croatian. Paper presented at the Geneva Workshop on the Wackernagel Position.
- Ćavar, Damir and Chris Wilder. 1994. "Clitic third" in Croatian. *Linguistics in Potsdam* 1:25-63.
- Cheng, Lisa. 1991. *On the typology of wh-questions*. Ph.D. dissertation. MIT.
- Chen, Matthew. 1990. What must phonology know about syntax? In *The phonology-syntax connection*, ed. Sharon Inkelas and Draga Zec, 19-46. Chicago: The University of Chicago Press.
- Cho, Sungeun and Xuan Zhou. 1999. The interpretations of wh-elements in conjoined wh-questions. Ms. State University of New York, Stony Brook.
- Cho, Young-Mee Yu. 1990. Syntax and phrasing in Korean. In *The phonology-syntax connection*, Sharon Inkelas and Draga Zec (eds), 47-62. Chicago: The University of Chicago Press.
- Choe, Jae-Woong. 2004. Obligatory honorification and the honorific feature. *Studies in Generative Grammar* 14:545-559.
- Chomsky, Noam. 1967. *Aspects of the theory of syntax*. Cambridge, Mass.: MIT Press.
- Chomsky, Noam. 1970. Remarks on nominalization. In *Readings in English transformational grammar*, ed. by R. A. Jacobs and P. S. Rosenbaum, 232-286. Waltham: Ginn and Company.

- Chomsky, Noam. 1973. Conditions on transformations. In *A festschrift for Morris Halle*, ed. by Stephen Anderson and Paul Kiparsky, 232-286. New York: Holt, Rinehart and Winston.
- Chomsky, Noam. 1975. *Reflections on language*. New York: Pantheon Books.
- Chomsky, Noam. 1976. Conditions on rules of grammar. *Linguistic Analysis* 2:303-351.
- Chomsky, Noam. 1980. On binding. *Linguistic Inquiry* 11:1-46.
- Chomsky, Noam. 1981. *Lectures on government and binding: The Pisa lectures*. Dordrecht: Foris Publications.
- Chomsky, Noam. 1982. *Some concepts and consequences of the theory of government and binding*. Cambridge, Mass.: MIT Press.
- Chomsky, Noam. 1986a. *Barriers*. Cambridge, Mass.: MIT Press.
- Chomsky, Noam. 1986b. *Knowledge of language: Its nature, origin, and use*. New York: Praeger.
- Chomsky, Noam. 1991. Some notes on economy of derivation and representation. In *Principles and parameters in comparative grammar*, ed. by R. Freidin, 417-454. Cambridge, Mass.: MIT Press. [Reprinted in as ch.2. of Chomsky 1995]
- Chomsky, Noam. 1993. A minimalist program for linguistic theory. In *The view from building 20: Essays in honor of Sylvain Bromberger*, ed. by Kenneth Hale and Samuel Jay Keyser, 1-52. Cambridge, Mass.: MIT Press.
- Chomsky, Noam. 1995. *The minimalist program*. Cambridge, Mass.: MIT Press.
- Chomsky, Noam. 2000. Minimalist inquiries. In *Step by step: Essays on minimalist syntax in honor of Howard Lasnik*, ed. Roger Martin, David Michaels, and Juan Uriagereka, 53-87. Cambridge, Mass.: MIT Press.

- Chomsky, Noam. 2001a. Beyond explanatory adequacy, *MIT Occasional Papers in Linguistics* 20, 1-28. MITWPL, Department of Linguistics and Philosophy, MIT.
- Chomsky, Noam. 2001b. Derivation by phase. In *Ken Hale: A life in language*, ed. Michael Kenstowicz, 1-52. Cambridge, Mass.: MIT Press.
- Chomsky, Noam. 2005a. On phases. Ms., MIT.
- Chomsky, Noam. 2005b. Three factors in language design. *Linguistic Inquiry* 36:1-22.
- Chomsky, Noam and Morris Halle. 1968. *The sound pattern of English*. New York: Harper and Row.
- Chomsky, Noam and Howard Lasnik. 1977. Filters and control. *Linguistic Inquiry* 8:425-504.
- Chomsky, Noam and Howard Lasnik. 1993. The theory of principles and parameters. In *Syntax: An international handbook of contemporary research*, ed. by Arnim von Stechow Joachim Jacobs, Wolfgang Sternefeld, and Theo Vennemann, 506-569. Berlin and New York: Walter de Gruyter. [Reprinted in N. Chomsky, *The minimalist program*. MIT Press. 1995]
- Chung, Dae-Ho. 2004. Multiple dominance analysis of Right Node Raising. *Language Research* 40:791-812.
- Chung, Inkie. 2007. *Ecology of PF: A study of Korean phonology and morphology in a derivational approach*. Ph.D. dissertation. University of Connecticut, Storrs.
- Chung, Sandra, William Ladusaw and James McCloskey. 1995. Sluicing and logical form. *Natural Language Semantics* 3:1-44.
- Cinque, Guglielmo. 1993. A null theory of phrase and compound stress. *Linguistic Inquiry* 24:239-297.

- Citko, Barbara. 2003. Parallel Merge and across-the-board wh-movement. Ms. University of Connecticut.
- Citko, Barbara. 2005. On the nature of Merge: External Merge, Internal Merge, and Parallel Merge. *Linguistic Inquiry* 36:475-496.
- Cooper, William E. and Jeanne Paccia-Cooper. 1980. *Syntax and speech*. Cambridge, Mass.: Harvard University Press.
- Culicover, Peter W. and Michael Rochemont. 1990. Extraposition and the complement principle. *Linguistic Inquiry* 21:23-48.
- Culicover, Peter W and Ray Jackendoff. 1997. Semantic subordination despite syntactic coordination. *Linguistic Inquiry* 28:195-217.
- Den Dikken, Marcel, Andre Meinunger and Chris Wilder. 2000. Pseudoclefts and ellipsis. *Studia Linguistica* 54:41-89.
- Doherty, Cathal. 1997. Clauses without complementizers: Finite IP-complementation in English. *The Linguistic Review* 14:197-220.
- Dyła, Stefan. 1984. Across-the-board dependencies and Case in Polish. *Linguistic Inquiry* 5:701-705.
- Embick, David and Rolf Noyer. 1999. Locality in post-syntactic operations. In *Papers in morphology and syntax, Cycle two: MIT working papers in linguistics*, ed. by Cornelia Krause Vivian Lin, Benjamin Bruening and Karlos Arregi, 41-72.
- Embick, David and Rolf Noyer. to appear. Distributed morphology and the syntax/morphology interface. In *The Oxford handbook of linguistic interfaces*, ed. by G. Ramchand and C. Reiss, Oxford University Press.

- Epstein, Samuel, Erich M. Groat, Ruriko Kawashima, Hisatsugu Kitahara. 1998. *A derivational approach to syntactic relations*. New York: Oxford University Press.
- Erteschik-Shir, Nomi. 1987. Right node raising. *MITWPL* 9, 105-117.
- Fiengo, Robert and Robert May. 1994. *Indices and identity*. Cambridge, Mass.: MIT Press.
- Filipović, Rudolf. 1975. *Contrastive analysis of English and Serbo-Croatian. volume one*. Zagreb: Institute of Linguistics, Faculty of Philosophy, University of Zagreb, Yugoslavia.
- Fox, Danny. 1995. Condition C effects in ACD. In *MIT working papers in linguistics* 27, 105-120. Department of Linguistics and Philosophy, MIT, Cambridge, Mass.
- Fox, Danny. 2000. *Economy and semantic interpretation*. Cambridge, Mass.: MIT Press.
- Fox, Danny and Howard Lasnik. 2003. Successive-cyclic movement and island repair: the difference between sluicing and VP-ellipsis. *Linguistic Inquiry* 34, 143-154.
- Fox, Danny and David Pesetsky. 2005. Cyclic linearization of syntactic structure. *Theoretical Linguistics* 31:1-45.
- Franks, Steven. 1992. A prominence constraint on null operator constructions. *Lingua* 87, 35-54.
- Franks, Steven. 1993. On parallelism in across-the-board dependencies. *Linguistic Inquiry* 24, 509-529.
- Franks, Steven. 1995. *Parameters of Slavic morphosyntax*. New York: Oxford University Press.
- Franks, Steven. 1998a. Clitics in Slavic. Paper presented at the Comparative Slavic Morphosyntax Workshop, Indiana University, Bloomington, June 1998.

- Franks, Steven. 1998b. Parameters of Slavic morphosyntax revisited: A minimalist retrospective. In *Formal approaches to Slavic linguistics: The Connecticut meeting*, 1997, ed. Željko Bošković, Steven Franks and William Snyder, 134-165. Ann Arbor.: Michigan Slavic Publications.
- Franks, Steven. 2005. What is *that*? In *Indiana University Working Papers in Linguistics*, ed. by Y. Kitagawa and D. Roehrs, 33-62. Bloomington, IN.
- Franks, Steven and Željko Bošković. 2001. An argument for multiple Spell-Out. *Linguistic Inquiry* 32, 174-183.
- Freidin, Robert. 1999. Cyclicity and minimalism. In *Working Minimalism*, ed. Samuel David Epstein and Nibert Hornstein, 95-126. Cambridge, Mass.: MIT Press.
- Fukui, Naoki and Margaret Speas. 1986. Specifiers and projection. *MIT Working Papers in Linguistics* 8, 128-172.
- Gazdar, Gerald. 1981. Unbound dependencies and coordinate structure. *Linguistic Inquiry* 12, 155-184.
- George, Lerand. 1980. *Analogical generalization in natural language syntax*. Ph.D. dissertation, MIT, Cambridge, Mass.
- Giorgi, Alessandra and Giuseppe Longobardi. 1991. *The syntax of noun phrases*. Cambridge: Cambridge University Press.
- Goldsmith, John. 1985. A principled exception to the Coordinate Structure Constraint. In *Proceedings of CLS 21. Part 1, The General Session*, ed. by Paul D. Kroeber William H. Eilfort, Karen L. Peterson, 133-143. Chicago Linguistic Society, University of Chicago.
- Goodall, Grant. 1983. A three-dimensional analysis of coordination. *CLS* 19, 146-154.

- Goodall, Grant. 1987. *Parallel structures in syntax: Coordination, causatives, and restructuring*. London: Cambridge University Press.
- Grimshaw, Jane. 1979. Complement selection and the lexicon. *Linguistic Inquiry* 10:279-326.
- Grimshaw, Jane. 1997. Projection, heads, and optimality. *Linguistic Inquiry* 28, 373-422.
- Grodzinsky, Yosef and Lisa Finkel. 1998. The neurology of empty categories: Aphasics' failure to detect ungrammaticality. *Journal of Cognitive Neuroscience* 10, 281-292.
- Grohmann, Kleanthes K. 2000. *Prolific peripheries: A radical view from the left*. Ph.D. dissertation. University of Maryland at College Park.
- Grosu, Alexander. 1973. On the nonunitary nature of the coordinate structure constraint. *Linguistic Inquiry* 4, 88-92.
- Grosu, Alexander. 1976. A note of subject raising to object and right node raising. *Linguistic Inquiry* 7:642-645.
- Guimarães, Max. 1998. PF reflexes of phase boundaries. Contribution to Minimalist Issues Chat Room, University of Maryland. [available at <http://www.ling.umd.edu/Courses/Ling819/Chatroom/MG-1.html>]
- Ha, Seungwan. 2006. Multiple dominance CAN'T, but PF-deletion CAN account for Right Node Raising. Paper presented at the 42nd Annual Meeting of the Chicago Linguistic Society, April.
- Hale, Kenneth and Elizabeth Selkirk. 1987. Government and tonal phrasing in Papago. *Phonology Yearbook* 4:151-183.
- Halle, Morris and Jean-Roger Vergnaud. 1987. *An essay on stress*. Cambridge, Mass.: MIT Press.

- Halle, Morris. 1990. An approach to morphology. *Proceedings of NELS 20*, 150-184.
- Halle, Morris and Alec Marantz. 1993. Distributed morphology and the pieces of inflection. In *The view from Building 20: Essays in linguistics in honor of Sylvain Bromberger*, ed. by Kenneth Hale and Samuel Jay Keyser, 111-176. Cambridge, Mass.: MIT Press.
- Halliday, M.A.K. 1967. Notes on transitivity and theme in English. *Journal of Linguistics*:177-274.
- Halpern, Aaron. 1992. *Topics in the placement and morphology of clitics*. Ph.D. dissertation. Stanford University.
- Han, Chung-Hye. 1996. Korean prosodic domains and phrase structure. *Penn Working Papers in Linguistics* 3:39-49.
- Hankamer, Jorge. 1979. *Deletion in coordinate structures*. New York: Garland Publishing.
- Hankamer, Jorge and Ivan Sag. 1976. Deep and surface anaphora. *Linguistic Inquiry* 7: 391-426.
- Harada, S. I. 1976. Honorifics. In *Syntax and semantics 5: Japanese generative grammar*, ed. by Masayoshi Shibatani, 499-561. New York: Academic Press.
- Harley, Heidi and Rolf Noyer. 1999. State-of-the article: Distributed morphology. *GLOT* 4.4, 3-9.
- Hartmann, Katharina. 2000. *Right Node Raising and Gapping: Interface conditions on prosodic deletion*. Amsterdam: John Benjamins Publishing Company.

- Hayes, Bruce. 1989. The prosodic hierarchy in meter. In *Phonetics and phonology vol.1: Rhythm and meter*, ed. by Paul Kiparsky and Gilbert Youmans, 201-260. Orlando, Florida: Academic Press.
- Hegarty, Michael V. 1991. *Adjunct extraction and chain configurations*. Ph.D. dissertation. MIT.
- Heim, Irene. 1982. *The semantics of definite and indefinite noun phrases*. Ph.D. dissertation. University of Massachusetts, Amherst.
- Henry, Alison. 1992. Infinitives in a *for-to* dialect. *Natural Language and Linguistic Theory* 10, 279-301.
- Henry, Alison. 1995. *Belfast English and Standard English: Dialect variation and parameter setting*. Oxford: Oxford University Press.
- Hiraiwa, Ken. 2001. On nominative-genitive conversion. In *A few from building E39: MIT Working Papers in Linguistics* 39, 67-125.
- Hirst, Daniel. 1993. Detaching intonational phrases from syntactic structure. *Linguistic Inquiry* 24, 781-788.
- Hoji, Hajime. 1998. Null object and sloppy identity in Japanese. *Linguistic Inquiry* 29, 127-152.
- Holmberg, Anders. 1986. *Word order and syntactic features in the Scandinavian languages and English*. Ph.D. dissertation. Stockholm University.
- Holmberg, Anders. 1998. Remarks on Holmberg's Generalization. *Studia Linguistica* 53: 1-39.
- Hornstein, Norbert. 1995. *Logical Form: From GB to minimalism*. Cambridge, Mass.: MIT Press.

- Hornstein, Nobert. 1999. Movement and control. *Linguistic Inquiry* 30:69-96.
- Hornstein, Nobert. 2001. *Move! A minimalist theory of construal*. Oxford: Blackwell.
- Hornstein, Norbert and Jairo Nunes. 2002. On asymmetries between parasitic gap and across-the-board constructions. *Syntax* 5, 26-54.
- Huang, C.-T. James. 1993. Reconstruction and the structure of VP: Some theoretical consequences. *Linguistic Inquiry* 24: 103-138.
- Hudson, Richard A. 1976. Conjunction reduction, Gapping, and Right-Node Raising. *Language* 52:535-562.
- Inkelas, Sharon and Draga Zec. (eds) 1990. *The phonology-syntax connection*. Chicago: The University of Chicago Press.
- Ishihara, Shinichiro. 2003. *Intonation and interface conditions*. Ph.D. dissertation. MIT.
- Ishihara, Shinichiro. 2004. Prosody by phase: Evidence from focus intonation-wh-scope correspondence in Japanese. In *Interdisciplinary studies on information structure 1*, ed. by M. Schmitz S. Ishihara, and A. Schwarz, 77-119.
- Jackendoff, Ray. 1971. Gapping and related rules. *Linguistic Inquiry* 2:21-35.
- Jackendoff, Ray. 1972. *Semantic interpretation in generative grammar*. Cambridge, Mass.: MIT Press.
- Jackendoff, Ray. 1977. *X' syntax: A study of phrase structure*. Cambridge, Mass.: MIT Press.
- Jackendoff, Ray. 2002. *Foundations of language: Brain, meaning, grammar, evolution*. New York: Oxford University Press.
- Jayaseelan, K. A. 1990. Incomplete VP deletion and Gapping. *Linguistic Analysis* 20, 64-81.

- Jo, Mi-Jeung. 2000. Nominal functional categories in Korean: A comparative study with languages with DP. *Studies in Generative Grammar* 10:427-452.
- Johannessen, Janne Bondi. 1998. *Coordination*. New York: Oxford University Press.
- Johnson, Kyle. 1994. Bridging the gap. Ms., University of Massachusetts, Amherst.
- Johnson, Kyle. 1996. In search of the English middle field. Ms., University of Massachusetts, Amherst.
- Jung, Yeun-Jin. 1991. X-bar theory, SPECS and directionality. *NELS* 21, 187-202.
- Kaisse, Ellen. 1985. *Connected speech: The interaction of syntax and phonology*. Orlando, FL.: Academic Press.
- Kandybowicz, Jason Todd. 2006. *Conditions on multiple copy spell-out and the syntax-phonology interface*. Ph.D. dissertation. University of California, Los Angeles.
- Kanerva, Jonni. 1989. *Focus and phrasing in Chichewa phonology*. Ph.D. dissertation. Stanford University.
- Kang, Myung-Yoon. 1987. Possessor raising in Korean. In *Harvard Studies in Korean Linguistics* 2, ed. by Susumu Kuno, 80-88.
- Kang, Myung-Yoon. 1988. *Topics in Korean syntax: Phrase structure, variable binding and movement*. Ph.D. dissertation. MIT.
- Kang, Bosook. 2002. The structure of Korean cleft construction and its theoretical implications. Ms. University of Connecticut, Storrs.
- Kang, Soyoung and Shari R. Speer. 2005. Effects of prosodic boundaries on syntactic disambiguation. *Studia Linguistica* 59:244-258.

- Kato, Takaomi. 2006a. A case against the representational approach to the Coordinate Structure Constraint. In *Proceedings of the North Eastern Linguistic Society 35*, 307-321.
- Kato, Takaomi. 2006b. *Symmetries in coordination*. Ph.D. dissertation. Harvard University.
- Kayne, Richard. 1994. *The antisymmetry of syntax*. Cambridge, Mass.: MIT Press.
- Kayne, Richard. 2003. Antisymmetry and Japanese. *English Linguistics* 20:1-40.
- Kennedy, Christopher. 2002. Comparative deletion and optimality in syntax. *Natural Language and Linguistic Theory* 20:553-621.
- Kim, Jeong-Seok. 1997. *Syntactic focus movement and ellipsis: A minimalist approach*. Ph.D. dissertation. University of Connecticut.
- Kim, Jeong-Seok. 1998. A minimalist account of Gapping in Korean/Japanese. *Studies in Generative Grammar* 8, 105-138.
- Kim, Sun-Woong. 1998. Verb raising and Gapping in Korean. *Studies in Generative Grammar* 8, 3-24.
- Kitahara, Hisatsugu. 1992. Checking theory and scope interpretation without quantifier raising. In *Harvard Working Papers in Linguistics* 1, 51-71. Cambridge, Mass.: Harvard University, Department of Linguistics.
- Kluck, Marlies. 2006. The issue of right edge restriction in Right Node Raising. Paper presented at SAM3, Tilburg, November.
- Kluck, Marlies. to appear. The perspective of external remerge on Right Node Raising. Proceedings of the 5th Cambridge Postgraduate Conference in Language Research. Cambridge, U.K.

- Ko, Heejeong. 2005. Syntax of *why*-in-situ: Merge into [Spec,CP] in the overt syntax. *Natural Language and Linguistic Theory* 23:867-916.
- Ko, Heejeong. 2007. Asymmetries in scrambling and cyclic linearization. *Linguistic Inquiry* 38:49-83.
- Koizumi, Masatoshi. 1993. Object agreement phrases and the split VP hypothesis. In *Papers on case and agreement I. MIT Working Papers in Linguistics* 18, 99-148.
- Koizumi, Masatoshi. 1995. *Phrase structure in minimalist syntax*. Ph.D. dissertation. MIT.
- Koizumi, Masatoshi. 2000. String vacuous overt verb raising. *Journal of East Asian Linguistics* 9:277-285.
- Koopman, Hilda. 1983. ECP effects in main clauses. *Linguistic Inquiry* 14:346-350.
- Koopman, Hilda. 2005. Korean (and Japanese) morphology from a syntactic perspective. *Linguistic Inquiry* 36:601-633.
- Koster, Jan. 1978. *Locality principles in syntax*. Dordrecht: Foris.
- Koutsoudas, Andreas. 1971. Gapping, conjunction reduction, and coordinate deletion. *Foundations of Language* 7:337-386.
- Kratzer, Angelika. 2006. Minimal pronouns: Fake indexicals as windows into the properties of bound variable pronouns. Ms., University of Massachusetts, Amherst.
- Kratzer, Angelika and Elisabeth Selkirk. 2007. Phase theory and prosodic spellout. Ms., University of Massachusetts, Amherst.
- Kuno, Susumu. 1976. Gapping: A functional analysis. *Linguistic Inquiry* 7:300-318.
- Kuroda, Shige-Yuki. 1983. What can Japanese say about government and binding. In the *Proceedings of the West Coast Conference on Formal Linguistics* 2, ed. by M.

- Barlow, D.P. Flickinger, M.T. Wescoat, 153-164. Stanford, Calif.: Stanford Linguistics Association.
- Ladd, D. Robert. 1996. *Intonational phonology*. New York: Cambridge University Press.
- Lakoff, George. 1986. Frame semantic control of the Coordinate Structure Constraint. In *Proceedings of CLS 22. Part 2, The Parasession on Pragmatics and Grammatical Theory*, 152-167. Chicago Linguistic Society, University of Chicago.
- Langendoen, D. Terence. 1975. Acceptable conclusions from unacceptable ambiguity. In *Testing linguistic hypotheses*, ed. by David Cohen and Jessica R. Worth, 111-127. Washington, DC.: Hemisphere.
- Lasnik, Howard. 1981. On a lexical parameter in the Government-Binding theory: Markedness and learnability, *University Massachusetts Occasional Papers in Linguistics* 6, 97-106. [Reprinted in Lasnik 1990, *Essays on Restrictiveness and Learnability*]
- Lasnik, Howard. 1995a. A note on pseudogapping. In *MIT Working Papers in Linguistics 27: Papers in Minimalist Syntax*, 143-163. [Reprinted in Lasnik 1999, 151-174]
- Lasnik, Howard. 1995b. Last resort. In *Minimalism and linguistic theory*, S. Haraguchi and M. Funaki (eds), 1-32. Tokyo: Hituzi Syobo Publishing. [Reprinted in Lasnik 1999: 120-146.]
- Lasnik, Howard. 1995c. Verbal morphology: Syntactic Structures meets the Minimalist Program. In *Evolution and revolution in linguistic theory*, ed. H. Campos and P. Kempchinsky, 251-275. Washington, DC: Georgetown University Press.
- Lasnik, Howard. 1999. *Minimalist analysis*. Oxford: Blackwell.

- Lasnik, Howard. 2001. When can you save a structure by destroying it? In *Proceedings of NELS 31*, M. Kim and U. Strauss (eds), 301-320. Amherst, Mass.: GLSA Publications.
- Lasnik, Howard and Mamoru Saito. 1984. On the nature of proper government. *Linguistic Inquiry* 15:235-289.
- Lasnik, Howard and Mamoru Saito. 1991. On the subject of infinitives. In *Papers from the 27th Regional Meeting of the Chicago Linguistic Society*, L. Dobrin, L. Nichols and R. Rodriguez (eds), 324-343. [Reprinted in Lasnik 1999: 7-24.]
- Lasnik, Howard and Mamoru Saito. 1992. *Move α : Conditions on its applications and output*. Cambridge, Mass.: MIT Press.
- Law, Paul. 1991. *Effects of head movement on theories of subadjacency and proper government*. Ph.D. dissertation. MIT. Cambridge, Mass.
- Legate, Julie. 2003. Some interface properties of the phase. *Linguistic Inquiry* 34, 506-516.
- Lehiste, Ilse. 1973. Phonetic disambiguation of syntactic ambiguity. *Glossa* 7, 107-122.
- Li, Yafei. 1990. *Conditions on X^0 -movement*. Ph.D. dissertation. MIT.
- Lieberman, Mark. 1975. *The intonational system of English*. Ph.D. dissertation. MIT.
- Lin, Vivian. 2001. A way to undo A-movement. In *Proceedings of WCCFL 20*, 358-371.
- Lobeck, Anne. 1986. *Syntactic constraints on VP anaphora*. Ph.D. dissertation. University of Washington.
- Lobeck, Anne. 1995. *Ellipsis*. Oxford: Oxford University Press.
- Maling, Joan. 1972. On Gapping and the order of constituents. *Linguistic Inquiry* 1, 101-108.

- Marantz, Alec. 1984. *On the nature of grammatical relations*. Cambridge, Mass.: MIT Press.
- Martin, Roger. 1996. *A minimalist theory of PRO and control*. Ph.D. dissertation. University of Connecticut, Storrs.
- Martin, Roger. 2001. Null Case and the distribution of PRO. *Linguistic Inquiry* 32, 141-166.
- May, Robert. 1985. *Logical form: Its structure and derivation*. Cambridge, Mass.: MIT Press.
- McCawley, James D. 1982. Parentheticals and discontinuous constituent structure. *Linguistic Inquiry* 13:91-106.
- McCawley, James D. 1988. *The syntactic phenomena of English*. Chicago: The University of Chicago Press.
- McCloskey, James. 1986. Right node raising and preposition stranding. *Linguistic Inquiry* 17:183-186.
- McCloskey, James. 1991. *There, it, and agreement*. *Linguistic Inquiry* 22, 563-567.
- McCloskey, James. 2000. Quantifier float and wh-movement in an Irish English. *Linguistic Inquiry* 31, 57-84.
- McNally, Louise. 1992. VP coordination and the VP-internal subject hypothesis. *Linguistic Inquiry* 23:336-341.
- Merchant, Jason. 2001. *The Syntax of silence: Sluicing, islands, and identity in ellipsis*. Oxford: Oxford University Press.
- Merchant, Jason. to appear. Variable island repair under ellipsis. In *Topics in ellipsis*, ed. by Kyle Johnson. Oxford University Press.

- Miyagawa, Shigeru. 1989. *Structure and case marking in Japanese: Syntax and semantics* 22. San Diego: Academic press.
- Moltmann, Frederike. 1992. *Coordination and Comparatives*. Ph.D. dissertation. MIT.
- Muads, Husni. 1991. *Coordinate Structures: A Planar Representation*. Ph.D. dissertation. University of Arizona.
- Mukai, Emi. 2003. On verbless conjunction in Japanese. In *Proceedings of North East Linguistic Society 33*, ed. by Makoto Kadowaki and Shigeto Kawahara, 205-224. Amherst, Mass.: GLSA.
- Munn, Alan. 1993. *Topics in the Syntax and Semantics of Coordinate Structures*. Ph.D. dissertation. University of Maryland, College Park.
- Munn, Alan. 1994. A minimalist account of reconstruction asymmetries. In *the Proceedings ofNELS 24*, ed. by M. Gonzales, 397-410.
- Namai, Kenichi. 2000. Subject honorification in Japanese. *Linguistic Inquiry* 31, 170-176.
- Neijt, Anneke. 1980. *Gapping: A Contribution to Sentence Grammar*. Dordrecht: Foris.
- Nespor, Marina and Irene Vogel. 1986. *Prosodic phonology*. Dordrecht: Foris.
- Niinuma, Fumikazu. 2003. *The Syntax of Honorification*. Ph.D. dissertation. University of Connecticut.
- Nissenbaum, Jon. 2000. *Investigations of Covert Phrase Movement*. Ph.D. dissertation. MIT.
- Nunes, Jairo. 1995. *The Copy Theory of Movement and Linearization of Chains in the Minimalist Program*. Ph.D. dissertation. University of Maryland at College Park.
- Nunes, Jairo. 2001. Sideward movement. *Linguistic Inquiry* 32, 303-344.

- Nunes, Jairo. 2004. *Linearization of chains and sideward movement*. Cambridge, Mass.: MIT Press.
- Ochi, Masao. 1999. *Constraints on feature checking*. Ph.D. dissertation. University of Connecticut.
- van Oirsouw, Robert R. 1987. *The syntax of coordination*. London: Croom Helm.
- Oku, Satoshi. 1998. *A theory of selection and reconstruction in the minimalist perspective*. Ph.D. dissertation. University of Connecticut.
- Ormazabal, Javier. 1995. *The syntax of complementation: On the connection between syntactic structure and selection*. Ph.D. dissertation. University of Connecticut, Storrs.
- Park, Bum-Sik. 2005. *Locality and identity in ellipsis*. Ph.D. dissertation. University of Connecticut, Storrs.
- Park, Myung-Kwan. 1994. *A morpho-syntactic study of Korean verbal inflection*. Ph.D. dissertation. University of Connecticut, Storrs.
- Park, Myung-Kwan. 2005. When things are coordinated or distributed across coordinate conjuncts. Paper presented at the 7th Seoul International Conference on Generative Grammar. Konkuk University, Seoul.
- Park, Myung-Kwan. 2006. Displacement effects by multi-dominance in right node raising constructions. Ms., Dongguk University.
- Percus, Orin. 1993. *The captious clitic: Problems in Serbo-Croatian clitic placement*. Ms., MIT, Cambridge, Mass.
- Perlmutter, David and John Ross. 1970. Relative clauses with split antecedents. *Linguistic Inquiry* 1, 3.

- Pesetsky, David. 1982. *Paths and categories*. Ph.D. dissertation. MIT.
- Pesetsky, David. 1987. Wh-in-situ: Movement and unselective binding. In *The representation of indefiniteness*, ed. E. Reuland and A. ter Meulen, 98-129. Cambridge, Mass.: MIT Press.
- Pesetsky, David. 1989. Language-particular processes and the earliness principle. Ms. MIT.
- Pesetsky, David. 1997. Some optimality principles of sentence pronunciation. In *Is the best good enough?*, ed. by Danny Fox Pilar Barnosa, Paul Hagstrom, Martha McGinnis, and David Pesetsky, 337-383. MIT Press and MITWPL, Department of Linguistics and Philosophy, MIT, Cambridge, Mass.
- Pesetsky, David. 2000. *Phrasal movement and its kin*. Cambridge, Mass.: MIT Press.
- Pesetsky, David and Esther Torrego. 2001. T-to-C movement: causes and consequences. In *Ken Hale: A life in language*, ed. M. Kenstowicz, 355-426. Cambridge, Mass.: MIT Press.
- Postal, Paul. 1974. *On raising: One rule of English grammar and its theoretical implications*. Cambridge, Mass.: MIT Press.
- Postal, Paul. 1993. Parasitic gaps and the across-the-board phenomenon. *Linguistic Inquiry* 24, 735-754.
- Postal, Paul. 1998. *Three investigations of extraction*. Cambridge, Mass.: MIT Press.
- Progovac, Ljiljana. 1996. Clitics in Serbian/Croatian: Comp as the second position. In *Approaching second: Second position clitics and related phenomena*, Aaron Halpern and Arnold Zwicky (eds), 411-428. Stanford: CSLI.

- Quirk, Randolph, Sidney Greenbaum, Geoffrey Leech, and Jan Svartvik. 1985. *A comprehensive grammar of the English language*. New York: Longman.
- Radanović-Kocić, Vesna. 1988. *The grammar of Serbo-Croatian clitics: A synchronic and diachronic perspective*. Ph.D. dissertation. University of Illinois, Urbana-Champaign.
- Radanović-Kocić, Vesna. 1996. Placement of Serbo-Croatian clitics: A prosodic approach. In *Approaching second: Second position clitics and related phenomena*, Aaron Halpern and Arnold Zwicky (eds), 429-445. Stanford: CSLI.
- Reglero, Lara. 2004. *A'-dependencies in Spanish and Basque*. Ph.D. dissertation. University of Connecticut, Storrs.
- Richards, Norvin W. 1997. *What moves where when in which language?* Ph.D. dissertation. MIT.
- Richards, Norvin. 1999. Complementizer cliticization in Tagalog and English. In *Proceedings of the 6th meeting of the Austronesian formal linguistics association: Toronto working papers in linguistics 16*.
- Rizzi, Luigi. 1990. *Relativized minimality*. Cambridge, Mass.: MIT Press.
- Rizzi, Luigi. 1996. Residual verb second and the wh-criterion. In *Parameters and functional heads: Essays in comparative syntax*, ed. A. Belletti & L. Rizzi, 63-90. Oxford: Oxford University Press.
- Rizzi, Luigi. 1997. The fine structure of the left periphery. In *Elements of grammar: Handbook in generative syntax*, Liliane Haegeman (ed.), 281-337. Dordrecht: Kluwer Academic Publishers.

- Ross, John Robert. 1967. *Constraints on variables in syntax*. Ph.D. dissertation. MIT.
 [Published as *Infinite Syntax!* Norwood, N. J.: Ablex (1986)]
- Ross, John Robert. 1969. Guess who? In *Proceedings of CLS 5*, R. Binnick, A. Davison, G. Green, and J. Morgan (eds), 252-286.
- Ross, John Robert. 1970. Gapping and the order of constituents. In *Progress in linguistics: A collection of papers*, ed. by Manfred Bierwisch and Karl Erich Heidolph, 249-259. The Hague: Mouton.
- Rooth, Mats. 1985. *Association with focus*. Ph.D. dissertation. University of Massachusetts at Amherst.
- Rooth, Mats. 1992. A theory of focus interpretation. *Natural Language Semantics* 1:75-116.
- Rudin, Catherine. 1988. On multiple questions and multiple wh-fronting. *Natural Language and Linguistic Theory* 6: 455-501.
- Sabbagh, Joseph A. 2003. Ordering and linearizing rightward movement. In *Proceedings of the 22nd West Coast Conference on Formal Linguistics*, ed. by Gina Garding and Mimu Tsujimura, 436-449. Somerville, Mass.: Cascadilla.
- Sag, Ivan. 1976. *Deletion and logical form*. Ph.D. dissertation. MIT.
- Saito, Mamoru. 1985. *Some asymmetries in Japanese and their theoretical implications*. PhD dissertation, MIT.
- Saito, Mamoru. 1987. Three notes on syntactic movement in Japanese. In *Issues in Japanese linguistics*, ed. by T. Imai and M. Saito, 301-350. Dordrecht: Foris.

- Saito, Mamoru. 1989. Scrambling as semantically vacuous A'-movement. In *Alternative conceptions of phrase structure*, ed. by Mark Baltin and Anthony Kroch, 182-200. Chicago: University of Chicago Press.
- Saito, Mamoru. 1992. Long distance scrambling in Japanese. *Journal of East Asian Linguistics* 1, 69–118.
- Saito, Mamoru. 2003a. A derivational approach to the interpretation of scrambling chains. *Lingua* 113, 481-518.
- Saito, Mamoru. 2003b. Ellipsis and pronominal reference in Japanese clefts. *Nanzan Linguistics* 1:21-50.
- Saito, Mamoru and Naoki Fukui. 1998. Order in phrase structure and movement. *Linguistic Inquiry* 29: 439-474.
- Saito, Mamoru and Keiko Murasugi. 1999. Subject predication within IP and DP. In *Beyond principles and parameters*, ed. by Kyle Johnson and Ian Roberts, 167-188. Dordrecht: Kluwer.
- Sauerland, Uli and Paul Elbourne. 2002. Total reconstruction, PF movement, and derivational order. *Linguistic Inquiry* 33, 283-319.
- Schein, Barry. 1997. Conjunction reduction redux. Ms. University of Southern California.
- Schütze, Carson. 1994. Serbo-Croatian second position clitic placement and the phonology-syntax interface. In *Papers on phonology and morphology. MIT working papers in linguistics* 21, 373-473.
- Schwarzschild, Roger. 1999. Givenness, Avoid F and other constraints on the placement of accent. *Natural Language Semantics* 7:141-177.

- Selkirk, Elisabeth. 1978. On prosodic structure and its relation to syntactic structure. In *Nordic Prosody II*, ed. by Thorstein Fretheim, 111-140. Trondheim: TAPIR.
- [Reproduced as Selkirk 1980. On prosodic structure and its relation to syntactic structure. Distributed by Indiana University Linguistics Club, Bloomington.]
- Selkirk, Elisabeth. 1980. The role of prosodic categories in English word stress. *Linguistic Inquiry* 11:563-605.
- Selkirk, Elisabeth. 1984. *Phonology and syntax: The relation between sound and structure*. Cambridge, Mass.: MIT Press.
- Selkirk, Elisabeth. 1986. On derived domains in sentence phonology. *Phonology yearbook* 3: 371-405.
- Selkirk, Elisabeth. 1995. Sentence prosody: Intonation, stress, and phrasing. In *Handbook of phonological theory*, ed. by J. Goldsmith, 550-569. Oxford: Blackwell.
- Selkirk, Elisabeth. 1997. Constraints on prosodic phrasing and their relevance for Right Node Raising. Ms., University of Massachusetts at Amherst.
- Sells, Peter. 1995. Korean and Japanese morphology from a lexical perspective. *Linguistic Inquiry* 26:277-325.
- Shlonsky, Ur. 1988. Complementizer-cliticization in Hebrew and the Empty Category Principle. *Natural Language and Linguistic Theory* 6, 191-205.
- Snyder, William and Susan Rothstein 1992. A note on contraction, case and complementizers. *The Linguistic Review* 9, 251-266.
- Sobin, Nicholas. 1987. The variable status of comp-trace phenomena. *Natural Language and Linguistic Theory* 5, 33-60.

- Sobin, Nicholas. 1997. Agreement, default rules, and grammatical viruses. *Linguistic Inquiry* 28, 318-343.
- Sohn, Keun-Won. 1994. On Gapping and Right Node Raising. In *Explorations in generative grammar: A festschrift for Dong-Whee Yang*, ed. by Young-Sun Kim, Byung-Choon Lee, Kyoung-Jae Lee, Hyun-Kwon Yang, and Jong-Yurl Yoon, 589-611. Seoul: Hankuk Publishing Co.
- Sohn, Keun-Won. 2001. Deletion and Right Node Raising in Korean and English. *Studies in Generative Grammar* 11, 485-501.
- Stepanov, Arthur. 2001. *Cyclic domains: A minimalist study on adjunction and extraction*. Ph.D. dissertation. University of Connecticut, Storrs.
- Stjepanović, Sandra. 1998. VP ellipsis in a verb raising language: Implications for verbal morphology. In *the Proceedings of ESCOL 97*, Jennifer Austin and Aaron Lawson (eds), 192-203. Cornell University.
- Stjepanović, Sandra. 1999. *What do second position cliticization, scrambling, and multiple wh-fronting have in common?* Ph.D. dissertation. University of Connecticut, Storrs.
- Stowell, Tim. 1981. *Origins of phrase structure*. Ph.D. dissertation. MIT, Cambridge, Mass.
- Stowell, Tim. 1982. The tense of infinitives. *Linguistic Inquiry* 13: 561-570.
- Stowell, Tim. 1986. Null antecedents and proper government. In *Proceedings of NELS 16*, ed. by Jae-Woong Choe Stephen Berman, Joyce McDonough, 476-493. GLSA.
- Swingle, Kari. 1993. The role of prosody in Right Node Raising. *Syntax at Santa Cruz* 2:84-111.

- Tada, Hiroaki. 1993. *A/A'-partition in derivation*. Ph.D. dissertation. MIT.
- Tai, J. H.-Y. 1969. *Coordination reduction*. Ph.D. dissertation. Indiana University.
- Takahashi, Daiko. 1994. *Minimality of movement*. Ph.D. dissertation. University of Connecticut.
- Takahashi, Daiko. 1997. Move-F and null operator movement. *The Linguistic Review* 14:181-196.
- Takahashi, Shoichi and Danny Fox. 2005. MaxElide and the re-binding problem. In *Proceedings of Semantics and Linguistic Theory XV*, ed. by Effi Georgala and Jonathan Howell, CLC Publications, Cornell University.
- Tomioka, Satoshi. 1999. A sloppy identity puzzle. *Natural Language Semantics* 7, 217-241.
- Travis, Lisa. 1984. *Parameters and effects of word order variation*. Ph.D. dissertation. MIT, Cambridge, Mass.
- Truckenbrodt, Hubert. 1995. *Phonological phrases: Their relation to syntax, focus, and prominence*. Ph.D. dissertation, MIT, Cambridge, Mass.
- Truckenbrodt, Hubert. 1999. Syntactic phrases and phonological phrases. *Linguistic Inquiry* 30, 219-255.
- Ura, Hiroyuki. 1996. *Multiple feature checking: A theory of grammatical function splitting*. Ph.D. dissertation. MIT.
- Uriagereka, Juan. 1988. *On government*. Ph.D. dissertation. University of Connecticut.
- Uriagereka, Juan. 1999. Multiple spell-out. In *Working minimalism*, Samuel David Epstein and Nibert Horstein, 251-282. Cambridge, Mass.: MIT Press.

- te Velde, John R. 2005. Unifying prosody and syntax for right- and left-edge coordinate ellipsis. *Lingua* 115:483-502.
- de Vos, Mark and Luis Vincente. 2005. Coordination under Right Node Raising. In *Proceedings of the 24th West Coast Conference on Formal Linguistics*, ed. by John Alderete et al., 97-104. Somerville, Mass.: Cascadilla Proceedings Project.
- Wagner, Michael. 2005. *Prosody and recursion*. Ph.D. dissertation. MIT.
- Watanabe, Akira. 1993. *AGR-based Case theory and its interaction with the A-bar system*. Ph.D. dissertation. MIT, Cambridge, Mass.
- Webelhuth, Gurt. 1989. *Syntactic saturation phenomena and the modern Germanic languages*. Ph.D. dissertation. University of Massachusetts, Amherst.
- Webelhuth, Gert. 1992. *Principles and parameters of syntactic saturation*. New York: Oxford University Press.
- Wexler, Kenneth, and Peter Culicover. 1980. *Formal principles of language acquisition*. Cambridge, Mass.: MIT Press.
- Wilder, Chris. 1994. Coordination, ATB and Ellipsis. *Groninger Arbeiten zur Germanistischen Linguistik (GAGL)* 37, 291-329.
- Wilder, Chris. 1997. Some properties of ellipsis in coordination. In *Studies on universal grammar and typological variation*, Artemis Alexiadou and T. Alan Hall (eds), 59-107. Amsterdam/Philadelphia: John Benjamins Publishing Company.
- Wilder, Chris. 1999. Right node raising and the LCA. In *Proceedings of the 18th West Coast Conferences on Formal Linguistics*, ed. by Andrew Carnie Sonya F. Bird, Jason D. Haugen, and Peter Norquest, 586-598. Cascadilla Press.
- Wilder, Chris. 2001. Shared constituent and linearization. Ms. ZAS, Berlin.

- Wilder, Chris and Damir Ćavar. 1994. Long head movement? Verb movement and cliticization in Croatian. *Lingua* 93: 1-58.
- Williams, Edwin. 1977a. Across-the-board application of rules. *Linguistic Inquiry* 8, 419-423.
- Williams, Edwin. 1977b. Discourse and logical form. *Linguistic Inquiry* 8:101-139.
- Williams, Edwin. 1978. Across-the-board rule application. *Linguistic Inquiry* 9, 31-43.
- Woolford, Ellen. 1987. A ECP account of constraints on across-the-board extraction. *Linguistic Inquiry* 18, 166-171.
- Wurmbrand, Susi. 2004. Syntactic vs. post-syntactic movement. *Proceedings of the 2003 annual meeting of the Canadian linguistic association (CLA)*, ed. Sophie Burelle and Stanca Somesfaleau. 284-295.
- Ximenes, Cristina and Jairo Nunes. 2004. Contraction and duplication of prepositions in coordinated structures in Brazilian Portuguese. In *the Proceedings of WCCFL 23*, ed. by G. Garding and M. Tsujimura, 101-114. Somerville, Mass.: Cascadilla Press.
- Yoon, James Hye-Suk. 1990. Theta theory and the grammar of inalienable possession constructions. In *the Proceedings of North East Linguistic Society 20*, ed. by R.M. Carter, B. Philip Dechaine, and T. Sherer, 502-516. GLSA, University of Massachusetts, Amherst.
- Zec, Draga and Sharon Inkelas 1990. Prosodically constrained syntax. In *Phonology-syntax connection*, Sharon Inkelas and Draga Zec (eds), 365-378. Chicago: University of Chicago Press.
- Zoerner, Edward. 1995. *Coordination: The syntax of &P*. Ph.D. dissertation. University of California, Irvine.

Zubizarreta, Maria Luisa. 1998. *Prosody, focus, and word order*. Cambridge, Mass.: MIT Press.